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USING VOLUNTEER AIDES IN A K-5 ELEMENTARY SCHOOL

The University of Arizona

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USING VOLUNTEER AIDES IN A K-5 ELEMENTARY SCHOOL

by

Robert Joseph Holzmilller

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STATEMENT BY AUTHOR

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SIGNED: Raven J. Holzmueller

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ABSTRACT

The purpose of this study was to (1) ascertain the perceptions of teachers using volunteer aides and (2) to investigate the effect use of volunteer aides have on student achievement when comparing anticipated achievement with actual academic achievement.

The population for this study included the teachers at Sahuarita Elementary School and students from both Sahuarita Elementary School and Sopori Elementary School in the Sahuarita Unified School District No. 30 system at Sahuarita, Arizona.

From these groups, all teachers at Sahuarita Elementary School were used in the sample study and one class from each grade level, two to five, from each school was selected to be representative of the total grade level.

Faculty members from Sahuarita Elementary School were given an opinion questionnaire constructed to indicate teacher effectiveness as a result of using volunteer aides. The teachers from Sopori Elementary School were not given the opinion questionnaire because they did not utilize the services of volunteer aides.

The Volunteer Aide Teacher Opinion Questionnaire was validated by using Aiken's Index of Content Validity and the information gathered on it was analyzed by a simple tally method. The mean scores of teacher responses were graphically illustrated on a profile chart.

Classrooms of students were selected, one from each grade level, two to five, and were administered the Short Form Test of

Academic Aptitude and the California Achievement Test at both Sahuarita Elementary School and at Sopori Elementary School. From the data collected, linear regressions utilizing residuals were graphically constructed for each class of students in the control and experimental groups. Significant levels of student achievement were noted based on analysis of variance of potential vs. performance.

Intelligence Quotient (I.Q.), sex and ethnic background were investigated to determine cause and effect relationships and for future investigative research.

CHAPTER 1

THE PROBLEM

Introduction

Dr. J. Lloyd Trump (Trump and Baynham 1961, p. 8) states that "one third of the teaching day goes to clerical and sub-professional tasks and another third to work that could just as well be done by various kinds of automatic devices. . . ."

Teachers are hard pressed to meet the daily demands placed on them by the ever increasing number of students placed in their classrooms and by the even greater diversity of individual student needs. Financial constraints have impeded the feasibility of adding professional and para-professional staff members to alleviate this problem.

Over the past decade, a phenomenon has emerged in school districts across the United States to help rectify this serious situation without infringing on an already overburdened budget--the use of volunteer aides to help students learn.

The practice of using volunteer aides in one form or another to assist in the instructional process at all levels of education is not a new or unique practice. Volunteer programs have been utilized by many societies for the purpose of transmission of culture. In the first century, the noted Roman teacher, Quintilian, pointed out in De Institutio Oratoria (A.D. 69) how much the younger children

could learn from the older ones. In the United States, the emergence of the one-room school promoted considerable peer and cross-age teaching. This was necessary in order for the teacher to be able to manage the diverse content and needs of the students (Gartner et al. 1971).

In a similar frame of reference, the concept of parents acting as an integral component in the development and enhancement of educational and vocational training for their children have been commonplace. Fathers training sons and mothers helping daughters has, since the beginning, been a way of existence and livelihood (Hess 1973).

The community is a storehouse of unique people with a lifetime of experiences to share with students. The oldest members of a clan or community in all cultures and societies have been looked to in the past for guidance and help because of their wisdom and understanding of societal and cognitive problems (Whaley 1973).

With the advent of the volunteer programs, it was inevitable that researchers would investigate the ramifications such programs have, not only on teacher effectiveness, but even more important, on student achievement.

Statement of the Problem

It was the purpose of this study to: (1) ascertain the perceptions of teachers using volunteer aides; and (2) to investigate the effect use of volunteer aides had on student achievement when comparing anticipated achievement with actual academic achievement.

Significance of the Study

Now, more than ever before, finding alternative ways of making teachers more effective in the classroom, with the end result of student achievement has become a topic of intense discussion and examination (Trump and Baynham 1961).

The use of peer aides, student aides, parent aides and community aides not only has a positive effect on the achievement of the students being tutored or given extra help, but, also, has a multidimensional by-product of the peers and students benefiting from the activity (Gartner et al. 1971). Parents benefit from the fact that they have helped their children, and community aides benefit from realizing they have a role to play in a very essential and vital endeavor (Hess 1973).

First, the teacher was given more help to develop materials that were of significance to the individual needs of each pupil through clerical, supervisory and non-initiated instructional assistance (Hiatt 1978).

Second, the peer tutors benefit by learning the subject well in order to assist other students. The peer tutors self-confidence and concepts are increased due to the fact that he or she has helped another person to succeed. Most of the literature examined emphasizes that the crux of peer tutorial process lies in helping enhance the child's feeling of self-worth (Johnston 1981).

Third, the student aides, even as the peer aides, benefit from learning the materials well enough to help other students of

a younger age. The student aides, also, can assist with clerical tasks and thus formulate some possible thoughts regarding future goals and careers. Cross-age relationships influence educational aspirations and achievement and attitudes toward school. These relationships contribute to the socialization of values, attitudes and ways of perceiving the world (Johnston 1981).

Fourth, parents not only have an opportunity to help the teacher and their own and other children but can become aware of the different student needs and school needs. Parent aides can become valued assistants within the school and throughout the community. It must never be forgotten that parents are teachers too (Bell 1975).

Finally, the community aides bring to the children, not only another adult to hear, listen and help them, but someone who can help the teacher have more time to give individual attention to those who need it. Community aides bring with them a lifetime of experiences to share. They are quite capable of various clerical tasks and are extremely happy to learn new ideas and methods relating to the educational process. Ultimately, they, themselves, are enriched by a feeling of usefulness and meaningfulness (Instructor 1979).

The benefits of volunteer aides effect every segment of the classroom and everyone of these persons who participate (Sager 1974). The ultimate effect, however, was most dramatic and the most meaningful, and that was the increase in teacher effectiveness as evidenced through student achievement as a result of the volunteer program. This was the major research endeavor of this study.

Research Questions to be Tested

The following questions gave direction to this study:

1. What were the perceptions of teachers utilizing volunteer aides in general?
2. What were the perceptions of teachers using peer aides?
3. What were the perceptions of teachers using student aides?
4. What were the perceptions of teachers using parent aides?
5. What were the perceptions of teachers using community aides?
6. What was the difference between the anticipated achievement in reading, grammar and mathematics as measured by the Short Form Test of Academic Aptitude (McGraw-Hill 1978) when compared to academic achievement in reading, grammar and mathematics as measured by the California Achievement Test (McGraw-Hill 1978) of classes that used volunteer aides?
7. What was the difference between the anticipated achievement in reading, grammar and mathematics as measured by the Short Form Test of Academic Aptitude (McGraw-Hill 1978) when compared to academic achievement in reading, grammar and mathematics, as measured by the California Achievement Test (McGraw-Hill 1978) of classes that did not use volunteer aides?
8. What difference was there between the high and low I.Q. students on the anticipated achievement in reading, grammar and mathematics as measured by the Short Form Test of Academic Aptitude (McGraw-Hill 1978) when compared to academic achievement in reading, grammar and

mathematics as measured by the California Achievement Test (McGraw-Hill 1978) of classes that used volunteer aides?

9. What difference was there between the high and low I.Q. students on the anticipated achievement in reading, grammar and mathematics as measured by the Short Form Test of Academic Aptitude (McGraw-Hill 1978) when compared to academic achievement in reading, grammar and mathematics as measured by the California Achievement Test (McGraw-Hill 1978) of classes that did not use volunteer aides?

Scope and Limitations

Two elementary schools were involved in the research of this study. Both schools were in the same district and had the same philosophical and curricular programs. The populations that make up the school were almost identical in their ethnic and socio-economic background. All classrooms at both schools were heterogeneously grouped as mandated by the state. However, one elementary school extensively utilizes volunteer aides and the other elementary school did not have that program.

Teachers from the elementary school utilizing volunteer aides was given an opinion questionnaire which was constructed to ascertain data to determine the effectiveness of voluntary aides on teachers regarding the assistance it does or does not provide.

One classroom on each grade level (2-5) of the two schools was the representative sample of the total populations. These groups of students at both schools were examined on the basis of their results on the Short Form Test of Academic Aptitude (SFTAA) and the California

Achievement Test (CAT). This information represented the differences between anticipated achievement (potential) and actual academic achievement (performance).

With the aforementioned data, conclusions were drawn as to the preparation in which research was conducted and under conditions that could be considered slightly out of the normal.

It was taken for granted that the instruction at both schools was of similar quality with the exception that the teachers at one school used volunteer aides.

The ethnic populations were also considered to be equal and no effect resulted from some classrooms having more minority students than another.

The final limitations were based on the belief that increased teacher effectiveness as a result of volunteer aides was the sole factor in the difference between student anticipated achievement and actual academic achievement.

Assumptions

1. A large portion of the teacher's time was spent on clerical and non-instructional tasks.
2. Increased class size and diversity of student needs hindered teacher effectiveness.
3. Teachers with and without volunteer aide programs were comparable in training and experience.
4. Teachers using volunteer aides made valid judgments and gave valid opinions about the value of volunteer aides.

5. Student achievement was determined through the use of standardized tests (CAT).

6. Student potential was determined by administering an achievement test which indicated I.Q. with specific implications on the age, sex and grade level of the student (SFTAA).

Definition of Terms

Volunteer Aides: Persons who gave freely of their time in the classroom to assist the teacher in non-initiated instructional tasks or who performed clerical services to enhance teacher effectiveness.

a. Peer aides were children within the classroom or who were at the same grade level who used their higher abilities to help those students of lesser ability.

b. Student aides were those students from higher grade levels who performed clerical tasks and cross-age tutoring activities.

c. Parent aides were parents of children within the school who performed clerical and tutorial duties.

d. Community aides were adult members of the community, most of whom were retired, who performed clerical and non-initiated instructional tasks.

Teacher Effectiveness: Effectiveness that resulted in student achievement due to increased time for preparation and development of individualized programs for students.

Academic Achievement (performance): Measure of actual capabilities of a student based on the use of a standardized test.

Anticipated Achievement (potential): Measure of the capability of a student based on the use of a prediction formula which takes into account the student's score on an achievement test (I.Q.) and the student's age, sex and grade level.

California Achievement Test: Standardized test mandated for use in the State of Arizona on grade levels 1-12. It was a nationally normed test published by the McGraw-Hill Company and hereafter was designated as the CAT.

Short Form Test of Academic Aptitude: Academic achievement test that determined the I.Q. of a student which was converted into grade level equivalences based on the age, sex and grade level of the student. It was published by McGraw-Hill Company and hereafter was designated as the SFTAA.

CHAPTER 2

REVIEW OF RELATED LITERATURE

Introduction

The objectives of this study were focused on the effects of volunteer aides on student achievement with an intervening variable of enhancement of teacher effectiveness due to the assistance the volunteer aides can provide for the teachers. Consequently the review of literature was divided into three sections. The first section reviewed the evolution of volunteer programs and examine some of the volunteer programs now in existence. The second section reviewed materials that had indicated a beneficial effect for teachers as a result of volunteer aides and volunteer programs. The third section reviewed literature for any program that indicated some academic gain or educational enhancement as a result of the use of specific types of volunteer aides.

Volunteer Programs

Volunteerism, as an important aspect of society, is clearly in evidence in the United States of America. No other nation has so great an emphasis on volunteerism--of people giving of their time, talents, and efforts to help their fellow human beings in the communities where they reside--is deeply engrained into American society. It is one of the bedrock philosophical concepts that led to the establishment of our nation. Having been with us so long, it is a concept

that many American citizens have taken for granted. Those who fall into such a trap miss an essential part of what it means to be an American citizen (Hoyt 1980).

During the first half of this century most volunteer activity was peripheral to education. Parent-teacher associations, room mothers, and field trip assistants comprised the bulk of parental involvement in schools. The attitude of bureaucratic paternalism on the part of the professional staff was not questioned by most parents. As recently as the 1950s, parents were being told to leave education to the schools, but the relationship between parents and school systems began to change (Whaley 1973).

The school volunteer programs movement formally began in 1956 in New York City when twenty interested citizens began assisting teachers with instructional and related activities. In less than twenty years since its inception, the movement had grown into an organization that pervaded the entire nation. In 1964 this movement began receiving national awareness. At that time, representatives from twenty cities were prompted to organize the National School Volunteer Program, Inc. (NSVP). It is now estimated that there are more than 500 chapters and that there are three million additional workers in unaffiliated organizations (Straus 1972). When the Ohio Department of Education hosted the annual meeting of the NSVP in 1975, conferees represented volunteer programs located in every state of the Union (Grossman 1971). Two groups have extensively offered guidance and encouragement to local groups related to the organization

and to other groups that are implementing volunteer programs. The National Reading Center and the Right to Read Program have published and circulated many administrative procedures and materials of special interest to volunteer programs (Boutwell 1972).

Many segments of the community also recognize the importance of the volunteer programs to educational endeavors and citizen groups are beginning to lend tangible support to school programs. For example, several universities offer training programs in this field. Moreover, certain industries release personnel for participation in these programs without loss of pay, and the New York State Legislature has moved to include volunteerism in its liability insurance coverage for paid school personnel (Boutwell 1972).

School officials in Mamaroneck, New York agree that volunteers may be as variegated as the citizenry, and may be comprised of parents or non-parents, young, middle-aged, or senior citizens. Nevertheless, there is general agreement in that an essential characteristic they all must demonstrate is a genuine affection for children. Going a step further, the directors of School Volunteers for Boston (SVB) add to the foregoing desirable behaviors, the dimension of enthusiastic support for the efforts of professional personnel (Whaley 1973).

The New York City Volunteer Aide Program
(New York City Board of Education 1972)

The New York City School Volunteer Program was initiated in 1956 as an experiment in the structured use of unpaid volunteers to assist teachers and pupils in the public schools. The program

functioned as a pilot project of the Public Education Association with a Ford Foundation grant until 1962, when it was adopted by the New York City Board of Education. It serves as a model for similar programs established in other parts of the country and abroad.

The type of service offered by School Volunteers has changed over the years from purely mechanical routine chores performed for the teacher to tutorial assistance for individual pupils. This change evolved as teachers acquired confidence in the volunteers' skills and dependability, and as the School Volunteer Program refined its techniques of training and supervision.

Volunteers serve on all grade levels from kindergarten to high school, mainly in the areas of reading improvement and teaching English as a second language. They are assigned only to those schools whose principals and teachers request their services. They work only with pupils referred to them by the teachers and other school professionals. It is made clear to all concerned that the volunteer is an auxiliary, a supplementary resource--never a replacement--for the teacher.

The program is administered jointly by the School Volunteer Central Office (an agency of the Central Board of Education) and those community school districts which elect to participate. The Central Office develops guidelines, handles city-wide recruitment and publicity, and serves as a coordinating agency and resource center for the community school districts. It also administers the program

in the city's high schools and special schools, which remain under the jurisdiction of the Central Board of Education.

The Program is financed mainly by public funds provided by the Central Board of Education and the school boards of participating school districts. Supplementary financing is provided by the New York City School Volunteer Program, Inc., a non-profit organization which raises funds from foundations, businesses and other sources to expedite the expansion of the program throughout the city and to provide seed money for experimental new uses of volunteers.

Volunteers are recruited in a variety of ways--city-wide publicity in newspapers, magazines, radio and television, referrals by other volunteers and other agencies, etc. Most of the general publicity originates from the Central Office. The Central Office also advises and furnishes materials to these community school districts where recruitment is directed mainly toward parents' associations and neighborhood groups.

Every new recruit is interviewed by a trained volunteer interviewer. Although there are no specific age, education or experience requirements, volunteers must be healthy, emotionally stable, dependable people who can work well with children and young people. Satisfactory medical and character references and a tuberculosis screening examination are required before a volunteer is accepted in the program.

Before assignment to a school, every new recruit is required to attend a series of training sessions in his chosen area of service. Pre-service training courses, ranging from ten to thirteen hours

are conducted monthly throughout the school year at the School Volunteer Central Office. They are also conducted as needed in those districts from which volunteers cannot conveniently travel to the Central Office. The instructors are either teachers on the professional staff or highly experienced volunteers.

All new volunteers are given an orientation to the New York City Public School System, to the background and philosophy of the School Volunteer Program and to the characteristics of the pupils involved in the program. They then attend workshops in techniques for reading tutoring, for teaching English as a second language, or for serving as an Early Childhood classroom assistant.

There is continuous on-the-job training for volunteers. Professional and volunteer instructors visit the schools on a regular basis. In addition, in-service workshops are held periodically at the Central Office and in the districts.

The volunteers in the Reading Help Program serve as tutors for pupils referred to them by classroom teachers and other school personnel as likely to benefit from some individual attention. Generally, these pupils are reading from one to three years below grade level and are receiving no professional remedial assistance.

Each pupil is helped twice weekly at the same hour by the same volunteer. Wherever possible, the pupils leave their classrooms to meet their volunteers in a special room set aside for this purpose.

The volunteer is trained to capitalize on the interests of the individual child, choosing from a wide variety of trade books,

games and self-made materials on all levels of difficulty, not ordinarily found in the classroom. Starting at a level where the child can achieve success, the volunteer tries gradually to build the self-confidence the child needs to progress.

The aim of the School Volunteer English as a Second Language Program is to teach non-English speaking students enough oral English to enable them to function in their classrooms. The method is audio-visual-lingual, relying completely on direct association of objects and words, with no translation from any foreign language.

The volunteers work outside the classroom, each volunteer teaching two students at a time, twice a week for a 30-minute period. The students are paired according to age, proficiency in English and personality. Since only English is used in the teaching sessions, the volunteer need not know a foreign language, and the two children need not know the same original language.

The School Volunteer Early Childhood Program provides volunteer assistance for kindergarten, first and second grade classes.

The volunteers serve as an "extra pair of hands" for the teacher and as an enriching experience for the children. They help with classroom routines and with all activities requiring more than one adult: reading to and with individuals and small groups of children, helping with music and art activities, accompanying classes on trips, etc. The volunteers give pupils individual time and attention and encourage them to express themselves through language--an important prerequisite for learning to read.

Early Childhood volunteers serve a minimum of two half-days or one full day each week in their assigned classrooms, under the direct supervision of the classroom teacher.

The volunteers who teach reading or English as a second language generally work together as a unit in a special room in the school where the pupils come for their tutoring sessions. Each tutorial unit of volunteers is supervised by a Volunteer Chairman. The Chairman is an experienced School Volunteer who acts as liaison between the volunteers and the school professional staff.

The Chairman in each district is supervised by a Field Coordinator (professional teacher) who makes regular visits to the schools in the district to assist the Chairmen with their administrative problems and to give on-the-job training to the volunteers.

In the case of volunteers who serve in classrooms, the immediate supervisor is the classroom teacher. However, the School Volunteer Field Coordinator visits them frequently at their schools to provide additional training and to insure harmonious working relationships between volunteers and teachers.

The city-wide program is supervised and coordinated by the Director and Assistant Director, and by the Reading Help, English as a Second Language and Early Childhood specialists on the Central Office staff, who set guidelines for the training of volunteers and for the methodology and materials utilized throughout the program. A Board of Trustees (incorporated at the New York City School Volunteer Program, Inc. for fund-raising purposes) acts in an advisory capacity.

This board is composed of experienced school volunteers and knowledgeable members of the community at large.

The Good Friends Volunteer Program:
Nashville-Davidson County Metropolitan
Public Schools, Tennessee (Hooper 1976)

In the Metropolitan Schools of Nashville and Davidson County, the first system-wide effort to cultivate and develop the vast volunteer resource came in the school year 1971-72, under the federally funded Emergency School Assistance Program (ESAP).

According to the Minutes of the Board of Education, October 26, 1971, a Coordinator of Community Volunteers was to be hired ". . . to organize, develop and coordinate a program of volunteer citizen participation in the fulfillment of the goals and purposes of the Metropolitan School District. . . ."

Federal funding ended after the volunteer program was in operation for two years. During the school year 1973-74, the department was separated from the Community Education Department and became funded by local monies.

During 1975-76, over 3,000 volunteers worked in the Good Friends Volunteer Program in 110 schools. Duties included: giving a child special attention; helping enrich the program in areas such as music, art, dramatics, crafts, hobbies and other special interests; tutoring a child in reading or math; helping in the library or office, or preparing materials; helping in the clinic or on the playground; transporting other volunteers. Some worked as little as one hour per week while some worked as much as 30 hours per week. During

the full year 1975-76 , a total of more than 80,000 hours were logged by Good Friends Volunteers. At the end of each year, letters of appreciation and certificates are given to volunteers according to the following point system:

- a. 1 - 20 hours: letter of appreciation
- b. 21 - 35 hours: certificate
- c. 36 - 75 hours: certificate with seal
- d. 76 -125 hours: certificate with seal and two gold stars
- e. 126 -199 hours: certificate with seal and four gold stars
- f. 2 years and 200 cumulative hours: pin with name on it
- g. 3 years and 300 cumulative hours: silver pin

A local coordinator in each school works closely with the district coordinator (one for each of the three districts in the school system), and with the Coordinator of Volunteer Services to supervise the recruitment, orientation and inservice training for the volunteers at each respective school.

Orientation sessions are held for the faculty of each participating school in order to acquaint the teachers with the responsibilities involved in using volunteers. Volunteers are placed in classrooms only when requested by individual teachers.

Orientation sessions are also held for volunteers to inform them of their duties and responsibilities in working as a volunteer in the Metropolitan School System. Workshops which give more detailed help to the volunteer in tutoring reading and mathematics, communication,

and early childhood development are offered to all volunteers. All Teacher Center workshops are also open to volunteers.

The Coordinator of Volunteer Services is assisted in making policy decisions by two advisory committees: a community-wide citizen's committee and a system-wide school staff committee.

The overall objectives of the Office of Volunteers Service are:

1. To improve the learning situation for students by lowering the ratio of students to adult in the classroom.
2. To organize and conduct an active program for recruiting volunteers from the community as requested by the teachers.
3. To train teachers and principals in the effective and productive use of the volunteers.
4. To train the volunteers in the knowledge of school policies and to aid the volunteers to better use their varied skills and talents.
5. To conduct activities to insure the retention of qualified volunteers through workshop activities and awards of recognition.
6. To provide a reservoir of resource speakers which can supplement and enrich the social program.
7. To increase communication and interaction between the volunteers and the teachers which will, in turn, strengthen the relationship between the schools and the community.

Volunteers in the Metropolitan Public Schools enter the program through channels that are as varied as the individuals themselves. A primary source of volunteers is the parents of school age children.

They are given the first opportunity to volunteer by means of a letter from the school principal and the local coordinator. Many parents enjoy giving a few hours each week to volunteer work. Men and women of all professions and vocations, especially those with work schedules that permit, donate some of their free time to volunteer work. Elderly citizens are frequent volunteers, whether on an individual basis or as a part of an organized program. Students themselves also volunteer to help younger students through the Out-of-School Credit Experiences Program of the Metropolitan Schools.

Besides through letters to parents, prospective volunteers might first hear of the opportunity to work in the schools through a spot announcement on radio or television, an information-requesting post card display in a local bank, group participation by a club or other group, referral by another volunteer, or by numerous other methods.

The File Box System: Flexibility in a
Volunteer Aide Program, Meigs, Ohio
(Mangieri and Readence 1977)

In the Meigs Local School District, a rural southeastern Ohio school district, a volunteer aide program is currently in existence in the district's elementary schools. This program was initiated in cooperation with the Ohio University Teacher Corps Project which also operates within the school district.

The developers of the Meigs Volunteer Program (MVP) were acutely aware of the factors which customarily undermine most volunteer aide programs and they sought to design a program devoid of these

problems. Such a program has been devised, and the authors of this program believe that utilization of a single procedure is primarily responsible for any of the success which MVP has thus far attained.

The aforementioned factor is called a "file box" system. The system derives its name from the place (a file box) in which the names of aides are stored. From this resource pool, teachers and school district administrators can select the individual with whom they would like to work on a given day. Underlying the system is the belief that a volunteer program achieves optimum result when an elementary teacher determines the times a volunteer is to be used in her classroom, which aide is to be utilized, and the type(s) of service(s) to be provided by the volunteer in the elementary classroom.

The names of those individuals selected to participate in the volunteer program are cross-referenced in a file box according to the times and days they are available and the services which they can provide. A teacher, needing a volunteer to perform certain duties at specified times, selects the aide who best meets her needs according to time and performance. By selecting and notifying the volunteer (approximately two days) prior to the specified time, the teacher secures from the volunteer a commitment to fulfill the teacher's classroom or clerical needs.

Utilization of the file box system at each elementary school is the responsibility of the building coordinator. Efforts are coordinated between teachers and volunteers, and insures that teachers indicate the name of a volunteer from whom they have secured a commitment,

so that an individual's name is eliminated from the "available" list for those particular times and days. In addition, the building coordinator "checks in" volunteers when they enter a school site and "check out" volunteers when they leave the elementary school. This enables the coordinator to know not only when a volunteer is being utilized in the elementary school but also the degree to which the volunteer is being used weekly. This information has a certain degree of diagnostic value, as it enables the building coordinator to ascertain which volunteers are providing services and why other volunteers are not being used. Those volunteers not being utilized may be inserviced (or remediated) to correct possible reasons for their non-use.

Community Resource Center
(Great Falls Public Schools 1974)

The Voluntary Action Center and the Retired Senior Volunteer Program, in cooperation with the Great Falls Public School District's Career Education Program, developed and put into operation a Community Resource Center. This center functions as a clearing house for available people to get as resource persons upon request by individuals who represent community organizations.

At present, the Community Resource Center has one person responsible for the coordination of the office and recruitment to expand the human resources that are available in the community.

This job is extremely large for one volunteer to coordinate. Therefore, current plans are to find a volunteer for each of these areas.

The Community Resource Center is located within the Voluntary Action Center Office in the Civic Center. The Voluntary Action Center office is open 8:00 am. to 5:00 pm. Monday through Friday, so a staff member is available to answer the telephone (the Community Resource Center has a separate line) at all times. Each day is divided into two volunteer staff shifts, each being three hours in length (10:00 am.-1:00 pm. and 1:00 pm.-4:00 pm.). During the first four months of operation, requests processed averaged 20 per month. It was determined that one volunteer with a three hour shift per day was adequate. In the fifth month of operation, there was a dramatic increase in requests (50 per month, average). At this point, and thereafter, it became necessary to provide volunteer staff for two shifts per day. An individual is to complete the "Request for Resource Person" form and return it to the Career Education Office. The Career Education Office staff is responsible for regular delivery and pick-up of mail from the Community Resource Center. Upon the location of an individual who is able to provide the subject matter requested, the Community Resource Center forwards a carbon copy and evaluation sheet to the resource person and to the individual who placed the original request.

The "Request for Resource Person" forms are located in the library of each school. The principals of all the schools are requested to have these forms available at other locations, such as the

main office, teachers' resource rooms, teachers' lounges, and other assigned areas easily accessible to the faculty. Each form packet consists of an original and three color-coded copies.

Request forms are as detailed as possible. An area in which this is extremely important is the subject matter to be covered by the resource person. Being as explicit as possible provides the volunteer staff member with a thorough understanding of the type of individual who could best serve the needs of the person placing the request.

Confirmation of a resource person is accomplished when the lower portion of the "Request for Resource Person" form is completed by the Community Resource Center. The original is mailed to the resource person and copies are sent to the teacher placing the request and to the principal of the school involved for his files. A third copy is placed on file at the Community Resource Center. Confirmation forms to the teachers and principals are returned through the inter-school mail.

Evaluation Forms are mailed with the confirmation to the resource person and the teacher. There is a stamped, self-addressed envelope provided for the resource person. The "Feedback" sheet, when completed by the teacher, is returned via inter-school mail.

Prince George's County Public School
Program (Gold 1976)

An effective volunteer program can provide a means for facilitating individualized reading instruction in an elementary school setting

by providing services to meet the needs of both teachers and students. Volunteers in the Prince George's County Public Schools in Columbia, Maryland provide services in three major areas. Clerical volunteers develop instructional materials and aide in the checking of student work. Instructional volunteers reinforce teacher-initiated instruction and assist in clubs and special activities. Tutorial volunteers work outside the classroom in small group instruction of specific skills. Personnel are recruited from the community, and placement of clerical and instructional volunteers is coordinated by a volunteer liaison. Volunteers are encouraged to participate in inservice meetings to discuss new ways in which the volunteers can be utilized and how programs can be modified to be of greater assistance and service to teachers.

Volunteer Aides and Teacher Effectiveness

A long-standing goal for the elementary school has been "individualized instruction." This goal was first proposed by progressive educators--taking their lead from Dewey--in the early part of the 20th century. The popularity of the idea rose and fell over the years, and then reformers of the 1960s again emphasized the need to "individualize" instruction to meet the unique needs of each student. What is generally meant by "individualized instruction" is that each child's abilities and goals should be identified, and appropriate instruction provided to help him achieve his goals within the reach of his abilities (Eugene Public Schools 1970).

As is often the case in education, however, there is a large gap between the rhetoric and the reality. Elementary teachers have not been able to individualize instruction even though they believe they should, largely because it is all but impossible for one teacher in a self-contained classroom to create and carry out different learning agendas for each of twenty-five or thirty children. Even with the introduction of various auxiliary personnel into the elementary school--counselors, resource teachers, specialists, and teacher aides--the teacher has found it extremely difficult to provide the variety of activities and attention necessary to individualize instruction. It is almost impossible for the teacher to work with a single child or even with a small group of students having similar goals and abilities for any concentrated length of time (Goodlad 1975).

A comparison of the contemporary classroom with one of a century ago would sharply reveal the increased complexity of the work of teaching (Cubberly 1910). Today's classroom teacher needs to possess a wider range of knowledge and skills, such as the knowledge of child development and the psychological principles of learning, ability to judge a vast array of curricular materials and evaluate a multiplicity of testing devices, and skills in operating a variety of audiovisual machines and in managing the work of others. At the same time there is an increasing pressure to individualize instruction to meet the wide range of differences among pupils within the classroom (Goodlad 1975). Teachers are attempting to use a variety of instructional groupings, provide a wide selection of educational opportunities

and promote learning achievement according to the range of ability and interest within a given group. To the novice teacher who enters the classroom for the first time, the work of teaching appears to be overwhelming (Dreeban 1970).

A model of central and related teaching activities, shown in Figure 1, was ultimately developed from the work of Hiatt (1978). From this model it is easy to see that the central and related activities are many and varied and that by utilizing aides teachers would have more time for central activities of teaching. Related activities are performed by aides.

As means to assist the classroom teachers to meet the demands placed on them, schools are employing aides. The Western states are employing the greatest number of these aides (Moffat 1972). Currently within the State of California, there is pressure to restructure the primary grades to promote individualization of instruction for pupils (State of California 1972). As part of this plan for providing the unique differences of thirty pupils within a classroom, funds are provided for having teacher aides. Many other federal and state projects mandate the use of aides as a requirement of the program itself. Approximately 9,000 aides were hired in the Los Angeles School District to provide individual services for students. However, as fund and budget become less and less the need for aides remains a valued source of help for the teacher (Hiatt 1978).

One of the most significant trends in education over the past several years has been the increase in the number and variety

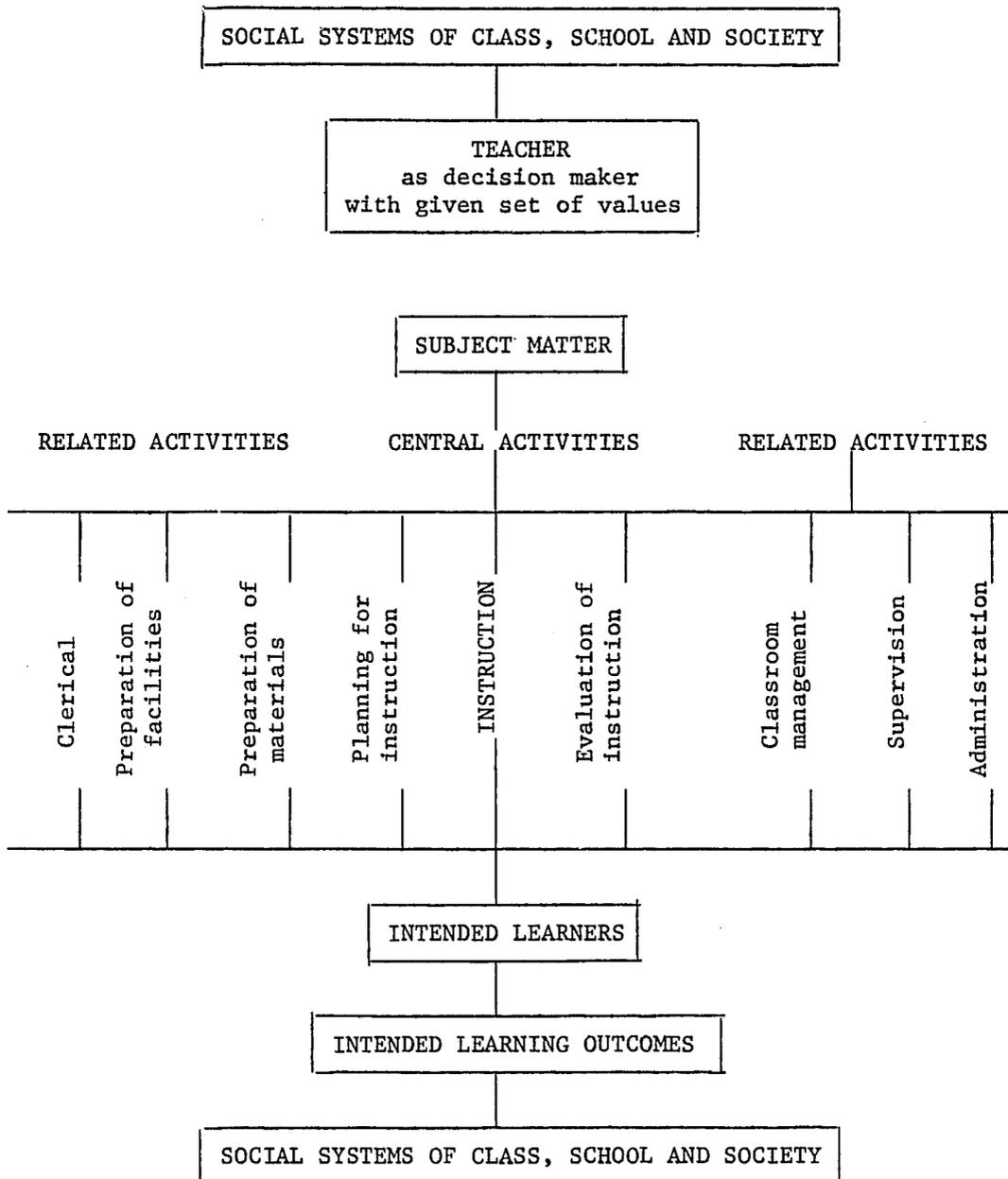


Figure 1. Categories of central and related activities of teaching.

of supportive personnel working directly with or under the classroom teacher for the purpose of individualizing instruction (Sager 1974).

At present there are well over 2½ million volunteers working in the schools largely in the area of reading, and reports indicate that there is barely a community across the nation that is not still actively involved in programs which bring senior citizens, parents, and older students into the classroom to act as volunteer tutors and aides (Sager 1974).

An intensive study of twenty-five primary classrooms with and without aides suggested that teachers with aides displayed more evidence of job satisfaction and were able to devote more time to teaching activities they valued (Hiatt 1978).

A project of note consisted of a five-year study conducted in twenty-five Michigan schools to determine the effectiveness of volunteer programs. The data revealed a significant reduction in the amount of non-instructional time required of teachers in that volunteers assisted with "correcting papers, enforcing discipline, taking attendance, preparing reports, patrolling halls, and monitoring lesson" (Whaley 1973).

As part of the Michigan Educational Assessment Program volunteers were utilized to correct individual tests prepared by teachers for over 2,000 students in the fourth and fifth grade. This allowed the teachers the time to work with students and prepare individual student materials (Roeber and Brictson 1978).

The volunteer program implemented in the State of Ohio in conjunction with the Ohio Education Association and the National Education Association in 1969 listed various utilizations of volunteer aides:

1. Help individualize instructions.
2. Assume clerical type tasks.
3. Tutor in reading.
4. Assist with the lunchroom duties.
5. Act as language interpreters.
6. Assist with playground and field trip supervision.
7. Assist with non-initiated instructional tasks.
8. Assist teachers in monitoring study activities.
9. Share experiences, materials and special talents.
10. Assist the school nurses.
11. Assist the office staff in registration, etc.
12. Assist the teacher in classroom maintenance and beautification.

All of these aforementioned activities obviously enhance teacher time and effectiveness. The goals of the program used to improve instruction and the objectives were as follows:

1. Teachers will spend more time directly involved in such significant high level teaching and learning functions as assessment of pupil needs, inquiry teaching, encouragement of creativity, evaluation of student progress and personal guidance.

2. Teachers will spend more time designing teaching strategies directed to achieving instructional objectives.
3. Teachers will be more personally involved with pupils.
4. The basic skill programs will be improved because the knowledge of teachers will be utilized to manage the programs while aides will take care of routine asks.
5. Teachers will have more physical and mental energy to devote to teaching.

The Florida Department of Education in conjunction with federal funds allocated through Title V and with the legislation passed by the State of Florida in 1975, enacted programs based on community involvement and the utilization of volunteer aides to facilitate a greater degree of individualization. These programs provided additional personnel and capitalize on the teachers' professional expertise by releasing them from non-instructional tasks, thereby allowing for increase teacher/student interaction. It was the ultimate goal of the Florida Department of Education to reinforce the basic skill areas (Florida State Department of Education 1976).

In investigating a great number of the federal and state projects on volunteerism it is one of the primary purposes of these programs to enhance teacher effectiveness through the use of volunteer aides. Every set of goals and objectives brings into focus individualizing to meet student needs by using the services of community members to free teachers to perform their central activities and to release

them from related activities such as clerical, supervisory and non-instruction tasks. Teachers are the most effective doing what they have been trained to do--teach (Florida State Department of Education 1976).

Volunteer Aides and Student Achievement

Although educators are diverse in their descriptions of the basic characteristics which volunteer programs should possess, there seems to be unanimous agreement that volunteer programs are of great value to education. Not only do educators attest to the value of the program but they predict that they will eventually develop into routine procedures of public school systems. Harriett Strauss, President of the School Volunteer Program in Los Angeles, confirmed this opinion when she stated that "The expansion of volunteer services can lead to more significant educational programs, as well as to better, and more positive community relationships," (Strauss 1974, p. 40). School personnel in Salem, Oregon support the opinion expoused by Strauss and place basic value on the helping relationship that children are able to receive as a result of volunteer aide programs. The specialized skills which students develop provide added opportunities to enhance the role of their schools in school-community relations (Whaley 1973).

In his survey of principals, volunteers, and receiving teachers in Canada, Lucien G. Perras discovered a thread of unanimity running through the responses of participants similar to those elicited from their counterparts in the United States. In his work, Perras assailed the lack of on-going research programs to evaluate the degree of

effectiveness volunteers demonstrate as they perform specified functions. He contended that longitudinal research is needed to clarify aspects of these programs of general benefit to the educational welfare of students (Perras 1973).

Eric data summarize additional studies of volunteer programs conducted by educators, research corporations, and divisions of the federal government. As examples, the work of Keen (1973) and Neff (1973) may be cited. Their studies conducted in Delaware and Sacramento respectively, attest to the effectiveness and work of volunteer programs in meeting the educational needs of pupils.

The practice of annual evaluation of the Denver volunteer program as a measure of gains made by students, has materially added to our knowledge in this field. The opinions of classroom teachers are recorded on a scale ranging from "some" to "great" gains. Approximately 80% of the responding teachers indicated gains in self-concept, attitudes toward reading, attitudes toward school, and attitudes toward other teachers. Actual improvements made by students in spelling, writing, following directions, and listening skills are validated for more than 50% of the respondents (Strauss 1972).

Mention, in this review, should be made of the effectiveness of Project Upswing as a federally financed effort to conduct evaluative research of volunteer programs in five major cities. Three groups of early primary children were studied in each city. One group had the benefit of volunteers who received specialized training; in another group, the training was general; and in the control group, there

were no volunteers. Empirical data obtained from the research confirmed the hypothesis that children benefit from volunteer tutoring. It was concluded that the degree of effectiveness depends upon the amount of training volunteers receive. According to the findings of a longitudinal study, conducted by the Tutorial Center in Logan-Cache, Utah over a seven-year period, tutoring was the critical variable that seemed to improve standardized test scores in reading and writing. Obviously the use of volunteers makes more tutors available for work with students. A similar study of shorter duration, but supportive of the above findings, was conducted in California by Operation Share. The data for 1969-70 disclosed that substantial gains were made by most of the children in the volunteer-tutorial project. A report based upon presentations made at a national seminar held by the Institute for Development of Educational Activities, Inc. (I/D/E/A) further substantiated the foregoing findings. The report particularizes the benefits that accrue from a reduction in the ratio between pupils and adults, individualization of instruction, and reduction in discipline problems (Walton 1976).

Finally, the U.S. Office of Education directed a national survey to determine the value of volunteer programs. These findings were summarized thusly, "Value gained from such programs outweigh the drawbacks or disadvantages." It was further contended that ample data from the study supported the notion that most of the difficulties encountered by school districts can be mitigated (Whaley 1973).

Peer Aides

"I learn by her helping me" was the enthusiastic response of a fifth grade boy when asked how he liked working with one of his classmates. She had been tutoring him in reading under the supervision of a college student enrolled in a diagnostic reading course. The college student taught one child specific tutoring behaviors, and this child then tutored a peer. Both students were in fifth grade, and both children had been diagnosed as needing remedial work in reading (Boraks and Allen 1977).

The idea of one child tutoring another child is not a new concept. In the past few years peer tutoring has been suggested as a means to improve reading achievement and school attitude (Powell 1975).

An essential element in a successful tutoring program is the training of the child in the methods of tutoring. It is necessary to explain and demonstrate how to use materials and present ideas to tutors. It cannot be assumed that simply by pairing students for instructional purposes will yield productive results (Dreyer 1973).

In 1977 a peer tutoring study was developed by Nancy Boraks and Amy Allen to investigate two-way peer tutoring as opposed to tutoring by an adult helping elementary remedial readers. In essence the children are taught some or all, of a series of teaching behaviors which they apply during tutoring sessions when working together.

The behaviors included in the program are: promoting positive response patterns, keeping the tutee on task, explaining objectives, giving praise, teaching the tutee to verify his own responses, setting the tutee at ease, showing enthusiasm, developing clarity, varying activities, and varying questions. Children of the same ages and similar ability levels are paired as tutoring teams. Because children learn to be a tutor and to alternate tutor and tutee roles for different lessons, the term "Reciprocal Peer Tutoring" (RPT) was chosen as a label for the process.

In this study RPT was compared with direct adult-child tutoring. The purpose of the study was to determine whether RPT or direct tutoring would differentially affect the reading achievement of elementary school remedial reading students.

The study indicates that two-way peer tutoring is superior to tutoring by an adult in helping elementary remedial readers (Boraks and Allen 1977).

In the River Range Public Schools in River Range, Michigan 500 pupils in kindergarten through the sixth grade were involved in the Peer Instructional Program developed by Fredric Revkin and Martha Dreiman. The program was in conjunction with a project which was under the guidelines of Title I and consisted of students working 30 minutes daily on the mastering of phonic skills. There were six steps through which each student must achieve success before becoming a peer aide and cycling other students through the sequence. The process has been very effective (Ravkin and Dreiman 1973).

David Lazerson (1978) conducted a study to investigate the value of peer aides involving 60 children grades two to eight. The study hypothesized that both the aggressive and withdrawn children would benefit from participation in brief daily learning sessions. After five weeks of peer tutoring, almost all children who actively participated in the program showed increased learning abilities.

Student Aides

Children learn more from teaching other children. At first thought, this may seem untrue, but it has been proven time and time again that benefits derived from older children teaching younger children are many (Gartner et al. 1971). The Moravian teacher, John Comenius, noted in Dedativa Magna, "He who teachers others, teachers himself" (Comenius 1632, p. 156).

In our nation's early one-room school houses when there was one teacher hired to teach all eight grades, it became a necessity to ask the older children to assist the younger ones, not only with class management and housekeeping duties but also with their lessons. Thus, the monitorial system which is generally credited to Joseph Baker, an English Quaker, was created (Gartner et al. 1971).

Today, there is an even greater need for student aides. Individualization, a key to learning, can be enhanced through the use of student aides. Student aides are being used in several nations besides the United States, including Cuba, Great Britain and the Soviet Union (Blackburn 1975).

John Holt in his book, How Children Fail, blames failure in the classroom on the fact that "they (the pupils) are afraid, bored and confused" (Holt 1964, p. xiii). The student aide automatically removes the feeling of fear in that he is himself a child and does not entertain the limitless hopes and expectations of an adult. Boredom is terminated since there is excitement, even fun, if only because the child is working with another child his own age, or close to it. Confusion, too, disappears. The tutor relates to the child, and his directions are likely to be couched in language that is more familiar than that used by the teacher. And, if he does not understand what is expected of him, he is not as reluctant to ask the young tutor to explain again just what was required by a given assignment (Holt 1964).

In reports about students teaching students, the advantages of tutoring students are generally extolled. Those tutored are provided with immediate feedback in a one-to-one relation; thus they learn more and also realize a sense of worth from identifying with older model figures. The tutors themselves form a common bond of cooperation with the teachers; they learn while preparing lessons and so acquire a sense of responsibility, concern for others, an improved self-image, and a more positive attitude toward school. Teachers, likewise, profit: they are provided with more time for developing the curriculum, they can cover more material, and they can devote their efforts to the most troublesome areas needing extended attention.

Reading seems to be the subject which lends itself best to cross-age tutoring, at least judged by the number of reports appearing in recent literature. Numerous studies offer evidence of cognitive gains. The most impressive gains reported, as measured by a standardized reading test, are seven months gain in ten weeks for the tutored elementary students (Halls 1976; Melaragno 1977; Olsen 1974; Shaw 1973; Thelen 1969). In other cases, gains are reported for the children tutored (Allen et al. 1976; Melaragno 1977; Olsen 1974; Plumb and Wilkinson 1974).

In the affective domain, evidence for change is less clear than that for cognitive achievement. Data must be collected from often imprecise questionnaires, attitude scales, and anecdotal observations (Melaragno 1974). As an example of what exists, Bean and Luke (1972) developed a sentence completion test to evaluate improvement in self-concept. After ten weeks of tutoring, 87% of the elementary tutees completed their answers in the most positive way. Other reports (Allen et al. 1976; Gartner et al. 1971) have indicated that tutees improve not only in self-concept but also in behavior, social acceptability, and increased interest in school.

School attendance has also improved for tutees (Brottman 1975; Gartner et al. 1972; Frager and Stern 1970).

Many studies indicate various conditions which should exist in successful tutoring programs. Time and again need for careful structure, systematic tutor training, and consistent support from adults is emphasized (Melaragno 1977; Niedermeyer and Ellis 1971).

In one experiment (Mayhall et al. 1975) learning disabled third graders were tutored by trained intermediate students to learn words on cards. When the teacher actively supervised the tutors, the third graders learned significantly more ($p < .01$) than when there was no teacher supervision. Diamond (1976) suggests that lack of adequate structure and support may provide an explanation for a tutoring project which failed to produce cognitive and/or affective gains. Robertson (1971), in his paper presenting a successful tutoring project in teaching sight words, describes the tutors' training sessions. The fifth graders were instructed in tutoring behaviors and procedures, given a well-defined set of tasks to accomplish, given demonstrations with the materials used, provided opportunities to role play the parts of both tutors and tutees, informed about purposes and expected outcomes, and involved in evaluation.

In a study by Medway and Lowe, forty-two elementary school children (Grades 2, 3, and 4) were tutored on a one-to-one basis by junior high volunteers (Grades 6, 7, and 8) for twelve weeks. Prior to the start of the tutoring program and following an experimental tutoring session in which tutee performance and feedback were manipulated, both the elementary and secondary students attributed responsibility for potential (pretutoring) and real (experimental) tutoring outcomes to either tutor, tutee, or tutee classroom teacher factors. Results indicated that tutees, as compared to tutors, saw their learning ability as a less important cause and saw tutor effort

as a more important cause of successful and unsuccessful outcomes and for real situations. Tutees were found to blame tutors more for lack of success in the real (and more involving) situation, thus offering partial support for notions of ego-enhancing and ego-defensive attributional biases (Medway and Lowe 1976).

At the University of Southern California a special project on cross-age tutor training has been developed called Storytelling: All About Me! The project utilizes fifth grade students acting as tutors for second grade students. The purpose of the project was to enhance tutee capabilities in storytelling and thought processes and has been very successful (Cone and Hall 1976).

Fifteen high school students from Ludlow School District in Websterville, Vermont served as volunteer tutors in an individualized reading program for fourteen fourth and fifth grade pupils unable to succeed at grade level in reading skills. Assignments were based on the Ginn 100 reading series and scores were evaluated on word recognition (taught with flashcards) and comprehension. Each student improved in word recognition for each text demonstrating intrasubject as well as intersubject replication of the effects of teen tutoring. In addition, concurrent with introduction of points exchanged for library books of their choice, pupil performances improved for daily comprehension of reading assignments. From September to May, most students advanced two to three years in reading with the least advancement 1.7 years and greatest 3.7 years (Klann, Kinsman and Egner 1972).

In addition to the aforementioned a review of dissertations and studies on the use of cross-age tutoring and student aides resulted in the following information being gathered to further substantiate the effects of such programs.

In Tuscaloosa, Alabama forty third grade students were tutored by sixth grade students for 40 minutes each day for eight weeks. The third grade students were Caucasian, middle-class underachievers. The experimental group of third grade made scores that were significantly higher at the .01 level on the California Reading Test (Rogers 1969).

Forty first, second, and third grade tutees and their controls (predominately black or Mexican-American disadvantaged underachievers) were tutored by fifth and sixth grade students. The experimental pupils made significant gains at the .05 level on the Reading Subtest of the Metropolitan Achievement Test. On the criterion referenced Word Recognition Test, gains were significant at the .01 level. The experimental group was tutored for 20 minutes four times each week for eight weeks (Snapp 1970).

Sixty-six first grade students in Tarzana, California were tutored by thirty-three fifth grade students identified as low achieving readers. Experimental pupils who received normal instruction plus individual tutoring made significant gains in sight work vocabulary and out performed the control subjects who received only the normal instruction (Robertson and Friedman 1971).

In a study in Cleveland, Ohio eighty-two black male underachieving third grade students were tutored by forty-one fifth and sixth grade pupils with the same characteristics. The experimental group of students were tutored for 30 minutes three times each week, for twelve weeks. No notebooks or textbooks were used in tutoring but the experimental group made reading comprehension scores significant at the .05 level over the control group scores (Liette 1971).

In another study two hundred and sixteen second grade students in Lexington, Kentucky were tutored by sixty fourth grade students in reading comprehension. Tutoring sessions were held for 20 minutes daily in the fourth grade classrooms during the regular reading lessons for approximately six months. No significant gains in reading comprehension were noted for the second grade students, but gains significant at the .05 level were noted for the fourth grade tutors (Kelly 1971).

In Seattle, Washington eighty first through fourth grade students were tutored by forty seventh and eighth grade students. Half of the tutees showed greater academic progress with tutors than without (Bremmer 1972).

Parent Aides

Official figures tell us that three out of every ten persons in the United States are directly involved in education. We often assume that three out of ten are enough to do the job well. We often believe that the schools are the sole territory of those persons

directly involved in education, and that participation of other members of the community might be viewed from inside the school as interference (Schofield 1975).

The truth is that our schools need our care, and taking care of a school is more than removing trash and repairing broken equipment and replacing damaged instructional materials. It involves a maintenance of spirit among students and teachers and other school personnel. That spirit, which we often call morale--as if we were an army facing a long season of trench warfare--in turn flows back to us and to all the other members of our community. At a time when the public educational system is threatened (many forces that would establish private schools and cut the budgets of public education), it is imperative that we maintain that spirit. The divisive action of a few strikes at the heart of the premises of equality and equal opportunity on which our democracy is based, and if we permit it to erode our public school system, we indeed jeopardize the education of the whole people (Schofield 1975).

If all of us do not concern ourselves with the schools, we are forfeiting some of the responsibility we share for our country's future. An active, well planned and carefully implemented parent involvement program can help all of us in working together toward the future (Caplin 1970).

A child's initial learning experiences take place in the home, with parents as the first instructors. As the child's world

expands, other persons--relatives, family friends, other children, and those present through books, radio, television, and movies--play an important part in learning. As these other sources of learning become evident, parents may begin to feel they are losing contact with their child, and this feeling can become especially acute when the child enters school (Hess 1973).

Many parents experience the loss of shared activities with a child not because they are no longer interested but because they do not feel involved in the school situation. Though some parents try to counteract this--as indicated by the growing number of cooperative nursery schools in which parents take part in the child's learning and share in her/his growth--the doors of the elementary school are often closed to parent participation. Parents too often find they can do little in cooperation with the school and the teacher, except perhaps provide refreshments for a holiday party or help chaperone the class picnic (Hess 1973).

Since the school and the parents share concern for the welfare of the child, it is logical that they should develop a cooperative partnership. Creating such a partnership is the purpose of the parent involvement program--an exciting concept designed to bring parents into the classroom where they can actively take part in the education of their child. With the growing emphasis on individualized or personalized instruction, you will find there are many opportunities for parents to participate in activities which do not require the

professional expertise of the teacher but which do utilize the skills or interests parents have and do provide an enriched learning experience for the children. The parent involvement program does not attempt to replace teachers, substitute teachers, or auxiliary personnel with parents, but it can supplement and enrich their efforts with parent assistance (Bell 1975).

Although the primary aim of the parent involvement program is to broaden the learning opportunities of each student through increased personal attention and support, there are also advantages for the teacher, the school, and the parents. The teacher has more time to devote to the professional aspects of teaching and is able to learn more about individual students; the school is able to obtain skills and services from parents which might not otherwise be available; and the parents are able to share in their child's development and to enrich their own lives through meaningful contributions to their community. As communication between home and school increases, parents are able to learn more about school and, thus, come to the support of the school and its programs, while school and teacher gain important information about the community and its residents (Bell 1975).

In a review of studies and research papers on the use of parent aides it becomes very obvious that their value is significant.

In the Flint Public Schools in Flint, Michigan 1,000 students from Kindergarten through sixth grade (predominately black) were

tutored by their parents for five months in reading. The combined overall mean gain on vocabulary and comprehension was 5.3 months for the experimental group and 2.8 months for the control group (Flint Public Schools 1963).

Four hundred and fifty preschool students were tutored by parents in reading preskills for 30 minutes or more per week in Denver, Colorado. Significant gains were noted with those children tutored or reading preskills (Brezeinski 1964).

In Indiana study of two hundred and thirty-two second graders who received parental tutoring showed scores on the Word Meaning Test of the Stanford Achievement Test significantly higher than control group scores at the .01 level. There was no significant differences between groups on the Paragraph Meaning Test (Ryan 1964).

Parents in Norman, Oklahoma tutored seventy-two first grade students on the processes of learning to read. The results of the Gates Primary Reading Tests, administered at the end of the first grade showed significant gains at the .05 level on sentence reading ability, paragraph reading ability, and total reading achievement for the experimental students over the control students (McLaren 1965).

Thirty inner-city primary grade black children were tutored by their parents in reading. A comparison between those tutored and not tutored showed significantly higher scores in vocabulary and composite reading. There was no significant difference in comprehension scores. Parents tutored children by playing one or more

games daily with them which required a planned dialogue between parent and child (Clegg 1971).

Parents and older siblings were used to tutor ninety first graders in a small urban residential district with a high socioeconomic level in Berkeley, California on reading. The experimental students made gains of three to four school months in reading scores over the control students. Games, puzzles and library books were used to tutor (Rosenquist 1972).

Two students were tutored by their mother in three to five 15 minute tutoring sessions per week over a period of four months in Virginia. Both children made definite gains in reading ability (Hoskisson et al. 1974).

Community Aides

The use of senior citizens as volunteers in schools should not be ignored when a new program is being designed, or when an already operational one is being expanded. The maturity, experience, and warm human instincts of these participants to help children have considerable potential for program application.

The earliest report of the utilization of senior citizen volunteers in educational settings describes Project TEAM which was initiated in Louisville, Kentucky. The project was organized in 1965 for the purpose of utilizing the talent, experience, ability, and maturity of retired and semi-retired persons. The volunteers

tutored students in junior high school in an individualized, remediation program. A group of senior citizens in Quincy, Massachusetts organized a parallel program to the Kentucky model in an elementary school that did not have adequate paid staff. These individuals became involved after reading an advertisement in a newspaper published for senior citizens reading in a housing project (Whaley 1973).

Seniors Offering Useful Resources for Children's Education (SOURCE) is another retired group who are giving teachers and children assistance in the schools of Edmonds, Washington. The program of this group capitalizes on the tradition of older generations transmitting skills to the young. Picture, if you can, the volunteers working with students in fine arts, an eighty-year old woman reading stories to young children, and a blind, physically handicapped student being tutored by a retired school superintendent. Such are the occurrences which may be viewed when one encounters these programs (Strachen 1973).

In 1972, several schools in Los Angeles initiated a grandparent program to supplement the existing cadre of volunteers. School officials were laudatory of the understanding that older citizens bring to the classroom and the "special person" reception they received from students. Los Angeles also organized a substitute grandparent program that utilized the consultative services of seven retired persons (Ianni 1973).

Retired Senior Volunteer Program
(RSVP): Lake County, Ohio
(Foley 1974)

The Retired Senior Volunteer Program is one program of ACTION--the agency for Volunteer Service, ACTION, created in 1971, is a federal agency which administers a number of volunteer programs, namely, Peace Corps, VISTA, the Foster Grandparent Program, the Senior Companion Program, University Year for ACTION, SCORE, ACE, as well as RSVP.

The purpose of RSVP is to provide a recognized role in the community and a meaningful life in retirement for older adults through significant volunteer service. Senior volunteers must be age sixty or over; there are no eligibility requirements for volunteers based on income, education, or experience. The RSVP program, through its policy of reimbursing the volunteer for out-of-pocket expenses, enables the person who otherwise might not be able to volunteer to do so.

Today ACTION supports 660 RSVP projects located throughout the United States and in Puerto Rico, the Virgin Islands, and the District of Columbia, through which over 100,000 RSVP volunteers serve. Local sponsoring agencies are private, non-profit agencies as well as local government agencies.

The original decision of the administration department of the schools that older persons have a very real and vital contribution to make to youth was the foremost factor in the decision. The second was the marked success the Career Education Department had seen when

older persons were introduced into the classroom as social models and "hands on" volunteer instructors.

Retirement Power in Education Project
(RPIE): Tennessee University
(Banta and Lawson 1980)

In September 1978 the Lenoir City (Tennessee) school system initiated a volunteer tutoring program called the Retirement Power in Education Project (RPIE). The program originally was proposed for all four of the schools in the Lenoir City system, but it actually began in two elementary school and the middle school.

Lenoir City teachers had indicated in a survey administered in Fall, 1977 a need for more one-on-one tutorial experience for students in reading and in mathematics. At first parents were considered as potential volunteers to provide tutoring assistance, but a survey of parents conducted in the same year indicated that few parents were available for volunteer work. Fifty-six percent of the students whose parents responded came from families in which both parents were working, and seven percent of the students came from one-parent families. A third survey indicated that 11.7 percent of the Lenoir City's residents were sixty-five years of age or older and that these individuals had more free time than did parents. It was hoped that members of the sixty-five-or-older group would volunteer as tutors for students in the Lenoir City schools.

The project derived its name from the fact that the initial RPIE Project proposal in 1978 specified that retired and semi-retired

persons would be asked to serve (1) as volunteer tutors for individual students, and (2) as sources of enrichment experiences designed to supplement and/or expand the curriculum. An insufficient number of retired and semi-retired persons to meet student needs for tutoring brought about a project amendment for the 1979-80 school year. The amendment specified the utilization of volunteers of all ages in order to expand the potential resources. In addition, the program was limited to tutoring in reading alone rather than reading and mathematics, as originally proposed. The criteria for volunteer selection were: ability to meet minimal education requirements and willingness to work with a student.

Teacher-Learning Communities (T-LC):
Ann Arbor, Michigan Public Schools

Senior citizen volunteers, referred to as Grandpersons, are involved in a special school program in Ann Arbor, Michigan called Teaching-Learning Communities (T-LC). They range in age from sixty to eighty-seven, are multiethnic, and come from a variety of social and occupational backgrounds. They are individuals willing to share their experiences and knowledge with children during half-day sessions (Instructor 1979).

Senior Citizens and Parents as Resources
for the Classroom (SPARC): Kansas State
Department of Education

The Senior Citizens and Parents as Resources for the Classroom (SPARC) project was developed in Topeka, Kansas by the Kansas State

Department of Education in conjunction with Title IV-C which deals with grants for exemplary and innovative programs. SPARC utilizes the talents of community volunteer aides from the retired sector to maximize the learning potential of students. This potential is maximized by using methods and techniques developed in inservice training by the volunteer aides and guides by the expertise of the professional educator-teacher.

Individualized help is given by the community volunteer aides through the use of well designed materials in the areas of language arts, mathematics, social studies, and science. Packets, games and learning center activities are all part of the program.

Learning activities called "hang-ups" are used to reteach and recheck individual basic skills with which a student may have a problem.

The program has proved very successful in meeting individual student needs through the use of community volunteer aides.

Four hundred and eighty first grade pupils in Indianapolis, Indiana were tutored by non-professional adults in reading. An analysis of covariance comparisons of experimental and control raw scored showed students who had received two 15 minute sessions of programmed tutoring each day achieved significant gains in reading on their basal reader tests. Directed tutoring using a variety of materials did not yield significant results. Half of the experimental group was given one or two sessions of programmed tutoring daily. The

other half was given one or two sessions of directed tutoring daily. The students were tutored for one year (Ellson et al. 1970).

In Medford, Oregon twenty-three fifth and sixth grade boys were tutored by volunteer adults in reading. The tutors had been trained in the Laubach method. All of the students in the experimental group showed gains in comprehension of vocabulary. Teachers reported apparent gains in self-concepts, interest in classwork and willingness to try new tasks (Gaulke 1972).

Male and female adults in Casa Grande, Arizona tutored sixty Mexican-American boys in grades two, three and four. The tutors were unskilled as paraprofessionals. The second grade students made the most significant gains and were tutored by females. The third and fourth grade students made more substantial gains when tutored by men. Tutors worked with students twice a week in one hour sessions for a period of eight weeks (Gentile 1975).

CHAPTER 3

ORGANIZATION AND DESIGN OF THE STUDY

Nature of the Study

This study used the methodology of experimental research. First, a questionnaire was devised to survey teacher opinions regarding the utilization of volunteer aides as a viable source of assistance and help.

Secondly, a situation was examined wherein one group of students were exposed to volunteer aides, while the other group was not exposed to that condition. This tested hypotheses about cause and effect relationships.

Together, the research indicated that the use of volunteer aides helped teacher effectiveness and ultimately enhanced student achievement.

Background of the Study

The ethnic makeup of the two elementary schools that were used for the research of this study were identical with approximately 32% of the population being of Mexican-American ancestry. The remaining 68% of the students at the two schools involved were Anglo students.

The economic background of the students range from extreme low to average middle class with an equal amount of students interspersed at both schools. The majority of the students came from the blue collar labor force.

The curriculum at the two schools was identical and the same basic curricular materials had been adopted at the two facilities. A basal approach that best fit the district curriculum was the modus operandi.

The teachers were state certified and an equal ratio of paraprofessional staff members were utilized in both schools to meet specific needs of students.

The only difference in basic operation was that students at the one school were totally bussed to the school site, while the majority of students at the other elementary school walked to school.

The educational program in the two elementary schools that were used as investigational sites was established on a philosophical belief of individualization. This individual approach utilized personalized instruction and continuous progress as a basis for instruction.

Class sizes were kept at a small pupil teacher ratio (approximately 20/1), and facilities were constructed to accommodate this educational concept.

The curriculum was constantly being revised to best meet the individual needs of the students. Goals and objectives were written on the basis of personalized instruction and continuous progress, and tests were constructed to measure progress towards mastery of the objectives of the curriculum. Teachers over the past ten years had written the aforementioned curricular objectives and pre- and post-tests had been constructed during summer curriculum writing sessions.

Reporting systems to parents were detailed, and individual abilities of the students were clearly explained. Parent conferences and various other methods of communication were considered to be an integral part of the total education process.

With this brief background in mind, it was obvious that a great deal of time and effort was necessary to maintain this educational program. However, with the decrease in funding and the limitations placed on money in the educational sector, increased constraints relating to adequate help caused serious problems in the system. Classroom size (pupil-teacher ratio) was increased and the diversity of student needs was also increasing in a rather unprecedented manner. Thus, it was becoming apparent that student achievement was suffering as a result of these factors. Teachers needed help, and additional certificated and paraprofessional help was not procured because of the financial situation. It was, therefore, obvious that other sources of help needed to be found to resolve this situation.

Design of the Study

Subjects

The population for this study included the teachers at Sahuarita Elementary School and students from both Sahuarita Elementary School and Sopori Elementary School in the Sahuarita Unified School District No. 30 at Sahuarita, Arizona.

Sample

From these groups, all teachers at Sahuarita Elementary School were sampled and one class from each grade level two to five from each school was selected to be representative of the total grade level. Selection for the experimental group was based on the use of the volunteer program. The teachers at Sopori Elementary School were not involved because they did not utilize volunteer aides.

Procedure

Faculty members from Sahuarita Elementary School utilizing teacher aides were given an opinion questionnaire constructed to indicate their opinions as to effects of using volunteer aides.

Classrooms of students were selected, one from each grade level two to five, and were administered the Short Form Test of Academic Aptitude and the California Achievement Test to determine student achievement.

Independent Variable

In this study, the use of volunteer aides was viewed as the predictor of independent variable. This study was viewing the volunteer aide program in one school as the cause; results were dependent upon the differences in the independent variable.

Dependent Variable

Student achievement as a result of the volunteer program was viewed as the dependent variable because the results were presumed to depend upon differences in the independent variable. The use

of volunteer aides caused the increase in student achievement. Also, the academic achievement was examined on the basis of high and low potential (I.Q.).

Other dependent variables in this study that were investigated relating to student achievement were sex and ethnic origin. These variables did not effect the relationship between the independent and dependent variable, but simply were of interest to the researcher for future studies.

Intervening Variable

Teacher effectiveness was the intervening variable because of the effect of the independent variable (use of volunteer aides) on the dependent variable (student achievement).

Instrumentation

CAT

The California Achievement Test combined the important uses of norm-referenced tests with the objective-based information of criterion-referenced tests. Norm-referenced tests were used to determine how well students were performing in relation to other students of similar age and background; they also gave school personnel some assistance in judging the strengths and weaknesses of their curricula. Criterion-referenced tests offered information on individual and group mastery of specified objectives.

The CAT measured achievement in the areas of prereading, reading, spelling, language, mathematics, and reference skills.

The CAT also included a dual standardization of CAT and the Short Form Test of Academic Aptitude (SFTAA) to provide anticipated achievement. Because the CAT was standardized at two different periods of the year using the same students, realistic normative data for any periods of the school year was provided.

The CAT was a series of test batteries designed to measure the achievement of students from the beginning of kindergarten through the twelfth grade. Functional level testing (testing each student with materials of appropriate difficulty) was an important concern of the development of CAT. Test materials were designed so that schools could select the level of CAT/C or CAT/D that would best measure the achievement of each student (McGraw-Hill 1978).

Development of CAT began with the planning and writing of objectives. These objectives were developed by reviewing state and city curriculum guides, major textbooks, and the objectives of two criterion-referenced testing programs produced by CTB/McGraw-Hill: The Prescriptive Reading Inventory and The Diagnostic Mathematics Inventory.

The CAT objectives were called category objectives since each objective represented a category of skills. For example, Inferred Meaning was a category objective in the Reading Comprehension test. Items for this objective measured a student's ability to understand main idea, conclusion, and cause and effect.

Once a set of category objectives was established, guidelines were developed concerning the number of items needed to measure each

category objective and the kinds of items necessary to cover the specific skills. Vocabulary difficulty was controlled for each level and content area. In reading, the difficulty and length of passages also were controlled by the use of readability formulas.

For the tryout edition, many more items were written than could be used for the final edition in order to give a better selection. All items were reviewed to make sure that the items accurately measured skills in a specified objective.

All approved items were published in the tryout edition. Each item was tested in at least three adjacent grade levels to provide information on growth, item difficulty, and appropriate grade level. All teachers who administered the tryout edition were asked to fill out a questionnaire concerning the contents of the test and the instructions. Their comments were an important guide in revising material for the standardization edition.

All items on the tryout were also reviewed for racial, ethnic, and sex bias. Women and men who hold responsible positions in the educational community and belong to various ethnic groups reviewed the items and noted any apparent content bias in language, subject matter, and the overall representation of people. In addition, CTB/McGraw-Hill conducted statistical research to identify any item that appeared to have racial bias and eliminated or revised the items as necessary.

Data from the tryout edition were analyzed and items were selected for the standardization edition. Items from the tryout

formed a pool for both Form C and Form D. Items selected were required to:

- give good coverage of an objective (a minimum of four items are included for each objective tested at any given level);
- provide a wide range of difficulty;
- meet the requirements for reducing bias;
- cover a variety of topic areas (as much as possible, materials used within levels are of different types and reflect different subject matter); and
- demonstrate growth (items were placed in the grade level that appeared most appropriate based on student performances and improvement from one grade to the next) (McGraw-Hill 1978).

The California Achievement Test was mandated under Arizona Revised Statutes to be administered to all students throughout the State of Arizona during the third week in April starting in the 1980-81 year and each year thereafter.

A.R.S. 15-741. Testing of Pupils

A. The State Board of Education shall:

1. Promulgate rules and regulations pursuant to this article.
2. Adopt and implement a statewide nationally standardized norm-referenced achievement testing program for use in grades one through twelve.
3. Adopt a nationally standardized norm-referenced achievement test which shall be uniform throughout the state.
4. Insure that the results of tests established as provided in this article are comparative to associated grade equivalents, percentiles and stanines derived from a multistate sample.

5. Include within its budget all costs pertaining to the achievement tests prescribed in this article.
- B. The testing program shall be designed to test pupils in grades through twelve in reading, grammar and mathematics at a level appropriate for their level.
- C. The standardized norm-referenced achievement tests adopted by the state board shall be given annually in a week in April as determined by the state board.
- D. A test for penmanship shall not be required pursuant to this article (State of Arizona 1981, pp. 210-211).

The results of this mandated test was used on grade levels two to five with selected classrooms representing the total grade level populations at both Sopori and Sahuarita Elementary Schools and served as the basis for the indication of the actual academic achievement or performance.

SFTAA

The Short Form Test of Academic Aptitude (SFTAA) was a series of mental ability tests for use throughout the school years in grades 1.5 through 12. (See Table 1 for the level designations and recommended grade range for each level.) It was developed as an instrument to assess the level of intellectual development attained by the student, and to predict the potential rate of progress and level of success in school.

Table 1. Grade ranges.

Level	Grade Range
1	1.5 - 3.4
2	3.5 - 4.9
3	5.0 - 6.9
4	7.0 - 9.9
5	9.0 -12.9

(McGraw-Hill 1978)

The SFTAA, at each of the five levels, included four subtests which measure, respectively, vocabulary development, logical reasoning, education of quantitative relations, and meaningful memory. The entire test was administered in one normal school period. A variety of summary and derived scores (i.e., language, non-language, and total; and intelligence quotient, Reference Scale Score, percentile rank, standard score, and stanine) were obtained from the test results (McGraw-Hill 1978).

Each level of the Short Form Test of Academic Aptitude contained four separately-timed subjects: Vocabulary, Analogies, Sequences, and Memory. Vocabulary and Memory constitute the Language section; Analogies and Sequences make up the Non-language section. At level 1 all test items were either pictures, designs, letters, or numerals, and no reading is required of the student. Levels 2 through 5 consisted of reading items as well as items containing only non-verbal material (pictures, etc.).

When the Short Form Test of Academic Aptitude was administered to students at the same time as the California Achievement Tests, 1970 Edition, or the Comprehensive Tests of Basic Skills, it was possible to infer whether or not a student was achieving "up to ability." By the use of a prediction formula which takes into account scores on the SFTAA and the student's sex, age, and grade, performance on the achievement test can be predicted. When this predicted score was compared with the student's obtained score, the teacher identified students who were falling significantly below levels of achievement typically attained by students with similar characteristics.

Anticipated achievement scores were expressed as Anticipated Achievement, Grade Equivalents or as Anticipated Achievement Scale Scores. It was noted that to obtain a measure of anticipated achievement both the SFTAA and the achievement test were to be given within a short span.

The Short Form Test of Academic Aptitude was given in conjunction with the California Achievement Test to the classrooms selected to be representative of the total population in grades two to five at both Sopori and Sahuarita Elementary schools and acted as an indicator of the anticipated achievement or potential of those students in the experimental and control groups.

The Teacher Opinion Questionnaire

The teacher opinion questionnaire was developed on the basis of what teachers feel was true-beliefs. Beliefs are assessments of what a person thinks is true or false. There was no implied

goodness or badness in beliefs, but only an assessment of what one thinks exists or does not exist (Dillman 1978).

The questions contained in the questionnaire were close-ended questions with ordered answer choices. The feature that distinguished this type of question from other forms was that each choice offered for a particular question represented a graduation of a single dimension or some concept. This question structure was perfectly suited for determining such things as intensity of feeling, degree of involvement and frequency of participation (Dillman 1978).

The teacher opinion questionnaire was developed by the researcher for the purpose of affirming the belief that teacher effectiveness was enhanced through the use of volunteer aides.

The questionnaire was initially pilot tested for clarity, relevance and validity by having five teachers from another school who utilized volunteer aides to rate the individual questions on a designated value scale. The results were tabulated and Aiken's Index of Content Validity was employed to estimate the validity of the opinion questionnaire. The findings were presented in the next chapter (Aiken 1980).

The questionnaire was divided into three sections covering types of volunteer aides utilized (peer, student, parent or community), amount of time the volunteer aides were used per week and specific questions about each types of volunteer aides and their value to the teacher.

Data Analyses Procedures

Statistical Hypothesis

The use of volunteer aides enhanced student achievement.

H_0 = Volunteer Programs

H_I = Teacher Effectiveness (intervening variable)

H_A = Student Achievement

$H_0 = H_I = H_A$

Data Gathering

A questionnaire was utilized to gather teacher opinion information about the usefulness of volunteer aides in relationship to teacher effectiveness while scores on standardized tests and achievement tests provided the other necessary sources of information to correlate the enhancement of student achievement.

The teacher opinion questionnaire was tabulated and analyzed to determine if teachers felt volunteer aides were valuable assistants in helping students achieve. This information was correlated to other information done in this same area with a primary purpose of substantiating the basic premise of usefulness.

The effect of the utilization of volunteer aides on student achievement was determined by the conversion of the students anticipated achievement to a grade level equivalency and a comparison of that equivalency to the actual achievement on the standardized test which also was represented in grade level equivalencies. This was done for the academic areas of reading, grammar, and mathematics. A further

comparison was made relating to low and high potentials of students regarding their performance to see if a specific segment of students obtained greater benefit from the use of the volunteer aides. Finally, comparisons were made between the control group and the experimental group to determine if there was any significant difference between ethnicity and sex.

Data Analyses

The information gathered on the questionnaire was analyzed on a simple tally method with mean scores indicating the rating of the usefulness of the aides. Tables were used to give representations of teacher opinions.

A simple linear regression equation was calculated for the selected classes of students on grade levels two to five for both the experimental school and the control school. The number of students scoring above the predicted achievement levels was presented for both schools. The prediction variable was the Short Form Test of Academic Aptitude and the criterion was the California Achievement Test. Reading, grammar and mathematics were considered separately for each student and plotted.

Potential level (high and low) was investigated as part of the dependent variable. Sex and ethnic background were examined only for use of the researcher.

CHAPTER 4

THE FINDINGS

Introduction

For the purpose of presenting the findings of this study this chapter was organized into three sections. Findings from the Pilot Test for the Teacher Opinion Questionnaire on volunteerism were reported in the first section. The second section presented the responses from the Teacher Opinion Questionnaire on the enhancement of teacher effectiveness as a result of utilizing volunteer aides. In the third section the computerized results of the effects of volunteer aides on student achievement were presented based on potential vs. performance.

Findings from the Pilot of the Teacher Opinion Questionnaire

The Pilot test for the Teacher Opinion Questionnaire (see Appendix A) was administered to five junior high school teachers who utilized various types of volunteers at their individual grade levels, but who were not part of the experimental group under investigation. The Pilot Test was given with only a minimum of explanation and with only the written directions on the test itself to elicit positive critical or non-critical responses.

Validity was rated on a three point scale (1) not valid, (2) valid, (3) very valid. Charity and relevance were rated on the

same scale: (1) not clear, (2) clear, (3) very clear and (1) not relevant, (2) relevant, (3) very relevant.

Aiken's Index of Content Validity (Aiken 1980) was employed to estimate the content validity of the Volunteer Aide Teacher Opinion Questionnaire using a BASIC computer program (Powers, 1982).

Aiken's procedures "can be used in a variety of situations where judgment of the content validity of items or questionnaires are made on ordinal rating scales" (Aiken 1980, p. 955).

The formula for calculating Aiken's Index of Content Validity was based on the assumption that each of N raters were to inspect each single item on the questionnaire and indicated, on a c -category ordinal rating scale (lowest validity category through highest validity category), his or her judgment of the content validity of the item on the questionnaire. After all N raters had made their judgments, a scorer assigned a weight of 0 to each of the n_0 ratings which fell in the lowest category, a weight of 1 to the n ratings in the next higher category, and so on through a weight of $c-1$ to each of the n_{c-1} ratings in the highest (c th) category (see Table 2).

Thus, it was determined that the content validity was defined as

$$V = \frac{\sum_{i=1}^{c-1} i n_i}{N(c-1)}$$

A validity (V) was calculated for each item on the Teacher Opinion Questionnaire using the value scores indicated in Figure 1 (see Appendix B).

Table 2. Value Scores for ratings and assigned statistical significance for the Pilot Test of the Teacher Opinion Questionnaire.

N Categories	Assigned Value Scores	Assigned Statistical Significance
1 = 2	.98	.021
4 = 3		
2 = 2	.80	.041
3 = 3		
1 = 1	.70	.082
1 = 2		
3 = 3		
1 = 1	.60	.123
2 = 2		
2 = 3		
3 = 2	.70	.041
2 = 3		

The average coefficient of validity was determined by multiplying those items with the same assigned value scores times the number of occurrences, adding all the total scores together for each of the areas of investigation (clarity, relevance and validity) and then dividing by the total number of items rated e.g. Coefficient of Validity for Clarity on the General section of the Teacher's Opinion Questionnaire.

$$\frac{.90 \times 11 + 1 \times .60}{12} = .875$$

The Coefficient of Validity ranges from 0 to 1 but in this analysis ranged from .60 to .90.

The mean coefficient for clarity, relevance and validity for all terms on sections A-E of the Teacher Opinion Questionnaire was .81. The grand mean for the entire questionnaire was .81 and thus, statistically significant based on the fact that .70 was statistically significant at the .05 level. As Aiken did not give guidelines for interpreting the importance of his Coefficient of Validity, the .80 level was adopted which indicated a sufficiently high degree of validity.

Findings from the Teacher Opinion Questionnaire

The teachers from Sahuarita Elementary School were given an opinion questionnaire to determine the effects that the use of volunteer aides had on enhancing their abilities to provide more individualized instruction for students. The teachers at Sopori

Elementary School were not given the Teacher Opinion Questionnaire because they did not utilize the service of volunteers.

The Teacher Opinion Questionnaire (see Appendix C) was divided into three parts. In part 1 the teachers at Sahuarita Elementary School were asked to identify the type of volunteer aides they utilized in their classrooms. Table 3 indicates the results of the responses given by the twenty-seven teachers:

Table 3. Types of Volunteer aides utilized.

none	0
Peer Aides	19
Students Aides	16
Parents Aides	8
Community Aides	9

One of the teachers at Sahuarita Elementary School utilized the services of six community aides in his classroom, while other teachers used the assistance of two or three different types of volunteer aides (Table 4).

Table 4. Utilization of the different types of volunteer aides.

One type of volunteer aide	7
Two types of volunteer aides	10
Three types of volunteer aides	4
All types of volunteer aides	<u>6</u>
Total	27

Part II of the Teacher Opinion Questionnaire dealt with the average amounts of time per week that volunteer aides were utilized in classroom. A mean was calculated based on the twenty-seven responses given by the teachers using the services of volunteer aides. The mean amount of time was estimated to be seven hours a week at Sahuarita Elementary School (see Appendix C).

In Part III specific questions were asked regarding the various types of volunteer aides utilized in the classrooms. All teachers at Sahuarita Elementary School were to answer section A of Part III and only those other sections which related to those types of volunteer aides that they were using in their individual classrooms (see Appendix D).

The following rating scale was used to indicate the opinions expressed by the teacher at Sahuarita Elementary who utilized the different types of volunteer aides:

1. Strongly disagree
2. Disagree
3. No opinion
4. Agree
5. Strongly agree

A. General

The responses given in section A concerning the general utilization of volunteer aides were strongly supportive of the increased effectiveness of the teacher. Volunteer aides were considered to

be very capable of performing clerical and non-initiated instructional tasks, Figure 2.

Indirect questions 5, 6 and 7 were items inserted to give the reverse effect of the usefulness of volunteer aides and once again it was indicated by the teachers that volunteer aides needed no specialized training and that they had been of valuable assistance in the classroom.

The mean average for the general questions on the usefulness of volunteer aides was 4.43 indicating a strong agreement. The indirect questions had a mean of 1.83 indicating disagreement that volunteers were not of teacher benefit (see Appendix D; Table A).

B. Peer Aides

Teachers using peer aides were questioned on the value of students of the same grade level and students with more ability helping students with lesser abilities. It was noted in a profile examination of the responses to the questions that teachers felt that peers could effectively help them with clerical tasks and activities. The result of the helping relationship would be beneficial to all concerned. The teacher received assistance, the students of lesser abilities were helped and the peer volunteer aides strengthened their capabilities (Figure 3).

The mean average for the total profile for direct questions regarding peer aide was 4.25 which indicated a strong support for utilizing peer aides. The indirect question responses on questions

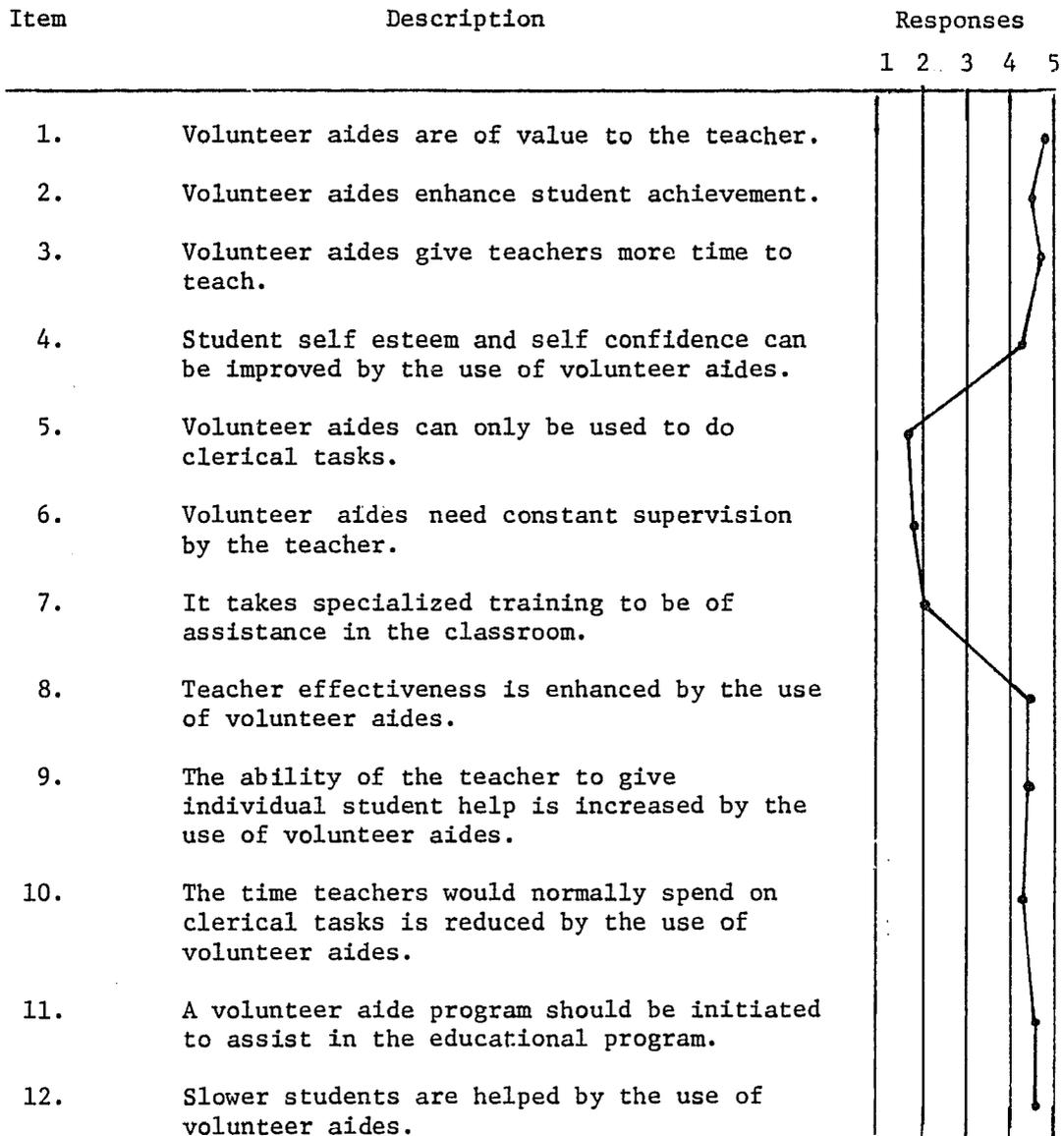


Figure 2. Profile of teacher opinions regarding the general use of volunteer aides and teacher effectiveness.

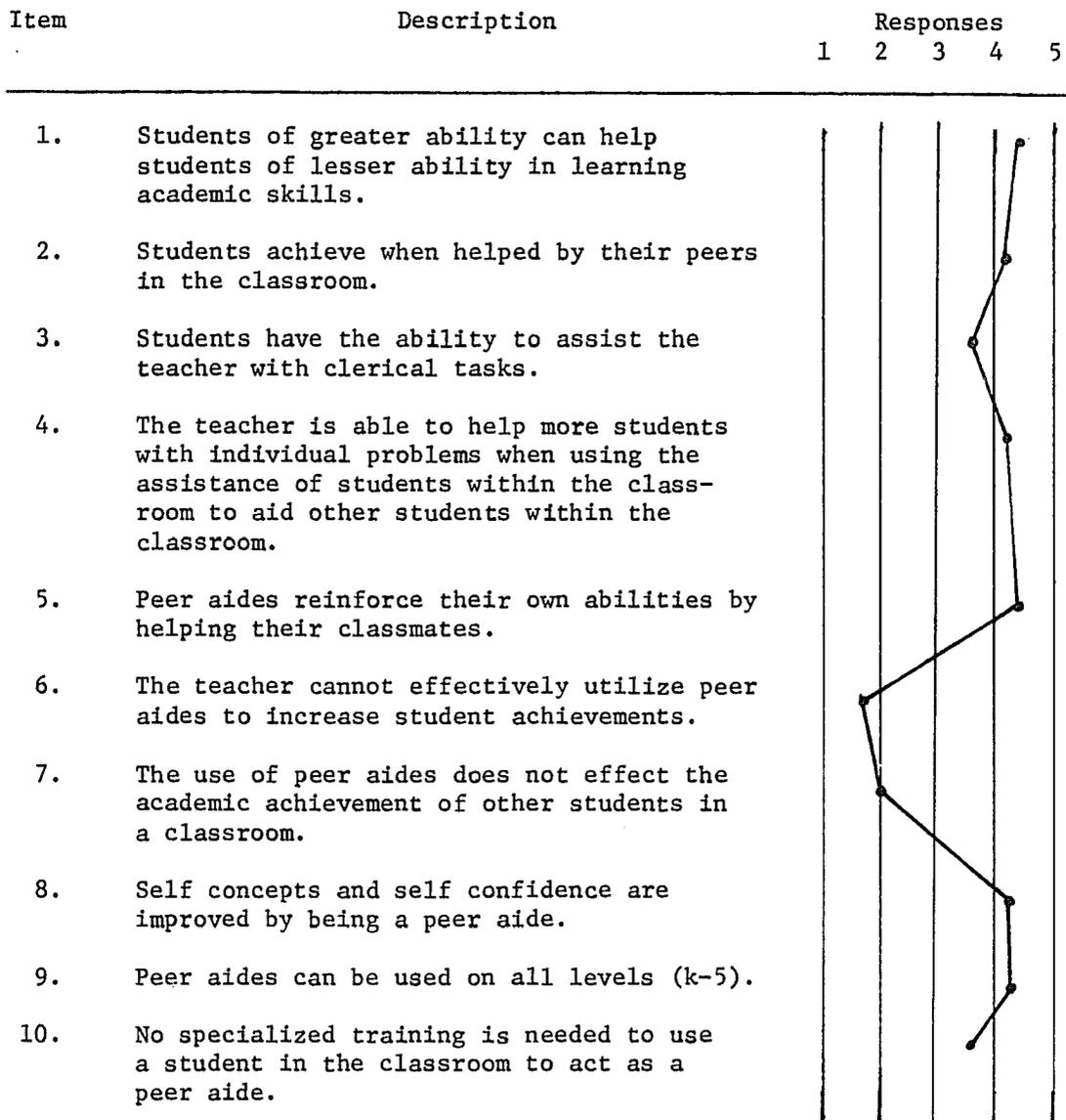


Figure 3. Profile of teacher opinions regarding the use of peer aides and teacher effectiveness.

6 and 7 pointed to the aforementioned assumption of the value of peer aides and had a mean average of 1.89 (see Appendix D; Table B).

C. Student Aides

Student aides or cross-age tutoring has been a highly investigated area over the past in terms of an increase in teacher effectiveness and student achievement. The responses given by the teachers at Sahuarita Elementary School were very representative of former research done on this topic. The teacher opinions strongly supported the premise that student aides were of valued assistance in the classroom (Figure 4).

Teachers indicated that no specialized training was necessary for a student from a higher grade level to do clerical and non-initiated instructional tasks and that older students were reliable and capable of helping younger students.

The mean average for positive response questions was 4.04 which would suggest a strong agreement and support for the usefulness of student volunteer aides (see Appendix D; Table C).

The mean average for the negative response question was 2.80 and indicated that inservice and training activities (question 7) neared no opinion proportions but was considered to be supportive of the helpfulness of student aides.

D. Parent Aides

In Figure 5 the teachers that used the assistances of parent aides expressed their opinions about the effects these types of

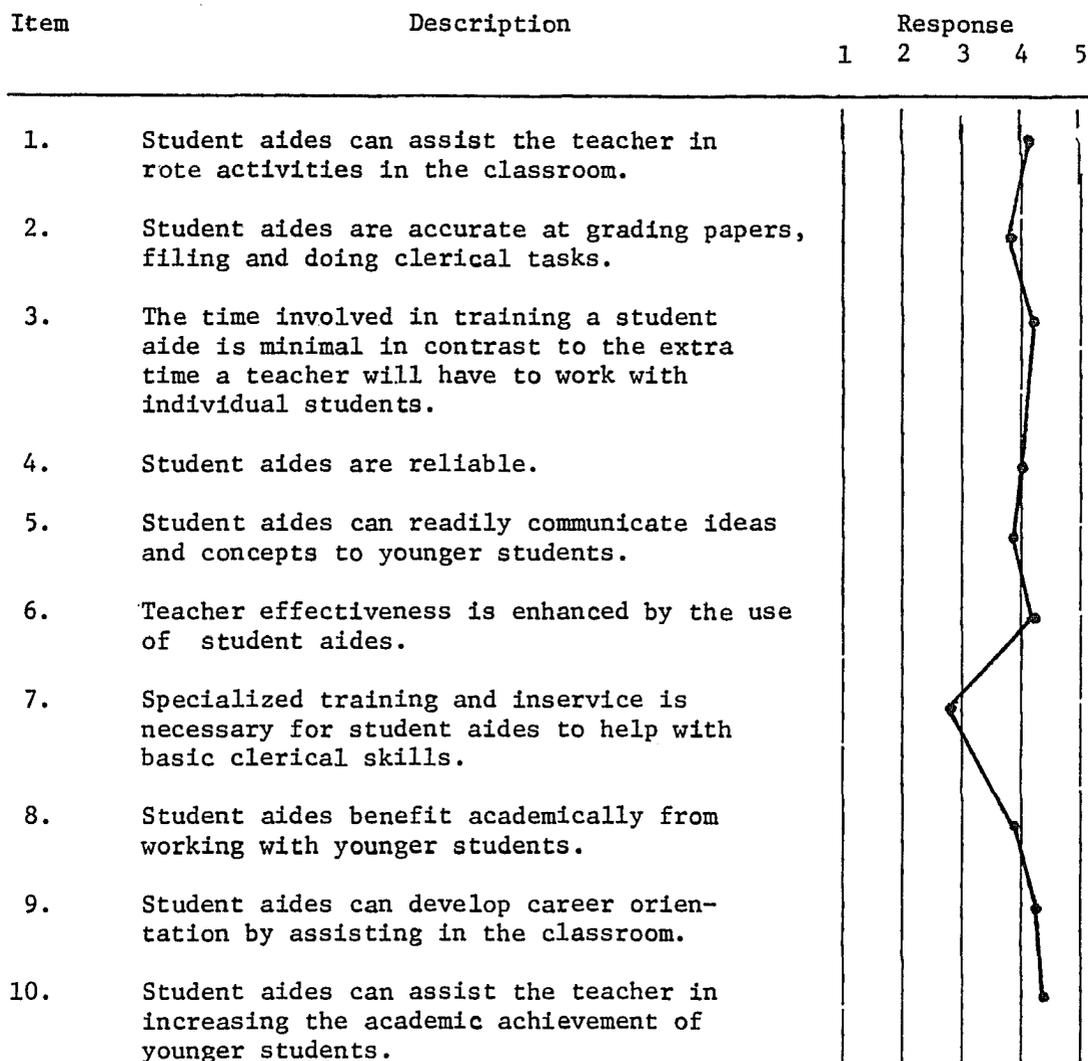


Figure 4. Profile of the teacher opinions regarding the use of student aides and teacher effectiveness.

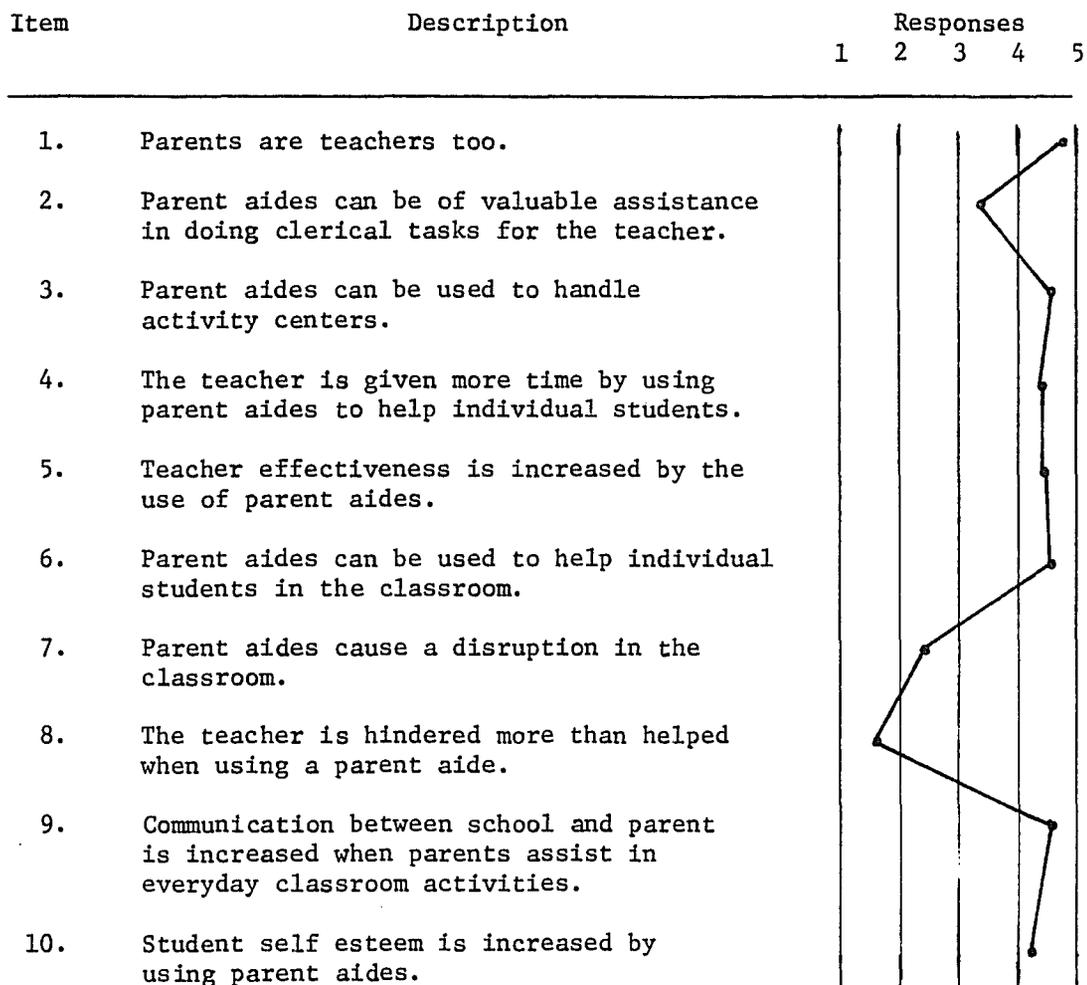


Figure 5. Profile of teacher opinions regarding the use of parent aides and teacher effectiveness.

volunteers had on their teaching effectiveness. It was indicative of the profile of their responses that parent aides were capable of increasing teacher effectiveness by helping individual students with routine activities and tasks.

The indirect questions supported the value of parent aides with a mean average of 2.00 on questions 7 and 8.

The direct questions, with the exception of question 2, agreed with the mean average of 4.33 and supported the utilization of parent aides as a valuable source of help (see Appendix D; Table D).

E. Community Aides

The profile of community aides was consistent with the other profiles (Figure 6). The teachers expressed opinions that indicated a total agreement that community aides were capable of performing clerical and non-initiated instructional tasks and activities without extensive formalized training and inservicing. Teachers agreed that the community aides were a valuable source of information and that student achievement would be increased by the use of this component of volunteerism.

The mean average of the direct questions was 4.42 indicating total agreement to utilizing community volunteer aides and was 2.0 on the indirect question indicating disagree and support for the community aides (see Appendix D; Table E).

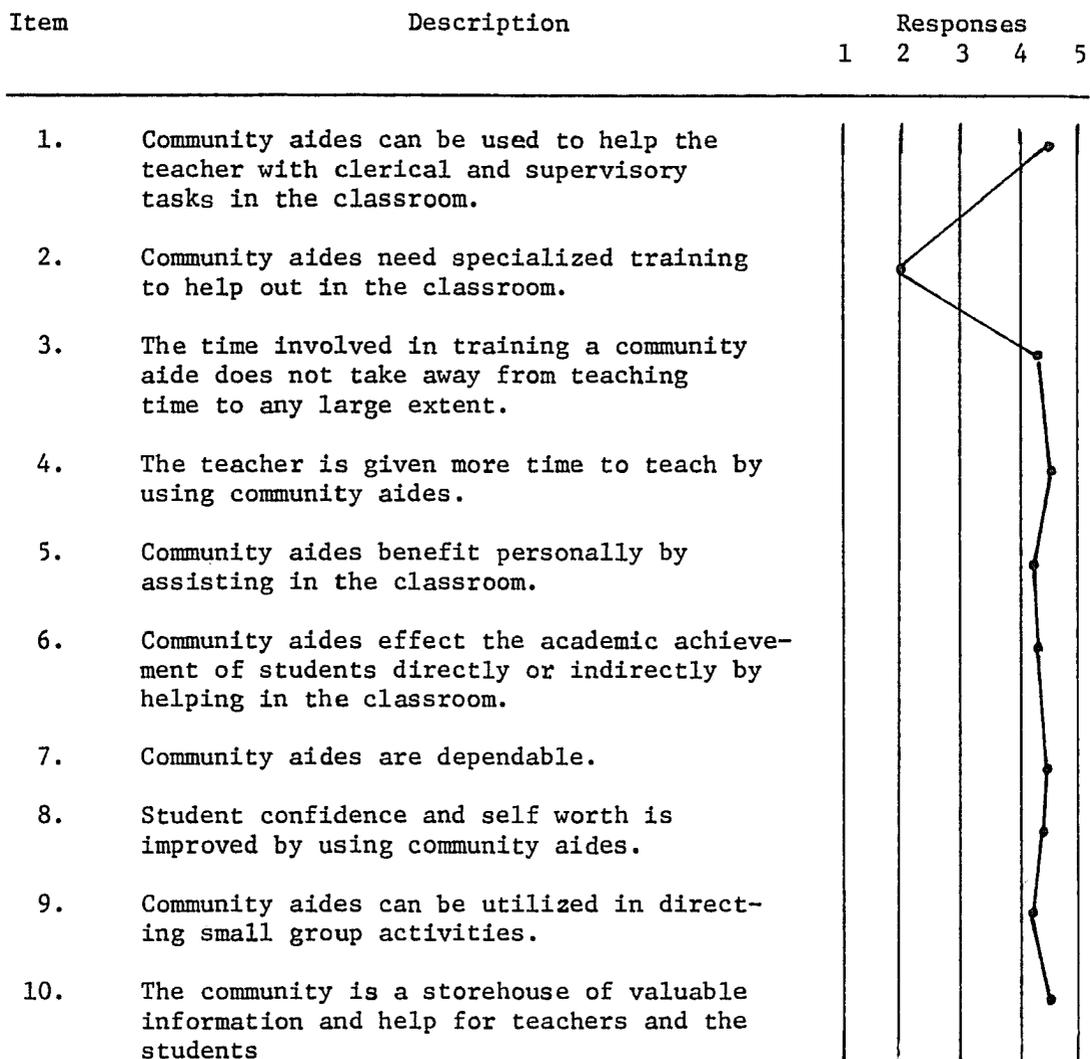


Figure 6. Profile of teacher opinions regarding the use of community aides and teacher effectiveness.

Summary of the Findings from the
Teacher Opinion Questionnaire

The following research questions were answered as a result of the Teacher Opinion Questionnaire:

1. Teachers felt that volunteer aides were of definite benefit and enhanced teacher effectiveness:
 - a) that volunteer aides increased student achievement
 - b) that volunteer aides were capable of performing clerical, supervisory and non-instructional tasks
 - c) that volunteer aides needed no specialized training
2. Teachers felt that the use of peer aides was a sound educational endeavor and of benefit to teacher effectiveness:
 - a) that peer aides were capable of performing clerical tasks
 - b) that peer aides of greater abilities academically assisted and helped students of lesser abilities
 - c) that peer aides reinforced their own abilities through the process of volunteering
 - d) that peer aides needed no specialized training to perform various tasks within the classroom
3. Teachers indicated that student aides were of valuable assistance in allowing them to teach rather than spend time on non-instructional tasks:
 - a) that student aides needed no specialized training
 - b) that student aides benefited from working with younger children

- c) that student aides were given direction towards possible future careers through the volunteer program
- d) that student aides increased student achievement

4. Teachers were of the opinion that parent aides were an effective support mechanism for them in terms of allowing them to perform their teaching activities:

- a) that parent aides were of valuable assistance in performing clerical, non-initiated instructional and supervisory tasks
- b) that parent aides needed no specialized training
- c) that parent aides helped to enhance the communication between home and school
- d) that parent aides increased student self-concepts and esteem

5. Teachers positively responded to the utilization of community volunteer aides in helping them effectively perform their teaching activities:

- a) that community aides were of great assistance in performing non-initiated instructional tasks
- b) that community aides have a life time of valuable information to bring to the classroom
- c) that no specialized training was necessary for community aides
- d) that community aides enhanced student achievement

Findings Related to the Use of
Volunteer Aides and Student Achievement

Students on the second, third, fourth and fifth grade levels were administered the California Achievement Test and the Short Form Test of Academic Aptitude at both Sopori and Sahuarita Elementary Schools over a period of three days. From the results of these tests information was compared and analyzed to determine the difference in performance when compared to potential.

A linear regression was utilized to indicate student scores on reading, grammar and mathematics tests. Residuals were computed to arrive at the mean overall score for the grade levels in each of the aforementioned academic areas at each of the schools (Appendix D, Tables A, B, C and D).

The linear of regression was calculated using a computerized slope and an intercept point for each subject on each grade level based on standard formula:

$$y = bx + a \qquad \text{(Minium, 1978)}$$

The F-ratio represented the ratio of two unbiased estimates of the population variance. It was used because the following criteria were met:

1. The population of scores were normally distributed.
2. Two sample estimates had been made of the same population variance.
3. The scores comprising each estimate had been selected at random from the population.

4. The two estimates were independent.

$$\text{F-Ratio} \qquad F = S_1^2 / S_2^2 \qquad (\text{Minium, 1978})$$

The significance of F was based on levels of significance. The significant range used in this analysis of variance was $p < .05$. The .05 level would, therefore, indicate a meaningful relationship when comparing the two unbiased estimates of the population variance in the F-ratio (Minuim, 1978).

Based on the performance scores as measures of actual achievement and potential scores as measures of anticipated achievement, a bivariate regression equation was computed to obtain the optimal prediction equation. For each student a predicted score was obtained based on sex, age grade and I.Q. which represented the student's predicted grade equivalent. This predicted grade equivalent was the result of the prediction equation. A residual score was the actual grade equivalent score minus the predicted grade equivalent score. Thus, the residual indicated the degree to which a student achieved above or below the predicted achievement. If the mean of the residuals was negative for a group, it indicated that the average for the group was below that which was predicted and visa versa (Figure 7).

The Intellegence Quotient (I.Q.) for each student at Sopori and at Sahuarita Elementary Schools was determined by the Short Form Test of Academic Aptitude. The I.Q. was divided into two segments of which 100 and below was considered to be the low group, while

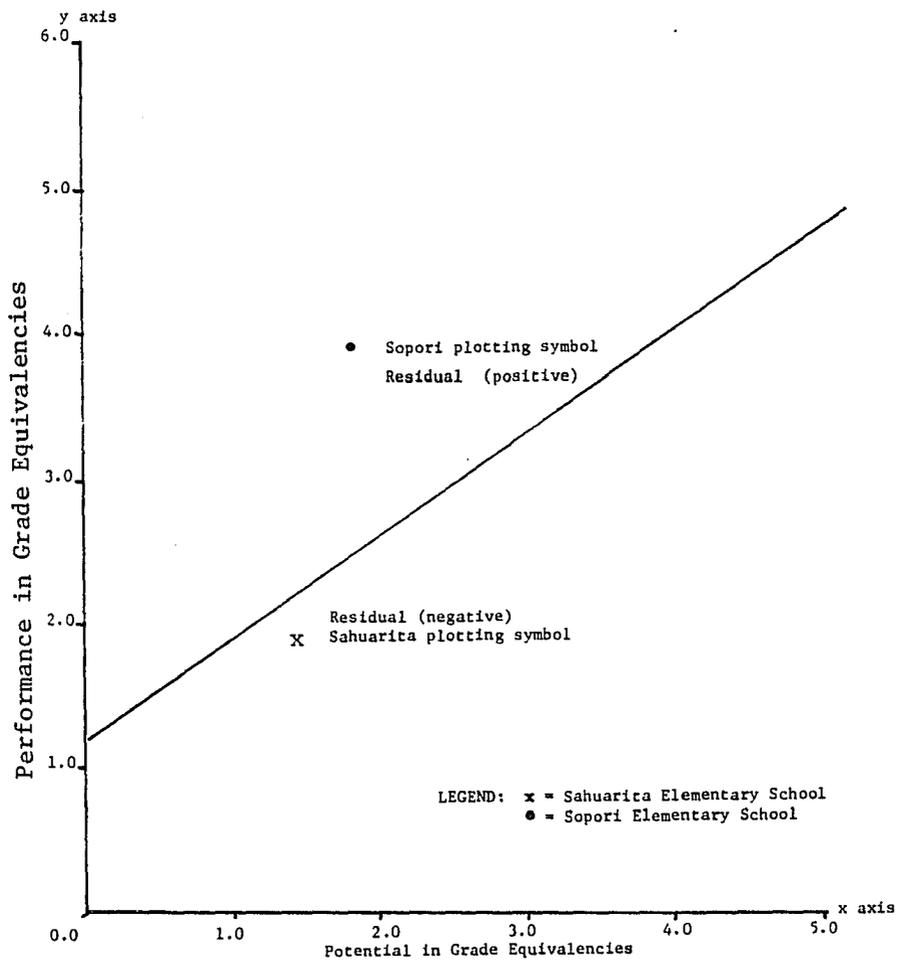


Figure 7. Linear regression using residuals based on Performance vs. Potential.

those with an I.Q. of 101 or above was considered to represent those students with a high I.Q. With these basic divisions in I.Q., investigations were made to determine the effects I.Q. had on student achievement at Sopori where volunteer aides were not utilized and at Sahuarita where volunteerism was extensively used. It was the purpose of this analysis of variance to determine if the use of volunteer aides helped students with a higher or lower I.Q. achieve to a great degree based on a comparison of the performance and the potential.

Ethnicity and sex were studied to determine if these two variables had any significant effect on the performance and the potential of the students. Residuals, once again, were used as a basis for comparison. Boys and girls and anglo and hispanic students were examined to see if their test results indicated any differences caused by the utilization of volunteer aides.

Second Grade Residuals, the F-Ratio and the Significance of F for all Variables

Data was gathered on the second grade level at both Sahuarita and Sopori Elementary Schools in the areas of reading, grammar and mathematics. A graph comparing the performance and the potentials of the second grade students was constructed in each of the aforementioned areas so as to visually observe the differences between the two schools. A linear regression line was computed on the performance and potential scores (see Appendix E; Table F). Residuals were computed and notations made of the distances of each set of scores from the line of regression for I.Q., sex and ethnicity.

On the second grade level in reading it was concluded that Sahuarita students performed to a higher degree in comparison to Sopori students. As a result of the mean of the residuals the level of significance was .000 for this comparison (Figure 8 and Table 5).

I.Q., sex and ethnicity made no significant difference in the degree to which Sahuarita students scored to higher performance level than did the Sopori students (Table 5).

From the data represented in Figure 9, it was determined that in grammar Sahuarita students were superior to the Sopori students based on their performance to the .029 level of significance (Table 6).

I.Q., sex and ethnicity showed no relationship to the superior of the Sahuarita students in comparison to the Sopori students (Table 6).

In the academic area of mathematics on the second grade level the Sahuarita students once again showed great academic gains in reading and grammar when compared to the Sopori students. The level of significance for this comparison was .000 (Figure 10 and Table 7).

In Table 7 it was also determined that I.Q., sex and ethnicity were of no significance in determining the outcome of the higher performance levels of the Sahuarita students on the second grade.

From the data presented in Figures 8, 9 and 10 and on Tables 5, 6 and 7 it was concluded that the students at Sahuarita Elementary

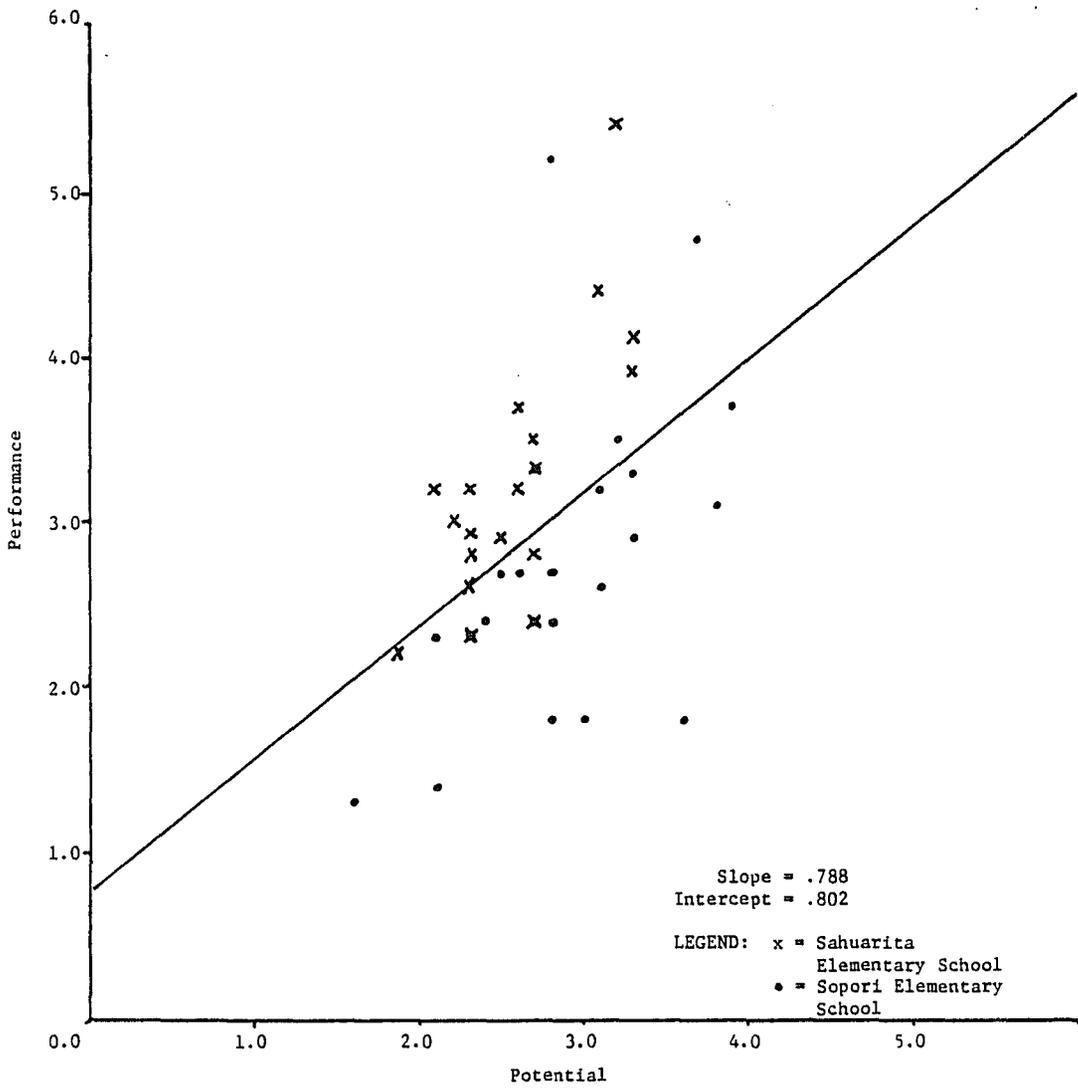


Figure 8. Second grade linear regression for reading.

Table 5. Analysis of variance of the mean residuals by school,
I.Q., sex and ethnicity for the second grade in reading.

Variables	N	Mean Residuals	F-Ratio	Significance of F
1. School	44			
Sahuarita	23	0.42	17.496	.000
Sopori		-0.38		
2. I.Q.	44			
Low	21	0.03	1.475	.232
High	23	-0.03		
3. Sex	44			
Male	19	-0.8	.184	.670
Female	25	0.6		
4. Ethnicity	44			
Hispanic	17	-0.02	.073	.788
Anglo	27	0.01		

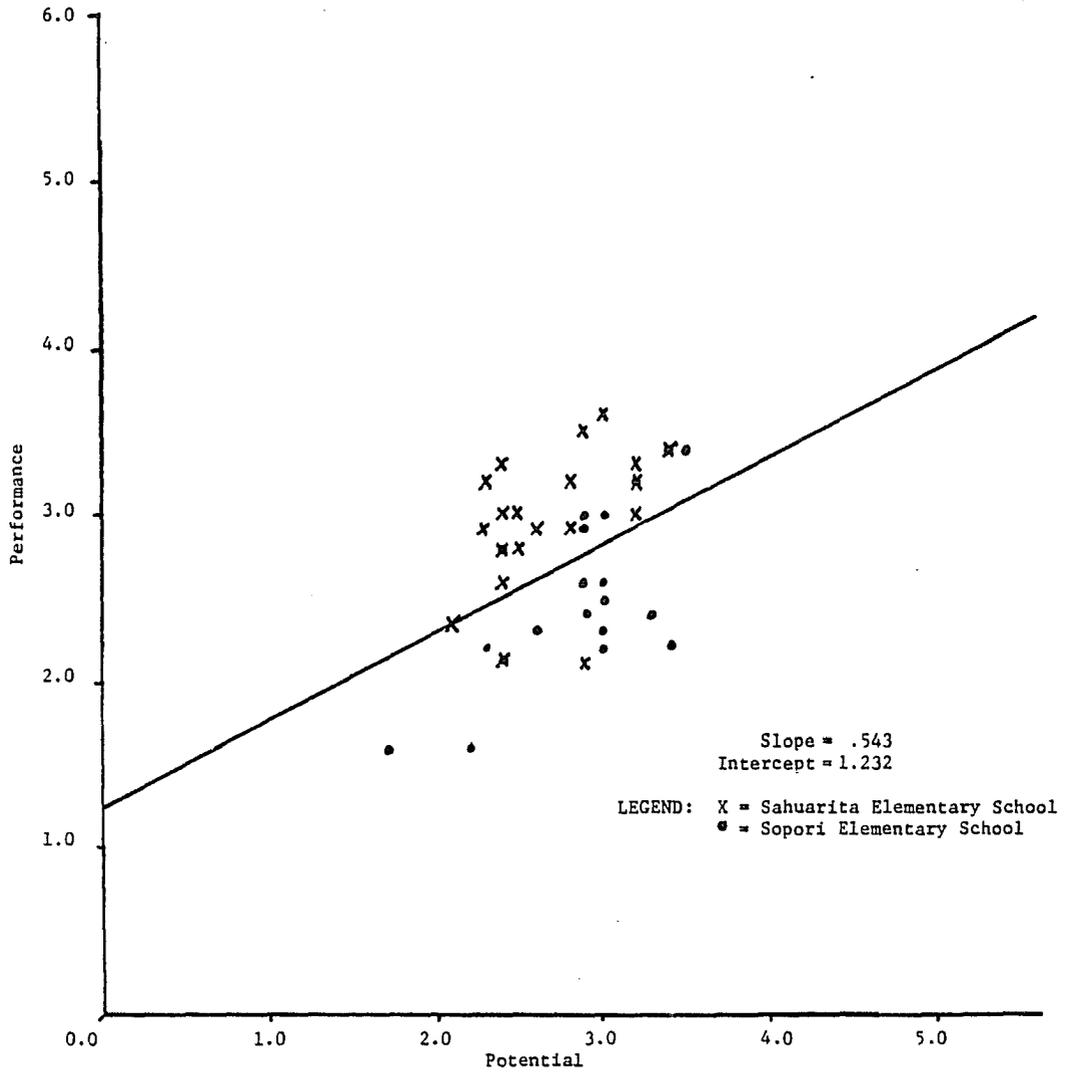


Figure 10. Second grade linear regression for mathematics.

Table 6. Analysis of variance of the mean residuals by school, I.Q., sex and ethnicity for the second grade in grammar.

Variables	N	Mean Residuals	F-Ratio	Significance of F
1. School	44			
Sahuarita	23	0.36	5.117	.029
Sopori	21	-0.33		
2. I.Q.	44			
Low	21	0.16	.052	.820
High	23	-0.15		
3. Sex	44			
Male	19	0.06	1.334	.255
Female	25	-0.05		
4. Ethnicity	44			
Hispanic	17	0.03	.202	.655
Anglo	27	-0.02		

Table 7. Analysis of variance of the mean residuals by school, I.Q., sex, and ethnicity for the second grade in mathematics.

Variables	N	Mean Residuals	F-Ratio	Significance of F
1. School	44			
Sahuarita	23	0.26	19.385	.000
Sopori	21	-0.24		
2. I.Q.	44			
Low	21	0.07	.291	.593
High	23	-0.06		
3. Sex	44			
Male	19	0.01	2.360	.132
Female	25	-0.01		
4. Ethnicity	44			
Hispanic	17	-0.07	.280	.600
Anglo	27	-.04		

School who had the use of volunteer aides significantly achieved to a greater degree in reading, grammar and mathematics.

The I.Q. had no significance for any of the investigated areas of academic achievement. High and low students did not show any appreciable difference when the residuals at the two schools were compared in reading, grammar and mathematics. The initial results of superiority based on the use of volunteer aides remained consistent (Tables 5, 6 and 7).

Sex did not indicate any significant changes in the advanced achievement of the students at Sahuarita Elementary School. Both boys and girls at Sopori performed to a lesser degree than did the boys and girls at Sahuarita when the test results were compared (Tables 5, 6 and 7).

Ethnicity had no meaningful effect on the residuals at Sahuarita and Sopori Elementary Schools. Therefore, it was concluded that neither anglo nor hispanic students caused the results of the residual differences at Sahuarita and Sopori Elementary Schools (Tables 5, 6 and 7).

Third Grade Residuals, the F-Ratio and the Significance of F for all Variables

Data was gathered on the third grade level at both Sahuarita and Sopori Elementary Schools in the areas of reading, grammar and mathematics. A graph comparing the performance and the potentials was constructed in each of the aforementioned areas so as to visually observe the differences between the two schools. A linear regression

line was computed based on the performance and potential scores (see Appendix E; Table G). Residuals were computed based on the distances of each set of scores from the line of regression for I.Q., sex and ethnicity.

From viewing the graph in Figure 11 it was substantiated that the students from Sahuarita in reading scored significantly higher than the students from Sopori to the .001 level of significance (Table 8).

I.Q., sex and ethnicity had no effect on the results of the comparison of the two schools as can be deducted from Table 8.

In grammar a similar indication was analyzed. The students at Sahuarita significantly scored higher than the students from Sopori. Figure 12 represents the level of significance at .000 (Table 9).

The variables of I.Q., sex and ethnicity for the third grade analysis of variance for grammar indicated no significant difference between Sahuarita and Sopori (Table 9).

In mathematics on the third grade level there was no significant level of difference between Sahuarita and Sopori achievement. The performance and potentials were relatively the same at both schools (Figure 13 and Table 10).

I.Q. and sex also gave a non significant indication as a cause for any differences at the two schools (Table 10). However, ethnicity did show a significant level of difference. The hispanic students at Sahuarita and Sopori did significantly better than the anglo students to the .021 level (Table 10).

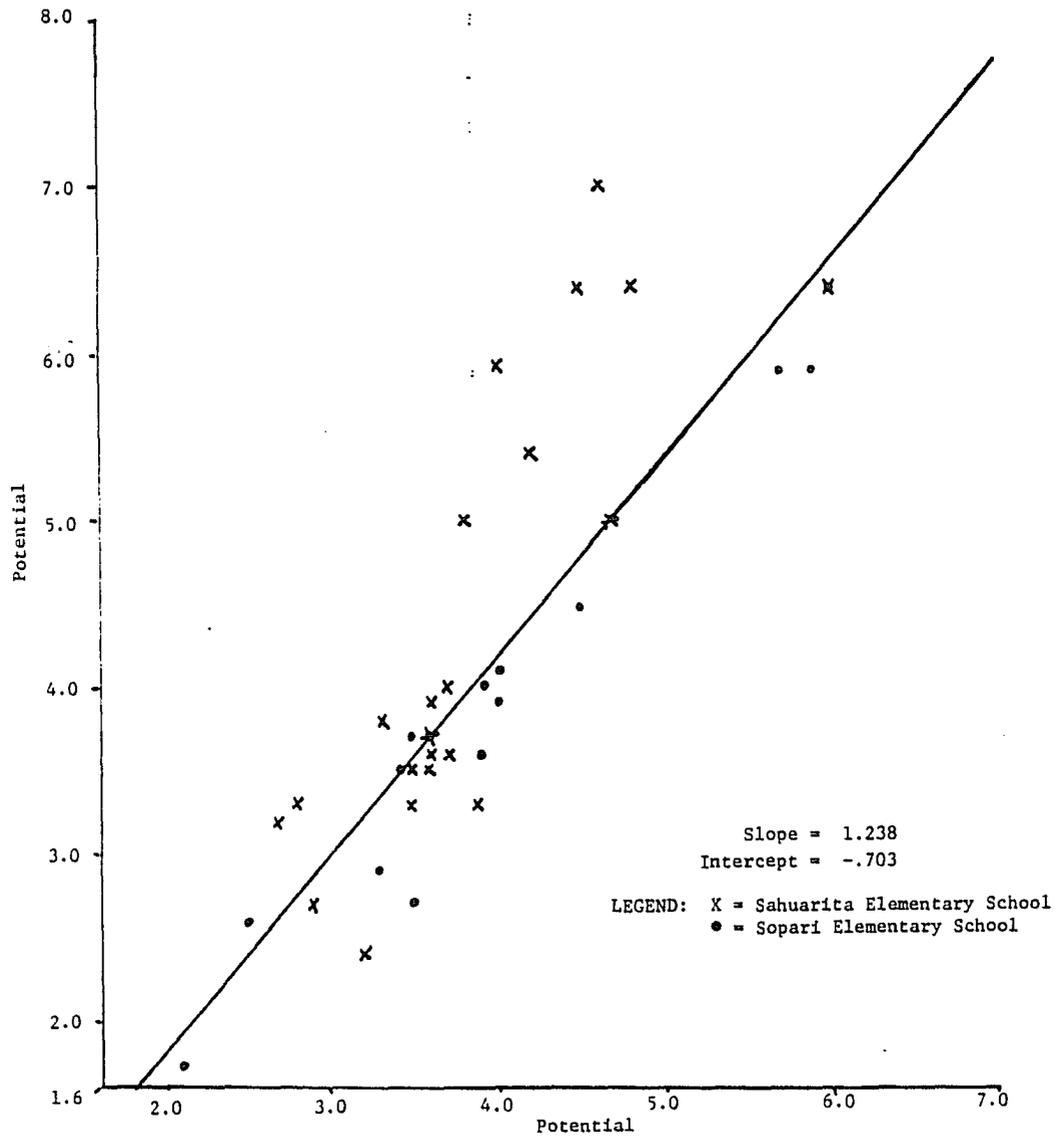


Figure 11. Third grade linear regression for reading.

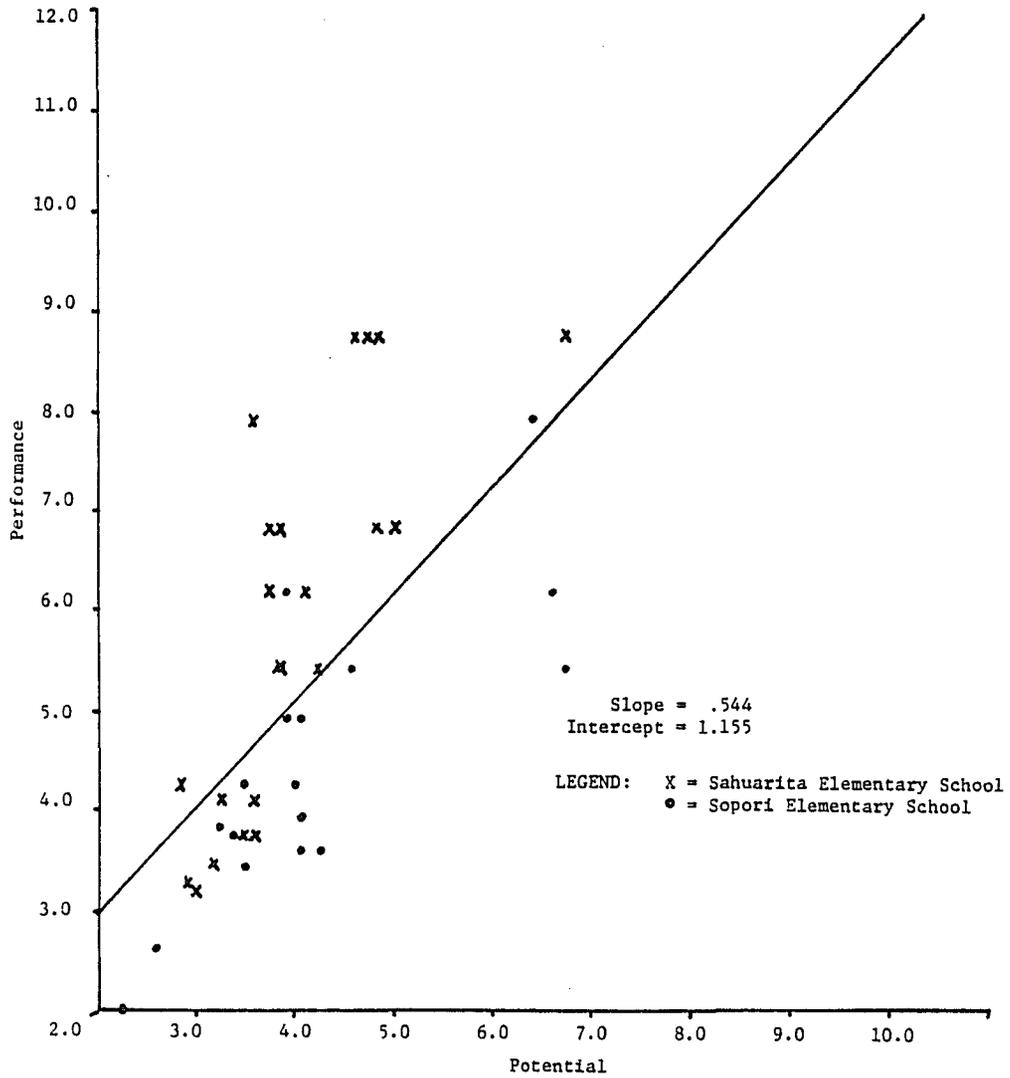


Figure 12. Third grade linear regression for grammar.

Table 8. Analysis of variance of the mean residuals by school, I.Q., sex and ethnicity for the third grade in reading.

Variables	N	Mean Residuals	F-Ratio	Significance of F
1. School	41	0.03		
Sahuarity	22	-0.35	14.434	.001
Sopori	19			
2. I.Q.	41			
Low	20	-0.11		
High	21	0.10	2.731	.107
3. Sex	41			
Male	17	-0.17		
Female	24	0.12	.653	.424
4. Ethnicity	41			
Hispanic	21	0.08		
Anglo	20	-0.08	.352	.557

Table 9. Analysis of variance of the mean residuals by school, I.Q., sex and ethnicity for the third grade in grammar.

Variables	N	Mean Residuals	F-Ratio	Significance of F
1. School	41			
Sahuarita	22	0.64	17.224	.000
Sopori	19	-0.74		
2. I.Q.	41			
Low	20	-0.25	3.533	.068
High	21	0.23		
3. Sex	41			
Male	17	-0.48	2.009	.165
Female	24	0.34		
4. Ethnicity	41			
Hispanic	21	0.14	.263	.611
Anglo	20	-0.15		

Table 10. Analysis of variance of the mean residuals by school, I.Q., sex and ethnicity for the third grade in mathematics.

Variables	N	Mean Residuals	F-Ratio	Significance of F
1. School	41			
Sahuarita	22	0.07	.655	.424
Sopori	19	-0.08		
2. I.Q.	41			
Low	20	0.11	1.540	.222
High	21	-0.11		
3. Sex	41			
Male	17	0.13	2.909	.096
Female	24	-0.09		
4. Ethnicity	41			
Hispanic	21	0.18	5.778	.021
Anglo	20	-0.19		

On the third grade level there was a significant difference between Sahuarita Elementary School and Sopori Elementary due to the utilization of volunteer aides in reading and grammar. However, the F-ratio showed a non significant indication when the residuals for the two groups representing the total populations of the schools were examined in mathematics (Figures 11, 12 and 13; Tables 8, 9 and 10).

The I.Q. score gave no significant indication for effecting the outcoming in the areas of reading and grammar. Also, no differences were noted in mathematics that could have accounted for the lack of any superiority by either of the groups examined (Tables 8, 9 and 10).

Sex was not an issue that effected the significant results in reading, grammar or mathematics. Boys and girls had similar potentials at both schools and, therefore, no statistical ramifications could be explored (Tables 8, 9 and 10).

However, in the academic area of mathematics for third grade students significance was noted for ethnicity. Hispanic students of which there were twenty out of the total of forty-one did equally well at both schools and significantly better than the anglo students (Figure 13 and Table 10).

Fourth Grade Residuals, the F-Ration and the Significance of F for all Variables

Data was gathered on the fourth grade level at both Sahuarita and Sopori Elementary Schools in the areas of reading, grammar and

mathematics. A graph comparing the performance and the potentials was constructed in each of the aforementioned areas so as to visually observe the differences between the two schools. A linear regression line was computed based on the performance and potential scores (see Appendix E; Table H). Residuals were computed based on regression for I.Q., sex and ethnicity.

In reading the students at Sahuarita Elementary scored significantly higher to the .016 level over the students at Sopori Elementary School. When the linear regression was examined (Figure 14) this difference in residuals became quite apparent (Table 11).

I.Q. on the fourth grade showed no significant bearing on the outcome of the differences in reading between the two schools (Table 11).

Sex did give a significant level indication of .048 between male and female students. The female students at Sahuarita did much better than the males at Sahuarita and even better to a higher degree than the female students at Sopori. Sex, therefore, was considered to be a factor effecting the outcome of the comparison between Sahuarita and Sopori in reading (Table 11).

Ethnicity neared significance in reading at the fourth grade level, but was not considered to be the cause of any significant differences between the two schools (Table 11).

On the fourth grade level in grammar (Figure 15) the level of significance between Sahuarita and Sopori Elementary Schools was

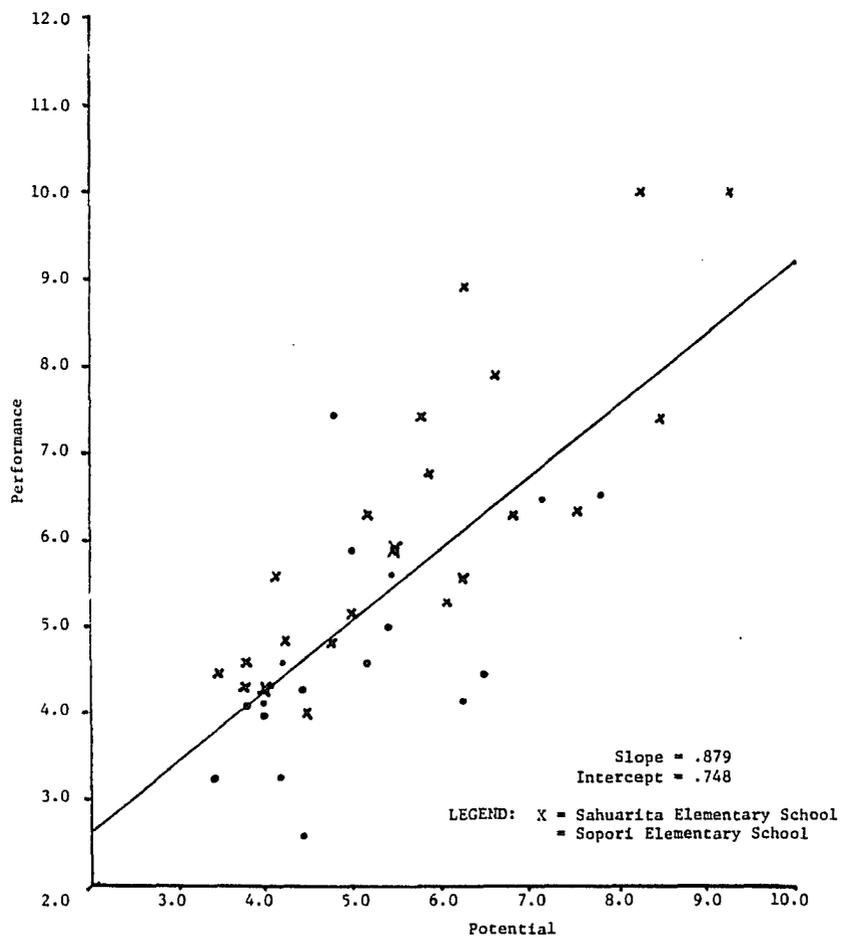


Figure 14. Fourth grade linear regression for reading.

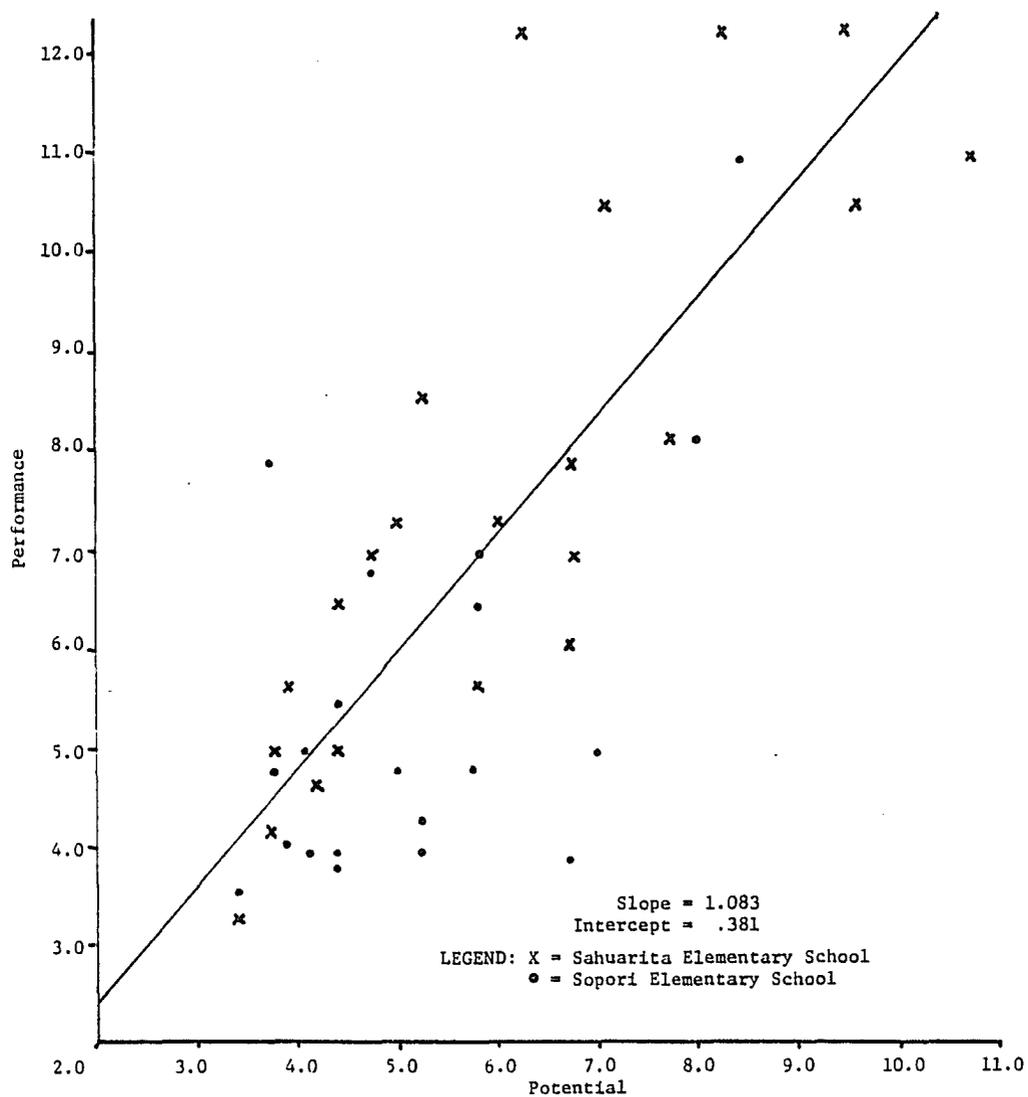


Figure 15. Fourth grade linear regression for grammar.

Table 11. Analysis of variance of the mean residuals by school, I.Q., sex and ethnicity for the fourth grade in reading.

Variables	N	Mean Residuals	F-Ratio	Significance of F
1. School	42			
Sahuarita	22	0.39	6.415	.016
Sopori	20	-0.43		
2. I.Q.	42			
Low	17	-0.13	.195	.661
High	25	0.19		
3. Sex	42			
Male	22	0.37	4.166	.048
Female	20	-0.41		
4. Ethnicity	42			
Hispanic	9	-0.54	3.850	.057
Anglo	33	0.15		

.013. Sahuarita, as in reading, achieved to a higher degree than did Sopori when potentials were examined (Table 12).

I.Q., sex and ethnicity had no significant effects on the results of this higher achievement by the students from Sahuarita (Table 12).

Mathematics gave no significant indications in any areas of investigation (Figure 16). The students at both schools were comparable in their achievement based on their potentials (Table 13).

The residuals for I.Q., sex and ethnicity showed no significant indications, but only that these variables had no positive or negative effect on the outcome of the performance and the potentials (Table 13).

Based on the results of the residuals calculated on the fourth grade experimental and control groups it was obvious that the students at Sahuarita Elementary School surpassed their potentials to a greater extent than did the students at Sopori Elementary School in the academic areas of reading and grammar. However, in mathematics no significant difference was noted between the two schools as a result of volunteerism (Figures 14, 15 and 16; Tables 11, 12 and 13).

In all three investigated areas of testing I.Q. played no significant role. Students at both schools had similar numbers of high and low potentials. Therefore, I.Q. was determined to be of no consequence (Tables 11, 12 and 13).

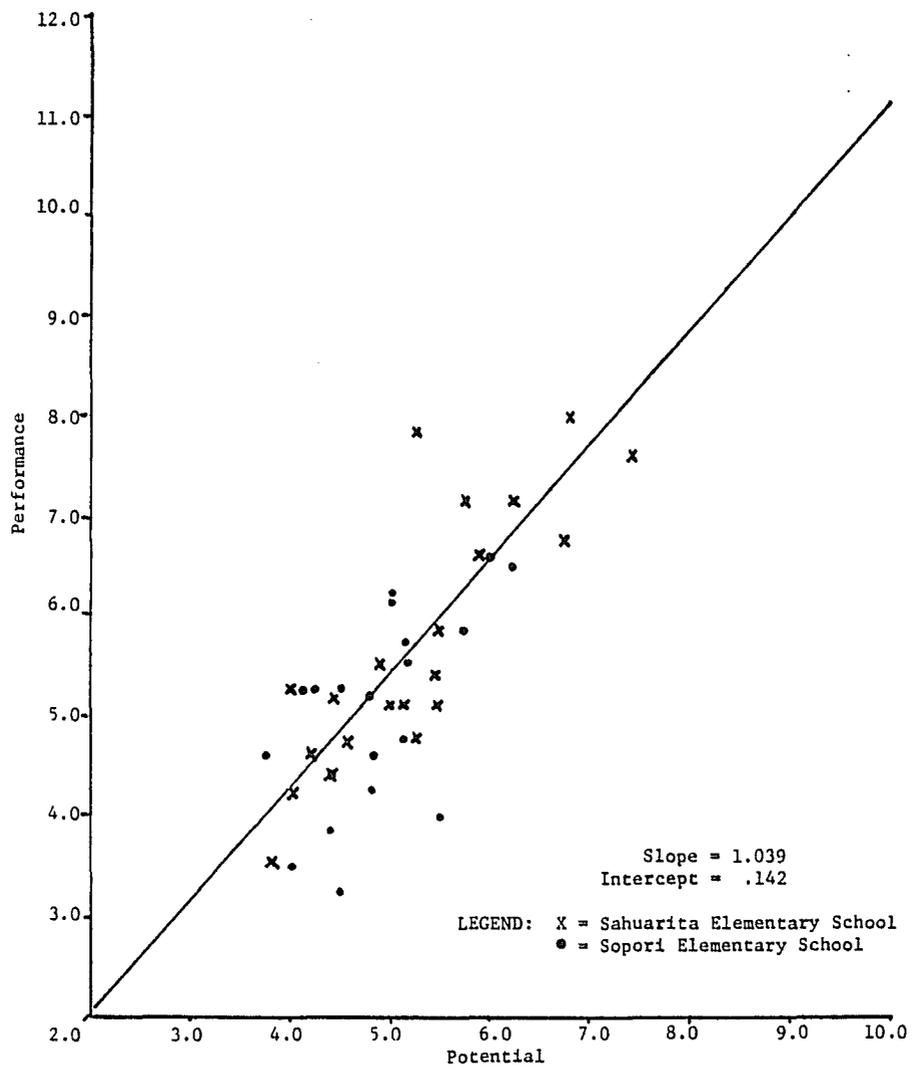


Figure 16. Fourth grade linear regression for mathematics.

Table 12. Analysis of variance of the mean residuals by school, I.Q., sex and ethnicity for the fourth grade in grammar.

Variables	N	Mean Residuals	F-Ratio	Significance of F
1. School	42			
Sahuarita	22	0.60	.687	.013
Sopori	20	-0.66		
2. I.Q.	42			
Low	17	0.09	.272	.605
High	25	-0.06		
3. Sex	42			
Male	22	0.03	.336	.566
Female	20	-0.03		
4. Ethnicity	42			
Hispanic	9	-0.69	2.413	.129
Anglo	33	0.19		

Table 13. Analysis of variance of the mean residuals by school, I.Q., sex and ethnicity for the fourth grade in mathematics.

Variables	N	Mean Residuals	F-Ratio	Significance of F
1. School	42			
Sahuarita	22	-0.11	.911	.345
Sopori	20	0.12		
2. I.Q.	42			
Low	17	-0.00	.003	.956
High	25	0.00		
3. Sex	42			
Male	22	0.01	.045	.834
Female	20	-0.01		
4. Ethnicity	42			
Hispanic	9	-0.12	.336	.566
Anglo	33	0.03		

In reading there was evidence that sex had a slight significance on the outcome of the superiority of the experimental group at Sahuarita. The girls at Sahuarita exceeded their potentials to a greater degree than did the boys and to an even greater extent than did the girls at Sopori (Table 11).

In the other areas of investigation sex was determined to be of no significant effect (Tables 12 and 13).

Ethnicity in the fourth grade was indicated as having no significance on the relationship of the performance to the potentials (Tables 11, 12 and 13).

Fifth Grade Residuals, the F-Ratio and the
Significance of F for all Variables

Data was gathered on the fifth grade level at both Sahuarita and Sopori Elementary Schools in the areas of reading, grammar and mathematics. A graph comparing the performance and the potentials was constructed in each of the aforementioned areas so as to visually observe the differences between the two schools. A linear regression line was computed based on the performance and potential scores (see Appendix E; Table I). Residuals were computed based on the distances of each set of scores from the line of regression for I.Q., sex and ethnicity.

The fifth grade linear regression graph in reading showed that the student at Sahuarita Elementary School and the students at Sopori had no significant level of difference at .059. While

this closely approached a meaningful indication the .05 level was not achieved (Figure 17 and Table 14).

I.Q., sex and ethnicity in a similar manner showed no significant implication for any cause and effect relationship (Table 14).

In grammar the visual representation of Figure 18 showed a high level of significance at .004. From this indication it was concluded that the students at Sahuarita did much better on their achievement than the students at Sopori (Table 15).

I.Q. and sex from the calculations represented in Table 15 indicated that there was no significant effect caused by either of these two variables at either school on the fifth grade (Table 15).

Ethnicity, however, indicated that hispanic students at Sahuarita had a significant effect on the outcome of the comparison between the two school. Hispanic students at Sahuarita significantly did better than hispanic students at Sopori (Table 15).

In mathematics the students at both schools showed no significant differences. Sopori students did just as well as the Sahuarita students when their performance was compared to their potentials (Figure 19 and Table 16).

I.Q., sex and ethnicity had no significant effects on the comparison of the two schools (Table 16).

On the fifth grade level the data collected indicated similar findings as those recorded on the third and fourth grade levels. Significance due to the use of volunteer aides was noted based on the higher achievement of the students at Sahuarita Elementary School.

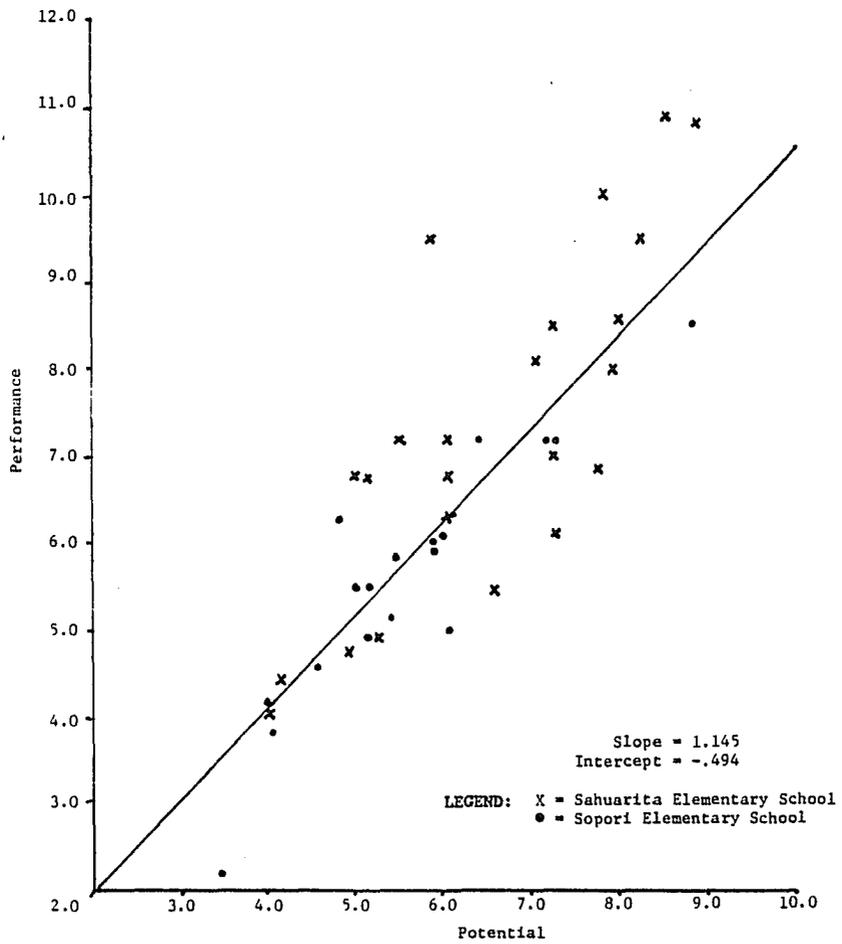


Figure 17. Fifth grade linear regression for reading.

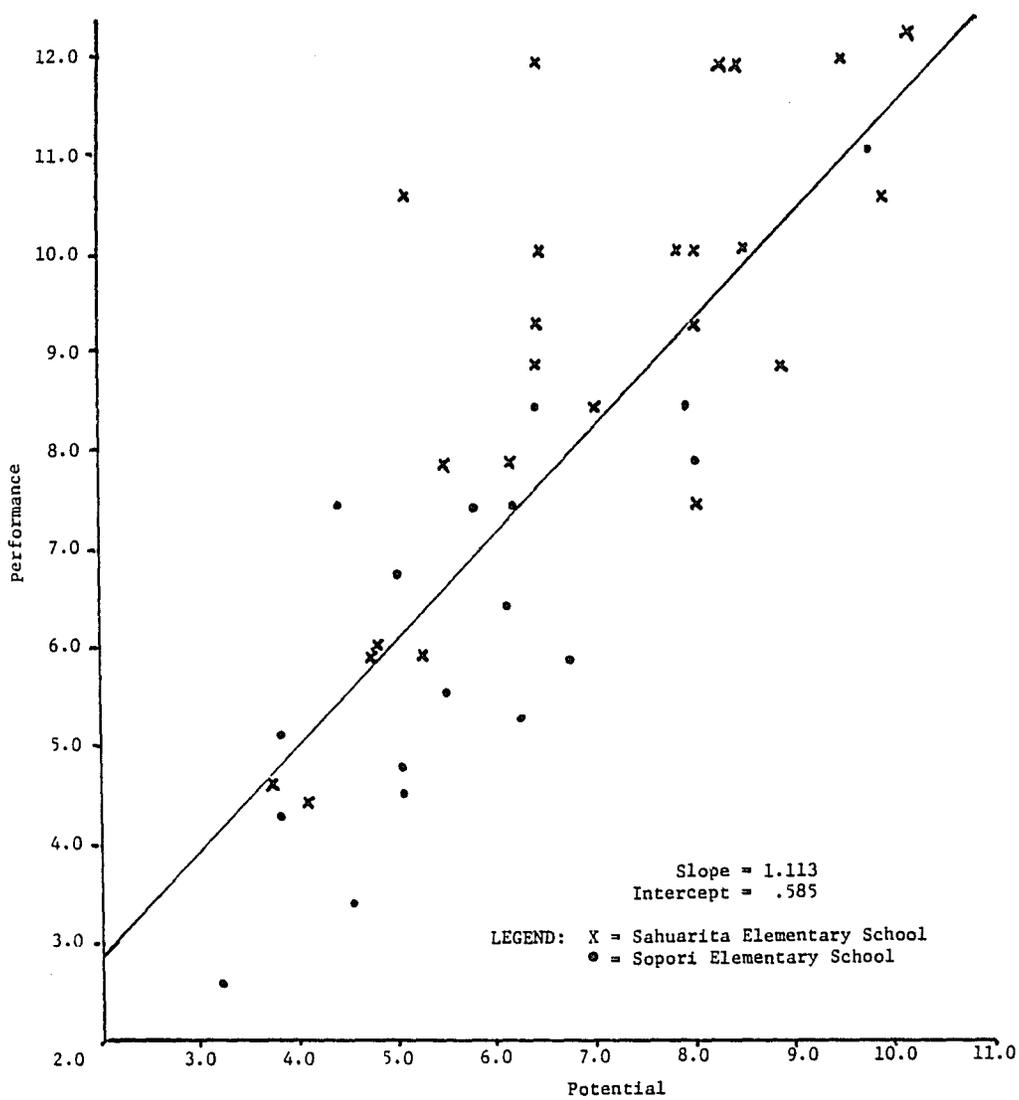


Figure 18. Fifth grade linear regression for grammar.

Table 14. Analysis of variance of the mean residuals by school, I.Q., sex, and ethnicity for the fifth grade in reading.

Variables	N	Mean Residuals	F-Ratio	Significance of F
1. School	42			
Sahuarita	24	0.25	3.790	.059
Sopori	18	-0.33		
2. I.Q.	42			
Low	16	-0.00	.354	.555
High	26	0.00		
3. Sex	42			
Male	16	0.21	.347	.559
Female	26	-0.13		
4. Ethnicity	42			
Hispanic	13	0.27	1.136	.293
Anglo	29	-0.12		

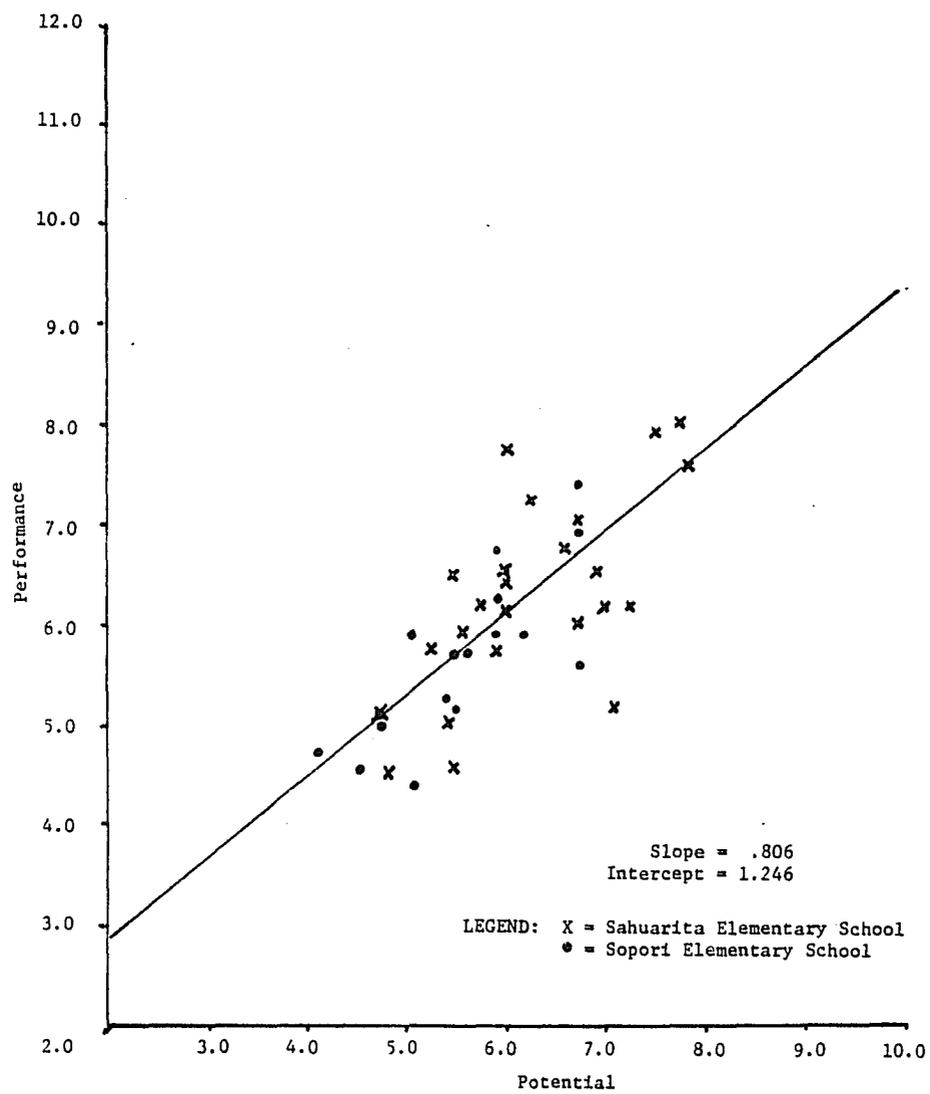


Figure 19. Fifth grade linear regression for mathematics.

Table 15. Analysis of variance of the mean residuals by school, I.Q., sex, and ethnicity for the fifth grade in grammar.

Variables	N	Mean Residuals	F-Ratio	Significance of F
1. School	42			
Sahuarita	24	0.59	9.319	.004
Sopori	18	-0.79		
2. I.Q.	42			
Low	16	-0.19	.101	.753
High	26	0.12		
3. Sex	42			
Male	16	-0.16	2.421	.128
Female	26	0.10		
4. Ethnicity	42			
Hispanic	13	1.15	15.013	.000
Anglo	29	-0.51		

Table 16. Analysis of variance of the mean residuals by school, I.Q., sex, and ethnicity for the fifth grade in mathematics.

Variables	N	Mean Residuals	F-Ratio	Significance of F
1. School	42			
Sahuarita	24	-0.07	1.265	.268
Sopori	18	0.09		
2. I.Q.	42			
Low	16	-0.12	1.593	.215
High	26	0.08		
3. Sex	42			
Male	16	-0.15	.909	.346
Female	26	0.09		
4. Ethnicity	42			
Hispanic	13	0.18	1.554	.220
Anglo	29	-0.08		

However, in the academic area of mathematics no statistical significance was obtained to support the findings made in reading and grammar (Figures 17, 18 and 19; Tables 14, 15 and 16).

The I.Q. scores (high and low) were of no statistical relevance on the fifth grade level.

Significance in the academic areas was independent of the fact that students were either male or female. Therefore, it was substantiated that the use of volunteer aides was independent of sex in regard to achievement in reading and grammar.

Ethnicity was a highly significant consideration in grammar on the fifth grade level. The hispanic students exceeded their potentials in comparison to the anglo students. However, the number of hispanic students was double that of the anglo students in all the experimental and control groups (Table 15). Ethnicity was definitely a significant factor in reading and mathematics (Tables 14 and 15).

Summary of the Findings Related to the Use of Volunteer Aides and Student Achievement

The data from the figures and tables would obviously support the fact that the students at Sahuarita Elementary School achieved to a higher degree in reading and grammar on the second, third, fourth and fifth grade levels. In mathematics it is just as apparent that no significant deductions were able to be drawn to support advanced achievement based on or anticipated achievement when compared to actual achievement.

I.Q., sex and ethnicity were of no significance. Only minor instances of significance were noted in particular areas that were isolated and that did not effect the overall comparisons and end result of the research.

The following questions were answered as a result of the analysis of variance done on the second, third, fourth and fifth grades in reading, grammar and mathematics at both schools relating to volunteerisms and student achievement:

1. The students at Sahuarita Elementary School because of the utilization of volunteer aides achieved to a higher degree in reading and grammar based on the positive residual results obtained when the performance and the potential scores were plotted and analyzed.

2. The students at Sopori Elementary School without the use of volunteer aides achieved to a lesser degree in reading and grammar based on the negative residual results obtained when the performance and the potential scores were plotted and analyzed.

3. The second grade students at Sahuarita Elementary School with the assistance of volunteer aides achieved to a significantly higher level than the students at Sopori in mathematics based on the positive residual results obtained when the performance and the potential scores were plotted and analyzed.

4. The Intelligence Quotient (I.Q.) did not significantly effect the outcome of any findings based on the use of volunteer aides and student achievement.

5. Sex did not significantly effect the outcome of any findings based on the utilization of volunteer aides and student achievement.

6. Ethnicity did not significantly effect the results of any findings based on the utilization of volunteer aides and student achievement.

7. Volunteer aides enhanced teacher effectiveness and increased student achievement in the areas of reading and grammar on all grade levels irrespective of I.Q., sex and ethnicity.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATION

Summary

The Problem

This study was primarily concerned with the effect that the use of volunteer aides had on student achievement when actual achievement (performance) was compared with anticipated achievement (potential). It also was concerned with the perceptions of teachers using volunteer aides as to their value in enhancing teacher effectiveness.

Procedures of the Study

The population for the study included the teachers at Sahuarita Elementary School and students from both Sahuarita Elementary School and Sopori Elementary School in the Sahuarita Unified School District No. 30 at Sahuarita, Arizona.

From these groups, all teachers at Sahuarita Elementary School were sampled and one class from each level two to five from each school was selected to be representatives of the total grade level. Selection for the experimental group was based on the use of the volunteer program. The teachers at Sopori were not involved because they did not utilize volunteer aides.

A questionnaire was utilized to gather teacher opinion information about the usefulness of volunteer aides in relationship to teacher effectiveness while scores on standardized tests and

achievement tests provided the other necessary sources of information to correlate the effects on student achievement.

The teacher opinion questionnaire was tabulated and analyzed to determine if teachers felt volunteer aides were valuable assistants in helping students achieve. This information was correlated to other information done in this same area with a primary purpose of substantiating the basic premise of usefulness.

The effect of the utilization of volunteer aides on student achievement was determined by the conversion of the students anticipated achievement to a grade level equivalency and a comparison of that equivalency to the actual achievement on the standardized test which also was represented in grade level equivalencies. This was done for the academic areas of reading, grammar, and mathematics. A further comparison was made relating to low and high potentials of students regarding their performance to see if a specific segment of students obtained greater benefit from the use of the volunteer aides. Finally, comparisons were made between the control group and the experimental group to determine if there was any significant difference between ethnicity and sex.

The information gathered on the questionnaire was analyzed on a simple tally method with mean scores indicating the rating of the usefulness of the aides. Tables were used to give representations of teacher opinions.

A simple linear regression equation was calculated for the selected class of students on grade level two to five for both the

experimental school and the control school. The number of students scoring above the predicted achievement levels was presented for both schools. The prediction variable was the Short Form Test of Academic Aptitude and the criterion was the California Achievement Test. Reading, grammar and mathematics were considered separately for each student and plotted.

Potential level (high and low) was investigated as part of the dependent variable. Sex and ethnic variables were examined only for the use of the researcher.

The Findings

The teachers at Sahuarita Elementary School felt that volunteer aides in general had a very positive effect on their abilities to teach children. They considered volunteer aides to be very useful in clerical, supervisory and non-initiated instructional tasks.

Peer aides were considered by teachers to be an effective method within the classroom for students with greater abilities to help students with lesser abilities. Teachers also felt peer aides benefited themselves by this aforementioned interaction.

Student aides were also considered to be of valuable assistance in the classroom. The teachers utilizing student aides felt very strongly that the academic achievement of younger students was increased by the use of these volunteers.

Parent aides were considered to be very helpful in working with individual students. Teachers indicated that parents needed no specialized training and that they could effectively do clerical,

non-initiated instructional tasks and supervise various activities within and outside the classroom.

Community aides were the most strongly supported by the teacher responses. It was indicated by teachers that community aides needed no specialized training and that they were of tremendous value in working with individual students. It was also indicated that community aides were a valuable source of information and that they helped develop feelings of self-confidence and self-worth in students.

In the area of student achievement it was determined that all else being equal volunteer aides had a definite effect on students surpassing their potential as indicative of their performance.

In the areas of reading and grammar on the second, third, fourth and fifth grade levels, students performance was significantly above their potential. This indicated that the additional help provided them by the teachers through the use of volunteer aides and by the volunteer aides themselves caused them to exceed their anticipated achievement.

However, in mathematics only on the second grade level was there a significant difference between the performance and the potential. This was explained by the fact that the majority of the volunteers were used in the area of language arts which consists of reading and grammar activities. Less emphasis was placed on the mathematical skills.

The I.Q. for both high and low potential students did not effect significantly the results of the comparison of the two schools

studied. Therefore it must be concluded that both high potential students and low potential students are helped by the use of volunteer aides.

The issue of sex (boy or girl) had no effect on the use of volunteer aides. Boys and girls both significantly exceeded their potentials with extra help and assistance.

Finally, the question of ethnicity was analyzed and it was found to have no significant effect on the results of student achievement. However, as a result of the utilization of volunteer aides both hispanic and anglo students benefited at Sahuarita Elementary School.

In summation it can be stated that volunteer aides affect the achievement of students in the areas of reading and grammar and that there was no observable effects in mathematics between those with and without the services of volunteer aides.

I.Q., sex and ethnicity were not factors that directly affected the significant relationship of anticipated achievement (potential) when compared to the actual achievement (performance) in the study.

Conclusions

The utilization of peers, students, parents and community members as volunteer aides in the classroom to enhance teacher effectiveness and increase student achievement has in the past fifteen years become a highly viable source of assistance.

Current emphasis on individualizing instruction to meet the needs of each student has created a demand for hiring additional

resources within schools. The current economic situation, however, has resulted in the reduction of many resources in many schools. The problem of the simultaneous increase in responsibilities and decrease in services has rendered insufficient time for individualizing student instruction. A well organized school volunteer program can be an effective means of ameliorating the situation for both the teachers and students.

The following conclusions were drawn as a result of this study on volunteerism:

1. Volunteer aides were of definite benefit to the teachers in the enhancement of teacher effectiveness.
 - a) volunteer aides were capable of performing clerical, supervisory and non-initiated instructional tasks
 - b) volunteer aides needed no specialized training
2. Peer aides enhanced teacher effectiveness and their use was an educationally sound endeavor.
 - a) peer aides were capable of performing clerical tasks
 - b) peer aides of great abilities were able to academically assist students of lesser abilities and they themselves were academically reinforced by the activity
3. Student aides were of valuable assistance to the classroom teacher in allowing them to teach rather than spend time on non-instructional tasks.
 - a) student aides needed no specialized training
 - b) student aides benefited from working with young children

- c) student aides were given direction towards future careers
- d) student aides increased the academic achievement of students they helped

4. Parent aides were helpful in increasing teacher effectiveness in terms of performing tasks that allowed teachers to teach.

- a) parent aides were of valuable assistance in performing clerical, supervisory and non-initiated instructional tasks
- b) parent aides needed no specialized training
- c) parent aides increased the communication between the community and the school
- d) parent aides increased student self-concepts and self-esteem

5. Community aides were of definite advantage in increasing teachers time for teaching and meeting individual student needs.

- a) community aides were of great assistance in performing clerical, non-initiated instructional tasks and supervisory activities
- b) community aides have a lifetime of experience to share with students
- c) community aides needed no specialized training
- d) community aides enhanced student achievement

6. Students who had the advantage of volunteer aides scored to a higher degree in achievement when performance was compared to potential in the academic areas of reading and grammar.

7. Students without the help of volunteer aides achieved to a lesser degree when performance and potential were statistically analyzed in reading and grammar.

8. The Intelligence Quotient (I.Q.) did not effect the differences in high and low I.Q. students that were noted as a result of the utilization of volunteer aide.

9. Sex (boys and girls) was not a cause of increased academic achievement but the use of volunteer aides resulted in a higher level of accomplishment.

10. Ethnicity was not a critical factor in student achievement. Both anglo and hispanic students benefited from the use of volunteer aides and conversely those without volunteer aides did not advance to as great an extent.

11. Volunteer aides enhanced teacher effectiveness and increased student achievement in the areas of reading and grammar irrespective of I.Q., sex or ethnicity.

An effective volunteer program not only promotes a closer relationship between the community and the school; it also provides a means for facilitating individualization.

Discussion of Conclusions

Research concerning volunteer aides and student achievement is very limited. Very little information regarding the effects volunteer aides have on increased academic achievement is available. Most of the data collected has been limited to very small populations

and random samples in reading programs especially those connected with federally funded title programs.

It would seem obvious from the conclusions made from the findings that volunteer aides are a valuable source of teacher assistance and that school districts that are losing their budgetary allocations should investigate this area as a resource for providing teachers with addition help in and outside the classroom. Peer aides, student aides, parent aides and community aides are volunteer programs within themselves. The extent to which teacher effectiveness can be increased is contingent upon the degree to which the services of these volunteer aides are utilized.

Student achievement was obviously enhanced through the use of various types of aides. Each component of the total volunteer program identified in this research study has unique characteristics and value to the educational progress of individual students. Individualization can be practiced not preached, if the full potential of the volunteer program is properly directed in the instructional program.

Finally, it is a deductible implication that no specialized training is necessary for volunteer aides. It would seem to follow then that no budgetary expenditures need to be assumed by the school district using the services of volunteer aides.

Recommendations

In examining the findings and conclusion of this study, the following recommendations seem appropriate:

1. Additional research should be done in the academic area of mathematics to determine if achievement would be positively effected by a concentration of volunteer assistance on that subject.
2. Additional research should be done to determine if Intelligence Quotient (I.Q.) is effected on a high, medium or low level to a more substantial degree by the use of volunteer aides.
3. Additional research should be conducted on the specific types of volunteer aides.
 - a) The effects of peer aides on student achievement
 - b) The effects of student aides on student achievement
 - c) The effects of parent aides on student achievement
 - d) The effects of community aides on student achievement
4. Additional research should be conducted to investigate the reverse effects of volunteerism.
 - a) The effects of volunteerism on peer aides
 - b) The effects of volunteerism on student aides
 - c) The effects of volunteerism on parent aides
 - d) The effects of volunteerism on community aides
5. Additional research should be done on the effects the volunteer program has on the budget.
6. Additional research should be done on the effects the administration has on the volunteer program regarding:
 - a) implementation of the volunteer program
 - b) success of the volunteer program
 - c) teacher acceptance of the volunteer program

d) response of peer, student, parents and community members
to the volunteer program

7. Additional research should be done on the amount of time that is necessary to be committed by volunteer aides to efficiently enhance teacher effectiveness and student achievement.

8. This study should be replicated at both the junior high and high school levels.

9. This study should be replicated over a three to five year period to respectively insure the validity of the test results based on performance and potential.

10. School districts and schools considering the implementation of a volunteer program should:

- a) decide on a plan for implementing and evaluating the
volunteer program
- b) decide on school sites and personnel to be involved in
the volunteer program
- c) formulate a long range plan for the volunteer program
that agrees with the philosophy of the district and enhances
its goals and objectives
- d) write a volunteer program handbook to act as a guide
- e) provide staff developmental programs for volunteerism
- f) insure administrative commitment to volunteerism
- g) insure teacher commitment to volunteerism
- h) evaluate the volunteer program

APPENDIX A

VOLUNTEER AIDES TEACHER OPINION QUESTIONNAIRE

PILOT TEST

VOLUNTEER AIDES
TEACHER OPINION QUESTIONNAIRE
PILOT TEST

Please read each question from Part III of the Teacher Opinion Questionnaire and circle the rating for each area indicated regarding clarity, relevance and validity.

CLARITY- The quality or state of being clear.

1. Not Clear
2. Clear
3. Very Clear

RELEVANCE- Relation to the matter at hand.

1. Not Relevant
2. Relevant
3. Very Relevant

VALIDITY- Meaningfulness to the matter at hand.

1. Not Valid
2. Valid
3. Very Valid

A. GENERAL

	<u>Clarity</u>	<u>Relevance</u>	<u>Validity</u>
	1 2 3	1 2 3	1 2 3
1. Volunteer aides are of value to the teacher.	1 2 3	1 2 3	1 2 3
2. Volunteer aides enhance student achievement.	1 2 3	1 2 3	1 2 3
3. Volunteer aides give teachers more time to teach.	1 2 3	1 2 3	1 2 3
4. Student self esteem and self confidence can be improved by the use of volunteer aides.	1 2 3	1 2 3	1 2 3

	<u>Clarity</u>	<u>Relevance</u>	<u>Validity</u>
5. Volunteer aides can only be used to do clerical tasks.	1 2 3	1 2 3	1 2 3
6. Volunteer aides need constant supervision by the teacher.	1 2 3	1 2 3	1 2 3
7. It takes specialized training to be of assistance in the classroom.	1 2 3	1 2 3	1 2 3
8. Teacher effectiveness is enhanced by the use of volunteer aides.	1 2 3	1 2 3	1 2 3
9. The ability of the teacher to give individual student help is increased by the use of volunteer aides	1 2 3	1 2 3	1 2 3
10. The time teachers would normally spend on clerical tasks is reduced by the use of volunteer aides.	1 2 3	1 2 3	1 2 3
11. A volunteer aide program should be initiated to assist in the educational program.	1 2 3	1 2 3	1 2 3
12. Slower students are helped by the use of volunteer aides.	1 2 3	1 2 3	1 2 3

B. PEER AIDES

	<u>Clarity</u>	<u>Relevance</u>	<u>Validity</u>
1. Students of greater ability can help students of lesser ability in learning academic skills.	1 2 3	1 2 3	1 2 3
2. Students achieve when helped by their peers in the classroom.	1 2 3	1 2 3	1 2 3
3. Students have the ability to assist the teacher with clerical tasks.	1 2 3	1 2 3	1 2 3
4. The teacher is able to help more students with individual problems when using the assistance of students within the classroom to aid other students within the classroom.	1 2 3	1 2 3	1 2 3

	<u>Clarity</u>	<u>Relevance</u>	<u>Validity</u>
5. Peer aides reinforce their own abilities by helping their classmates.	1 2 3	1 2 3	1 2 3
6. The teacher can not effectively utilize peer aides to increase student achievements.	1 2 3	1 2 3	1 2 3
7. The use of peer aides does not effect the academic achievement of other students in a classroom.	1 2 3	1 2 3	1 2 3
8. Self concepts and self confidence are improved by being a peer aide.	1 2 3	1 2 3	1 2 3
9. Peer aides can be used on all levels (k-5).	1 2 3	1 2 3	1 2 3
10. No specialized training is needed to use a student in the classroom to act as peer aide.	1 2 3	1 2 3	1 2 3

C. STUDENT AIDES

	<u>Clarity</u>	<u>Relevance</u>	<u>Validity</u>
1. Student aides can assist the teacher in rote activities in the classroom.	1 2 3	1 2 3	1 2 3
2. Student aides are accurate at grading papers, filing and doing clerical tasks.	1 2 3	1 2 3	1 2 3
3. The time involved in training a student aide is minimal in contrast to the extra time a teacher will have to work with individual students.	1 2 3	1 2 3	1 2 3
4. Students aides are reliable.	1 2 3	1 2 3	1 2 3
5. Student aides can readily communicate ideas and concepts to younger students.	1 2 3	1 2 3	1 2 3

	<u>Clarity</u>	<u>Relevance</u>	<u>Validity</u>
6. Teacher effectiveness is enhanced by the use of student aides.	1 2 3	1 2 3	1 2 3
7. Specialized training and inservice is necessary for students aides to help with basic clerical tasks.	1 2 3	1 2 3	1 2 3
8. Student aides benefit academically from working with younger students.	1 2 3	1 2 3	1 2 3
9. Student aides can develop career orientation by assisting in the classroom.	1 2 3	1 2 3	1 2 3
10. Student aides can assist the teacher in increasing the academic achievement of younger students.	1 2 3	1 2 3	1 2 3

D. PARENT AIDES

	<u>Clarity</u>	<u>Relevance</u>	<u>Validity</u>
1. Parents are teachers too.	1 2 3	1 2 3	1 2 3
2. Parent aides can be of valuable assistance in doing clerical tasks for the teacher.	1 2 3	1 2 3	1 2 3
3. Parent aides can be used to handle activity centers.	1 2 3	1 2 3	1 2 3
4. The teacher is given more time by using parent aides to help individual students.	1 2 3	1 2 3	1 2 3
5. Teacher effectiveness is increased by the use of parent aides.	1 2 3	1 2 3	1 2 3
6. Parent aides can be used to help individual students in the classroom.	1 2 3	1 2 3	1 2 3
7. Parent aides cause a disruption in the classroom.	1 2 3	1 2 3	1 2 3
8. The teacher is hindered more than helped when using a parent aide.	1 2 3	1 2 3	1 2 3

	<u>Clarity</u>	<u>Relevance</u>	<u>Validity</u>
9. Communication between school and parent is increased when parents assist in everyday classroom activities.	1 2 3	1 2 3	1 2 3
10. Student self esteem is increased by using parent aides.	1 2 3	1 2 3	1 2 3

E. COMMUNITY AIDES

	<u>Clarity</u>	<u>Relevance</u>	<u>Validity</u>
1. Community aides can be used to help the teacher with clerical and supervisory tasks in the classroom.	1 2 3	1 2 3	1 2 3
2. Community aides need specialized training to help out in the classroom.	1 2 3	1 2 3	1 2 3
3. The time involved in training a community aide does not take away from teaching time to any large extent.	1 2 3	1 2 3	1 2 3
4. The teacher is given more time to teach by using community aides.	1 2 3	1 2 3	1 2 3
5. Community aides benefit personally by assisting in the classroom.	1 2 3	1 2 3	1 2 3
6. Community aides effect the academic achievement of students directly or indirectly by helping in the classroom.	1 2 3	1 2 3	1 2 3
7. Community aides are dependable.	1 2 3	1 2 3	1 2 3
8. Student confidence and self worth is improved by using community aides.	1 2 3	1 2 3	1 2 3

	<u>Clarity</u>			<u>Relevance</u>			<u>Validity</u>		
9. Community aides can be utilized in directing small group activities.	1	2	3	1	2	3	1	2	3
10. The community is a storehouse of valuable information and help for teachers and the students.	1	2	3	1	2	3	1	2	3

APPENDIX B

TABLES OF THE PILOT TEST TALLY RESULTS FOR THE TEACHER OPINION
QUESTIONNAIRE USING AIKEN'S INDEX OF CONTENT VALIDITY

Table 1. General - Section A.

Question Number	Responses	Clarity			Relevance			Validity		
		Responses	Number	V*	Responses	Number	V*	Responses	Number	V*
			.875			.858			.850	
1.	0 1 4	1 2 3	.90 .021	0 1 4	1 2 3	.90 .021	0 1 4	1 2 3	.90 .021	
2.	0 1 4	1 2 3	.90 .021	0 1 4	1 2 3	.90 .021	0 1 4	1 2 3	.90 .021	
3.	0 1 4	1 2 3	.90 .021	0 1 4	1 2 3	.90 .021	0 1 4	1 2 3	.90 .021	
4.	0 1 4	1 2 3	.90 .021	0 1 4	1 2 3	.90 .082	1 1 3	1 2 3	.70 .041	
5.	0 1 4	1 2 3	.90 .021	1 1 3	1 2 3	.082 .082	0 2 3	1 2 3	.80 .041	
6.	0 1 4	1 2 3	.90 .021	0 2 3	1 2 3	.80 .041	0 2 3	1 2 3	.80 .041	

Table 1. Continued.

Question Number	Response	Clarity			Relevance			Validity		
		Responses	Number		Responses	Number		Responses	Number	
				v*			v*			v*
7.	1	1		0	1		0	1		
	2	2	.60	2	2	.80	2	2	.80	
	2	3	.123	3	3	.041	3	3	.041	
8.	0	1		0	1		0	1		
	1	2	.90	1	2	.90	1	2	.90	
	4	3	.021	4	3	.021	4	3	.021	
9.	0	1		0	1		0	1		
	1	2	.90	1	2	.90	1	2	.90	
	4	3	.021	4	3	.021	4	3	.021	
10.	0	1		0	1		0	1		
	1	2	.90	2	2	.80	2	2	.80	
	4	3	.021	3	3	.041	3	3	.041	
11.	0	1		0	1		0	1		
	1	2	.90	1	2	.90	0	1	.90	
	4	3	.021	4	3	.021	4	3	.021	
12.	0	1		0	1		0	1		
	1	2	.90	1	2	.90	1	2	.90	
	4	3	.021	4	3	.021	4	3	.021	

* V = Coefficient of validity

Table 2. Peer Aides - Section B.

Question Number	Responses	Clarity			Relevance			Validity		
		Responses	Number	V*	Responses	Number	V*	Responses	Number	V*
			.860			.800			.790	
1.	0	1		0	1		0	1		
	1	2	.90	2	2	.80	2	2	.80	
	4	3	.021	3	3	.041	3	3	.041	
2.	0	1		0	1		0	1		
	2	2	.80	2	2	.80	2	2	.80	
	3	3	.041	3	3	.041	3	3	.041	
3.	0	1		0	1		1	1		
	2	2	.80	1	2	.90	1	2	.70	
	3	3	.041	4	3	.021	3	3	.082	
4.	0	1		0	1		0	1		
	2	2	.80	1	2	.70	2	2	.80	
	3	3	.041	3	3	.82	3	3	.041	
5.	0	1		0	1		0	1		
	1	2	.90	1	2	.90	1	2	.90	
	4	3	.021	4	3	.021	4	3	.021	
6.	0	1		1	1		1	1		
	2	2	.80	1	2	.70	1	2	.70	
	3	3	.041	3	3	.082	3	3	.082	

Table 2. Continued.

Question Number	Responses	Clarity			Relevance			Validity		
		Responses	Number		Responses	Number		Responses	Number	
				V*			V*			V*
7.	0	1		1	1		1	1		
	1	2	.90	1	2	.70	1	2	.70	
	4	3	.021	3	3	.082	3	3	.082	
8.	0	1		0	1		0	1		
	1	2	.90	1	2		1	2	.90	
	4	3	.021	4	3	.021	4	3	.021	
9.	0	1		0	1		0	1		
	1	2	.90	2	2	.80	2	2	.80	
	4	3	.021	3	3	.041	3	3	.041	
10.	0	1		0	1		0	1		
	1	2	.90	2	2	.80	2	2	.80	
	4	3	.021	3	3	.041	3	3	.041	

* V = Coefficient of Validity

Table 3. Student Aides - Section C.

Question Number	Responses	Clarity			Relevance			Validity		
		Responses	Number	V*	Responses	Number	V*	Responses	Number	V*
			.760			.790			.790	
1.	1	1		0	1		1	1		
	1	2	.70	2	2	.80	1	2	.70	
	3	3	.082	3	3	.041	3	3	.082	
2.	1	1		1	1		1	1		
	1	2	.70	1	2	.70	1	2	.70	
	3	3	.082	3	3	.082	3	3	.082	
3.	0	1		1	1		0	1		
	2	2	.80	1	2	.70	2	2	.80	
	3	3	.041	3	3	.082	3	3	.041	
4.	0	1		0	1		0	1		
	2	2	.80	2	2	.80	2	2	.80	
	3	3	.041	3	3	.041	3	3	.041	
5.	0	1		0	1		0	1		
	2	2	.80	2	2	.80	2	2	.80	
	3	3	.041	3	3	.041	3	3	.041	
6.	0	1		0	1		0	1		
	2	2	.80	2	2	.80	2	2	.80	
	3	3	.041	3	3	.041	3	3	.041	

Table 3. Continued.

Question Number	Responses	Clarity			Relevance			Validity		
		Responses	Number		Responses	Number		Responses	Number	
				V*			V*			V*
7.	1	1		0	1		0	1		
	2	2	.60	2	2	.80	2	2	.80	
	2	3	.123	3	3	.041	3	3	.041	
8.	0	1		0	1		0	1		
	2	2	.80	2	2	.80	2	2	.80	
	3	3	.041	3	3	.041	3	3	.041	
9.	0	1		0	1		0	1		
	2	2	.80	2	2	.80	2	2	.80	
	3	3	.041	3	3	.041	3	3	.041	
10.	0	1		0	1		0	1		
	2	2	.80	1	2	.90	1	2	.90	
	3	3	.041	4	3	.021	4	3	.021	

* V = Coefficient of Validity

Table 4. Parent Aides - Section D.

Question Number	Responses	Clarity			Relevance			Validity		
		Responses	Number	V*	Responses	Number	V*	Responses	Number	V*
			.790			.810			.810	
1.	1	1		1	1		1	1		
	2	2	.60	2	2	.60	2	2	.60	
	2	3	.123	2	2	.123	2	3	.123	
2.	0	1		0	1		0	1		
	2	2	.80	2	2	.80	2	2	.80	
	3	3	.041	3	3	.041	3	3	.041	
3.	0	1		0	1		0	1		
	2	2	.80	2	2	.80	2	2	.80	
	3	3	.041	3	3	.041	3	3	.041	
4.	0	1		0	1		0	1		
	2	2	.80	1	2	.90	1	2	.90	
	3	3	.041	4	3	.021	4	3	.021	
5.	0	1		0	1		0	1		
	2	2	.80	1	2	.90	1	2	.90	
	3	3	.041	4	3	.021	4	3	.021	
6.	0	1		0	1		0	1		
	2	2	.80	2	2	.80	2	2	.80	
	3	3	.041	3	3	.041	3	3	.041	

Table 4. Continued.

Question Number	Responses	Clarity			Relevance			Validity		
		Responses	Number	V*	Responses	Number	V*	Responses	Number	V*
7.	0	1	.80 .041	0	1	.80 .041	0	1	.80 .041	
	3	2		3	2		3			
	2	3		2	3					
8.	0	1	.80 .041	0	1	.80 .041	0	1	.80 .041	
	2	2		2	2		2			
	3	3		3	3					
9.	0	1	.90 .021	0	1	.90 .021	0	1	.90 .021	
	1	2		1	2		1	2		
	4	3		4	3		4	3		
10.	0	1	.80 .041	0	1	.80 .041	0	1	.80 .041	
	2	2		2	2		2	2		
	3	3		3	3		3	3		

* V = Coefficient of Validity

Table 5. Community Aides - Section E.

Question Number	Responses	Clarity			Relevance			Validity		
		Responses	Number	V*	Responses	Number	V*	Responses	Number	V*
			.780			.800			.810	
1.	0	1		0	1		0	1		
	2	2	.80	2	2	.80	2	2	.80	
	3	3	.041	3	3	.041	3	3	.041	
2.	1	1		0	1		0	1		
	2	2	.60	2	2	.80	2	2	.80	
	2	3	.123	3	3	.041	3	3	.041	
3.	0	1		0	1		0	1		
	2	2	.80	1	2	.90	1	2	.90	
	3	3	.041	4	3	.021	4	3	.021	
4.	0	1		0	1		0	1		
	2	2	.80	1	2	.90	1	2	.90	
	3	3	.041	4	3	.021	4	3	.021	
5.	0	1		1	1		1	1		
	2	2	.80	2	2	.60	2	2	.60	
	3	3	.041	2	3	.123	2	3	.123	
6.	0	1		0	1		0	1		
	2	2	.80	2	2	.80	2	2	.90	
	3	3	.041	3	3	.041	3	3	.041	

Table 5. Continued.

Question Number	Responses	Clarity			Relevance			Validity		
		Responses	Number	V*	Responses	Number	V*	Responses	Number	V*
7.	0	1		0	1		0	1		
	2	2	.80	2	2	.80	2	2	.80	
	3	3	.041	3	3	.041	3	3	.041	
8.	0	1		0	1		0	1		
	2	2	.80	1	2	.90	1	2	.90	
	3	3	.041	4	3	.021	4	3	.041	
9.	0	1		0	1		0	1		
	2	2	.80	2	2	.80	2	2	.80	
	3	3	.041	3	3	.041	3	3	.041	
10.	0	1		1	1		1	1		
	2	2	.80	1	2	.70	1	2	.70	
	3	3	.041	3	3	.082	3	3	.082	

* V = Coefficient of Validity

Table 6. Totals of the Responses.

Question Number	Responses	Clarity			Relevance			Validity		
		Responses	Number		Responses	Number		Responses	Number	
				V*			V*			V*
			$\bar{X} = .813$			$\bar{X} = .811$			$\bar{X} = .810$	
1.		1 2 3			1 2 3			1 2 3		
2.		1 2 3			1 2 3			1 2 3		
3.		1 2 3			1 2 3			1 2 3		
4.		1 2 3			1 2 3			1 2 3		
5.		1 2 3			1 2 3			1 2 3		
6.		1 2 3			1 2 3			1 2 3		

Table 6. Continued.

Question Number	Responses	Clarity			Relevance			Validity		
		Responses	Number		Responses	Number		Responses	Number	
				V*			V*			V*
7.		1			1			1		
		2			2			2		
		3			3			3		
8.		1			1			1		
		2			2			2		
		3			3			3		
9.		1			1			1		
		2			2			2		
		3			3			3		
10.		1			1			1		
		2			2			2		
		3			3			3		
					$\bar{X} = .811$					

* V = Coefficient of Validity

APPENDIX C

VOLUNTEER AIDES TEACHER OPINION QUESTIONNAIRE

VOLUNTEER AIDES TEACHER OPINION QUESTIONNAIRE

Part I

Instructions: Please check the appropriate line to indicate what type of classroom aide(s) you utilize.

- None
 Peer Aides (Students within the classroom aiding other students)
 Student Aides (Older students used to help younger students)
 Parent Aides
 Community Aides (Non-parent adults)

Part II

What amount of time per week do you have the assistance of a volunteer aide? _____ hour(s)

Part III

Instructions: Please circle the number in one of the five right-hand columns which best indicates your opinion of the volunteer program on each area that is applicable to yourself.

1. Strongly Disagree
2. Disagree
3. No Opinion
4. Agree
5. Strongly Agree

A. General

- | | | | | | |
|---|---|---|---|---|---|
| 1. Volunteer aides are of value to the teacher. | 1 | 2 | 3 | 4 | 5 |
| 2. Volunteer aides enhance student achievement. | 1 | 2 | 3 | 4 | 5 |
| 3. Volunteer aides give teachers more time to teach. | 1 | 2 | 3 | 4 | 5 |
| 4. Student self esteem and self confidence can be improved by the use of volunteer aides | 1 | 2 | 3 | 4 | 5 |
| 5. Volunteer aides can only be used to do clerical tasks. | 1 | 2 | 3 | 4 | 5 |
| 6. Volunteer aides need constant supervision by the teacher. | 1 | 2 | 3 | 4 | 5 |
| 7. It takes specialized training to be of assistance in the classroom. | 1 | 2 | 3 | 4 | 5 |
| 8. Teacher effectiveness is enhanced by the use of volunteer aides. | 1 | 2 | 3 | 4 | 5 |
| 9. The ability of the teacher to give individual student help is increased by the use of volunteer aides. | 1 | 2 | 3 | 4 | 5 |
| 10. The time teachers would normally spend on clerical tasks is reduced by the use of volunteer aides. | 1 | 2 | 3 | 4 | 5 |
| 11. A volunteer aide program should be initiated to assist in the educational program. | 1 | 2 | 3 | 4 | 5 |
| 12. Slower students are helped by the use of volunteer aides. | 1 | 2 | 3 | 4 | 5 |

B. Peer Aides

1. *Students of greater ability can help students of lesser ability in learning academic skills.* 1 2 3 4 5
2. *Students achieve when helped by their peers in the classroom.* 1 2 3 4 5
3. *Students have the ability to assist the teacher with clerical tasks.* 1 2 3 4 5
4. *The teacher is able to help more students with individual problems when using the assistance of students within the classroom to aid other students within the classroom.* 1 2 3 4 5
5. *Peer aides reinforce their own abilities by helping their classmates.* 1 2 3 4 5
6. *The teacher can not effectively utilize peer aides to increase student achievements.* 1 2 3 4 5
7. *The use of peer aides does not effect the academic achievement of other students in a classroom.* 1 2 3 4 5
8. *Self concepts and self confidence are improved by being a peer aide.* 1 2 3 4 5
9. *Peer aides can be used on all levels (k-5).* 1 2 3 4 5
10. *No specialized training is needed to use a student in the classroom to act as a peer aide.* 1 2 3 4 5

C. Student Aides

1. *Student aides can assist the teacher in rote activities in the classroom.* 1 2 3 4 5
2. *Student aides are accurate at grading papers, filing and doing clerical tasks.* 1 2 3 4 5
3. *The time involved in training a student aide is minimal in contrast to the extra time a teacher will have to work with individual students.* 1 2 3 4 5
4. *Student aides are reliable.* 1 2 3 4 5
5. *Student aides can readily communicate ideas and concepts to younger students.* 1 2 3 4 5
6. *Teacher effectiveness is enhanced by the use of student aides.* 1 2 3 4 5
7. *Specialized training and inservice is necessary for student aides to help with basic clerical tasks.* 1 2 3 4 5
8. *Student aides benefit academically from working with younger students.* 1 2 3 4 5
9. *Student aides can develop career orientation by assisting in the classroom.* 1 2 3 4 5
10. *Student aides can assist the teacher in increasing the academic achievement of younger students.* 1 2 3 4 5

D. Parent Aides

- | | | | | | |
|---|---|---|---|---|---|
| 1. Parents are teachers too. | 1 | 2 | 3 | 4 | 5 |
| 2. Parent aides can be of valuable assistance in doing clerical tasks for the teacher. | 1 | 2 | 3 | 4 | 5 |
| 3. Parent aides can be used to handle activity centers. | 1 | 2 | 3 | 4 | 5 |
| 4. The teacher is given more time by using parent aides to help individual students. | 1 | 2 | 3 | 4 | 5 |
| 5. Teacher effectiveness is increased by the use of parent aides. | 1 | 2 | 3 | 4 | 5 |
| 6. Parent aides can be used to help individual students in the classroom. | 1 | 2 | 3 | 4 | 5 |
| 7. Parent aides cause a disruption in the classroom. | 1 | 2 | 3 | 4 | 5 |
| 8. The teacher is hindered more than helped when using a parent aide. | 1 | 2 | 3 | 4 | 5 |
| 9. Communication between school and parent is increased when parents assist in everyday classroom activities. | 1 | 2 | 3 | 4 | 5 |
| 10. Student self esteem is increased by using parent aides. | 1 | 2 | 3 | 4 | 5 |

E. Community Aides

- | | | | | | |
|--|---|---|---|---|---|
| 1. Community aides can be used to help the teacher with clerical and supervisory tasks in the classroom. | 1 | 2 | 3 | 4 | 5 |
| 2. Community aides need specialized training to help out in the classroom. | 1 | 2 | 3 | 4 | 5 |
| 3. The time involved in training a community aide does not take away from teaching time to any large extent. | 1 | 2 | 3 | 4 | 5 |
| 4. The teacher is given more time to teach by using community aides. | 1 | 2 | 3 | 4 | 5 |
| 5. Community aides benefit personally by assisting in the classroom. | 1 | 2 | 3 | 4 | 5 |
| 6. Community aides effect the academic achievement of students directly or indirectly by helping in the classroom. | 1 | 2 | 3 | 4 | 5 |
| 7. Community aides are dependable. | 1 | 2 | 3 | 4 | 5 |
| 8. Student confidence and self worth is improved by using community aides. | 1 | 2 | 3 | 4 | 5 |

9. *Community aides can be utilized in directing small group activities.*

1 2 3 4 5

10. *The community is a storehouse of valuable information and help for teachers and the students.*

1 2 3 4 5

APPENDIX D

TABLES OF THE VOLUNTEER AIDES TEACHER OPINION
QUESTIONNAIRE TALLY RESULTS

Table A. Teacher opinion questionnaire tallies for the general use of volunteer aides and teacher effectiveness.

T.A. Q.N.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	S/T	\bar{x}	
1.	5	5	5	5	4	5	5	4	5	4	5	5	5	5	5	5	5	5	4	5	5	4	5	5	5	4	3	127/27	4.70	
2.	5	5	5	5	4	5	5	4	5	4	4	4	5	4	5	5	4	5	4	5	4	4	4	5	5	5	4	3	122/27	4.52
3.	5	5	5	5	4	5	5	3	5	3	5	5	5	5	5	4	5	4	5	5	4	5	5	5	5	4	3	124/27	4.59	
4.	5	4	5	5	5	5	5	4	5	4	3	4	4	3	5	5	3	3	3	5	5	4	5	4	5	4	4	116/27	4.30	
5.	1	1	1	1	1	1	2	4	1	1	2	2	1	5	1	1	2	1	2	2	1	2	1	1	1	1	2	42/27	1.56	
6.	2	2	2	1	2	1	2	2	1	2	2	4	2	1	1	2	2	2	2	2	2	1	2	1	1	1	2	49/27	1.81	
7.	1	2	1	1	2	2	2	1	1	2	2	2	2	4	2	2	4	1	2	2	4	2	3	2	2	2	55/27	2.04		
8.	5	4	5	5	4	5	5	4	5	4	5	5	5	4	5	5	4	5	4	4	1	4	5	4	4	4	118/27	4.37		
9.	5	2	5	5	5	5	4	4	5	5	4	5	5	5	5	5	4	4	5	5	1	4	5	5	5	4	118/27	4.37		
10.	5	4	4	5	4	5	3	4	5	2	5	5	3	5	4	5	3	4	5	4	2	4	4	4	5	4	111/27	4.11		
11.	4	4	5	5	3	5	4	4	5	4	5	5	4	5	5	5	3	4	5	5	5	4	5	5	5	4	121/27	4.48		
12.	3	4	5	5	4	5	4	4	5	5	4	5	5	5	5	5	4	4	5	5	5	4	4	4	5	4	121/27	4.48		

LEGEND: T.N. - Teacher I.D. number
 Q.N. - Question number
 S - Sum of the responses
 T - Total number of responses
 \bar{x} - Mean average of S/T

Table B. Teacher opinion questionnaire tallies for the use of peer aides and teacher effectiveness.

T.N. Q.N.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	S/T	\bar{X}
1.			5	5	4	5	5		4		4	4		5	4	4		4	4	5		4	4	4		5	5	84/19	4.42
2.			5	5	4	5	5		4		4	4		4	4	4		4	4	4		4	4	4		4	4	80/19	4.21
3.			4	5	4	4	3		4		4	1		4	2	2		4	4	4		4	4	4		4	3	68/19	3.58
4.			5	5	4	4	3		4		3	5		4	4	4		4	4	4		4	4	4		4	4	80/19	4.21
5.			5	5	4	5	5		5		4	4		5	4	4		4	4	4		4	5	4		4	5	84/19	4.42
6.			2	1	1	1	1		1		2	4		2	2	2		4	2	2		2	1	2		2	1	33/19	1.74
7.			2	1	2	2	1		2		2	3		2	2	2		2	2	2		2	2	2		2	2	39/19	2.05
8.			5	5	4	4	5		4		4	4		4	4	4		4	4	4		4	5	5		4	5	82/19	4.32
9.			5	4	4	5	5		4		5	4		4	4	4		4	4	3		4	5	4		4	5	81/19	4.26
10.			2	5	4	4	5		2		4	4		2	4	3		4	4	4		4	3	4		4	2	68/19	3.58

LEGEND: T.N. = Teacher I.D. number
 Q.N. = Question number
 S = Sum of the responses
 T = Total number of responses
 \bar{X} = Mean average of S/T

Table C. Teacher opinion questionnaire tallies for the use of student aides and teacher effectiveness.

T.N. Q.N.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	S/T	\bar{X}
1.	4	4	4	4	5		4	4	4	4	4	4	4	4	4		4	4			4	4	5	4			66/16	4.13	
2.	4	3	4	4			4	4	4	4	3	4	4	4	4		4	4			3	3	4	4			60/16	3.75	
3.	4	4	4	4			4	5	5	4	4	4	4	4	4		5	4			5	4	4	4			68/16	4.25	
4.	4	4	4	4			4	4	4	4	4	4	4	4	4		5	3			5	4	4	4			65/16	4.06	
5.	4	4	4	4			3	4	4	3	4	4	4	4	4		4	3			5	4	4	4			62/16	3.88	
6.	4	4	4	4			5	5	4	5	4	4	4	4	4		4	4			5	4	4	4			68/16	4.25	
7.	4	3	2	2			5	1	2	3	2	3	2	4	4		4	4			1	3	4	2			45/16	2.81	
8.	4	5	3	5			3	4	3	4	3	4	3	4	3		3	4			5	4	3	4			61/16	3.81	
9.	4	5	4	5			5	4	5	4	4	4	4	4	4		3	4			5	4	3	4			67/16	4.19	
10.	4	5	4	5			5	5	4	4	4	4	4	4	4		4	5			5	4	4	4			70/16	4.38	

LEGEND: T.N. - Teacher I.D. number
 Q.N. - Question number
 S - Sum of the responses
 T - Total number of responses
 \bar{X} - Mean average of S/T

Table D. Teacher opinion questionnaire tallies for the use of parent aides and teacher effectiveness.

T.N. Q.N.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	S/T	\bar{X}
1.			5	5			5			5		5	5					4						4				38/8	4.75
2.			4	5			1			3		3	3					4						4				27/8	3.38
3.			4	5			3			5		5	5					5						4				36/8	4.50
4.			4	5			3			3		5	5					5						5				35/8	4.38
5.			4	5			3			4		5	5					5						4				35/8	4.38
6.			4	5			4			3		5	5					5						5				36/8	4.50
7.			2	2			3			2		2	2					4						2				19/8	2.38
8.			2	1			3			1		2	1					2						1				13/8	1.63
9.			4	5			4			5		5	5					4						4				36/8	4.50
10.			4	5			3			5		4	5					4						4				34/8	4.25

LEGEND: T.N. = Teacher I.D. number
 Q.N. = Question number
 S = Sum of the responses
 T = Total number of responses
 \bar{X} = Mean average of S/T

Table E. Teacher opinion questionnaire tallies for the use of community aides and teacher effectiveness.

T.N. Q.N.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	S/T	\bar{X}
1.	5	4	5	5	4	5	5	4		5		4	5	4	4	5	3	5		4					4	5		85/19	4.47
2.	1	3	2	1	1	2	1	2		1		2	2	4	4	2	2	2		2					2	2		38/19	2.00
3.	4	4	4	5	4	5	5	4		4		4	5	4	4	4	4	4		4					4	4		60/19	4.21
4.	4	4	5	5	4	5	5	4		4		5	5	4	4	5	3	4		5					5	5		85/19	4.47
5.	4	4	5	4	5	5	5	4		5		4	4	4	4	5	3	4		4					4	5		82/19	4.32
6.	4	4	5	5	5	5	4	4		4		4	4	4	4	5	4	4		5					4	5		83/19	4.37
7.	5	4	5	5	5	5	5	4		5		4	4	4	4	5	3	4		5					5	5		86/19	4.53
8.	5	4	5	5	5	5	5	4		5		4	5	3	4	5	3	4		4					5	5		85/19	4.47
9.	5	4	5	5	5	5	5	4		4		4	5	4	4	5	4	4		3					4	4		83/19	4.37
10.	5	4	5	5	5	5	5	4		4		4	5	4	4	5	3	5		5					5	5		87/19	4.58

LEGEND: T.N. = Teacher I.D. number
 Q.N. = Question number
 S = Sum of the responses
 T = Total number of responses
 \bar{X} = Mean average of S/T

APPENDIX E

TABLES OF LINEAR REGRESSION PLOTTING POINTS FOR
READING, GRAMMAR AND MATHEMATICS

Table F. Linear Regression Plotting Points for the Second Grade.

Performance			Potential		
Reading	Grammar	Mathematics	Reading	Grammar	Mathematics
33	32	24	27	27	29
14	14	16	21	21	22
26	29	26	31	30	30
18	20	23	30	30	30
52	36	29	28	28	29
29	51	24	33	32	33
26	29	22	31	30	30
27	39	30	28	28	29
13	18	16	16	17	17
27	39	23	25	25	26
37	51	34	39	38	35
33	36	32	33	32	32
18	21	29	28	26	29
23	25	28	23	23	24
24	28	21	24	24	24
24	15	26	27	27	29
31	34	34	38	37	34
32	44	25	31	30	30
18	21	22	36	36	34
27	44	23	26	26	26
23	24	22	21	22	23
24	25	24	28	28	29
35	39	30	32	31	30
30	34	32	22	22	23
28	36	33	23	23	24
33	39	29	27	26	28

Table F.--Continued.

Performance			Potential		
Reading	Grammar	Mathematics	Reading	Grammar	Mathematics
32	63	30	32	31	32
22	22	23	19	20	21
23	28	26	23	23	24
29	51	30	25	25	25
32	34	29	21	22	23
37	34	29	26	26	26
32	32	29	26	26	26
32	26	21	23	23	24
29	24	30	23	23	24
33	28	35	27	27	29
26	39	28	23	23	24
44	44	36	31	30	30
39	39	32	33	33	32
29	29	28	25	25	25
41	51	33	33	33	32
47	44	34	37	36	34
24	26	21	27	27	29
28	29	32	27	26	28

Table G. Linear Regression Plotting Points for the Third Grade.

Performance			Potential		
Reading	Grammar	Mathematics	Reading	Grammar	Mathematics
37	41	37	36	36	36
40	49	35	39	39	39
35	37	36	34	34	35
29	38	45	33	33	35
36	41	46	39	39	39
59	62	55	59	66	49
17	20	15	21	23	29
45	54	42	45	46	43
27	34	36	35	35	36
41	43	35	40	40	39
37	43	35	35	35	36
26	26	30	25	26	32
64	54	59	60	67	50
59	79	48	57	64	48
39	49	40	40	41	39
36	54	34	39	38	38
33	36	40	41	43	40
40	62	43	39	39	39
29	38	45	33	33	35
37	79	43	36	36	36
24	34	34	32	32	35
59	62	40	40	41	39
27	32	36	29	30	34
35	41	40	36	36	36

Table G.--Continued.

Performance			Potential		
Reading	Grammar	Mathematics	Reading	Grammar	Mathematics
32	43	37	27	28	33
50	68	48	47	48	44
64	87	47	45	46	43
36	68	40	37	37	37
38	41	42	33	33	35
64	87	51	60	67	50
70	87	48	46	47	43
64	68	46	48	50	45
40	62	47	37	37	37
50	87	37	47	48	44
33	37	34	35	35	36
33	33	42	28	29	33
54	54	42	42	43	40
50	68	42	38	38	37
35	37	35	35	35	36
39	37	36	36	36	36
33	54	34	39	38	38

Table H.. Linear Regression Plotting Points for the Fourth Grade.

Performance			Potential		
Reading	Grammar	Mathematics	Reading	Grammar	Mathematics
44	49	58	65	70	56
26	37	33	44	44	45
46	39	62	52	53	50
41	40	48	40	39	43
58	64	55	55	58	52
74	66	52	48	47	48
33	35	46	34	34	37
43	54	53	44	44	45
58	46	46	50	50	49
46	39	44	42	42	44
46	43	62	52	53	50
65	81	66	72	80	60
40	49	53	40	41	43
33	38	38	42	44	44
41	38	40	63	67	55
65	109	65	77	84	63
50	47	47	54	56	52
56	69	57	55	58	52
41	78	35	37	36	40
42	47	53	40	38	42
55	60	58	63	67	55
56	64	46	42	44	44
44	33	35	35	34	38
63	122	72	76	83	63

Table H.--Continued.

Performance			Potential		
Reading	Grammar	Mathematics	Reading	Grammar	Mathematics
74	73	47	57	60	53
47	46	52	43	43	45
79	104	72	66	71	57
43	41	43	38	37	40
63	85	51	52	53	50
74	104	80	85	96	68
63	81	66	69	77	59
49	69	53	47	47	47
52	73	55	50	50	49
58	56	51	55	58	52
46	49	53	38	37	40
53	69	51	61	66	55
100	109	76	93	106	74
89	78	54	63	67	55
40	49	47	45	44	46
43	56	46	40	39	43
67	122	78	58	63	53
100	122	67	83	95	67

Table I. Linear Regression Plotting Points for the Fifth Grade.

Performance			Potential		
Reading	Grammar	Mathematics	Reading	Grammar	Mathematics
38	43	50	41	38	47
50	84	65	61	64	60
55	67	53	51	50	54
46	74	59	46	44	51
63	34	44	48	46	52
61	53	66	60	63	59
85	110	80	88	101	77
72	84	69	72	79	67
72	78	74	73	80	67
42	51	51	40	38	46
51	74	62	56	57	57
59	74	63	59	62	59
55	45	57	52	51	55
22	26	47	35	33	42
58	55	57	55	55	56
49	47	52	52	51	55
60	64	59	59	62	59
72	58	59	64	67	62
47	58	57	49	47	53
88	100	56	73	80	67
100	118	62	78	84	70
61	74	70	73	80	67
70	93	60	73	80	67
80	100	52	79	85	71

Table I.--Continued.

Performance			Potential		
Reading	Grammar	Mathematics	Reading	Grammar	Mathematics
67	100	65	52	51	55
95	78	57	59	62	59
63	118	65	61	64	60
68	118	65	77	83	69
108	122	76	89	102	78
72	100	64	61	64	60
72	78	59	55	55	56
67	88	62	61	64	60
67	60	50	50	48	54
54	84	73	66	70	63
49	58	46	53	53	55
85	88	62	80	88	73
44	44	45	42	41	48
95	118	79	83	95	75
108	105	80	86	99	77
63	93	77	61	64	60
81	100	67	71	78	66
40	46	51	40	37	46

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