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AN EXPERIMENTAL STUDY TO DETERMINE
THE EFFECTS OF AN ORGANIZED GUIDANCE
PROGRAM ON ACHIEVEMENT GAIN AT THE
ELEMENTARY LEVEL AS MEASURED WITH A
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ORGANIZED GUIDANCE PROGRAM ON ACHIEVEMENT GAIN
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A SPECIFIED TEST BATTERY

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ROBERT FERRELL CAROTHERS

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AN EXPERIMENTAL STUDY TO DETERMINE THE EFFECTS OF AN
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CHAPTER I

INTRODUCTION

Background and Need for Guidance

Throughout the history of education, guidance of the elementary school child has been a concern of good teachers. In contemporary education, D. A. Thom was among the first to direct attention to "the everyday problems of the everyday child,"¹ as was also Ernest Harms who wrote, Handbook of Child Guidance.² Both of these scholars presented the concept that "guidance is necessary in practically all segments of life of our youth and, if totally developed, would bring about the adjustment of the child to the problems of modern life."³

¹D. A. Thom, Normal Youth and Its Everyday Problems (New York: Appleton-Century, 1932), p. 18.

²Ernest Harms, Handbook of Child Guidance (New York: Child Care Publications, 1950).

³Ernest Harms, "The Doctor and the Problem Child," School and Society, LXXXVI (December, 1958), pp. 457-458.

In spite of the historical background of elementary guidance and the increasing emphasis placed on organized programs during the last two decades, organized guidance services at the elementary level are lacking or inadequate in many public schools. There has been much work done in the area of guidance at the secondary level in both large and small schools, but guidance programs in the elementary grades have been developed mainly in the larger school systems. The National Defense Education Act of 1958, Title 5, was a recognition on the part of the Federal Government of the importance of guidance in the public schools.¹ However, the financial assistance provided by this act was allocated to support guidance services only in the junior and senior high schools. The Oklahoma Curriculum Improvement Commission has done extensive work during the last two years on guidance from kindergarten through the twelfth grade. Much emphasis has been placed on guidance at the elementary level by this organization.

After a number of years of teaching, supervising and observing in the elementary grades, the writer feels that there are some weaknesses in the teaching and learning processes at this level. The gifted child is held back, or permitted to become a discipline case; the remedial programs

¹Information and Regulations Relating to Title V, Public Law 85-864, National Defense Education Act 1958 (Oklahoma City, Oklahoma: State Department of Education, Defense Education Division, 1963), p. 1.

apparently do not take care of the slow learners and the children that are maladjusted or emotionally disturbed are sometimes neglected or poorly handled. Articles in recent periodicals give evidence that "school dropouts" are high at the secondary level. This might indicate a lack of proper guidance in the elementary grades.

Riendeau reports statistics released by the National Education Association in 1961 which revealed that 34.5 per cent of all youngsters enrolled in the eighth grade in 1953-54 failed to complete high school for one reason or another.¹

Schreiber gives the following discouraging prophesy in his article, "The Dropout and the Delinquent":

First of all, there is the sheer and unprecedented number of young people who, during this decade 1960-70, will pass out of the schools. They are the fruits, come of age, of the post World War II baby boom. And over the decade some 26 million of these young people with widely varying degrees of preparation, will have entered the labor market. If some revolutionary improvement has not been brought about, a minimum of 7 1/2 million of them will be school dropouts--and 2 1/2 million of these will have had less than eight years of formal education.²

Williams in his recent article on "School Dropouts" concludes:

It is evident that the full burden of blame for the dropout problem cannot be borne by the high schools. Activities and provisions to assure success

¹ Albert J. Riendeau, "Facing Up to the Dropout Problem," The Clearing House, XXXVI (May, 1962), p. 523.

² Daniel Schreiber, "The Dropout and the Delinquent: Promising Practices Gleaned from a Year of Study," Phi Delta Kappan, XLIV (February, 1963), p. 216.

in high school must begin in the home, in the elementary school, and in the community. It is usually too late to apply corrective measures when the student informs the high school counselor or principal that he is quitting school or even when the first symptoms of a desire to leave become evident.¹

The largest dropout percentage has occurred at the secondary level, but it is likely that many of the factors responsible for dropouts were formulated during the elementary years. Thus, if preventive and developmental guidance could be administered to children in their early years of school, many of the high school dropouts might be prevented.

Additional research and experimentation is needed to properly evaluate the contributions that a well organized guidance program at the elementary school level will make--not only to the elementary school, but to the total educational program.

Statement of the Problem

This investigation was to determine through experiment the effects of an organized guidance program on the achievement gain of average fourth, fifth, and sixth grade pupils in mathematics, science, reading, and writing as measured with the Sequential Tests of Educational Progress.

More specifically, this study was to determine experimentally the difference in achievement gain, if any, of two groups of average fourth, fifth, and sixth grade pupils

¹Percy V. Williams, "School Dropouts," NEA Journal, LII (February, 1963), p. 12.

working under conditions involving different treatment. One group was taught by teachers working in an organized program of guidance. The other group was taught by teachers in a non-organized situation where guidance was not specifically planned nor provided and any guidance techniques used were incidental. The study sought to answer the following questions: Did the organized program of guidance create conditions that were conducive to learning? Which group of children would achieve more during the experimental period in mathematics, science, reading, and writing as measured with the STEP achievement tests?

Delimitations

This study was limited to the pupils in the fourth, fifth, and sixth grades in the Lindsay Elementary School, Lindsay, Oklahoma, during the school year of 1962-63. It was further limited to the pupils who enrolled in these grade groups during the first two weeks of the school term and who were in regular attendance for the entire experimental period. The I. Q. range of the population sample was 90-115. The experimental period was limited to thirty weeks of actual class work.

Only literature which was written during and after 1950 was used in the development of the problem. The date 1950 was selected because most of the contributions to

organized guidance at the elementary school level have been made since the year 1950.

Significance of the Problem

The results of this experimental study may indicate that organized guidance will create optimal learning conditions in the classroom for both pupils and teachers and thereby increase academic achievement.

The recent national recognition of the student dropout problem has brought about renewed emphasis on guidance, at the elementary level, as a means of dropout prevention. The writer hopes that this experiment in guidance might make a small contribution to the prevention of student dropouts at the upper elementary and high school levels. If the results of this study prove to be fruitful, perhaps other elementary schools might be influenced to carry out similar experimental studies in organized guidance involving other grade groups.

Hypotheses to Be Tested

In order to determine statistically the difference in achievement, if any, of the experimental and control groups, the following hypotheses were tested:

1. There is no statistically significant difference in mean achievement gain between the fourth grade experimental and fourth grade control groups.
2. There is no statistically significant difference in mean achievement gain between the fifth grade experimental and fifth grade control groups.

3. There is no statistically significant difference in mean achievement gain between the sixth grade experimental and sixth grade control groups.
4. There is no statistically significant difference in mean achievement gain between the boys of the experimental and control groups.
5. There is no statistically significant difference in mean achievement gain between the girls of the experimental and control groups.
6. There is no statistically significant difference in mean achievement gain between the experimental and control groups in mathematics.
7. There is no statistically significant difference in mean achievement gain between the experimental and control groups in science.
8. There is no statistically significant difference in mean achievement gain between the experimental and control groups in reading.
9. There is no statistically significant difference in mean achievement gain between the experimental and control groups in writing.
10. There is no statistically significant difference in the total mean achievement gain between the experimental and control groups in all four subjects.

Definition of Terms

In the development of this study, it was necessary to use frequently several terms that are listed and defined as follows:

1. Guidance is a process or an activity which is concerned with the improved adjustment of the pupil.
2. Organized guidance program is a planned program of services whose aims and objectives are written. The principles and plans of the program are carried out by the administrators and classroom teachers who are assisted by special staff members who are trained and certificated in the field of guidance.

3. Non-organized guidance program refers to a group of teachers who have little or no training in the field of guidance and are teaching pupils without consciously applying guidance principles and techniques. If guidance is practiced in this group, it is incidental in nature.
4. Experimental group refers to the elementary pupils working in the organized guidance program.
5. Control group refers to the pupils working in the regular classrooms without the assistance of organized guidance.
6. Scholastic ability test refers to the California Short-Form Test of Mental Maturity, 1957 S-Form.
7. Achievement test refers to the Sequential Tests of Educational Progress--in the abbreviated form: STEP tests.
8. Index of Status Characteristic refers to a method of measuring social class.

Need for an Organized Guidance Program

Teacher-training institutions have for several decades devoted considerable course time to the teaching of factors related to the understanding of pupils as individuals. School administrators have provided in-service training programs to help teachers do a more proficient job of working with individuals. A continuous stream of writing and reports of research on this topic is to be found in all the professional journals. Yet in thousands of our schools today we find no organized provision for the improved academic adjustment of each pupil. There are few programs which will provide the machinery for the understanding of every student during his entire educational experience. The responsibility for this

service is usually vested in each teacher. Perhaps many teachers are qualified, but the assignment is illogical and unfair to both the teacher and her pupils.

Hatch and Costar point out the weaknesses of an incidental guidance program and emphasize the need for organized guidance.¹ These two authorities contend that incidental guidance leaves the adjustment of pupils entirely to the discretion of individual teachers. There is no provision for a continuous record of development and growth of the individual through his entire school experience. Under such a program the total responsibility is assigned to each teacher. This does not permit her to avoid her weaknesses or to capitalize her strengths in this type of work. They further contend that if the teacher conducts a separate guidance program there is duplication of effort. The teacher's work day is a full day, and if her efforts can be made more efficient and meaningful by coordinated effort, it is of greater benefit to all concerned.

In emphasizing the need for an organized guidance program, Hatch and Costar make the following statement:

To overcome the apparent omissions of the "incidental" guidance program, a program of guidance services may be initiated. Such a program would make it possible for the school to use the abilities and interests of all staff members to the maximum. It makes it possible for the staff members to be more

¹Raymond N. Hatch and James W. Costar, Guidance Services in the Elementary School (Dubuque, Iowa: WMC Brown Co., Inc., 1961), p. 13.

effective and at the same time increase their enjoyment of teaching. It should provide an opportunity to work with each pupil as an individual during his entire school life. Last, yet most important, it establishes the framework for meeting the needs and problems of every pupil.¹

Review of the Related Literature

Exploration of the writings of educators reveal that most of them made statements that seemed related to the development of child guidance. Prior to the Renaissance, such men as Quintilian, Socrates, and Aristotle might be included among those who provided and advocated guidance for youth. The Renaissance, with its awakening of interest in self-realization, brought forth such educators as Vittorino da Feltre, with his belief in the need for curriculum variations to promote interest on the part of his students.²

Three centuries later Rousseau, in setting the needs and interests of the individual above those of society of his day, stressed the importance of understanding child nature.³ Pestalozzi, who also lived during the eighteenth century, is credited with being the first educator to make systematic observations of the growth of children. He studied the past

¹ Ibid., p. 14.

² Frederick Eby and Charles Arrowood, The Development of Modern Education (New York: Prentice-Hall, Inc., 1942), p. 880.

³ Jean Jacques Rousseau, Emile, or Concerning Education (Boston: D. C. Heath and Company, 1898), pp. 19, 32, 55.

histories of children as well as their present environments in an effort to determine how they might best be taught.¹

During the nineteenth century, two names are outstanding--those of Herbart and Froebel. Herbart is known primarily for his contributions to the development of modern education as a science based upon psychological knowledge.² Froebel emphasized the influence of a faulty environment in childhood difficulties.³

G. Stanley Hall and John Dewey are prominent among twentieth century educators in this country who contributed to a scientific interest in education. Hall made a major contribution through his founding of Pedagogical Seminary, a journal devoted primarily to articles on child study. The writings of John Dewey are filled with statements that point toward the need for understanding children and for a guidance viewpoint on the part of teachers.

Science has made a valuable contribution to guidance through the development of measurement techniques that have made possible objective planning based on individual needs.

¹Eby and Arrowood, op. cit., p. 471.

²Gardner Murphy, Historical Introduction to Modern Psychology (New York: Harcourt, Brace and Company, 1950), pp. 53-54.

³S. S. F. Fletcher and J. Welton, eds., Froebel's Chief Writings on Education (New York: Longmans, Green and Company, 1912), p. 77.

Early interest in scientific method was aroused by the studies of Sir Francis Galton. In Heredity Genius, published in 1869, he dealt with the inheritance of mental traits and advocated the construction of a scale to measure general abilities.¹

Interest in the needs of individuals began in this country with the recognition of the need for providing for handicapped children. The Psychological Clinic at the University of Pennsylvania, founded by Lightner Witmer in 1896 for the diagnosis of mental deficiency, was an important step in this direction.²

Interest in the study of differences among all children was increased through the work of James McKeen Cattell during the last ten years of the nineteenth century. His sensory-motor tests given to Columbia University students, were a beginning in the type of experiments that led to intelligence-test development.³

Mental measurement as a science was advanced greatly through the efforts of Alfred Binet, whose extensive experiments in the development of intelligence-test items, resulted in the Binet-Simon Scale of 1905. The importance of his work

¹ Leonard Carmichael, ed., Manual of Child Psychology, 2nd ed., (New York: Wiley and Sons, 1954), p. 988.

² Rudolph Pintner, Intelligence Testing, Methods and Results (Henry Holt and Company, 1931), p. 11.

³ Ibid., p. 12.

is indicated by the fact that adaptations of his 1905 scale are found in many scales since developed, and by the widespread use to which the scale has been put in countries throughout the world.

In 1909 Dr. William Healy established a clinic for assisting juvenile delinquents. This clinic created a nationwide interest in child guidance.¹ By 1914 over one hundred clinics had been established to help children that were in trouble.

In 1921, the Commonwealth Fund became interested in the child guidance movement, and established demonstration clinics in a number of cities throughout the country. By 1927 nearly five hundred of these clinics were serving over forty thousand children.²

The factor contributing most to the interest in mental health for children and adults was the founding of the National Committee for Mental Hygiene in 1909 by Clifford Beers. Beers, author of A Mind That Found Itself became interested in problems of mental health as a result of confinement as a patient in a mental hospital. The Committee, organized to promote improvement in services to the mentally ill, has exerted nationwide influence. It has contributed

¹Ernest Harms, ed., Handbook of Child Guidance (New York: Child Care Publications, 1947), p. 22.

²Ibid., p. 23.

much to public understanding of guidance needs at child and adult levels.

The interest shown in the welfare of children by the prominent educators of the past, the contributions of science and the establishment of children's clinics have laid the foundation for the modern movement of organized guidance programs in the elementary schools of this country.

Organized guidance programs at the elementary level are relatively new. The amount of literature directly or indirectly related to this problem is not large. Most of the books dealing with elementary guidance have been written within the last ten years. In the main the authors of these books deal with the foundation and organization principles of guidance, the social development, and the personal adjustment of the pupil. There apparently is very little experimental literature dealing directly with the effect of organized guidance on the academic achievement of pupils.

A few experimental studies have been made in the last three decades that have included academic achievement as a facet of the study. In 1936 Rothney and Roens began an extensive experimental study which involved only eighth grade students from three junior high schools in Arlington, Massachusetts.¹ The study continued for a period of five years. The

¹John W. M. Rothney, and Bert A. Roens, Guidance of American Youth--An Experimental Study (Cambridge, Massachusetts: Harvard University Press, 1950), pp. 102-217.

design of the study included 129 pairs of students who were matched in 1936 on the basis of sex, grade, chronological age, mental age, IQ, religion, father's occupation, score on Sims Socio-economic scale, and average marks attained in the seventh grade where all pupils took the same subjects.

The 129 matched pairs made up an experimental and control group. Both of these groups were weighted heavily with pupils with more-than-average ability. In the treatment of the experimental group all phases of guidance was disregarded except counseling. The average number of interviews per year was approximately seven and the average length of the interviews was twenty to thirty minutes. The control group received no counseling or at least none in a formal sense.

At the conclusion of the five year experiment Rothney and Roens listed the following significant differences between the control and experimental groups.

1. Rate of subject failures and the average number of failures per subject decreased faster in the guided group than in the unguided group.
2. Rate of grade failure was higher in the unguided group in grade ten.
3. The mean scholastic rating of the guided group was higher than that of the unguided group by a statistically reliable margin. The per cent of those graduated with honors was higher in the guided group.
4. A significantly larger per cent of the guided group than of the unguided group was admitted to institutions of higher learning.¹

¹Ibid., p. 216.

In 1949 Rothney began an eight year experimental study which involved 870 sophomore boys and girls. These students were selected from four communities in Wisconsin. They were divided into an experimental group that was counseled and a control group that was not given any counseling.

Conclusions at the end of the experimental period indicated several small differences in the two groups. Statistically none of these differences were very great. One of the most important differences was in academic achievement. The experimental or counseled group achieved slightly higher academic records in high school and post high school education.

Rothney concluded:

It seems clear that the differences between counseled and comparison subjects of the study after they graduated from high school were less than one would hypothesize in view of claims made by guidance workers.¹

Although the two experiments discussed above involved junior and senior high school students, and the treatment of the subjects did not include all phases of the guidance program, the designs of the studies were similar to the one used by the writer in the present study. The results of the two studies indicated a statistically significant difference in achievement in favor of the two experimental groups that received counseling.

¹ John W. M. Rothney, Guidance Practices and Results (New York: Harper and Brothers, Publishers, 1958), p. 482.

A few experimental studies have been carried out more recently. Mayer in his article entitled "The Good Slum Schools"¹ gave a report of the three experiments carried on through guidance departments in so-called slum schools. Findings showed that many lower class children are brighter than suspected and can achieve more when they are made to feel that they can do better.

The three slum school experiments are being carried on in Kansas City, New York City and Tucson, Arizona. Many of the children involved in these three experiments are from the bottom stratum of society. Results from several studies indicate that children from low social classes have lower average intelligence quotients than children from the higher classes. Warner, Havighurst, Davis, and Eells in their study entitled "A Study in a Small Midwestern City" claim that children of high socio-economic level average five to twelve Binet points of IQ higher than children of low socio-economic level. In large American metropolitan areas the top school of a wealthy suburb usually shows an average IQ of 120. The poor schools in the worst slum areas show average IQ's of about 85.

Kansas City Experiment.--In Kansas City the guidance experiment is being carried on at Central High School. This is an integrated school and one half of the student population

¹Martin Mayer, "The Good Slum Schools," Harper's Magazine, CCXXII (April, 1961), pp. 48-52.

is negro. During the last years as an all white school, Central High never sent more than fifteen per cent of its graduates to college. Despite a great drop in socio-economic level, 150 out of 350 graduates go on to college. In recent years Central High has sent its negro and white graduates to Yale, Vassar, Northwestern and the University of Chicago. This has been accomplished through an organized guidance program which received complete backing from both white and colored community leaders and parents.

New York City Experiment.--The greatest current effort to educate culturally deprived children is in New York's "Higher Horizons" program. This program started at Manhattanville Junior High School 43 in 1954, as a demonstration guidance project. It has been expanded to sixty three elementary and junior high schools in the New York City slums. The central purpose was to find college material going to waste for lack of educational opportunity. Only four per cent of the pupils ever went to college from Junior High 43 before "Higher Horizons." This school was as bad as the city could offer. The measured average IQ was 82. A high proportion of the parents were on relief and their children were receiving free lunches. Truancy was high and more than three fifths of Junior High 43 graduates failed to graduate from high school. Today truancy is down and two thirds of Junior High 43 graduates are completing high school. In 1957, twenty six per

cent of the students had scored in the IQ category of 110 and above. In 1960 fifty eight per cent scored 110 and above.

The Higher Horizons Program begins its operations in the third grade of the elementary school. A well organized guidance program in every school helps to create in each child a decent self image and a desire to achieve.

Tucson Experiment.--The third guidance experiment was carried on in the Pueblo High School in Tucson, Arizona. This high school is located in the low socio-economic area of the city that is being plagued by a rapidly growing population. The success of this experiment is due to the efforts of a well trained guidance staff, an excellent group of teachers and a principal who has the guidance point of view.

The guidance program is developed around a special curriculum that has been built for the students of Pueblo High School. An assessment is made of each student's ability and he is placed on an academic level where he can achieve. Pueblo's center of operation is the belief that any child can be stimulated to become interested in something academic. A program of seminars is planned for the courses of the gifted children. Special classes are arranged for the slow learners. Each student is inspired with the idea that he is not working for grades but is working for himself.

In all three of the "slum area" experiments discussed, data that is statistically significant may be lacking in some facets of the programs. However, they present much convincing

evidence that both pupil achievement and pupil IQ can be increased in the schools of the culturally deprived areas through a well organized guidance program.

The lack of experimental evidence supporting the hypothesis that an organized guidance program will increase achievement in the elementary grades, pointed up the appropriateness of an action research problem of this kind. Middle class children of average intelligence were selected as subjects for this experiment as these children make up the majority of the children enrolled in the Lindsay Elementary School.

CHAPTER II

SCHOOL ORGANIZATION FOR GUIDANCE

This chapter sets forth the principles of organization and the contributions of several supporting agencies which were included in the organizational plan for guidance. These agencies were not under the direct supervision of the elementary principal who served as the director of guidance. They exercised a cooperative relationship with the director and the administrative office.

Principles of Organization

In laying out plans for a guidance program, the following principles of organization were used as a frame of reference:

1. Any service, whether new or old needs the acceptance and leadership of the school administrator.
2. The success of service depends upon a state of readiness of the school staff to accept, contribute to, and utilize the service.
3. The objectives of any service must be defined.

4. The development of a service must evolve from existing services and be adapted to the unique circumstances inherent in any given school setting.

5. The program must be built around the classroom teacher.

6. A guidance program should be geared to the competencies and skills possessed by teachers and other personnel.

7. Simplicity must be observed in organization.

8. A service must be developed in harmony with the total educational program of the school.¹

The experimental guidance program had the unanimous support of the superintendent of schools and the Board of Education. The elementary principal assumed the leadership of the program during the entire experimental period.

Before setting up the guidance program, the teachers who were selected to participate in the experiment were canvassed individually to determine whether or not they were ready to accept and utilize the services of the program in their classrooms. Objectives of the guidance services were agreed upon by the guidance committee prior to the beginning of the program. These objectives, which are listed in Chapter III of this study, were developed in harmony with the objectives and philosophy of the total educational program of the school. Existing services such as standardized testing,

¹ John A. Barr, The Elementary Teacher and Guidance (New York: Holt, Rinehart, and Winston, Inc., 1958), p. 404.

cumulative folders, and Special Education were included in the new program of services.

The classroom teachers were made aware of the important position they occupied in the guidance process. Their roles and duties as guidance workers were discussed and outlined.

The organizational chart, Fig. 1, illustrates the relationship of the various organizations, officers and departments with the major areas of responsibilities listed in some of the blocks.¹ In order to complete the lists of duties and responsibilities of the various departments, pre-school meetings were held with the representatives of each department or organization for this purpose.

The organizational chart includes two types of contributing agencies which are discussed in the two following sections.

Supervising Agencies

Principal-Counselor

During the initial stages of the guidance program the elementary principal assumed the temporary chairmanship of the guidance committee. After a permanent chairman was elected, he became the director of the program and a resource

¹Harold F. Cottingham, Guidance in Elementary Schools--Principles and Practices (Bloomington, Illinois: McKnight and McKnight Publishing Company, 1956), p. 218.

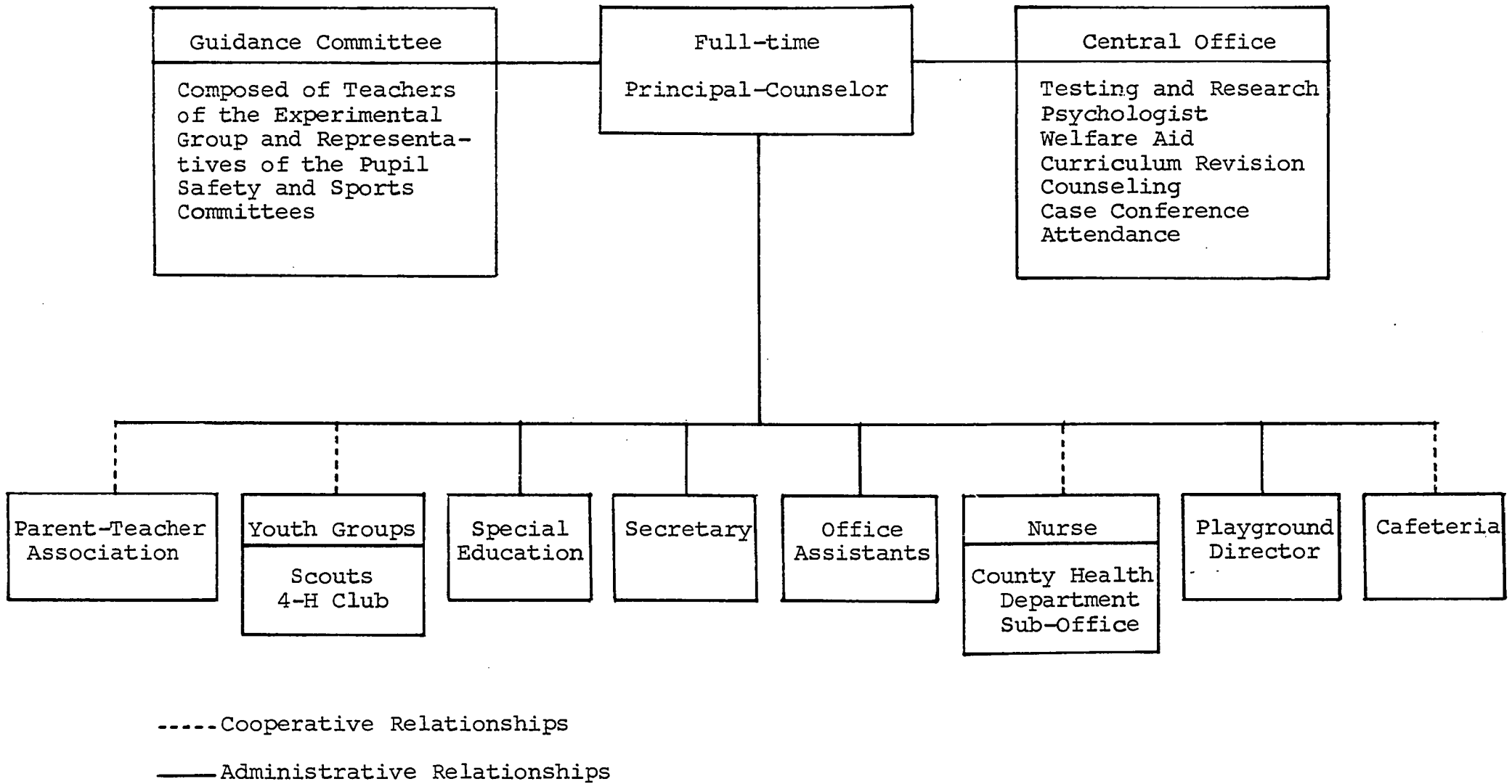


Fig. 1.--School organization for guidance in the experimental group

person to the staff. As director, he took the initiative in organizing and coordinating a program of guidance services.

When specialized help was not available within the school, the elementary principal was responsible for seeking out referral agencies, for counseling with teachers and with parents and for helping pupils whom the teachers did not feel adequate to handle. Other responsibilities included the administering of individual and group tests, providing necessary facilities for carrying on guidance functions, and organizing the in-service training program in guidance for the elementary teachers.

Guidance Committee

The guidance function of the Lindsay Elementary School was focused in a committee which studied the guidance needs of the school and set the guidance policies. The committee was responsible for overseeing and evaluating guidance activities and services in the school. Some of its major areas of service included cumulative records, testing, in-service training, playground supervision, and pupil safety and sports. This committee assisted the guidance director in the planning of all guidance activities.

All of the teachers in the experimental group served on the guidance committee. This was considered desirable because the number involved was small. The elementary principal served as chairman of the committee during the initial stages of organization. After the program was well underway, a

chairman was elected by the committee from among its membership. The committee chairman was responsible to the elementary principal who became the director of all the services of the program. Sixth grade pupils were permitted to serve on some of the sub-committees. Both boys and girls served on the pupil safety committee which dealt with pupil safety on the playground, traveling to and from school, and fire and tornado drills. Boys and girls also served on the pupil sports committee. The function of this committee was to plan organized play in the gymnasium and on the playground and to encourage good sportsmanship.

Central Office

The several facets of the guidance program listed in the chart block on page 24 of this study were assigned to the Central Office. Supervision of these specific areas of guidance was the responsibility of the elementary principal, who was a certified school psychologist. A room adjoining the Central Office was appropriated for individual testing, case conferences and counseling. Tests, guidance materials and professional books were issued from this office.

All other agencies, working through the Central Office, assisted directly or indirectly in carrying out the work involved in each phase of guidance assigned to this office.

Special Education

The Lindsay Elementary School had a state approved program of special education for exceptional children.¹ This program consisted of one classroom unit of educable, mentally handicapped children whose ages were comparable to normal children in grades four, five, and six. "The educable mentally handicapped have been defined as those children who can be taught some academic work, but who are mentally handicapped to the extent that their development is hindered in the regular classroom."²

The curriculum for this mentally handicapped class provided educational experiences at the child's mental level. Special attention was given to the use of concrete situations in attaining the basic purposes of the education of all American children, namely self-realization, human relationships, civic responsibility and economic efficiency.³ At all times an attempt was made to adapt the curriculum to the needs, interest and welfare of the child.

The following approaches were used in attaining the academic objectives or goals of the special education program:

¹ A Program of Education for Exceptional Children in Oklahoma, Bulletin S. E. No. 5 (Oklahoma City: Oklahoma Department of Education, 1959), pp. 17-20.

² Ibid., p. 9.

³ J. E. Wallace Wallin, Education of Mentally Handicapped Children (New York: Harper and Brothers, 1955), p. 268.

1. Emphasis was placed on readiness. The readiness period was expanded according to the individual needs of each child.

2. Experience units and activities within the scope of the child's interest and capacity were developed.

3. Activities in terms of the child's physical, social, and emotional development were-continuous.¹

The special education class was taught by a teacher whose undergraduate major was psychology and whose major at the graduate level was special education. She held a valid Special Education Teacher's Certificate under the State Laws of Oklahoma.² Since her training qualified her to administer the Stanford-Binet Test, she assisted in administering this test not only to subjects for the special education class, but to pupils who were having learning difficulties or behavior problems. She also served on the case conference team in the area of mental retardation.

Office Personnel

The secretary and the office assistants, in addition to their secretarial duties, administered first aid to playground casualties, admitted sick children to the health room,

¹Curriculum Guide for Teachers of Educable Mentally Handicapped Children, Oklahoma Curriculum Improvement Commission, Oklahoma Society for Crippled Children, Inc. (Oklahoma City: Oklahoma State Department of Education, 1959), p. 15.

²A Program of Education for Exceptional Children in Oklahoma, op. cit., p. 5.

called the health nurse, and assisted the school psychologist with cases of school phobia. The office staff also assisted the principal in checking out tests and guidance materials to teachers and in tabulating test results.

Supporting Agencies

4-H Club

One of the most important purposes of guidance in the Lindsay Elementary School is to assist all pupils in personality development, social behavior and problems connected with learning. One of the best media for assisting pupils in these three areas was the 4-H Club organization. In the Lindsay schools this organization is a definite part of the curriculum. Special facilities have been provided for this organization and two elementary teachers, well trained in 4-H Club work, served as local leaders. Both rural and urban boys and girls were members of the 4-H Club. Any boy or girl between ten and nineteen years of age may join the 4-H Club by agreeing to work on a project and to follow 4-H ideals and standards. The main requirement is a willingness to learn by doing and "To Make the Best Better," the club motto. These young people carried on a wide variety of projects in agriculture, home economics, citizenship and personal development.

The 4-H Club meeting was a workshop in democratic citizenship. Here boys and girls elected their own officers, planned and conducted their own programs and held regular

meetings. They took part in community activities and the county-wide 4-H program. The club meeting teaches parliamentary procedure, how to make individual and group decisions and how to plan and carry out group activities.

Wholesome recreation and wise use of leisure time is an important phase of 4-H club work. Group singing, folk dances, and active sports are a few of the many kinds of useful recreation enjoyed by the club members.

There were 4-H Club members and members of the two scout organizations in both the experimental and control groups of the guidance experiment. It was in the classrooms containing only the pupils of the experimental group that a cooperative program of guidance was planned with the two youth organizations.

Scout Organizations

The scout organizations were included because their goals and objectives are closely related to those of the guidance program. A large classroom was equipped for the Girl Scout Troops in grades four, five and six, who held their meetings after school. The Boy Scouts held their meetings in the Scout Hut, which was located near the school. The adult leaders of these organizations worked cooperatively with the guidance staff in carrying out the aims and objectives of the guidance program. They rendered invaluable assistance in the counseling service of the program.

County Health Nurse

The county health nurse was the pivot about which the health program was organized. Fortunately a sub-office of the County Health Department was located on the school grounds near the elementary school. Adequate office facilities were provided by the local Board of Education, free of charge, to the County Health Department. The nurse, her secretary and the county sanitarian occupied these offices. The utility bills were also paid by the local school district.

The nurse who served the Lindsay area was a registered nurse and was one of the three county health nurses assigned to Garvin County. Since she lived in the Lindsay community and served only two other small areas, it was possible to utilize most of her time in the local school and surrounding area.

Of the many services rendered by the health nurse, one of the most important was to act more or less as a liaison officer between the school and out-of-school specialists. Other services rendered were to make home visits and to prepare the necessary reports for clinical referral; to act as advisor on individual cases; and to confer with teachers concerning physical examinations and health needs of pupils. The nurse rendered a major service by working closely with community agencies, clubs, and social organizations. These organizations made provisions for needed care and treatment when parents were unable to do so themselves. Records kept

by the nurse were available to teachers and counselors in working with pupil problems.

The health nurse served as a resource person in case conferences involving pupils and their parents. Through the cooperation of the State Vocational Rehabilitation Department, she was able to secure the services of a psychiatrist, a clinical psychologist and a psychiatric case worker for the more deep seated pupil problems. These three specialists served on a consultant basis.

County Health Department

The County Health Department rendered assistance to the experimental group in setting up a mental health program. Knapp emphasized the importance of a mental health program in the guidance of elementary children. He states:

Good guidance must always be predicated upon good mental hygiene. Everything the child does within the classroom--all experiences that the child is provided, either academic or social--and the guidance he receives either individually or in groups must be evaluated in terms of the mental health values contained therein.¹

Scott believes that:

If an elementary school is to be a "laboratory for learning," careful consideration must be given to the ways that it deals with children; it should be happy and friendly, not tense and competitive. Discontent, strains, tensions, insecurities, misunderstandings, frustrations, unhappiness, and ineffectiveness must be reduced to a minimum. Practically every

¹ Robert H. Knapp, Guidance in the Elementary School (Boston: Allyn and Bacon, Inc., 1959), p. 239.

policy and practice of the school has its implications for mental health.¹

In planning a mental health program the following characteristics served as a general measure of sound mental health.

1. Children with sound emotional or mental health are able to accept themselves and are happy to be themselves. They estimate their ability realistically, having neither too high nor too low an opinion of themselves. They accept their shortcomings and try to correct those that can be corrected. They can even laugh at themselves.

2. They stand on their own feet; they are reasonably independent in deciding things as compared with other children of the same age.

3. They are confident of their ability to handle the situations that may confront them.

4. They are not constantly afflicted with strong feelings of fear, anger, jealousy, worry or guilt. Generally they seem to be fairly relaxed.

5. They like and trust others and are able to form warm, lasting personal relationships. They have at least one close friend. They expect people to like them.

6. They consider the interests of other people and feel some responsibility for the welfare of others.

¹Clyde R. Scott, Administering Pupil Personnel Services in the Elementary School (State College, Penn.: Pennsylvania State College, Doctoral Dissertation, 1951), pp. 97-98.

7. They consider themselves an integral part of the group.

8. They accept reasonable responsibility.

9. They improve their abilities, skills, and talents, and face new experiences eagerly.¹

Parent-Teacher Association

The Lindsay Elementary School is fortunate to have an active Parent-Teacher Association. The various P. T. A. committees provided invaluable assistance to the pupils and teachers involved in the experiment. The Student Welfare Aid Committee provided clothing, workbooks and instructional materials for indigent children. The P. T. A. Health Committee conducted hearing and vision screening tests for all the pupils in both the control and experimental groups. The P. T. A. Audio-Visual Aid Committee sponsored guidance films for the teachers and pupils in the experimental group. The home room mothers assisted in planning school social events for the pupils. They also served as liaison agents for the classroom teacher and the parents of her pupils.

An attempt has been made in the several preceding pages to show how the various organizations, departments and offices, shown in Fig. 1, page 24, have been employed in carrying out the guidance program in the experimental group.

¹ Jack Kough and Robert F. DeHaan, Helping Children with Special Needs (Chicago: Science Research Associates, Inc., 1956). Volume II, p. 119.

This group consisted of seven teachers and two hundred twenty-two elementary pupils in grades four, five and six.

Guidance Services

The six guidance services adopted for this experimental investigation, evolved from a pilot study in evaluation directed by the State Guidance and Counseling Committee of the Oklahoma Curriculum Improvement Commission. The Lindsay Elementary School was selected as one of the several schools in Oklahoma to participate in the pilot study which was conducted in May 1961. Evaluation instruments¹ prepared by the State Guidance and Counseling Committee were used to determine the weak points of the existing elementary guidance program, and to bring to light the need for other services. The evaluation study also proved to be a valuable in-service training device for the staff members who were selected later to serve in the experimental group.

Recent literature in the area of elementary guidance indicates that most authors agree that the following services are necessary for an effective elementary guidance program.

1. Pupil inventory service
2. Orientation service
3. Counseling service
4. Referral service
5. Follow-up and evaluation service
6. Research and in-service training

¹A Handbook for the Improvement of Guidance and Counseling in Oklahoma Schools Grades K-12, The Oklahoma Curriculum Improvement Commission, (Oklahoma City: Oklahoma State Department of Education, 1961), pp. 60-86.

Pupil Inventory Service

The collection, appraisal, filing and interpretation of information about each pupil is known as the Pupil-Inventory Service. Hatch and Costar state conclusively that this is the most important guidance service of the elementary guidance program. They support their conclusion with the following reasons:

First it provides teachers with a better opportunity to know and understand pupils at an age when remedial and therapeutic activities are usually most effective. Second it helps pupils develop a better understanding of themselves, their needs, interest, and abilities. A third contribution of this service is more apparent in the guidance program of the secondary school. Much of the effectiveness of the guidance program at the secondary level depends upon the cumulative data gathered during the elementary school years.¹

The foundation of the pupil-inventory service is the cumulative record. In the Lindsay Elementary School this record begins with the child's entry into the Kindergarten. It is the most important record in the school and all other guidance services are more or less dependent on it for information about each pupil. Some of the essentials² of the cumulative record are:

1. Photograph of the child cemented to the inside of the file folder.

¹Hatch and Costar, op. cit., p. 42.

²Edwin A. Gaddis, "A Cumulative Record System that Promotes Guidance, The National Elementary Principal, XXXIV (September, 1954), pp. 172-174.

2. Personal data. This includes name, sex, date of birth, residence, names and occupations of parents, etc.
3. School marks.
4. Test records.
5. School attendance.
6. Health record.
7. Hobbies and interest.
8. Teacher records. Sociogram, anecdotal records, reports on home visits and case studies.
9. Autobiographies.
10. Profile sheets from standardized tests.

In the experimental guidance group the cumulative record served a number of purposes. Its chief uses in this experiment are listed below:

1. It was used by the teachers at the beginning of the school year to enable them to plan a realistic program for all of their pupils.
2. Children's weaknesses were brought to light by a study of the record early in the school year so that remedial activities could be started immediately to correct pupil shortcomings.
3. The child with high potential ability was identified earlier and work was planned to prevent aimless drifting habits of poor study.
4. Cumulative data provided information for effective counseling of pupils.

5. Information in cumulative records was often the basis for parent conferences.

6. Cumulative records provided the teacher and the principal with information which enabled them to ascertain pupils' interests.

7. Cumulative data served as the core for development of case studies.

8. Pupils' academic records were reviewed with them to help plan their courses in junior high school.

9. Data regarding scholastic aptitude and achievement were used to discover under and over achievers.

10. The cumulative record enabled the teacher to get a long-range view of the individual pupil's growth.

Orientation Service

According to Froehlich, orientation is "a continuing service to all students each of whom is in need of assistance in making a wide variety of adjustments in a new school."¹

Willey refers to the process as "entrance into environmental change."²

In any event, the child moves into a new experience, which may hold fears and uncertainties for him; he leaves behind areas of experience with which he is familiar and in

¹ Clifford P. Froehlich, Guidance Services in Smaller Schools (New York: McGraw-Hill Book Company, Inc., 1950), p. 84.

² Roy D. Willey, Guidance in Elementary Education (New York: Harper and Brothers, 1952), p. 40.

which he is secure. Orientation is needed any time the child enters a new situation where adjustments and guidance are necessary. For the elementary school child, these points are when he first enters school and changes from the home environment to the school environment, when he changes from one grade level or group to another in the same school, when he changes from one school to another of the same kind, because of a change of residence for his parents, and when he changes from elementary school to junior high school.

Unless careful plans are made by all concerned, much of the value in a comprehensive guidance program may be lost at the transfer point. Three groups were involved in the orientation program of the Lindsay guidance experiment: school personnel, parents, and the pupils themselves.

Orientation of school personnel.--Staff members at both levels need understanding of the purposes and values in school programs in the elementary and secondary school. This understanding was achieved in the Lindsay schools through articulation meetings involving elementary grade personnel and teachers, counselors and administrators from the secondary school.

Orientation of parents.--Parents as a group are as much in need of information concerning each elementary grade level or the secondary school and its activities as elementary teachers and pupils. Because they are not in direct, daily contact with either school, they are perhaps more

subject to misinformation and occasional misgivings than either of the other groups. Orientation programs were therefore planned to involve parents as well as children and teachers. Planned programs included visitations, conferences, demonstrations, and publications.

The Parent-Teacher Association was very helpful in planning orientation activities for parents. "Back to School Night" was used at the beginning of the term to give parents a preview of their child's future program by going through briefly the class activities in which he would be assigned.

At the beginning of the year the teachers in the experimental guidance group made home visits. The visits were apparently effective especially where parents were dilatory in coming to school to talk with the teachers.

Orientation of pupils.--Lindsay, Oklahoma is located in an oil field area. Many of the jobs connected with the oil industry are temporary in nature and as a result there was a fairly rapid turnover in school population. The frequent enrollment of new pupils created a great need for orientation and guidance. The new child had the task of building new friendships, finding acceptance in new groups, and becoming familiar with an entirely new neighborhood, school building, classmates, and teachers.

Obviously, the classroom teacher was the key person in providing orientation for the lonely child. Feelings of warmth and friendliness must radiate from the teacher from

the very beginning to help the new child to adjust. The child must feel that he has found a friend in the teacher. Planning by the group under the leadership of the teacher before the new child arrived helped to create a desire in most of the children to want to help the new member of the room to become acquainted, to feel that he was wanted, and that there was a place for him in the group.

As soon as possible, the school carried orientation to the parents of the child new to the school. The parents were invited to the school to meet their child's teachers and other school personnel. They were given an opportunity to discuss with the teacher problems of adjustment for their child and what they could do cooperatively to ensure the child's rapid and successful adjustment to the new situation.

The teachers in the experimental group of grades four, five, and six discussed among themselves and with their pupils, the requirements and expectations of the next higher grades. Throughout the sixth year of school, the teachers took advantage of opportunities to answer questions from children and to give advice concerning the junior high school. Sixth graders were prepared for junior high school by attempting to have them understand and see the relationships of what they learned in the elementary school to what they would encounter in the junior high school. Talks to the sixth grade children by the elementary school principal on the opportunities open to them in the junior high school proved effective.

Teachers, counselors, principals, and students from the junior and senior high schools visited the sixth grade rooms in the experimental group to tell the pupils about junior high school and to arouse interest in the elementary child to become a part of the new school. Movies and color slides were also used to bring the work and opportunities of the junior high school to this group of children. Printed materials, including handbooks, brochures, and leaflets prepared by the junior and senior high schools were placed in the hands of the elementary school children. Leaflets were prepared on various programs of the junior high school including vocational education and home economics.

A final step in the elementary orientation program was the transmission of the sixth grade pupils' cumulative records to the junior high school. These records were transmitted at the time the elementary pupils enrolled in the seventh grade. Knapp makes the following suggestion on transmission of pupil data to the junior high school:

Orientation and adjustment of the elementary school child will be helped immeasurably if significant facts about the pupil, his problems, and his needed adjustments are transmitted to the junior high school.

One of the best ways to accomplish this is to transmit the pupil's cumulative record. If the record is complete and has been kept and recorded as it should have been, the guidance personnel of the junior high school should be able to determine pretty well the needs of the child.¹

¹Knapp, op. cit., p. 214.

Orientation, then, attempts to eliminate the emotional problems associated with transition and to smooth the child's educational journey as he moves through school.

Counseling Service

In the Lindsay Elementary School the classroom teacher was a key person in all services of the guidance program. This was especially true in the counseling service. On many occasions the teachers were forced into a teacher-counselor role. Wicas recognized this role in his rather specific definition: "Counseling is a relationship between two people who utilize this relationship to explore the feelings and emotions of one of these individuals, the client, in order that he gain an understanding of himself, and through achieving this, be enabled to work out answers to his own problems."¹

The amount of counseling service needed in the elementary school is probably less than that needed by students in the secondary school. The youngster while in the elementary school has fewer major choices to make, has problems which are often of a more superficial nature, and has closer relationship with one teacher from whom he tends to seek assistance. The writer is aware that classroom teachers are not professional counselors but in many instances during the experimental period, the Lindsay Elementary teachers served

¹Edward A. Wicas, "The Teacher as a Counselor," Journal of Education, CXXXIX, No. 4 (April, 1957), p. 13.

as front-line counselors. Because of their close relationship with the child, they were in a better position to handle some pupil problems than the trained counselor. Kowitz and Kowitz emphasize the role of the teacher-counselor in the following manner:

Every classroom teacher is in an excellent position to observe, help, and evaluate each child and his problems, whether they are of a personal, academic or some other nature. His observations of the child in the many areas of study give him background information and provide contact with the area of development as the problems emerge. As a result, the teacher's role has a number of advantages over that of the counselor who is called upon after a problem has reached disturbing proportions.¹

Since it was necessary that the classroom teachers assume the role of counselors, an in-service training program was set up to help staff members improve their counseling techniques, to become acquainted with what to look for, to learn what not to do and to know when to seek clinical help. Counseling rooms were provided in each building where teachers could go for short counseling periods with individual pupils.

The writer included pupil conferences or parent-teacher conferences as a form of counseling. Pupil conferences were generally brief in duration, whether scheduled or unscheduled. They may have been in the form of casual conversations, in or out of class; the short chat before or

¹Gerald T. Kowitz and Norma G. Kowitz, Guidance in the Elementary Classroom (New York: McGraw-Hill Book Company, Inc., 1959), p. 131.

after school; or the playground conversation. The deep seated pupil problems were referred to the school psychologist or to agencies outside the school.

Elementary schools have the special responsibility of doing developmental as well as remedial work in personal-social growth and adjustment. In order that all pupils might get the help they needed, group guidance was practiced by the classroom teachers. Group guidance was not intended to be substituted for individual guidance or counseling; the two are considered complementary. Some advantages of group guidance discussed by Wittker, a clinical psychologist, are indicated below.¹

1. Group guidance makes it possible to discuss personal problems effectively.
2. Group guidance contributes to self-understanding and to release of tension.
3. Group guidance is enhanced by the individual's desire for group acceptance.
4. Group guidance saves the teacher time.
5. Group guidance paves the way for individual counseling.

The cumulative record, a basic tool of guidance and counseling and the repository of the information that has been gathered about the individual child and his growth record is very important in ensuring effective counseling. All teachers in the Lindsay Elementary School kept their pupils' cumulative records in their rooms during the school

¹Ella-Mason Wittker, "Practices in Group Guidance," Good Guidance Practices in the Elementary School, Bulletin of the California State Department of Education, XXIV (August, 1955), pp. 29-31.

year. These records were filed in metal lock boxes to ensure confidential handling. Having easy access to a child's cumulative record enabled the teachers to gain some insight into each child's problem before the counseling period began.

Thus the aim of the counseling service in the Lindsay Elementary School was to help each boy and girl to make a satisfactory adjustment to his environment.

Referral Service

The Lindsay Elementary School, like most elementary schools, had its quota of children that were in need of specialized help. This help in most instances could not be given by the classroom teachers because their training in diagnosis and treatment of maladjustments was limited. In the organized guidance group, the teachers were made aware of all the special services and agencies, either within the school system or outside the school, that could help with special pupil problems. Referrals to specialized services within the school could be made by the teachers or the health nurse. All referrals to agencies outside the school were made by the principal.

The teacher was considered the general practitioner, with the other professional groups serving in the specialist function. As general practitioners, the teachers learned to recognize and to treat difficulties within their competencies, and to make the proper referral to the specialists when the problem fell outside the scope of their professional training.

The specialized personnel worked more with individual children, while the teacher, though concerned with the individual child, did most of his work with the group.

Strang has well described the teacher's relationships to the professional service people.

He is an important member of a multi-professional team. His work is a part of a pattern of principles and practices; it is re-inforced and supplemented by persons in many fields--pediatricians, other physicians, and nurses; psychiatrists; psychologists; social workers; group workers and sociologists; semanticists, speech correctionists, and remedial teachers; anthropologists; judges in juvenile courts; and leaders in the field of religion and parent education.¹

The specialized guidance personnel rendered services in the main to the exceptional child, including those children of low or high ability, class disturbers, those with cultural handicaps, or those with emotional disturbances--particularly when the disturbances involved the family and other factors outside the school.

The school counselor, school psychologist, special education teacher, and the public health nurse constituted the main specialized guidance personnel in the Lindsay Elementary School. The school psychologist, who was also the elementary principal, and the special education teacher served as psychometrists. The public health nurse, who served as the school nurse, was trained in social case work

¹Ruth Strang, "Many Sided Aspects of Mental Health," Mental Health in Modern Education, The Fifty-Fourth Yearbook of the National Society for the Study of Education, Part II, (Chicago: University of Chicago Press, 1955), p. 30.

techniques. She made home visits and acted as an intermediary for the school both in the education of the parent about the school and in supplying the school with information about the home. The nurse also paved the way for the counselor or teachers to visit in the home or allay parent fears about a visit to the school.

The local doctors, the local optometrist, the dentists and the ministers of the local churches gave valuable assistance and advice to the guidance personnel. In some instances professional services were donated to indigent children by this group when referrals were made to them by the school personnel.

The local organizations in Lindsay which assisted directly or indirectly in the referral service of the guidance program included the P. T. A., the Scout organizations, 4-H Club, Lions Club, Rotary Club, Mothers Clubs, the Community Chest and religious agencies.

All specialized school personnel, working as a team, had certain general functions in common which they were prepared to exercise and in which they assisted the school and the elementary teachers in guidance. These functions included:

1. The gathering and synthesizing of information about pupils needing help. Individual and group tests, pupil and parent interviews, consultation with teachers, and cumulative records provide sources for this information.

2. Study and interpretation of such information and providing help in working out solutions to problems dealing with individual child adjustment.

3. Awareness of referral agencies available in either the local community or through area agencies.

Some of the referral agencies used by parents in Lindsay included the following:

1. Community Guidance Center, Oklahoma City, Oklahoma.
2. County Health Department, Pauls Valley, Oklahoma.
3. Speech and Hearing Clinic, University of Oklahoma, Oklahoma City, Oklahoma.
4. State Department of Mental Health, Oklahoma City, Oklahoma.
5. State Department of Public Welfare, Oklahoma City, Oklahoma.
6. Childrens Convalescent Hospital, Inc., Bethany, Oklahoma.
7. Speech Clinic, Oklahoma College for Women, Chickasha, Oklahoma.

Follow-up and Evaluation Service

The follow-up service is concerned with problems, successes, failures and suggestions of the individuals after they are in a new situation. Since the vast majority of pupils of the elementary school go directly to the secondary school, this service has less significance for the elementary school. In the main the follow-up evaluation made of a pupil's stay in the Lindsay Elementary School was that done by individual classroom teachers keeping in touch informally with their former pupils. A follow-up of former elementary pupils who had enrolled in the secondary school proved to be

helpful to the elementary school staff in the improvement of the educational experiences of future pupils.

The school psychologist, who served as counselor, arranged for follow-up case conferences in which teachers who had previously worked with a child took an important part. Discussions in these conferences were informal and all important information pertaining to the child was compiled into one report which was filed in the elementary principal's office. When a child left the school district, an indication was made on the transfer materials that study data were available to the proper persons in the new school. The case conference served as a means for assisting a child on a continuing basis and provided means for in-service training for all guidance personnel.

In addition to the follow-up case conferences, a number of follow-up case studies were made of former elementary pupils. These studies had the following purposes:

1. To determine the adequacy of the preparation provided former pupils by the school, with a view to improving the educational experiences of present pupils.

2. To provide a basis for evaluating specific aspects of the school program such as the extent and quality of the curriculum offerings, the guidance services, and extra classroom activities.

3. To locate persons who have not made a satisfactory adjustment, and to help them to do so.

4. To inform the school of difficulties encountered by former pupils on the job, in other schools or in their personal lives.

5. To determine why dropouts left school.

6. To develop a better understanding of the school's objectives, strengths and weaknesses on the part of the pupils, teachers, administrators and patrons.

Evaluation and follow-up are so closely related that some authors discuss them together. The follow-up may be used as one facet of the evaluation plan. According to the literature, evaluation is the weakest phase of guidance due to the lack of valid criteria and adequate measuring instruments of pupil achievement in areas other than the academic area. There is need for much work and research in the evaluation of guidance services. Since this investigation was primarily concerned with the effect of an organized guidance program on academic achievement, the writer has attempted to show only how evaluation was employed in the guidance experiment of the Lindsay Elementary School. The principles, techniques, and general purposes of an organized plan of evaluation would embody materials for another research problem beyond the scope of this study.

Bernard, James and Zeran give the following definition and implications of evaluation:

Evaluation is a process that is used to ascertain to what extent values are being achieved. This statement implies that certain values have been defined and

accepted; next, an effort is made to attain the goals or objectives to which these values seem to be attached; then techniques are devised and used to ascertain whether goals and objectives have been reached and to what extent the accepted values have been realized.¹

This definition served as a guide to the evaluation committee in its attempt to evaluate the guidance services in terms of the aims and purposes presented in Chapter III of this study.

The committee under the direction of the elementary principal had in mind four main purposes in its plan of evaluation.

1. To provide a basis for program improvement.
2. To keep the community informed as to the success of various educational services.
3. To offer certain professional experience and growth to the faculty and to those responsible for the evaluation function.
4. To measure pupil academic achievement with standardized testing instruments.

One of the most popular means of evaluating guidance programs has been the use of check lists set up as evaluative criteria. One of the most recent attempts to put down in writing important criteria for evaluation of guidance in the elementary school are the criteria published by William

¹Harold W. Bernard, C. E. James, and Franklin R. Zeran, Guidance Services in the Elementary Schools (New York: Chartwell House, Inc., 1954), p. 323.

Coleman. His criteria are in terms of questions concerning methods, techniques and provisions for meeting the needs and differences of individual children. Because these criteria are quite lengthy, only the twelve main questions are listed below:

1. Are the teachers sensitive to the feelings of individual pupils?
2. Are the teachers able to accept each child as he is in the classroom and to appreciate the individual differences that exist among children?
3. Are the teachers familiar with the growth and developmental patterns of children?
4. Are the teachers familiar with, and do they utilize, the various methods of securing information on individual pupils?
5. Are the teachers accessible to individual pupils for counseling?
6. Is there an orientation program for beginning pupils?
7. Is there an effective two-way communication system between the home and the school?
8. Are all the teachers making use of appropriate community agencies to deal with some of the problems of pupils?
9. Are all the teachers making certain that every child in need of it is securing remedial help in school?
10. Is there a systematic plan for assisting pupils to make the transition from the elementary to the high school?
11. Have the necessary arrangements been made in your school to facilitate counseling individual pupils?
12. Does the in-service training program include time for the discussion and consideration of guidance services?¹

At the close of the thirty weeks experimental period the evaluation committee found Coleman's criteria helpful in the evaluation of the guidance services in the Lindsay

¹William Coleman, "Some Criteria for Evaluating Elementary-School Guidance Services," Elementary School Journal, LV (January, 1955), pp. 274-278.

Elementary School. These criteria seem to incorporate all of the general and specific objectives set up at the beginning of the program. On the basis of these criteria, the evaluation committee concluded that the objectives of the guidance program had been attained to a satisfactory degree.

Briefly, evaluation is a continuous process of assessing and planning improvements in the guidance program.

Research and In-service Training

Today, more than ever before, the role of research in modern education is being emphasized. The role of the classroom teacher and the guidance specialist is an important one in educational research, especially action research. Many of the every day problems of the classroom teacher can be approached through action research techniques.

The Lindsay teachers in the organized guidance group, recognizing the importance of research, formed small research teams. These teams desired to select research topics which were local problems and which would contribute to sound theory and practice in education. With guidance personnel acting as consultants, hypotheses were formulated which could be submitted to experimental testing.

The research groups worked on problems such as revision of pupil report cards, types of cumulative records, standardized tests, how to interview parents and how to detect potential dropouts. Other topics selected for

investigation were the effectiveness of teachers' workshops, and ways of improving the pre-school conference.

Several of the teachers in the experimental guidance group were enrolled in a guidance and curriculum development course offered by the University of Oklahoma. This class met once a week at the local school in Lindsay. An opportunity was created in this class for teachers to do research problems in their own classrooms. They were permitted to work individually or in groups. Some of the research projects were case studies of problem children in the classrooms of the participants. Other problem areas were underachievers and maladjusted children.

The University extension class was not only the pivot of research projects, it was also a valuable part of the in-service training program for teachers who were working in the experimental guidance group.

Gordon emphasizes the importance of action research to the teacher as a guidance worker. He states: "The third facet of the teacher's general role of guidance worker is action research."¹ He further states that the teacher can use the action research approach in evaluating his effectiveness as a guidance worker. The teacher faces three major action research problem areas: research in relation to his

¹ Ira J. Gordon, The Teacher as a Guidance Worker (New York: Harper and Brothers Publishers, 1956), p. 321.

effectiveness as a group worker, as a counselor, and as a parent educator.¹

In addition to research projects, other phases of the in-service training program included guidance workshops in the local school, experiences for staff members such as serving on special guidance committees, use of a professional library containing recent books and materials on elementary guidance, and visitations to other schools that had successful guidance programs under way.

Research and in-service training, like evaluation, should be a continuing process for teachers and guidance specialists.

¹Ibid., p. 328.

CHAPTER III

PROCEDURE

The method of research used in the development of this study was action research, experimental in design, and involving a pattern of two parallel equated groups. The population from which the two equated groups were selected consisted of 121 fourth graders, 153 fifth graders and 88 sixth graders, or a total population of 362 pupils in the experimental and control groups.

The two groups of teachers involved in the experiment had comparable training as indicated by the arithmetic averages and totals shown in Table 1 and Table 2. The greatest disparity was in the average number of years taught. The lower average number of years taught by the experimental group should not be reflected in pupil achievement since all teachers in this group have seven or more years of experience except one. To further offset the wide disparity in average teaching experience, the teachers in the experimental group have had college courses more recently in guidance than the teachers in the control group. The experimental group also has more college hours in guidance per teacher than the control group.

TABLE 1

EDUCATIONAL BACKGROUND OF THE TEACHERS IN THE EXPERIMENTAL GROUP

Name	Sex	Grade Taught	Highest Degree	Colleges Attended	College Hours		Majors	Years Taught	Teaching Certificates	Special Training (Hrs.)		
					Under-Grad.	Grad.				Guid-ance	Psychology Educ.	Gen. Ed.
Flossie Beckett	F	4	Ed. M.	NES, ECS, OU	127	32	Elem Ed.	19	Elem 1-8 life	4	2	2
Bertha Spears	F	4	BS	OCW	126	0	Home Ec. Elem Ed. (minor)	1	Elem 1-8 Prov.	2	3	0
Barbara Lackey	F	5	BS	Conners St. Agri., NES, OU (Ext.)	133	4	Elem Ed.	9	Elem 1-8 Stand.	2	3	3
Berniece Hutson	F	5	AB	SES N. Tex. Teach. OU (Workshop)	127½	2	English History Elem Ed.	23	Elem 1-8 life English History 7-12	0	4	4
Clarabelle Wagon	F	5	BS	CSC, OCW	145	0	Commerce Elem Ed.	7	Elem 1-8 Stand.	0	3	2
Marietta Castleberry	F	6	Ed. M.	SESC, OSU OU (Ext)	125	32	Elem Ed. English	31	Eng 7-12 life Elem 1-8 life	2	7	2
L. C. Castleberry	M	6	Ed. M.	SESC, OSU OU (Ext)	137½	32	Phy Ed. History Elem Ed.	31	Phy Ed. 7-12 life Elem 1-8 life	2	9	2
TOTALS	6 F 1 M	2 4th 3 5th 2 6th	3 M 4 B	2 Univ. 6 State 1 Jr. College	921	102	6 El. major 1 El. minor	129	4 Elem life 2 Elem Stand. 1 Elem Prov.	12	31	15
Average per Teacher					135.5	14.6		17.3		1.7	4.4	2.1

TABLE 2

EDUCATIONAL BACKGROUND OF THE TEACHERS IN THE CONTROL GROUP

Name	Sex	Grade Taught	Highest Degree	Colleges Attended	College Hours		Majors	Years Taught	Teaching Certificates	Special Training (Hrs.)		
					Under-Grad.	Grad.				Guid-ance	Psychology Educ.	Gen.
Velma Lou Barnhill	F	4	MS in Ed	Peabody, OCW, NWSC, CSC, OU (Ext), OSU, U of Colo.	137½	41	Home Ec. Elem Ed.	33	Elem 1-8 life Home Ec 7-12 life	4	11	3
Zelda Robberson	F	4	BS	CSC, OSU, ECSC	124	1	Elem Ed. Phy. Ed. Soc. Sci.	18	Elem 1-8 life	0	6	0
Ida Tinch	F	4	BS	CSC, OCW, OU (Ext), ECSC	150	3	Home Ec. Elem Ed.	36	Elem 1-8 life Home Ec 7-12 life	0	3	3
Edith Sanford	F	5	AB	ECSC, CSC	124½	0	History English Elem Ed.	31	English, Hist 7-12 Elem 1-8 life	0	6	4
Agnes Ensminger	F	5	BS	CSC, OCW, NWSC	141½	1	Home Ec. Elem Ed.	12	Elem 1-8 life Home Ec. 7-12 life	0	6	0
Sam Branch	M	6	Ed. M	U of Ark., OU, Peabody, U of Calif., Sul Ross, Tex.	153	44	Elem Ed.	47	Elem 1-8 Stand.	0	2	2 2/3
TOTALS	5 F 1 M	3 4th 2 5th 1 6th	2 M 4 B	5 University 7 State	830½	90	6 Elem	177	5 Elem life 1 Elem Stand.	4	34	12 2/3
Average per Teacher					138.4	15		29.5		.7	5.7	2.1

The control group consisted of three classrooms of fourth graders, two rooms of fifth graders and one room of sixth graders. The total for the group was 162. This group of pupils was taught by six teachers not working in an organized guidance program. These teachers had an average of 15 graduate hours, an average teaching experience of 29.5 years and all had majored in elementary education. Each teacher held either a life elementary certificate or a five year standard elementary certificate. They have been considered successful subject matter teachers. They had little or no training in guidance at any level and worked independently of the organized guidance program. This group of teachers, with the exception of two, did not participate in the in-service training program nor attend guidance workshops. Two teachers of the group enrolled in a guidance course offered by the University of Oklahoma Extension Division during the first semester of the experimental period. Only one teacher had any college training in guidance prior to the beginning of the experimental period. Insofar as possible, guidance activities or techniques were not recognized nor practiced in the teaching process of the control group.

The experimental group consisted of two fourth grade rooms, three fifth grade rooms and two sixth grade rooms. The total for this group was 200. The seven teachers who taught these pupils agreed to work in an organized guidance program. The average number of graduate hours for the group

was 14.6 and the average number of years of teaching experience was 17.3. All teachers in the group had elementary education majors and either elementary standard or life elementary certificates except one. This teacher had almost completed the requirements for both the elementary major and standard certificate. Five teachers in the experimental group had training in guidance, consisting of two to four college hours each, prior to the beginning of the guidance experiment. Three of the teachers in this group enrolled in the guidance course offered during the first semester by the University of Oklahoma.

The experimental period included a total of thirty weeks. It extended from the beginning of the third week of the school term to the close of the thirty second week of the term.

In-service Training

The teachers in the experimental group were also recognized as successful elementary teachers, but their academic training in guidance was limited. In an attempt to strengthen this group of teachers in the area of elementary guidance, a program of in-service training was set up during the summer preceding the beginning of the experiment and continued throughout the following school year. The following approaches were used in carrying out the program of in-service training:

1. Staff meetings where guidance practices were discussed by staff members who had prepared themselves in advance of the meeting or by outside resource people who were invited to participate.
2. Demonstrations by consultants within the school system--the school psychologist, special education teacher or the health nurse.
3. Laboratory experiences for staff members such as participating in case conferences or serving on special guidance committees.
4. Workshops devoted to special topics related to guidance.
5. Formal courses offered by college and universities during the winter term either by extension or on campus.
6. A professional library containing new and useful materials explaining guidance practices.

The professional library supplemented the reference material for the University of Oklahoma extension class in guidance which met in Lindsay. The guidance committee used the library materials in planning and setting up the guidance program for the experimental study. All materials in this library were made available one semester in advance of the beginning of the experimental period. The library also served as a source of information in the preparation of the writer's present study.

Statement of Guiding Principles

A guidance program is a program of planned services which facilitates efforts to study the child. At the elementary level the guidance process should be developmental,

preventive, and remedial in nature.¹ The successful operation of a guidance program requires a cooperative relationship among all school personnel. In order to promote this relationship, all personnel members in the elementary program must seek to understand each child and to focus their attention on stimulating his growth in all areas. Each member of a guidance team must embrace the concept that an elementary guidance program exists for one purpose--to promote the optimal adjustment of all pupils and thereby facilitate the teaching process.

In the development of this study the following underlying principles of elementary guidance, presented by Cottingham, were considered basic.²

Guidance, to be effective, should be of direct help to teachers in understanding and meeting the various needs of children.

The first step in the guidance process was to recognize the fundamental needs of childhood. Children have biological needs, such as the need for food, water, rest, and activity. They also have social or personality needs. Blair has listed the following:

¹John A. Barr, The Elementary Teacher and Guidance (New York: Holt, Rinehart, and Winston, Inc., 1958), p. 7.

²Harold F. Cottingham, Guidance in Elementary Schools--Principles and Practices (Bloomington, Illinois: McKnight and McKnight Publishing Company, 1956), pp. 8-10.

Need for status.--Every child wants recognition and attention. He craves the esteem of his teachers, parents, and peers.

Need for security.--Children desire regularity and stability in their lives. Too much uncertainty as to how they stand in their group or excessive anxiety as to whether they will pass or fail a course creates a very unwholesome condition for them.

Need for affection.--Everyone craves love. The good teacher is one who genuinely likes his pupils.

Need for independence.--Children want to take responsibility and to make choices which are commensurate with their abilities. The wise teacher will give children an opportunity to satisfy this need in many classroom activities which are arranged.¹

Fenton emphasizes three other basic needs of children.

The need for social adjustment.--Every child needs to be accepted as a member of a family group and as a worthy member of his peer group. To be well adjusted socially he must have a good attitude toward himself as well as others.

The need for feelings of competence.--In order to prevent feelings of inferiority, children need to learn to do many things well and even to excel in some activities. They need to develop skills in reading, oral expression, and

¹G. M. Blair, R. Stewart Jones, and Ray H. Simpson, Educational Psychology (New York: Macmillan, 1954), p. 44.

written expression. Lack of satisfactory progress in these skills may result in social and emotional maladjustments.

The need to accept conditions, the realities of his own life.--A child must accept his own personal assets such as his looks, his physique, and his strength. He must learn to accept situations that cannot be changed.¹

Guidance in elementary schools centers around the classroom teacher as the key person.

In a contrast to guidance services at other educational levels, guidance functions rest largely in the hands of the person most closely associated with the pupil, his elementary teacher. The teacher not only provides immediate adjustment services where feasible, but coordinates other efforts directed toward the needs of the pupil. In the development of the Lindsay elementary guidance program, the guidance specialists had a definite place in the program. They served, however, as resource persons for the teachers and assisted them in carrying out the principles and techniques of guidance.

At the elementary level guidance and good instruction are similar in many respects.

Guidance services and instructional activities are similar in that they have almost the same long-range goals.

¹ Norman Fenton, Mental Hygiene in School Practice (Stanford University, California: Stanford University Press, 1944), pp. 181-198.

Guidance presumably aids the pupil to become a more effective citizen in terms of personal orientation, social adjustment, and ability to make wise choices and plans. The instructional program also seeks to develop a more adequately prepared citizen with emphasis on the knowledge and skills necessary to be a functioning adult in the social, economic, and political world. Both types of pupil experiences were provided in the Lindsay Elementary School educational program.

Guidance must be based on complete and accurate pupil information, both objective and subjective.

For several years the school administration and teachers in the Lindsay Elementary School have been developing a cumulative record system containing both objective and subjective types of pupil facts. These individual records were made available to the teachers and other guidance workers during the experimental period. The cumulative record was the foundation of the pupil-inventory service which was discussed in Chapter I of the present study.

Guidance services are a cooperative enterprise, embracing instructional, administrative, supervisory, and community resources.

An attempt was made to develop a pattern of guidance activities adequate to meet the diverse needs of the children in the experimental population of the Lindsay Elementary School. An organized plan for the various guidance resources and activities has been presented in Chapter I, page 24 of

this study. This organizational chart shows how resources were interrelated in the process of carrying out the guidance experiment.

Purposes of Guidance in the Lindsay Elementary School

In order to help meet the basic needs of children in the experimental group of the Lindsay Elementary School, both specific and general aims and purposes were adopted by the guidance committee. These aims and purposes were adopted because they seemed to be applicable to this particular group of pupils and teachers. The following list of purposes is by no means inclusive.

General:

1. To increase academic achievement in all subject areas.
2. To assist in the adaptation of the school to the needs of pupils as well as an adjustment of the pupil to the life of the school.
3. To assist all pupils in personality development, social behavior and problems connected with learning.
4. To help in providing special services for exceptional children. (The mentally and physically handicapped, the emotionally disturbed, the gifted, etc.)
5. To improve classroom relationships and emotional climate through emphasis on democratic procedures.
6. To provide for guidance services that will help strengthen parent-teacher and teacher-pupil relationships.
7. To provide the teachers with pupil data and information that might better enable them to understand their pupils.

8. To recognize the classroom teacher as a keynote person in the guidance program and to enlist the help and support of all teachers in carrying out the principles and practices of the program.
9. To help provide for continuous in-service education of teachers focused upon understanding child behavior.
10. To utilize community resources which can make a contribution to the welfare of children.

Specific:

1. To establish a cumulative record system for all pupils.
2. To improve the appraisal of pupils by use of tests, questionnaire forms or teacher anecdotes.
3. To provide released time for teachers to offer individual pupil assistance.
4. To set up a library of social and educational information.
5. To help pupils conduct class discussion on better self-understanding.
6. To develop opportunities for children to be of assistance to each other in problem solving.
7. To develop a program of mental and physical health.
8. To provide an orientation program to assist sixth grade pupils in making the transition from grade school to junior high school.

Guidance Facilities

Both the experimental and control groups were housed in a modern building. All pupils and teachers were under the same administrative setup and had access to the same facilities such as the lunch room, auditorium, libraries, gymnasium and health room.

A special counseling and testing room was provided for the pupils in the experimental group. This room was located near the principal's office and was used by the school psychologist and special education teacher for individual counseling and testing. The classroom teachers also had access to the counseling room during their free periods for counseling or instruction of individual pupils. The all purpose room was available for guidance activities and P. T. A. meetings. Two special rooms were provided for 4-H Club, Girl Scouts and other youth organizations. The 4-H Club room was equipped with television and a movie projector where television shows and films pertaining to guidance were shown pupils in the experimental group. A professional library was set up adjacent to the elementary principal's office. This library contained recent books on child psychology and child development, guidance magazines and pamphlets, books on elementary curriculum, and most of the books in the field of elementary guidance that have been written since 1950.

For several years cumulative folders have been provided for all elementary pupils and recently kindergarten pupils have been included. During the school year, each teacher filed the cumulative folders of his pupils in a lock box which was placed in the classroom for his convenience.

Pupil Assignment to Classroom

The method of assigning pupils to their classrooms was the same for both the control and experimental groups.

The following procedure has been adopted for assigning pupils to their classrooms in the Lindsay Elementary School and was used with both groups as follows: At the close of the enrollment period, the pupils were assigned to their rooms from teacher ranking lists. These ranking lists were prepared by the teachers at the close of the term of the previous year. The boys and girls are separated on the lists and each pupil's rank or standing in the classroom was shown among the members of his own sex. This division was made to help equalize the number of boys and girls in each classroom. Each pupil's rank was determined by his annual grade average in all subject matter areas, his total battery percentile rank on the California Achievement Test and by his profile rating on the Scott Foresman standardized reading test. In the fourth grade there was one exception in the testing program. Since it is the school's policy to give mental maturity and achievement tests alternately by grades, achievement tests were not given to the fourth grade pupils. The achievement tests were given at the close of the school term and the reading tests were given toward the close of each semester.

After the completion of enrollment, the teachers in each grade group met with the elementary principal and assigned the pupils so that each teacher would have approximately the same number of pupils in each of the ranked groups. Pupils who enrolled after the close of the enrollment period were

assigned to the room in their respective grade levels having the smallest number of pupils.

The Subjects

The subjects used in this study were eighty four boys and girls selected from a total population of three hundred sixty two pupils enrolled in the fourth, fifth and sixth grades in Lindsay, Oklahoma, Public Elementary School. These subjects were selected on the basis of sex, chronological age, I. Q., and socio-economic class. Forty two subjects were selected from the experimental population of two hundred pupils in the fourth, fifth, and sixth grades. These subjects comprised the "experimental group" referred to in this study. Forty two subjects were selected from the control population of one hundred sixty two pupils also enrolled in grades four, five, and six. These subjects comprised the "control group" referred to in this study.

Four variables were controlled in the selection of the subjects. The variables of socio-economic class, chronological age, I. Q., and sex were equated between groups.

Socio-economic class was measured using the "Index of Status Characteristics" method of measuring social class, described by Warner et al.¹ Social class status was determined from information derived from four characteristics:

¹W. Lloyd Warner, Marchia Meeker, and Kenneth Eells, Social Class in America (Chicago: Science Research Associates, 1949), pp. 121-175.

(1) occupation of parents, (2) source of income of parents, (3) house type, (4) dwelling area. The four status characteristics were rated on a seven point scale which ranged from "1"--very high status value, to "7"--very low status value. The rating of the status characteristics was done by the writer. These rating scores were then combined into a single numerical index by assigning each one a weight and then securing a total score of the separate scores. For this study a total weighted score in the range of 23 to 51 resulted in the classification of middle social class.¹ Most of the subjects used in this experiment were in the lower-middle social class placement.

All of the subjects selected for the experiment fell within an I. Q. range of 90 to 115. I. Q. was measured using the California Short-Form Test of Mental Maturity.²

Chronological age, I. Q. and Index of Social Characteristics of the control and experimental groups fell within selected ranges from each grade level. The ranges of these three variables are given in Table 3.

In order to determine whether or not the two population samples were equated, it was necessary to compute the homogeneity of variance of the experimental and control

¹ Ibid., p. 183.

² Elizabeth Sullivan, Willis W. Clark, and Earnest W. Tiegs, Manual, California Short-Form Test of Mental Maturity (Los Angeles: California Test Bureau, 1957).

TABLE 3

RANGES FOR CHRONOLOGICAL AGE, INTELLIGENCE QUOTIENT,
AND INDEX OF SOCIAL CHARACTERISTICS OF SUBJECTS
IN THE EXPERIMENTAL AND CONTROL GROUPS

Group	I. Q.	C. A.	I. S. C.
Fourth Grade Experimental	93-115	109-118	24-49
Fourth Grade Control	90-115	109-117	24-49
Fifth Grade Experimental	93-115	121-131	30-48
Fifth Grade Control	95-115	119-131	32-51
Sixth Grade Experimental	94-115	131-143	39-51
Sixth Grade Control	94-115	131-142	31-51

samples in each school grade group. Totals of the scores derived from chronological age, I. Q., and Index of Social Characteristics were used in the calculations. Homogeneity of variance was computed by using the formula for this ratio reported by Garrett.¹ The groups were found to be homogeneous with one exception in the sixth grade. Calculation of the F ratio between the experimental and control groups, using the Index of Social Characteristics, resulted in an F of 4.54. This was significant when compared to the table value of 2.60 needed for significance at the .05 level of confidence.

¹Henry E. Garrett, Statistics in Psychology and Education (New York: Longmans, Green and Company, 1958), p. 452.

The \underline{t} test was used in making a comparison of the means of each variable in each of the three grades of the two sample populations.¹ The formula is:

$$\frac{t = M_{x_1} - M_{x_2}}{\sigma_D}$$

At the .05 level of confidence there were no significant differences in means except in the Index of Social Characteristics of the fifth and sixth grade groups. Calculation of the \underline{t} ratio for the means of this variable between the two sample groups resulted in a \underline{t} of 2.39 for the fifth grade and 2.21 for the sixth grade. These \underline{t} ratios were significant when compared to the table value of 2.16 needed for significance at the .05 level of confidence.

Tables 4, 5, and 6 present the data by grades, for both sexes, that was used in equating the two sample populations. The computed \underline{F} and \underline{t} test values used for comparing the means and variances in each grade group are also reported in these tables. The individual scores and totals for the variables of I. Q., chronological age and Index of Social Characteristics are presented in Tables 17, 18, 19, 20, 21, and 22 of Appendix A.

The sex variable was equated between the two sample groups by selecting an equal number of boys and girls for

¹Ibid., p. 231.

TABLE 4

MEAN I. Q., CHRONOLOGICAL AGE, AND I. S. C.
FOR FOURTH GRADE BOYS AND GIRLS

Group	I. Q.	C. A.	I. S. C.
<u>Control Group</u>			
Mean	101.64	112.71	39.57
s ²	59.53	6.68	65.80
s	7.71	2.58	8.11
<u>Experimental Group</u>			
Mean	103.57	114.43	41.43
s ²	48.73	9.41	64.57
s	6.98	3.08	8.03
<u>Tests of Hypotheses</u>			
F	1.22	1.42	1.02
t	.70	1.62	.61

TABLE 5

MEAN I. Q., CHRONOLOGICAL AGE, AND I. S. C.
FOR FIFTH GRADE BOYS AND GIRLS

Group	I. Q.	C. A.	I. S. C.
<u>Control Group</u>			
Mean	106.07	125.50	44.21
s ²	42.07	12.12	31.57
s	6.49	3.48	5.62
<u>Experimental Group</u>			
Mean	108.00	125.50	39.00
s ²	45.85	9.65	36.15
s	6.77	3.11	6.01
<u>Tests of Hypotheses</u>			
F	1.09	1.25	1.14
t	.78	0.00	2.39*

* Significant at the .05 level.

TABLE 6

MEAN I. Q., CHRONOLOGICAL AGE, AND I. S. C.
FOR SIXTH GRADE BOYS AND GIRLS

Group	I. Q.	C. A.	I. S. C.
<u>Control Group</u>			
Mean	109.50	136.28	40.36
s ²	35.35	13.91	48.55
s	5.94	3.73	6.97
<u>Experimental Group</u>			
Mean	106.43	135.86	44.93
s ²	41.34	18.29	10.69
s	6.43	4.28	3.27
<u>Tests of Hypotheses</u>			
F	1.17	1.31	4.54*
t	1.32	.28	2.21*

* Significant at the .05 level.

each group. Tables 7 and 8 show the division by sex in each grade and also the number of boys and girls who were selected from each teacher's classroom. Although the number of males or females selected from each classroom is not equal in every case, the totals from corresponding grade levels of each sample group are equal.

Thus on the basis of sex, I. Q., and chronological age there was no statistically significant difference between the experimental and the control groups. For the Index of Social Characteristics, the difference in means was significant beyond the .05 level of confidence in the fifth and sixth grades. Also in the sixth grade the F ratio indicated that the variances for the Index of Social Characteristics were not homogeneous in the two sample groups of this grade. Since there is a fairly high degree of subjectivity in the process of determining the Index of Social Characteristics, it is apparent that this variable would not be as important in equating the experimental and control groups as the other three variables.

To determine whether or not the two population samples were equated on the basis of the pretest data, F ratios and t ratios were computed from the means of the raw scores obtained from the Sequential Tests of Educational Progress, Form 4A. These tests were administered during the week preceding the beginning of the experimental period. The raw score data was reported in Tables 23 through 28 in Appendix B.

TABLE 7

DIVISION BY SEX OF SUBJECTS IN EACH
GRADE FOR EXPERIMENTAL GROUP*

Teacher	Grade	Number of Subjects	
		Boys	Girls
Beckett	4	3	3
Spears	4	4	4
Hutson	5	2	1
Lackey	5	2	4
Wagnon	5	3	2
Castleberry, L.	6	3	3
Castleberry, N.	6	4	4
TOTAL		21	21

* Subjects were selected on the basis of sex, I. Q., Chronological Age, and Index of Social Characteristics.

TABLE 8

DIVISION BY SEX OF SUBJECTS IN EACH
GRADE FOR CONTROL GROUP*

Teacher	Grade	Number of Subjects	
		Boys	Girls
Barnhill	4	3	3
Robberson	4	2	2
Tinch	4	2	2
Ensminger	5	3	3
Sanford	5	4	4
Branch	6	7	7
TOTAL		21	21

* Subjects were selected on the basis of sex, I. Q., Chronological Age, and Index of Social Characteristics.

Tables 9, 10, and 11 present the pretest data by grades for both the experimental and control groups that was used in equating the two sample populations.

The computed F and t test ratios in Tables 9 and 10 were not significant at the required .05 level of confidence. Therefore there was no statistically significant difference in the fourth and fifth grade sample groups in reading, writing, mathematics and science.

In Table 11, the computed F ratio was 2.65 in reading. This was significant when compared to the table value of 2.60 needed for significance at the .05 level of confidence. All other F and t test scores were insignificant in the sixth grade sample groups.

Thus with one exception, the F and t test scores indicate that the experimental and control groups are matched on the basis of the scores obtained from the Sequential Tests of Educational Progress.

Instruments of Measure

The intelligence of the children included in this study was measured by the California Short-Form Test of Mental Maturity, Elementary 1957-S Form.¹ This test is a part of a larger parent test called the California Test of Mental Maturity. The short form seemed more appropriate than the

¹Sullivan, Clark, and Tiegs, op. cit., p. 2.

TABLE 9

COMPARISON OF PRETEST SCORE DATA OF FOURTH GRADE
EXPERIMENTAL AND CONTROL GROUPS
STEP, LEVEL 4, FORM 4A

Group	Reading	Writing	Mathe- matics	Science
<u>Control Group</u>				
Mean	34.07	22.50	18.29	30.64
s ²	111.76	51.54	23.31	61.94
s	10.57	7.18	4.83	7.87
<u>Experimental Group</u>				
Mean	35.36	22.14	17.78	27.78
s ²	183.17	43.36	41.10	84.49
s	13.53	6.58	6.41	9.19
<u>Tests of Hypotheses</u>				
F	1.64	1.19	1.76	1.36
t	.28	.14	.11	.89

TABLE 10

COMPARISON OF PRETEST SCORE DATA OF FIFTH GRADE
EXPERIMENTAL AND CONTROL GROUPS
STEP, LEVEL 4, FORM 4A

Group	Reading	Writing	Mathe- matics	Science
<u>Control Group</u>				
Mean	49.28	33.86	25.21	37.21
s ²	79.76	105.20	66.03	65.57
s	8.93	10.26	8.12	8.10
<u>Experimental Group</u>				
Mean	42.71	31.43	22.36	38.43
s ²	131.15	105.15	44.38	57.46
s	11.45	10.25	6.66	7.58
<u>Tests of Hypotheses</u>				
F	1.64	1.00	1.49	1.14
t	1.70	.63	1.02	.41

TABLE 11

COMPARISON OF PRETEST SCORE DATA OF SIXTH GRADE
EXPERIMENTAL AND CONTROL GROUPS
STEP, LEVEL 4, FORM 4A

Group	Reading	Writing	Mathe- matics	Science
<u>Control Group</u>				
Mean	52.57	37.21	31.43	43.93
s ²	37.62	52.62	55.15	48.54
s	6.13	7.25	7.43	6.97
<u>Experimental Group</u>				
Mean	49.78	37.00	31.07	43.00
s ²	99.72	75.08	90.07	93.23
s	9.98	8.66	9.49	9.65
<u>Tests of Hypotheses</u>				
F	2.65*	1.43	1.63	1.92
t	.89	.07	.11	.29

* Significant at the .05 level.

long form for testing elementary pupils, since the total testing time was only forty seven minutes.

This test was selected as an instrument of measure because of its high correlation with the Revised Stanford-Binet scales and the Weschsler Intelligence Scale for children. It samples mental processes in four areas: spatical relationship, logical reasoning, numerical reasoning, and verbal concepts. The fact that the California Short Form Test of Mental Maturity yields both Language and Non-Language I. Q.'s helps to eliminate discrimination against pupils with bilingual backgrounds or with differing cultural backgrounds.

The Sequential Tests of Educational Progress (STEP) Form 4A, Level 4, Grades 4-6 were used as a pretest for measuring achievement and were administered to all pupils in the control and experimental populations during the second week of school. The STEP tests measure critical skills in application of learning in seven major fields of school and college instruction. They measure these skills in a continuous way from the fourth grade of elementary school through the sophomore year of college. Only the subject matter areas of mathematics, science, reading and writing were used in measuring achievement of the pupils in this experiment. Each test covering these subject areas is seventy minutes in length (divided into two thirty-five-minute units). There is an individual test booklet for each subject area which is divided into two parts. The raw scores are changed to

converted scores and percentile bands. The converted scores facilitate the statistical processing of the data.¹

During the week following the close of the thirty weeks experimental period, another form of the Sequential Tests of Education Progress was administered to all pupils in the fourth, fifth, and sixth grades. This was Form 4B, Level 4, for grades four to six. This test constituted the posttest of the experiment.

Administration of the Tests

The California Short-Form Test of Mental Maturity and the Sequential Tests of Educational Progress, Form A, were administered during the second week of school to all pupils in grades four, five, and six. The first week of the term was used to complete enrollments and to allow time for the pupils to adjust to their new teachers and classrooms.

The mental maturity tests were administered to all pupils, one grade group at a time, by a teacher who was well trained in group testing. Approximately eighty pupils were in each test group. The classroom teachers assisted in the testing by serving as proctors. The grade school activity room which was equipped with tables and chairs was used as a testing room.

¹Manual, Sequential Tests of Educational Progress
(Los Angeles: Cooperative Test Division, Educational Testing Service, 1958), p. 7.

The STEP achievement tests were administered by each teacher in her own classroom. The classrooms involved during each test period were located on the same hall. Through an in-service training program each teacher was trained in the procedure of administering the tests in advance of the testing dates. The same plan was followed in administering the pretest and posttest.

The tests were administered under the supervision of the elementary principal who is a qualified school psychologist. All of these tests were machine scored and interpreted by the Evaluation and Testing Department, Extension Division of the University of Oklahoma.

The Hawthorne Effect

The writer is aware of the possible influence that the "Hawthorne effect" might have had on the results of this study. Cook gives the following definition for this psychological phenomenon.

The Hawthorne effect is a phenomenon characterized by an awareness on the part of the subjects of special treatment created by artificial experimental conditions. This awareness become confounded with the independent variable under study, with a subsequent facilitating effect on the dependent variable, thus leading to ambiguous results.¹

The Hawthorne effect has plagued research workers for a number of years. Brownell noted it approximately ten years

¹Desmond L. Cook, "The Hawthorne Effect," Phi Delta Kappan, XLIV (December, 1962), p. 118.

ago in a critique of research appearing in the Fiftieth Yearbook of the National Society for the Study of Education:

More than once, serious doubt has been cast on the evidence for an experimental program of instruction when attention has been called to seemingly innocuous but actually influential factors. For example the very novelty of a new system of instruction may make it attractive to teachers and learners alike, thus giving it a special advantage, and perhaps only a temporary advantage over the rival, traditional system of instruction.¹

The Hawthorne effect can also be used to account for situations where no differences are observed between the experimental and control groups at the end of an experimental period. Cook states several reasons why this might occur.

It might occur when an experimenter approaches a classroom to measure student performance before conducting the experiment. The pretesting of not only the experimental but the control group can become a signal to the latter group that they are subjects of an experiment. They might also be able to identify the experimenter's purpose, consequently leading to such improvements that the final result is that both groups perform² equally well at the end of the experimental period.²

How can the Hawthorne effect be controlled in educational research? Campbell and Stanley³ suggest that an

¹W. A. Brownell, "A Critique of Research on Learning and Instruction in the School," Fiftieth Yearbook of the National Society for Study of Education, Part 1, Graduate Study in Education, H. B. Henry, editor (Chicago: University of Chicago Press, 1951), p. 60.

²Cook, op. cit., p. 119.

³D. T. Campbell and J. C. Stanley, "Experimental Designs for Research on Teaching," Mimeographed chapter draft for Handbook of Research on Teaching, N. L. Gage, editor, American Educational Research Association, quoting Phi Delta Kappan, XLIV (December, 1962), p. 121.

attempt should be made to disguise the fact that an experiment is being conducted. They further recommend to avoid the singling out of individuals to be assigned at random to treatment or control groups and that regular classroom units with their regular teachers be employed as a means of minimizing individual reactions to experimental situations.

In opposition to the suggestions made by Campbell and Stanley, the National Research Council¹ suggests that researchers should not try to hide the fact that an experiment is in progress, but try instead to give equal exposure to both the experimental and control groups, thus establishing a type of experimental control over the Hawthorne effect.

In conducting the guidance experiment in the Lindsay Elementary School, an attempt was made to control the Hawthorne effect by using some of the suggestions made by the National Research Council. There was no attempt to disguise the fact that an experiment was in progress, but no individual pupils or groups of pupils were singled out. Every precaution was taken to prevent revealing the names of the pupils in the experimental and control groups to the teachers, parents or pupils during the experimental period. Insofar as possible equal attention was paid to pupils and teachers working in both groups of the experiment, but competition

¹Psychological Research in Education (Washington, D. C.: National Research Council, Publication 643, National Academy of Sciences, 1958), p. 24.

was reduced to a minimum. Much emphasis was placed on the fact that both sample groups were of equal importance to the experiment.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

The data for this experiment were obtained from specified achievement tests administered to the two equated groups of forty two fourth, fifth, and sixth grade pupils. These two groups comprised the experimental and control groups of the thirty weeks experiment in guidance. During the experimental period each group received different treatment. The data used to compare the mean achievement gain of the two groups are presented in the five tables of this chapter.

The purpose of the investigation was to determine if there was a statistically significant difference in mean achievement gain between the two equated groups in the subjects of reading mathematics, science, and writing. The instrument used to measure achievement in these four subject areas was the Sequential Test of Educational Progress. Form 4A of this test was used as the pretest and Form 4B was used as the posttest. Achievement gain for each pupil was determined by subtracting the pretest score from the posttest score. The total achievement gain for each sample group was obtained by the summation of the differences of the posttest

and pretest scores. In this study the required level of statistical significance was set at .05.¹

The statistical technique chosen for treatment of the data was the t-ratio for testing the statistical significance of difference between means of matched groups. A difference was considered significant when the calculated t was equal to or exceeded the .05 level of significance. The formula for the t-ratio follows:

$$t = \frac{M_{x_1} - M_{x_2}}{\sigma_D}$$

In this formula M_{x_1} equals the average gain difference of the posttest and pretest scores of the experimental group. M_{x_2} equals the average gain difference of the posttest and pretest scores of the control group. σ_D equals the standard error of difference of the experimental and control groups.²

The t-ratio was computed by dividing the average gain difference of the experimental and control groups by the standard error of difference of the two groups. The formula

¹Wilfrid J. Dixon and Frank J. Massey, Jr., Introduction to Statistical Analysis (New York: McGraw-Hill Book Company, Inc., 1957), p. 91.

²Henry E. Garrett, Statistics in Psychology and Education (New York: Longmans, Green and Company, 1958), p. 231.

for the standard error of difference was introduced by Guilford.¹ The formula is:

$$SE_d = \sqrt{(S_{d_1}^2 + S_{d_2}^2) (1 - r)}$$

This formula is applicable to matched groups involving correlated data.

Since Forma 4A and 4B of the Sequential Tests of Educational Progress were used as the pretest and posttest, the raw scores obtained from the two test forms could not be handled statistically. Therefore, it was necessary to use a converted score so that the two forms would be comparable. These converted scores were obtained from conversion tables published in the test manuals by the publishers of the tests. The converted scores for each form of the test and the gain differences are reported in Appendix C, Tables 29 through 34.

The results in testing the first hypothesis are given in Table 12. The achievement gains of the fourth grade pupils in the experimental and control groups were compared in each of the four subject areas and in the total achievement gains for all subjects. Using the previously set criterion of significance of .05, the computed t values in mathematics, reading and writing were not significant. In

¹J. P. Guilford, Fundamental Statistics in Psychology and Education (New York: McGraw-Hill Book Company, Inc., 1956), p. 199.

TABLE 12

COMPARISONS OF MEAN GAIN DIFFERENCES IN POSTTEST AND PRETEST ACHIEVEMENT
SCORES FOR FOURTH GRADE EXPERIMENTAL AND CONTROL GROUPS

Subject	Group	N	Total Gain	Average Gain	Variance	Standard Error of Difference	Average Gain Difference	t-ratio																																																				
MATH	Experimental	14	180	12.857	41.538	3.0536	3.500	.872																																																				
	Control	14	131	9.357	43.230				SCIENCE	Experimental	14	264	18.857	108.000	3.314	12.786	3.858*	Control	14	85	6.071	14.076	READING	Experimental	14	177	12.642	119.230	3.280	-2.786	-.849	Control	14	216	15.428	96.000	WRITING	Experimental	14	219	15.642	64.923	3.880	1.357	.349	Control	14	200	14.285	72.000	ALL SUBJECTS TOTAL ACHIEVEMENT	Experimental	14	840	60.000	90.230	4.023	14.858	3.693*	Control
SCIENCE	Experimental	14	264	18.857	108.000	3.314	12.786	3.858*																																																				
	Control	14	85	6.071	14.076				READING	Experimental	14	177	12.642	119.230	3.280	-2.786	-.849	Control	14	216	15.428	96.000	WRITING	Experimental	14	219	15.642	64.923	3.880	1.357	.349	Control	14	200	14.285	72.000	ALL SUBJECTS TOTAL ACHIEVEMENT	Experimental	14	840	60.000	90.230	4.023	14.858	3.693*	Control	14	632	45.142	71.673										
READING	Experimental	14	177	12.642	119.230	3.280	-2.786	-.849																																																				
	Control	14	216	15.428	96.000				WRITING	Experimental	14	219	15.642	64.923	3.880	1.357	.349	Control	14	200	14.285	72.000	ALL SUBJECTS TOTAL ACHIEVEMENT	Experimental	14	840	60.000	90.230	4.023	14.858	3.693*	Control	14	632	45.142	71.673																								
WRITING	Experimental	14	219	15.642	64.923	3.880	1.357	.349																																																				
	Control	14	200	14.285	72.000				ALL SUBJECTS TOTAL ACHIEVEMENT	Experimental	14	840	60.000	90.230	4.023	14.858	3.693*	Control	14	632	45.142	71.673																																						
ALL SUBJECTS TOTAL ACHIEVEMENT	Experimental	14	840	60.000	90.230	4.023	14.858	3.693*																																																				
	Control	14	632	45.142	71.673																																																							

* Significant at the .05 level.

science the computed t value exceeded the table value of 2.16 and was therefore significant. The total average gain difference in all subjects was significantly in favor of the experimental group because of the high t value in science. The first null hypothesis was therefore rejected. There was a statistically significant difference in mean achievement gain between the fourth grade experimental and control groups.

Table 13 reports the results in testing the second hypothesis which compared mean achievement gain of the two sample groups in the fifth grade. By school subjects the average gain difference favored the control group but none of these differences were statistically significant when tested by the t ratio. However the total average gain difference for all four of the subjects did reach the required .05 level of significance. The second hypothesis was rejected but in favor of the control group. There was a statistically significant difference in mean achievement gain between the experimental and control groups of the fifth grade.

The results in testing the third hypothesis which compared the mean gain achievement in the sample groups of the sixth grade are presented in Table 14. None of the computed t -test values in the individual subject areas nor in the total average gain difference of all subjects reached statistical significance. Hypothesis three was sustained. There was no statistically significant difference in mean achievement gain between the sixth grade sample groups.

TABLE 13

COMPARISONS OF MEAN GAIN DIFFERENCES IN POSTTEST AND PRETEST ACHIEVEMENT
SCORES FOR FIFTH GRADE EXPERIMENTAL AND CONTROL GROUPS

Subject	Group	N	Total Gain	Average Gain	Variance	Standard Error or Differ- ence	Average Gain Differ- ence	t-ratio																																																				
MATH	Experimental	14	116	8.285	43.923	2.834	-2.572	-.909																																																				
	Control	14	152	10.857	29.076				SCIENCE	Experimental	14	83	5.928	15.923	2.749	-3.500	-1.273	Control	14	132	9.428	68.076	READING	Experimental	14	208	14.857	84.615	2.812	-1.571	-.558	Control	14	230	16.428	73.538	WRITING	Experimental	14	128	9.142	69.076	3.704	-2.643	-.713	Control	14	165	11.785	55.692	ALL SUBJECTS TOTAL ACHIEVEMENT	Experimental	14	535	38.211	64.961	3.591	-10.286	-2.864*	Control
SCIENCE	Experimental	14	83	5.928	15.923	2.749	-3.500	-1.273																																																				
	Control	14	132	9.428	68.076				READING	Experimental	14	208	14.857	84.615	2.812	-1.571	-.558	Control	14	230	16.428	73.538	WRITING	Experimental	14	128	9.142	69.076	3.704	-2.643	-.713	Control	14	165	11.785	55.692	ALL SUBJECTS TOTAL ACHIEVEMENT	Experimental	14	535	38.211	64.961	3.591	-10.286	-2.864*	Control	14	697	48.500	64.000										
READING	Experimental	14	208	14.857	84.615	2.812	-1.571	-.558																																																				
	Control	14	230	16.428	73.538				WRITING	Experimental	14	128	9.142	69.076	3.704	-2.643	-.713	Control	14	165	11.785	55.692	ALL SUBJECTS TOTAL ACHIEVEMENT	Experimental	14	535	38.211	64.961	3.591	-10.286	-2.864*	Control	14	697	48.500	64.000																								
WRITING	Experimental	14	128	9.142	69.076	3.704	-2.643	-.713																																																				
	Control	14	165	11.785	55.692				ALL SUBJECTS TOTAL ACHIEVEMENT	Experimental	14	535	38.211	64.961	3.591	-10.286	-2.864*	Control	14	697	48.500	64.000																																						
ALL SUBJECTS TOTAL ACHIEVEMENT	Experimental	14	535	38.211	64.961	3.591	-10.286	-2.864*																																																				
	Control	14	697	48.500	64.000																																																							

* Significant at the .05 level.

TABLE 14

COMPARISONS OF MEAN GAIN DIFFERENCES IN POSTTEST AND PRETEST ACHIEVEMENT
SCORES FOR SIXTH GRADE EXPERIMENTAL AND CONTROL GROUPS

Subject	Group	N	Total Gain	Average Gain	Variance	Standard Error of Difference	Average Gain Difference	t-ratio																																																				
MATH	Experimental	14	69	4.928	71.000	3.338	.714	.213																																																				
	Control	14	59	4.214	30.307				SCIENCE	Experimental	14	66	4.714	54.230	2.813	2.928	1.040	Control	14	25	1.786	33.692	READING	Experimental	14	189	13.500	212.153	3.758	3.571	.950	Control	14	139	9.929	70.384	WRITING	Experimental	14	76	5.428	60.538	3.871	.214	.055	Control	14	73	5.214	75.692	ALL SUBJECTS TOTAL ACHIEVEMENT	Experimental	14	400	28.571	114.057	4.195	7.428	1.770	Control
SCIENCE	Experimental	14	66	4.714	54.230	2.813	2.928	1.040																																																				
	Control	14	25	1.786	33.692				READING	Experimental	14	189	13.500	212.153	3.758	3.571	.950	Control	14	139	9.929	70.384	WRITING	Experimental	14	76	5.428	60.538	3.871	.214	.055	Control	14	73	5.214	75.692	ALL SUBJECTS TOTAL ACHIEVEMENT	Experimental	14	400	28.571	114.057	4.195	7.428	1.770	Control	14	296	21.143	61.942										
READING	Experimental	14	189	13.500	212.153	3.758	3.571	.950																																																				
	Control	14	139	9.929	70.384				WRITING	Experimental	14	76	5.428	60.538	3.871	.214	.055	Control	14	73	5.214	75.692	ALL SUBJECTS TOTAL ACHIEVEMENT	Experimental	14	400	28.571	114.057	4.195	7.428	1.770	Control	14	296	21.143	61.942																								
WRITING	Experimental	14	76	5.428	60.538	3.871	.214	.055																																																				
	Control	14	73	5.214	75.692				ALL SUBJECTS TOTAL ACHIEVEMENT	Experimental	14	400	28.571	114.057	4.195	7.428	1.770	Control	14	296	21.143	61.942																																						
ALL SUBJECTS TOTAL ACHIEVEMENT	Experimental	14	400	28.571	114.057	4.195	7.428	1.770																																																				
	Control	14	296	21.143	61.942																																																							

Table 15 presents the results in testing hypothesis four and five which compared the mean achievement gain of the pupils of the same sex in the two sample groups. The differences of the posttest and pretest scores for each pupil in all subjects were reported in Appendix D, Tables 35 through 38.

The fourth null hypothesis tested was that there is no statistically significant difference in mean achievement gain between the boys of the experimental and control groups. In applying the t -test to the total average gain difference, the calculated t value of .565 was less than the table value of t which was 2.09. Therefore the fourth hypothesis was sustained. There was no significant difference in mean achievement gain between the boys of the control and experimental groups.

The fifth null hypothesis tested was that there is no statistically significant difference in mean achievement gain between the girls of the experimental and control groups. This hypothesis was sustained also since the computed t value of the total average gain difference in all subjects was less than the required table value of 2.09. There was no significant difference in mean achievement gain between the girls of the control and experimental groups.

The data for hypotheses six to ten inclusive are given in Table 16. Each of these hypotheses compared the total achievement gain of the experimental and control groups

TABLE 15

COMPARISONS OF MEAN GAIN DIFFERENCES IN TOTAL ACHIEVEMENT TEST SCORES
OF PUPILS OF THE SAME SEX IN THE CONTROL AND EXPERIMENTAL GROUPS

Sex	Group	N	Total Gain All Subjects	Average Gain	Variance	Standard Error of Differ- ence	Average Gain Differ- ence	t-ratio
BOYS	Experimental	21	927	44.143	743.73	10.942	6.192	.565*
	Control	21	797	37.951	664.94			
GIRLS	Experimental	21	848	40.381	470.14	7.813	1.810	.231*
	Control	21	810	38.571	247.95			

* Table Value: 2.09 at .05 level of significance.

TABLE 16

COMPARISONS OF MEAN GAIN DIFFERENCES IN TOTAL ACHIEVEMENT TEST SCORES FOR GRADES FOUR, FIVE, AND SIX IN EXPERIMENTAL AND CONTROL GROUPS

Subject	Group	N	Total Gain	Average Gain	Variance	Standard Error of Difference	Average Gain Difference	t-ratio																																																				
MATH	Experimental	42	365	8.690	60.415	3.181	.548	.172*																																																				
	Control	42	342	8.142	40.805				SCIENCE	Experimental	42	413	9.833	98.439	3.810	4.071	1.068*	Control	42	242	5.762	46.780	READING	Experimental	42	574	13.667	132.707	4.659	-.262	-.056*	Control	42	585	13.929	84.415	WRITING	Experimental	42	423	10.071	79.927	3.992	-.358	-.089*	Control	42	438	10.429	79.512	ALL SUBJECTS	Experimental	42	1775	42.262	595.756	9.407	4.000	.425*	Control
SCIENCE	Experimental	42	413	9.833	98.439	3.810	4.071	1.068*																																																				
	Control	42	242	5.762	46.780				READING	Experimental	42	574	13.667	132.707	4.659	-.262	-.056*	Control	42	585	13.929	84.415	WRITING	Experimental	42	423	10.071	79.927	3.992	-.358	-.089*	Control	42	438	10.429	79.512	ALL SUBJECTS	Experimental	42	1775	42.262	595.756	9.407	4.000	.425*	Control	42	1607	38.262	445.415										
READING	Experimental	42	574	13.667	132.707	4.659	-.262	-.056*																																																				
	Control	42	585	13.929	84.415				WRITING	Experimental	42	423	10.071	79.927	3.992	-.358	-.089*	Control	42	438	10.429	79.512	ALL SUBJECTS	Experimental	42	1775	42.262	595.756	9.407	4.000	.425*	Control	42	1607	38.262	445.415																								
WRITING	Experimental	42	423	10.071	79.927	3.992	-.358	-.089*																																																				
	Control	42	438	10.429	79.512				ALL SUBJECTS	Experimental	42	1775	42.262	595.756	9.407	4.000	.425*	Control	42	1607	38.262	445.415																																						
ALL SUBJECTS	Experimental	42	1775	42.262	595.756	9.407	4.000	.425*																																																				
	Control	42	1607	38.262	445.415																																																							

* Table Value: 2.02 at .05 level of significance.

in one particular subject area. The table value for the t ratio was 2.02 at the .05 level of significance.

The results in testing the sixth hypothesis which compared the total achievement gain of the two sample groups in mathematics produced a t value of .172. This t value was not significant when compared to the table value of 2.02. Since the computed t did not reach the required table value, the sixth hypothesis was sustained. There was no statistically significant difference in mean achievement gain between the experimental and control groups in mathematics.

The seventh hypothesis tested was that there is no statistically significant difference in the total achievement gain in science between the experimental and control groups. The t test for this hypothesis yielded a value of 1.068 which was less than the table value of 2.02. The average gain difference in science was therefore not significant and the seventh hypothesis was sustained. There was no statistically significant difference between the experimental and control groups in science.

In testing the eighth hypothesis the data in Table 16 yielded a t value of -.056. Using the previously set criterion of significance of .05, the t value was smaller than the .05 value; therefore, the null hypothesis was sustained. There is no statistically significant difference in mean achievement gain between the experimental and control groups in reading.

A t value of $-.089$ was obtained in testing the ninth hypothesis. This t value did not meet the required $.05$ level of significance and the ninth null hypothesis was sustained. There was no statistically significant difference in the mean achievement gain between the experimental and control groups in writing.

The results in testing the tenth hypothesis which compared the total achievement gain of the experimental and control groups in mathematics, science, reading and writing yielded a t value of $.425$. Since this value for t did not reach the required level of significance, hypothesis ten was sustained. There was no statistically significant difference in the total mean achievement gain between the experimental and control groups in all four subjects.

Summary of Results

In testing the ten null hypotheses, a total of twenty two comparisons were made between the groups and subgroups of the experimental and control samples. A statistically significant difference in mean achievement gain was found between the fourth grade experimental and control groups in science. A statistically significant difference was also found in total mean achievement gain for all subjects in the fourth grade. In both comparisons the differences were in favor of the experimental groups. Further analysis showed that a statistically significant difference was found in the

total achievement gain in all four subjects of the fifth grade. The difference in this comparison was in favor of the control group.

Other comparisons of the various sample groups yielded no significant differences. Therefore, eight of the ten null hypotheses were sustained.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Organized guidance programs in the elementary schools are relatively new. The child guidance movement, however, has an historical background that covers a long period of time. Contributions to the development of this movement can be credited to a number of the well known educators of the last three centuries. Pestalozzi, Froebel, G. Stanley Hall, John Dewey, and Alfred Binet are a few of the prominent educators who devoted much time to the study and understanding of children. In spite of the interest shown in child guidance by the well known educators of the past and the increasing emphasis placed on guidance programs in recent years, many public schools have no organized plan for guidance at the elementary level.

A review of the experimental literature revealed that only a few studies have been made to determine the effect of an organized guidance program on the achievement of pupils at either the elementary or secondary level. These experiments have been carried out during the last twenty-five years.

In 1941 Rothney and Roens concluded a five year experimental study which involved 129 matched pairs of eighth grade students. Nine variables were controlled in selecting the subjects. In the treatment of the experimental group all phases of guidance were disregarded except counseling. The control group received no counseling. The results of this study indicated the mean scholastic rating of the guided group was higher than that of the unguided group by a statistically reliable margin. Also the per cent of those graduated with honors was higher in the guided group.

In 1957 Rothney concluded an eight year experimental study which involved 870 sophomore boys and girls. They were divided into two groups, an experimental group that was counseled and a control group that was not given counseling. Conclusions at the end of the experimental period indicated several small differences in the two groups. Statistically none of these differences were very significant. The counseled group achieved slightly higher academic records in high school and post high school education.

Mayer reported some results from three guidance experiments that are being carried on through guidance departments in the so-called slum schools of New York City, Tucson, Arizona, and Kansas City. The experiment in New York City, known as the "Higher Horizons Program," is the only one of the three that involves elementary children. The results, reported so far from all three of the experiments, present

convincing statistical evidence that academic achievement can be increased in the culturally deprived areas through a well organized guidance program. Nevertheless, further experimentation should be done and more conclusive data is needed before a final conclusion can be drawn that an organized guidance program is the most important factor in the increase of pupil achievement in the slum schools of the three cities.

The purpose of this investigation was to determine the effect of an organized guidance program on the achievement of average fourth, fifth, and sixth grade pupils. The four subject areas in which achievement was measured were mathematics, science, reading, and writing.

This study was experimental in type and involved a pattern of two parallel equated groups. The variables of sex, I. Q., chronological age, and socio-economic class were controlled in selecting the eighty-four subjects for the experiment. Forty-two subjects were selected from the experimental population which consisted of 200 elementary boys and girls in grades four, five, and six. These pupils were matched in sex, I. Q., chronological age and socio-economic class with forty-two subjects selected from the control population which consisted of 162 pupils in the same grades. All pupils in both populations were enrolled in the Lindsay, Oklahoma, Public Schools. The two matched population samples comprised the experimental and control groups of this study. The identity of

the pupils selected for these two groups was not known to anyone except the writer.

The experimental and control groups were also matched on the basis of pretest data. Sample group means within each school grade were compared in mathematics, science, reading, and writing. The t test used for these comparisons revealed no statistically significant difference between the sample groups in the fourth, fifth, or sixth grade in any of the four school subjects.

An attempt was made to equate the two groups of teachers who taught the pupils in the experimental and control populations. As far as possible the two teacher groups were matched on the basis of college degrees earned, number of graduate and undergraduate college hours, years of teaching experience, and the number of college hours in guidance and psychology. The greatest disparity was in the average number of years taught. The average difference was in favor of the teachers in the control group.

The experimental period for this study began the third week of the school term 1962-63 and continued for thirty weeks. during the experimental period the pupils in the experimental population worked in an organized guidance program. The pupils in the control population worked in classrooms where no organized plan for guidance was provided. The organized guidance program and the non-organized situation constituted

the two different methods of treatment for the experimental and control groups.

The posttest for this experiment was the Sequential Tests of Educational Progress, Level 4, Form 4B. This test was administered at the termination of the experimental period to all pupils in both populations. The pretest scores were subtracted from the posttest scores in each of the four subject areas to determine achievement gain for each pupil.

A total of twenty-two comparisons were made between groups in testing the ten null hypotheses. The required level of significance was .05.

Hypothesis one was rejected. The difference in total mean achievement gain between the two sample groups of the fourth grade was significant beyond the required level of significance. The total average gain difference was in favor of the experimental group.

The second hypothesis was also rejected. The total mean achievement gain between the sample groups of the fifth grade was significant but the total average gain difference was in favor of the control group.

In the sixth grade the difference in total mean achievement gain between the two sample groups was not statistically significant. Therefore, the third hypothesis was sustained.

The fourth and fifth hypotheses were sustained. No significant differences were found in total mean achievement

gain between pupils of the same sex in the experimental and control groups.

Null hypotheses six, seven, eight, and nine were tested for significant differences in mean achievement gain between the experimental and control groups in mathematics, science, reading, and writing, respectively. Since no statistically significant differences were found between any of the groups compared, the four hypotheses were sustained.

The final comparison was made between the experimental and control groups of forty-two pupils each in total mean achievement gain in all four subjects. Since the t test revealed no statistically significant difference between the two groups, the tenth hypothesis was sustained.

Conclusions

The findings presented above suggest the following conclusions:

1. The experimental and control groups of the fourth grade differed significantly in achievement gain in science. The gain difference was in favor of the experimental group. The achievement gain difference in mathematics, reading and writing was not significant.

2. The experimental and control groups of the fifth grade differed significantly in total achievement in all four subjects and the difference was in favor of the control group.

This appears to indicate that the organized guidance program had a negative effect on achievement in the fifth grade.

3. In the sixth grade, the experimental and control groups did not differ significantly in achievement in individual subjects nor in total achievement for all four subjects. The trend in achievement which was in favor of the guided group might indicate that the organized guidance program had some effect on pupil achievement in the sixth grade.

4. Pupils of the same sex in the experimental and control groups did not differ significantly in total achievement in the four selected subject areas.

5. The organized guidance program did not seem to be a significant factor in the total achievement of the forty-two fourth, fifth, and sixth grade pupils in the experimental group.

The findings in this study do not completely support the evidence obtained from the experimental studies discussed in the literature reviewed in Chapter I. The results of this study present statistical evidence that an organized guidance program does not significantly increase academic achievement in the intermediate elementary grades.

The writer is aware that the results of this investigation could have been influenced by a number of uncontrollable variables such as teacher personality, teacher enthusiasm, and parental help at home.

The Hawthorne effect, which has plagued research workers for a number of years, may have influenced the results of this experiment. Although the writer attempted to control the effect of this psychological phenomenon, it might have partly accounted for the lack of statistically significant difference in achievement between the experimental and control groups.

The proximity of the classrooms of the experimental and control groups may have been conducive to the unintentional exchange of guidance information among the teachers of the two groups. Thus, another uncontrollable factor may have been created which could have, in some degree, accounted for the lack of statistically significant difference in achievement between the two sample groups.

Recommendations

The results of this study suggest that:

1. Further experimental research should be done with a repeat of the study as designed herein with the slow learners and the gifted children of the intermediate grades.
2. Other experimental studies should be made, using grades one, two, and three, to determine the effects of an organized guidance program on the academic achievement of pupils at the primary level.
3. In the selection of subjects for experimental studies, the variables of mental age, religion, and average

marks attained in lower grades should be used in addition to the four variables used in the present study. This would tend to make for better matched groups of subjects.

4. The experimental and control populations should be located in different elementary schools within the school district. This would help prevent excessive exchange of information between pupils and personnel of the two experimental populations.

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APPENDIXES

APPENDIX A

CONTROLLED VARIABLES USED IN SELECTING PUPILS
FOR THE EXPERIMENTAL AND CONTROL GROUPS
IN GRADES FOUR, FIVE, AND SIX

TABLE 17

FOURTH GRADE EXPERIMENTAL GROUP
CONTROLLED VARIABLES

Pupil Number	Sex	IQ	CA	ISC	Social Class Placement
1	M	102	115	48	Lower-Middle
2	F	110	113	48	Lower-Middle
3	M	109	116	46	Lower-Middle
4	F	97	115	39	Lower-Middle
5	F	94	118	41	Lower-Middle
6	M	115	116	41	Lower-Middle
7	F	93	111	24	Upper-Middle
8	M	108	112	45	Lower-Middle
9	F	105	109	48	Lower-Middle
10	M	114	110	28	Upper-Middle
11	M	99	116	41	Lower-Middle
12	F	103	118	49	Lower-Middle
13	M	98	119	49	Lower-Middle
14	F	103	114	33	Upper-Middle

TABLE 18

FOURTH GRADE CONTROL GROUP
CONTROLLED VARIABLES

Pupil Number	Sex	IQ	CA	ISC	Social Class Placement
15	M	108	115	28	Upper-Middle
16	F	103	114	49	Lower-Middle
17	F	103	112	49	Lower-Middle
18	F	115	110	43	Lower-Middle
19	M	91	112	33	Upper-Middle
20	F	105	109	48	Lower-Middle
21	M	108	114	24	Upper-Middle
22	M	97	117	46	Lower-Middle
23	M	99	112	46	Lower-Middle
24	M	90	115	34	Upper-Middle
25	F	94	112	40	Lower-Middle
26	F	99	110	48	Lower-Middle
27	F	100	110	37	Upper-Middle
28	M	100	117	33	Upper-Middle

TABLE 19

FIFTH GRADE EXPERIMENTAL GROUP
CONTROLLED VARIABLES

Pupil Number	Sex	IQ	CA	ISC	Social Class Placement
29	M	109	122	34	Upper-Middle
30	M	102	129	42	Lower-Middle
31	F	107	121	44	Lower-Middle
32	M	113	126	41	Lower-Middle
33	M	115	122	44	Lower-Middle
34	M	114	124	33	Upper-Middle
35	F	114	128	48	Lower-Middle
36	F	112	127	33	Upper-Middle
37	M	93	123	44	Lower-Middle
38	F	115	129	37	Upper-Middle
39	F	107	123	37	Upper-Middle
40	M	97	131	33	Upper-Middle
41	F	103	127	30	Upper-Middle
42	F	94	125	49	Lower-Middle

TABLE 20

FIFTH GRADE CONTROL GROUP
CONTROLLED VARIABLES

Pupil Number	Sex	IQ	CA	ISC	Social Class Placement
43	F	99	131	50	Lower-Middle
44	F	113	119	45	Lower-Middle
45	M	105	129	42	Lower-Middle
46	F	101	121	49	Lower-Middle
47	M	105	126	43	Lower-Middle
48	M	115	127	46	Lower-Middle
49	M	113	125	40	Lower-Middle
50	F	105	126	48	Lower-Middle
51	M	95	129	32	Upper-Middle
52	F	104	129	37	Upper-Middle
53	F	115	122	39	Lower-Middle
54	M	115	122	48	Lower-Middle
55	M	96	125	49	Lower-Middle
56	F	104	126	51	Lower-Middle

TABLE 21

SIXTH GRADE EXPERIMENTAL GROUP
CONTROLLED VARIABLES

Pupil Number	Sex	IQ	CA	ISC	Social Class Placement
57	F	110	135	44	Lower-Middle
58	M	106	141	48	Lower-Middle
59	M	94	143	44	Lower-Middle
60	F	111	132	48	Lower-Middle
61	M	105	135	46	Lower-Middle
62	F	96	132	45	Lower-Middle
63	F	115	133	45	Lower-Middle
64	M	103	139	39	Lower-Middle
65	M	106	133	51	Lower-Middle
66	M	110	132	41	Lower-Middle
67	F	114	139	41	Lower-Middle
68	F	104	134	43	Lower-Middle
69	F	102	143	46	Lower-Middle
70	M	114	131	48	Lower-Middle

TABLE 22

SIXTH GRADE CONTROL GROUP
CONTROLLED VARIABLES

Pupil Number	Sex	IQ	CA	ISC	Social Class Placement
71	F	104	135	41	Lower-Middle
72	F	106	132	33	Upper-Middle
73	F	112	133	31	Upper-Middle
74	F	115	136	41	Lower-Middle
75	F	94	137	42	Lower-Middle
76	M	114	137	49	Lower-Middle
77	F	113	142	37	Upper-Middle
78	M	115	142	51	Lower-Middle
79	M	114	138	48	Lower-Middle
80	M	107	132	49	Lower-Middle
81	F	106	136	30	Upper-Middle
82	M	107	141	38	Lower-Middle
83	M	111	133	41	Lower-Middle
84	M	115	131	41	Lower-Middle

APPENDIX B

PRETEST RAW SCORES USED IN EQUATING THE
EXPERIMENTAL AND CONTROL GROUPS
(STEP, LEVEL 4, FORM 4A)

TABLE 23

FOURTH GRADE EXPERIMENTAL GROUP
PRETEST RAW SCORES

Pupil Number	Mathematics	Science	Reading	Writing
1	13	21	27	18
2	18	28	30	21
3	10	14	20	16
4	14	29	37	26
5	22	29	45	30
6	32	42	60	34
7	13	21	35	19
8	24	38	32	24
9	15	14	27	18
10	14	30	19	16
11	20	29	36	17
12	26	44	58	32
13	10	21	19	13
14	18	29	50	26

TABLE 24

FOURTH GRADE CONTROL GROUP
PRETEST RAW SCORES

Pupil Number	Mathematics	Science	Reading	Writing
15	22	38	48	20
16	15	34	33	24
17	10	22	21	25
18	23	39	31	21
19	15	23	25	11
20	14	19	29	17
21	24	38	48	29
22	22	31	31	22
23	14	21	24	19
24	12	21	23	17
25	22	35	30	18
26	24	32	47	22
27	21	34	53	41
28	18	42	34	29

TABLE 25

FIFTH GRADE EXPERIMENTAL GROUP
PRETEST RAW SCORES

Pupil Number	Mathematics	Science	Reading	Writing
29	32	51	60	50
30	17	34	25	26
31	23	39	55	50
32	34	46	47	31
33	25	39	47	34
34	21	42	46	29
35	17	41	38	24
36	28	41	49	40
37	15	30	23	18
38	28	48	56	38
39	22	28	46	23
40	22	39	43	30
41	19	36	33	30
42	10	24	30	17

TABLE 26

FIFTH GRADE CONTROL GROUP
PRETEST RAW SCORES

Pupil Number	Mathematics	Science	Reading	Writing
43	19	23	34	24
44	22	39	52	44
45	18	24	40	22
46	23	38	55	39
47	34	48	56	31
48	20	38	48	41
49	35	37	56	38
50	23	38	47	32
51	42	48	55	37
52	28	43	56	45
53	33	40	56	39
54	23	40	56	40
55	12	24	29	7
56	21	41	50	35

TABLE 27

SIXTH GRADE EXPERIMENTAL GROUP
PRETEST RAW SCORES

Pupil Number	Mathematics	Science	Reading	Writing
57	38	45	63	45
58	34	49	57	42
59	22	43	50	35
60	32	41	49	43
61	9	21	23	17
62	24	34	42	36
63	42	55	57	48
64	27	49	48	44
65	40	55	54	30
66	43	47	55	32
67	33	52	57	46
68	35	44	56	37
69	21	33	41	26
70	35	34	45	37

TABLE 28

SIXTH GRADE CONTROL GROUP
PRETEST RAW SCORES

Pupil Number	Mathematics	Science	Reading	Writing
71	16	36	45	32
72	19	39	43	22
73	34	47	55	42
74	42	54	58	47
75	26	42	52	37
76	24	26	40	33
77	34	45	59	38
78	34	47	55	43
79	37	51	61	47
80	32	45	52	27
81	33	48	57	43
82	35	46	53	39
83	37	41	55	33
84	37	48	51	38

APPENDIX C

ACHIEVEMENT GAIN FOR INDIVIDUAL PUPILS IN SPECIFIED
SCHOOL SUBJECTS AS INDICATED BY CONVERTED SCORE
DIFFERENCES OF POSTTEST AND PRETEST
(STEP, LEVEL 4, FORMS 4A AND 4B)

TABLE 29

FOURTH GRADE EXPERIMENTAL GROUP CONVERTED SCORES

Pupil Number	MATHEMATICS			SCIENCE			READING			WRITING		
	Pre Test	Post Test	Diff.	Pre Test	Post Test	Diff.	Pre Test	Post Test	Diff.	Pre Test	Post Test	Diff.
1	231	244	13	239	273	34	239	252	13	237	252	15
2	238	244	6	247	258	11	242	259	17	243	256	13
3	230	245	15	228	249	21	232	250	18	233	250	17
4	232	249	17	247	260	13	247	256	9	249	259	10
5	244	245	1	247	261	14	254	265	11	254	266	12
6	256	274	18	260	296	36	277	278	1	259	272	13
7	231	236	5	239	251	12	246	251	5	239	259	20
8	246	260	14	256	271	15	243	274	31	247	262	15
9	234	247	13	228	239	11	239	234	-5	237	249	12
10	232	252	20	248	261	13	231	261	30	233	270	37
11	241	260	19	247	279	32	246	265	19	235	256	21
12	249	272	23	262	296	34	272	292	20	257	280	23
13	230	239	9	239	247	8	231	242	11	225	229	4
14	238	245	7	247	257	10	259	256	-3	249	256	7

TABLE 30

FOURTH GRADE CONTROL GROUP CONVERTED SCORES

Pupil Number	MATHEMATICS			SCIENCE			READING			WRITING		
	Pre Test	Post Test	Diff.	Pre Test	Post Test	Diff.	Pre Test	Post Test	Diff.	Pre Test	Post Test	Diff.
15	244	260	16	256	262	6	256	278	22	241	267	26
16	234	250	16	252	258	6	244	260	16	247	264	17
17	230	252	22	240	254	14	233	251	18	248	253	5
18	245	244	-1	257	257	0	242	267	25	243	261	18
19	234	235	1	242	251	9	237	250	13	223	246	23
20	232	238	6	237	245	8	241	239	-2	235	243	8
21	246	252	6	256	262	6	256	263	7	253	257	4
22	244	251	7	249	256	7	242	269	27	244	265	21
23	232	245	13	239	248	9	236	247	11	239	250	11
24	230	247	17	239	247	8	235	235	0	235	246	11
25	244	249	5	253	253	0	242	261	19	237	266	29
26	246	252	6	250	252	2	255	267	12	244	259	15
27	242	252	10	252	256	4	263	278	15	268	269	1
28	238	245	7	260	266	6	245	278	33	253	264	11

TABLE 31

FIFTH GRADE EXPERIMENTAL GROUP CONVERTED SCORES

Pupil Number	MATHEMATICS			SCIENCE			READING			WRITING		
	Pre Test	Post Test	Diff.	Pre Test	Post Test	Diff.	Pre Test	Post Test	Diff.	Pre Test	Post Test	Diff.
29	256	269	13	273	283	10	277	289	12	282	280	-2
30	237	236	-1	252	259	7	237	253	16	249	259	10
31	245	252	7	257	266	9	266	280	14	282	280	-2
32	258	258	0	264	263	-1	255	269	14	255	260	5
33	247	261	14	257	264	7	255	260	5	259	259	0
34	242	258	16	260	269	9	254	269	15	253	264	11
35	237	257	20	259	264	5	248	252	4	247	260	13
36	251	258	7	259	263	4	257	276	19	266	267	1
37	234	243	9	248	253	5	235	255	20	237	247	10
38	251	256	5	267	269	2	268	280	12	264	279	15
39	244	260	16	247	261	14	254	295	41	246	269	23
40	244	249	5	257	263	6	252	265	13	254	259	5
41	240	245	5	254	260	6	244	263	19	254	275	21
42	230	230	0	243	243	0	242	246	4	235	253	18

TABLE 32

FIFTH GRADE CONTROL GROUP CONVERTED SCORES

Pupil Number	MATHEMATICS			SCIENCE			READING			WRITING		
	Pre Test	Post Test	Diff.	Pre Test	Post Test	Diff.	Pre Test	Post Test	Diff.	Pre Test	Post Test	Diff.
43	240	247	7	242	254	12	245	250	5	247	261	14
44	244	254	10	257	262	5	261	283	22	273	274	1
45	238	253	15	243	260	17	249	257	8	244	259	15
46	245	260	15	256	269	13	266	292	26	265	275	10
47	258	267	9	267	279	12	268	274	6	255	266	11
48	241	252	11	256	269	13	256	283	27	268	275	7
49	259	270	11	255	267	12	268	283	15	264	291	27
50	245	260	15	256	263	7	255	263	8	257	269	12
51	267	266	-1	267	263	-4	266	278	12	262	274	12
52	251	261	10	261	262	1	268	276	8	274	279	5
53	257	263	6	258	276	18	268	295	27	265	270	5
54	245	267	22	258	266	8	268	295	27	266	276	10
55	230	238	8	243	267	24	241	259	18	223	250	27
56	242	256	14	259	255	-4	259	280	21	260	269	9

TABLE 33

SIXTH GRADE EXPERIMENTAL GROUP CONVERTED SCORES

Pupil Number	MATHEMATICS			SCIENCE			READING			WRITING		
	Pre Test	Post Test	Diff.	Pre Test	Post Test	Diff.	Pre Test	Post Test	Diff.	Pre Test	Post Test	Diff.
57	263	279	16	263	267	4	284	265	-19	274	282	8
58	258	261	3	269	283	14	270	286	16	269	265	-4
59	244	260	16	261	266	5	259	267	8	260	265	5
60	256	261	5	259	260	1	257	278	21	271	274	3
61	230	245	15	239	243	4	235	234	-1	235	241	6
62	246	243	-3	252	266	14	251	267	16	261	262	1
63	267	274	7	284	291	7	270	303	33	278	280	2
64	250	245	-5	269	279	10	256	267	11	273	266	-7
65	265	264	-1	284	271	-13	265	259	-6	254	269	15
66	269	272	3	266	273	7	266	298	32	257	272	15
67	257	276	19	275	276	1	270	292	22	275	276	1
68	259	253	-6	262	261	-1	268	278	10	262	282	20
69	242	241	-1	251	250	-1	250	276	26	249	261	12
70	259	260	1	252	266	14	254	274	20	262	261	-1

TABLE 34

SIXTH GRADE CONTROL GROUP CONVERTED SCORES

Pupil Number	MATHEMATICS			SCIENCE			READING			WRITING		
	Pre Test	Post Test	Diff.	Pre Test	Post Test	Diff.	Pre Test	Post Test	Diff.	Pre Test	Post Test	Diff.
71	236	252	16	254	258	4	254	280	26	257	280	23
72	240	251	11	257	256	-1	252	257	5	244	258	14
73	258	264	6	266	257	-9	266	286	20	269	280	11
74	267	269	2	280	283	3	272	289	17	277	284	7
75	249	253	4	260	262	2	261	269	8	262	269	7
76	246	245	-1	245	249	4	249	267	18	258	254	-4
77	258	265	7	263	266	3	275	286	11	264	272	8
78	258	263	5	266	262	-4	266	265	-1	271	264	-7
79	262	264	2	273	279	6	279	283	4	277	269	-8
80	256	258	2	263	267	4	261	271	10	250	259	9
81	257	258	1	267	262	-5	270	280	10	271	276	5
82	259	269	10	264	271	7	263	276	13	265	274	9
83	262	261	-1	259	273	14	266	263	-3	258	262	4
84	262	257	-5	267	264	-3	260	261	1	264	259	-5

APPENDIX D

CONVERTED SCORE DIFFERENCES OF POSTTEST AND PRETEST
FOR COMPARING ACHIEVEMENT OF THE SAME SEX IN
THE EXPERIMENTAL AND CONTROL GROUPS

TABLE 35

ACHIEVEMENT GAIN IN EACH OF THE FOUR SUBJECTS
FOR ALL BOYS IN THE EXPERIMENTAL GROUP

Pupil Number	Mathe- matics	Science	Reading	Writing	Total Gain
1	13	34	13	15	75
3	15	21	18	17	71
6	18	36	1	13	68
8	14	15	31	15	75
10	20	13	30	37	100
11	19	32	19	21	91
13	9	8	11	4	32
29	13	10	12	-2	33
30	-1	7	16	10	32
32	0	-1	14	5	18
33	14	7	5	0	26
34	16	9	15	11	51
37	9	5	20	10	44
40	5	6	13	5	29
58	3	14	16	-4	29
59	16	5	8	5	34
61	15	4	-1	6	24
64	-5	10	11	-7	9
65	-1	-13	-6	15	-5
66	3	7	32	15	57
70	1	14	20	-1	34

TABLE 36

ACHIEVEMENT GAIN IN EACH OF THE FOUR SUBJECTS
FOR ALL GIRLS IN THE EXPERIMENTAL GROUP

Pupil Number	Mathe- matics	Science	Reading	Writing	Total Gain
2	6	11	17	13	47
4	17	13	9	10	49
5	1	14	11	12	38
7	5	12	5	20	42
9	13	11	-5	12	31
12	23	34	20	23	100
14	7	10	-3	7	21
31	7	9	14	-2	28
35	20	5	4	13	42
36	7	4	19	1	31
38	5	2	12	15	34
39	16	14	41	23	94
41	5	6	19	21	51
42	0	0	4	18	22
57	16	4	-19	8	9
60	5	1	21	3	30
62	-3	14	16	1	28
63	7	7	33	2	49
67	19	1	22	1	43
68	-6	-1	10	20	23
69	-1	-1	26	12	36

TABLE 37

ACHIEVEMENT GAIN IN EACH OF THE FOUR SUBJECTS
FOR ALL BOYS IN THE CONTROL GROUP

Pupil Number	Mathe- matics	Science	Reading	Writing	Total Gain
15	16	6	22	26	70
19	1	9	13	23	46
21	6	6	7	4	23
22	7	7	27	21	62
23	13	9	11	11	44
24	17	8	0	11	36
28	7	6	33	11	57
45	15	17	8	15	55
47	9	12	6	11	38
48	11	13	27	7	58
49	11	12	15	27	65
51	-1	-4	12	12	19
54	22	8	27	10	67
55	8	24	18	27	77
76	-1	4	18	-4	17
78	5	-4	-1	-7	-7
79	2	6	4	-8	4
80	2	4	10	9	25
82	10	7	13	9	39
83	-1	14	-3	4	14
84	-5	-3	1	-5	-12

TABLE 38

ACHIEVEMENT GAIN IN EACH OF THE FOUR SUBJECTS
FOR ALL GIRLS IN THE CONTROL GROUP

Pupil Number	Mathe- matics	Science	Reading	Writing	Total Gain
16	16	6	16	17	55
17	22	14	18	5	59
18	-1	0	25	18	42
20	6	8	-2	8	20
25	5	0	19	29	53
26	6	2	12	15	35
27	10	4	15	1	30
43	7	12	5	14	38
44	10	5	22	1	38
46	15	13	26	10	64
50	15	7	8	12	42
52	10	-1	8	5	22
53	6	18	27	5	56
56	14	-4	21	9	40
71	16	4	26	23	69
72	11	-1	5	14	29
73	6	-9	20	11	28
74	2	3	17	7	29
75	4	2	8	7	21
77	7	3	11	8	29
81	1	-5	10	5	11