5-15-1969

A Comparative Study Of The Graded And Ungraded Elementary Schools.

Sondra L. Cohn

THE UNIVERSITY OF NEW MEXICO
ALBUQUERQUE, NEW MEXICO 87106

Policy on Use of Theses and Dissertations

Unpublished theses and dissertations accepted for master's and doctor's degrees and deposited in the University of New Mexico Library are open to the public for inspection and reference work. *They are to be used only with due regard to the rights of the authors.* The work of other authors should always be given full credit. Avoid quoting in amounts, over and beyond scholarly needs, such as might impair or destroy the property rights and financial benefits of another author.

To afford reasonable safeguards to authors, and consistent with the above principles, anyone quoting from theses and dissertations must observe the following conditions:

1. Direct quotations during the first two years after completion may be made only with the written permission of the author.

2. After a lapse of two years, theses and dissertations may be quoted without specific prior permission in works of original scholarship provided appropriate credit is given in the case of each quotation.

3. Quotations that are complete units in themselves (e.g., complete chapters or sections) in whatever form they may be reproduced and quotations of whatever length presented as primary material for their own sake (as in anthologies or books of readings) ALWAYS require consent of the authors.

4. The quoting author is responsible for determining "fair use" of material he uses.

This thesis/dissertation by Sondra L. Cohn has been used by the following persons whose signatures attest their acceptance of the above conditions. (A library which borrows this thesis/dissertation for use by its patrons is expected to secure the signature of each user.)

NAME AND ADDRESS	DATE
B. Saenor, 740 Bellamore NE. Alb. New Mex	1-14-70
Mary Rash 1417 Wellesley NE	2-7-70
[signature] 2704 UTAH NE	3-7-75

Oct. 1968—1,000—GS

This thesis, directed and approved by the candidate's committee, has been accepted by the Graduate Committee of The University of New Mexico in partial fulfillment of the requirements for the degree of

Master of Arts in Elementary Education

A COMPARATIVE STUDY OF THE GRADED AND UNGRADED ELEMENTARY SCHOOLS

Title

SONDRA L. COHN

Candidate

Elementary Education

Department

Wayne P. Moellenberg

Dean

May 15, 1969

Date

Committee

Miles V. Zintz

Chairman

Ralph D. Norman

James D. Cooper

A COMPARATIVE STUDY OF GRADED AND UNGRADED ELEMENTARY SCHOOLS

BY

SONDRA L. COHN
B.S., Millersville, Pennsylvania, State College, 1955

THESIS

Submitted in Partial Fulfillment of the
Requirements for the Degree of
Master of Arts in Elementary Education
in the Graduate School of
The University of New Mexico
Albuquerque, New Mexico
June, 1969

ACKNOWLEDGMENTS

The writer wishes to acknowledge her gratitude to members of the thesis committee, Dr. Miles Zintz, chairman, whose help and direction were invaluable from the conception through the completion of this study, Dr. James G. Cooper for his assistance in the statistical design and interpretation, as well as for his guidance and counsel in the formation of this study, and Dr. Ralph Norman for his review and suggestions.

The writer is indebted to Dr. Drage "Bud" Watson for permission to conduct this study in the Albuquerque Public School system, to Mr. Max Luft, Jr., for his help in obtaining the testing materials and collecting the test data, to Sister Thea and Sister Winifred of the Heights Parochial School, Sister Marie Augustine of Our Lady of Assumption Parochial School, Mr. Emanual Alalouf and Mr. Virgil Morgan of Inez Elementary School, and Mr. Harold Mercer, Principal, Zia Elementary School, for their active participation in the experimental phase of this study.

A COMPARATIVE STUDY OF GRADED AND

UNGRADED ELEMENTARY SCHOOLS

BY

SONDRA L. COHN

ABSTRACT OF THESIS

Submitted in Partial Fulfillment of the
Requirements for the Degree of
Master of Arts in Elementary Education

in the Graduate School of
The University of New Mexico
Albuquerque, New Mexico
June, 1969

ABSTRACT

A COMPARATIVE STUDY OF GRADED AND
UNGRADED ELEMENTARY SCHOOLS

The purpose of this study was to determine if there were significant differences in the scholastic achievements of children trained in an ungraded elementary school and those trained in a graded elementary school.

Children attending the only ungraded school in Albuquerque, New Mexico, in 1966 were tested after attending that school for three consecutive years, and again after five years. A neighboring graded elementary school was used for comparison in the experimental grouping. Another pair of neighboring graded schools was utilized as a control group. The total sample tested was 140 students.

The hypotheses of the study were that significant differences would occur in the areas of (1) reading achievement, (2) arithmetic achievement, and (3) language achievement.

Initially, each child in the sample was administered the Lorge-Thorndike Group Intelligence Test. Near the conclusion of the third school year, the pupils were given the Science Research Associates Achievement Tests in Reading, Arithmetic, and Language. Near the completion of the fifth school year, these same students were given the Stanford Achievement Tests in Reading, Arithmetic, and Language. An analysis of covariance design was run with the data accumulated.

On the basis of data gathered and the application of standard procedures of statistical analysis, the following conclusions are justified:

1. There were no significant differences between the schools tested in reading achievement at the third grade level.
2. There were no significant differences in reading achievement between the schools tested at the fifth grade level.
3. No significant differences were noted in the gain of reading achievement between the third and the fifth grade level.
4. Significant differences were noted in the statistical data in arithmetic achievement at the third grade level favoring the Ungraded School System.
5. At the fifth grade level, there were significant differences in arithmetic achievement, demonstrating that the Ungraded School System produced greater results.
6. Students attending the Ungraded School achieved greater gains in arithmetic achievement between the third and fifth school years than did the other schools tested.
7. There were no significant differences in language achievement at the third grade level.
8. No significant differences in language achievement existed at the fifth grade level among those schools tested.
9. Between the third grade level and the fifth grade level, no significant differences were noted in language achievement among the schools tested.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

The Problem

Statement of the problem. It is the purpose of this study to ascertain if children who have attended an ungraded school system for three years or five years will show a higher level of achievement than their peers who have attended a graded school system for a similar length of time; and to discern differences in the levels of intellectual achievement by testing comparable groups of students at the end of the third grade and again at the end of the fifth grade in each of these two systems.

Importance of the study. Children entering kindergarten or first grade differ markedly in their readiness to profit from any learnings schools choose to put before them. Intelligence tests provide one measure of these differences. Such tests reveal a large spread in mental age within a group of six-year-olds entering the first grade. The spread between the quick and the slow increases with time. Thus, when these students enter the fifth grade, a few of them compare favorably in mental age with high school freshmen. A few, however, have developed no further in their ability to use language and manipulate number symbols than have most children in the first grade.

Learners vary widely in their school achievement. It is this researcher's belief that the individual student is often spoken about

but too infrequently provided for. Repeatedly, the interests of the individual pupil are sacrificed to those of the many, thereby merging the individual into the mass.

The traditional graded school is not essentially geared to recognize the talents of each individual student. It is rather a rigid structure where preconceived material is presented to all youngsters simultaneously. The child must adapt himself to the system or be chastised by poor grades or non-promotion. This rigidity may inadvertently cause the child to have many emotional and social difficulties. The ungraded school is an attempt to avoid these pitfalls of the traditional elementary school.

In recent years, the Albuquerque Public School System has debated the validity of initiating a pilot ungraded school. Advocates of the ungraded school approach contend that children educated in such a manner exhibit greater scholastic achievement than those taught by the traditional approach currently used by the Albuquerque Elementary Schools.

Although the ungraded school is simply an administrative procedure, there is a great deal of skepticism on the part of principals and teachers in attempting to change their present operation. This study will endeavor to examine quantitatively the scholastic advances of children educated in both the graded and ungraded schools. It is hoped that this research will show which approach enables its students to attain the maximum achievement from their intellectual abilities and be able to demonstrate which organizational pattern is realistically concerned for the potentialities as well as the

performance of each youngster.

Today the graded structure is considered a way of life by many. "This is the way it has always been, and, after all, it has helped educate a pretty dynamic nation of people. Why bother about all of this business of nongradedness? Would it not create more problems than it will ever solve?"[1] So the thinking goes among more than a few educators.

Yet what are these people really saying, except, "Let's not get involved in change. Maybe the change itch will go away if we ignore it"? One can sympathize with this nostalgia for the world that never was, for American education has been changing rather rapidly for at least a hundred years, but one cannot give serious allegiance to it because of a simple truth: children and society are dynamic, and so must education be. Should this study reveal greater academic advances for the youth which education serves, then it becomes an obligation to change the status quo.

Limitations of the study. The only school in the city utilizing the ungraded approach for a period of five years prior to this study was one parochial school. There appeared to be more variables among the various parochial schools in the city than between the socio-economic divisions of the city. The students attending the various parochial schools throughout Albuquerque differ markedly in their cultural, intellectual, and economic backgrounds. Therefore, neighboring

---

[1]Richard I. Miller, The Nongraded School (New York: Harper and Row, 1967), p. 14.

schools extant in the same socio-economic areas were utilized in selecting the sets of schools considered in this study.

Only those children who had attended the experimental and control schools for five years were selected for this study, a situation which resulted in unequal sizes of the samples measured for each school. There was also some sample shrinkage during the study. More children were tested than used in the statistical analysis. When a child was absent or unable to take a single test, that child was eliminated from the analysis.

It is not known how valid I.Q. tests really are. Thus far, it has not been determined how much past learning due to the teaching system affects the results of an I.Q. score. It is, however, impossible to test true capacity without recognizing the effects of past learning experiences.

Source of the data. The primary source of the data used in this study was the Stanford Achievement Test, which was administered to 139 children in four elementary schools. The Lorge-Thorndike Group Intelligence Test was also administered to this sampling. This measure of intelligence was used in the statistical manipulation in an attempt to obtain raw achievement scores.

The S.R.A. Achievement Tests were taken by this group in 1966. The scores from this test were used to measure the gain in achievement in the two-year lapse between the tests.

Definition of Terms

Nongrading. "This is an organizational plan that does not leave a child's placement to chance, but rather forces educational decision-making that takes three important considerations into account: the teaching style that most successfully motivates, the peer group that most successfully stimulates, and the educational opportunities that most successfully advance the learning of each child."[2]

Graded Elementary School. A school with a heterogeneous system of grouping students into various classifications with reference to chronological age.

Ungraded Elementary School. A school with a philosophy of flexibility in the grouping of its students without reference to chronological age as a device of classification of its students. It groups students on the basis of ability and achievement to allow for similarity of instruction.

Grade. The term grade designates certain items of achievement to be accomplished within a time limit.

Grouping. Grouping places a pupil with other pupils who are able to function about alike in some respect. Grouping is a horizontal factor in school organization. Some kind of grouping of pupils is necessary for a controlled sequence of learning. The fundamental characteristic of nongraded grouping practices is flexibility.

Level. This refers to the ranking of pupils by various

---

[2]John I. Goodlad and Robert Anderson, The Nongraded Elementary School (New York: Harcourt, Brace and World, Inc., 1959), p. 103.

methods. In the nongraded plan, levels are attributed to groups of sequential skills to be learned without reference to time.

Grade Promotions. When a child is raised to a higher grade due to academic achievement or simply social growth, he is considered promoted.

Organization of the Remainder of the Study

In Chapter II a review of pertinent literature will cover the history and the future of the nongraded plan and literature related to experimental studies of academic achievement, contrasting the nongraded school with the graded school.

Chapter III will describe research methods and instruments used in making this study.

Chapter IV will present a detailed analysis of the results of the study.

The final chapter will include a summary and some conclusions and recommendations based upon the findings of the study.

CHAPTER II

REVIEW OF THE LITERATURE

Many educators have described nongradedness as probably the fastest-moving innovation on the elementary school scene today. It is certainly one of the most important dimensions of the current educational reform movement, which some go so far as to call a "revolution." It is clearly a rejection of certain rigid structures and policies associated with the graded school. In his repudiation of the graded school, Anderson declares:

> The use of grade-level-expectancy standards in describing and appraising each child's performance, the use of an ordinal vocabulary ("First Grade," "Second Grade," "Third Grade," and so on) to identify distance segments of the school program, the assumption that each of these segments should start for each child in September and end in June, and the reward-punishment system associated with "promotion" and "non-promotion"--these and other characteristics of the rigid graded school have been scorned by increasing numbers within the teaching profession, and there has been in recent years a mounting interest in the alternative known as nongradedness.[1]

Literature pertinent to this subject is reviewed in this chapter in two major sections:

A. The Past and the Future of the Nongraded Plan.

B. Literature Related to Experimental Studies of Academic Achievement Contrasting the Nongraded School with the Graded School.

---

[1]Robert Anderson in the Forward of Lillian Glogau and Murray Fessel, The Nongraded Primary School, A Case Study (New York: Parker Publishing Co., Inc., 1967), p. vii.

The Past and the Future of the Nongraded Plan

When educators acclaimed the emergence of the graded school, they could not have foreseen its many disadvantages which subsequent years would disclose. By 1870, graded classes, graded content, graded textbooks, and even graded teachers were synonymous with school organization.[2] Shearer aptly describes the school structure of that time when he states that "the pendulum had swung from no system to nothing but system."[3] Before the end of the 1870's, the defects of the graded system became all too evident with such problems as readiness, classification, and promotion. Uniformity of standards had to constantly weigh off individual differences. Educators came to the realization that the principles they professed were being defeated by the practices they condoned.[4] A search for panaceas was inevitable.

Experimentation with varied modification of the graded structure were being carried out by investigators in the late nineteenth and early twentieth centuries. Curriculum changes were introduced to facilitate organizational plans. A summation of these innovations is presented by Goodlad:

---

[2]John I. Goodlad, "Classroom Organization," Encyclopedia of Educational Research, revised edition (New York: The Macmillan Company, 1960), p. 222.

[3]William J. Shearer, The Grading of Schools (New York: H. P. Smith Publishing Company, 1899), p. 21.

[4]Charles Aubert Berthold, Administrative Concern for Individual Differences (New York: Bureau of Publications, Teachers College, Columbia University, 1951), p. 5.

> The St. Louis Plan, 1868, sought to reduce the rigidity of graded structure by reclassifying students at six-week intervals. In the Pueblo Plan, 1888-1894, all children studied all units but progressed through them at their own rate. Both the Cambridge Plan, first introduced in 1893, and the Portland Plan, discontinued by 1915, permitted bright students to move more rapidly in a double-track system, completing a nine-year program in as few as seven years. The Batavia, North Denver, and Santa Barbara Concentric Plans also recognized individual differences and sought to make special provision for them within the limitations of the graded structure. Of more recent vintage, the Winnetka and Dalton Plans differentiated "academic" from nonacademic phases of the curriculum and then encouraged students to move along through the academic work at their own rate.[5]

The Ungraded Primary School is not new to the American educational scene. Since the turn of the century, increased interest in and attempts to individualize instruction have been evident. Surveys by Slater,[6] Austin,[7] and Goodlad and Anderson[8] revealed that since the 1930's, school systems throughout the country have been experimenting with departures from the conventional uniformity of the grade-level organization. These investigators found little actual research evidence on which to base judgments as to the merits of the various plans. The major motives for creating the nongrading movement were reduced tension in pupils, increased teacher awareness of student individuality, and improved parental understanding of the schools.

---

[5]Goodlad and Anderson, op. cit., p. 104.

[6]Eva May Slater, The Primary Unit, Curriculum Bulletin, No. 3 (Storrs, Connecticut: Curriculum Center, School of Education, University of Connecticut, 1955), p. 33.

[7]Kent C. Austin, "The Ungraded Primary School," Childhood Education, XXXIII (February, 1957), 156.

[8]Goodlad and Anderson, op. cit., p. 248.

Wheat reported that, in 1934, the educational administration of Western Springs, Illinois, had formally established a primary unit in two elementary schools. He described results of a questionnaire survey conducted in 1936, which indicated that 93 percent of the parents preferred the new plan. The majority were of the opinion that their children were happier and more interested in school work. Teachers questioned unanimously endorsed the new system because of greater accomplishment on the part of pupils and consequently easier handling of classwork.[9]

Although continuous progress has been in existence since 1936 in Richmond, Virginia, and since 1939 at the College Avenue School in Athens, Georgia, most authorities consider Milwaukee to be the capital city of the nongraded school movement.[10] It has been found that today 114 out of 116 Milwaukee elementary schools are classified as nongraded.

In presenting an evaluation of the program after six years of experimentation, Kelly wrote:

> Our experience has demonstrated that we have less retardation at the end of six semesters and that children come through with better social and academic balance than under the traditional plan of "fail and repeat."[11]

The great inroads of this organizational movement followed World War II, when communities in various parts of the country

---

[9]Leonard B. Wheat, "The Flexible Progress Group System," Elementary School Journal, XXXVIII (November, 1937), 175-183.

[10]Goodlad and Anderson, op. cit., p. 70.

[11]Florence C. Kelly, "Doing Away With Grade Levels," NEA Journal, XXXVII (April, 1948), 222-223.

initiated some form of the ungraded school. Before this period there were but a few isolated communities practicing the plan. International crises in successive waves proved to be a boon to the ungraded innovation. This was part of a great educational period providing intensive changes that were multiplying rapidly.

In 1955, Goodlad identified sixteen centers using the nongraded system.[12] In a survey completed in 1957, Kent Austin listed thirty-one centers with active nongraded units.[13] Goodlad and Anderson surveyed approximately 134 communities in forty states regarding some form of nongraded organization believed to be in operation during the 1957-1958 school year. They concluded that about fifty communities were operating bona fide nongraded schools at that time.[14]

Five surveys by large research organizations have checked the growth of the nongraded schools.[15] Among these, the NEA Educational

---

[12]John I. Goodlad, "In Pursuit of Visions," Elementary School Journal, LIX, No. 1 (October, 1958), 1-17.

[13]Austin, op. cit., pp. 260-263.

[14]John I. Goodlad, "Ungrading the Elementary Schools," NEA Journal, XLIV (March, 1955), 170.

[15]Stuart E. Dean, Elementary School Administration and Organization: A National Survey of Practices and Policies (Washington, D. C.: U. S. Department of Health, Education, and Welfare, 1963); Louis T. DiLorenzo and Ruth Salter, "Co-operative Research on the Nongraded Primary," Elementary School Journal, LXV (February, 1965), 269-277; Lillian L. Gore and Rose E. Koury, A Survey of Early Elementary Education in Public Schools, 1960-61 (Washington, D. C.: U. S. Department of Health, Education and Welfare, 1965); National Education Association, Administrative Practices in Urban School Districts, 1958-59, Research Report 1961-R10 (Washington, D. C.: Research Division, National Education Association, May, 1961), and Nongraded Schools, Research Memo 1965-12 (Washington, D. C.: Research Division, National Education Association, May, 1965).

Research Service made a post card survey in May, 1964, to find out how many large urban school systems had nongraded or partially nongraded elementary or secondary schools. For the elementary level, nearly one-third of the 441 school systems questioned reported one or more elementary schools with a nongraded sequence.

Variations in the current estimates of the prevalence of the nongraded school are clearly discernible. Findings fluctuate between a high of 30.5 percent in the NEA's 1963 survey and a low of 5.5 percent in the U.S.O.E.'s 1960 survey with no consideration to the quality of the programs purporting to be nongraded. If these estimates are accurate, it would mean that in three years the number of schools with nongraded programs increased more than six times. However, there are many known biases in mail questionnaires which make them a highly unreliable tool. Norman reports that research shows returns on mail questionnaires to run from 15 percent to 76 percent.[16] When a considerable number fail to be returned or when there are biases in those that have been returned, the sampling may be seriously deranged.

In 1959, Goodlad approximated that considerably fewer than one percent of the nation's schools were nongraded.[17] In 1961, he felt that something less than 125 schools were operating truly nongraded

---

[16]Ralph D. Norman, "A Review of Some Problems Related to the Mail Questionnaire Technique," Educational and Psychological Measurement, VIII, No. 2 (Summer, 1948), 235-245.

[17]John I. Goodlad, "More About the Ungraded Plan," NEA Journal, XLIV, No. 5 (1955), 295-296.

programs, revealing that time had not caused him to raise his estimates.[18] Intuitively, these estimates are too disparate to be dependable.

The polls to determine schools' plans related to nongrading have produced conflicting results. It seems apparent from surveys, however, that nongrading is related to the size of the school district. The larger the district, the more likely it is to have one or more schools ungraded.

At this time, it is difficult to determine the extent of nongrading programs and to establish whether they will continue to grow or whether they are fading out of existence. During the past decade voluminous literature has been accumulated regarding the ungraded schools Those school systems using this organizational plan have reported great success. Little, however, has been published by those schools which have tried and abandoned nongrading.

Returns from secondary schools reveal only twelve systems, or 3.4 percent, had or planned to have some nongrading in the secondary schools.[19] Those who have tried nongrading at the secondary level are most enthusiastic about it and freely praise its success and potential. It is unlikely, however, that this plan will make serious inroads into the secondary schools throughout the country.

---

[18]National Education Association, Nongrading: A Modern Practice in Elementary School Organization, Research Memorandum 1961-37 (Washington, D. C.: Research Division, National Education Association, October, 1961).

[19]National Education Association, Nongraded Schools.

Literature Related to Experimental Studies of Academic Achievement Contrasting the Nongraded School with the Graded School

In its purest form, the ungraded school--which is a philosophy--permeates every aspect of school program. In practice, however, there is enough divergence in the programs that investigators are concerned with the apparent conflicts that have become known. Even the designation of the concept lacks standardization.

Some communities refer to their "ungraded primary plan"; others, "ungraded school." In some instances, the term "nongraded" is preferred. Another title used synonymously is "the continuous progress plan."

In the Dictionary of Education, the ungraded primary school is described as:

> A school that has a flexible system of grouping in which the children in the primary grades are grouped together regardless of age and in which extensive effort is made to adapt instruction to individual differences.[20]

Frank Dufay's interpretation of this system, arising from his investigation and experience, calls it:

> A philosophy of education that includes the notion of continuous pupil progress, which promotes flexibility in grouping by device of removing grade labels, which is designed to facilitate the teacher's role in providing for pupils' individual differences, and which is intended to eliminate or lessen the problems of retention and acceleration.[21]

Madaline Hunter defines nongrading as:

---

[20] Frank R. Dufay, Ungrading the Elementary School (New York: Parker Publishing Company, Inc., 1966), p. 23.

[21] Ibid., p. 24.

> An organizational plan that does not leave a child's placement to chance, but rather forces educational decision-making that takes three important considerations into account: the teaching style that most successfully motivates, the peer group that most successfully stimulates, and the educational opportunities that most successfully advance the learning of each child.[22]

Goodlad and Anderson, who were authors of the first complete book on the nongraded school, declare that the curriculum must be organized along vertical, sequential lines. Concern for long development of basic concepts, skills, and values must replace concern for mastering specific graded chunks of subject matter. A longitudinal view of the curriculum prescribed by the ungraded system permits concepts, skills, and values to be developed over the entire range of the elementary school.[23]

Understandably, in an age where there is much emphasis on the concept of teaching the "whole" child, it seems reasonable to appraise research in nongradedness as to its influence on students in two broad areas, student achievement and student adjustment.

The research in the area of academic achievement reveals a disproportionate number of studies relating to the influence on children's reading and arithmetic performance. The impact of nongrading on children's reading accounts for 48 percent of the reported studies, arithmetic for 26 percent, and language arts for 11 percent.[24]

---

[22]Madaline Hunter, "Dimensions of Nongrading," The Elementary School Journal, October, 1964.

[23]Goodlad and Anderson, op. cit., p. 105.

[24]William P. McLoughlin, The Nongraded School, A Critical Assessment (The State Education Department, The University of the State of New York, September, 1967), p. 14.

Because of concentration in these three curriculum areas, little is known of the influence of nongradedness in other areas. Work-study skills, science, and social studies have been neglected as far as research on the influence of nongradedness on student achievement.

Some educators claim that the majority of schools using the ungraded primary unit have confined their study and analysis of sequential learning to reading. They feel that a significant contribution could be made if they would extend their study to all areas of academic learning.[25] Perkins claims that a danger of the nongraded school is that individualization of instruction has been confined to reading. He also claims that without a strong commitment to a program based on individual rates of maturity and the needs of children, the sequence of step-wide levels may only result in replacing grade standards by another set of standards.[26]

Judging available reported research, the academic development of children does not suffer from attending a nongraded school, and there is tentative evidence that it may be somewhat enhanced. Children from graded classes seldom do better on studies measured than children from nongraded classes.

Ekstrom reviewed the literature of the experimental studies of homogeneous groupings. She located 13 studies which found differences,

---

[25]Ethel Thompson, "The Ungraded Plan," National Education Association Journal, XLVII (January, 1958), 16-18.

[26]Hugh V. Perkins, "Non-graded Programs: What Progress?" Educational Leadership, XIX, No. 3 (December, 1961), 169.

having or approaching significance, favoring homogeneous groupings; 15 studies which found no differences in achievement in homogeneous or heterogeneous groupings; and 5 studies which gave mixed results. Most significant, Ekstrom has further stated that experiments which specifically provided for differentiation of teaching methods and materials for homogeneous groups, and which made an effort to push bright homogeneous groups, tended to favor homogeneous groups.[27]

In 1960, Goodlad and Anderson conducted a survey of nongraded schools in 89 communities reported to have one or more of these schools in operation. Responses indicated that grade levels had been removed from between two or more grades in about 550 schools. Responses also suggested some misunderstanding about the nongraded concept itself. The authors state:

> As a consequence of our studies and observations to date, we pose the hypothesis that a substantial proportion of the elementary schools that now claim to be nongraded have given little or no attention to the vertical aspects of school organization. Changes effected to date tend to be modifications more of horizontal than vertical structure. Consequently, many so-called nongraded schools are nongraded in name only.

A large number of schools and school districts entered into nongrading to make better provisions for individual differences; however, they expressed little initial concern for curriculum reorganization. Goodlad and Anderson's data suggested the need for curriculum revision as a concomitant of nongrading rather than as an initial reason for

---

[27] Ruth B. Ekstrom, Experimental Studies of Homogeneous Grouping: A Review of the Literature (Princeton, New Jersey: Educational Testing Service, 1959).

it. The responses suggested few common directions for curriculum reform.[28]

Delgado-Marcano attempted to find out how curriculum and instruction were organized and how they operated in twenty nongraded elementary schools in the United States, and to determine to what extent the actual curriculum and instructional practices were compatible with the model of nongradedness supported by leading educators. They found five schools to be completely nongraded, while fifteen were found to be partially nongraded. In all of the twenty schools, a written nongraded philosophy was found to exist; however, in practice this philosophy was in different stages of fulfillment. Different patterns of nongrading organization were found to exist among the twenty schools studied, although nongradedness in the area of reading was common to all schools. In general, a trend to consider a child's progress according to his own standards of development was present in the twenty schools. In the partially nongraded schools, children were most often placed in self-contained classrooms in groups of the same chronological age, and the tendency was to use the total class as an instructional group, using the graded approach to the placement of children. Some of the partially nongraded schools limited the programs to the primary level and individualization of instruction was scarcely used.[29]

---

[28] John I. Goodlad and Robert H. Anderson, "Educational Practices in Nongraded Schools: A Survey of Perceptions," Elementary School Journal, LXIII (October, 1962), 33-44.

[29] Marie T. Delgado-Marcano, "The Operation of Curriculum and Instruction in Twenty Nongraded Elementary Schools," Dissertation Abstracts, XXVII (1965), 698-699A.

Roberts, in his investigation of the Golfview Elementary School in Brevard, Florida, and the Tuttle Elementary School in Sarasota County, Florida, found vertical groupings at Golfview based primarily on reading performance. Pupils in this school were assigned to a team of teachers responsible for two years of the six-year elementary program. Pupils remained with the same group throughout most of the school day. Vertical groupings at the Tuttle Elementary School were based on ability in the skill areas. Pupils progressed within their assigned teams upon acquisition of expected skills and understandings. Combination age groups (two chronological years) were assigned to teacher teams. During part of the school day, pupils were assigned to ability groups. Other areas of the curriculum were pursued by planned heterogeneous groups.[30]

Skapski, in an objective evaluation of ungraded primaries, attempted to determine if the second and third grade pupils involved in a nongraded program in reading achieve better than pupils in a graded program. Using the Stanford Achievement Test for reading and math in comparing the pupils in a nongraded school with the pupils of comparable intelligence and socio-economic background, she found that the pupils in the nongraded program were significantly superior in reading and the reading achievement was significantly superior to the arithmetic and spelling achievement. Skapski concluded from these findings that the ungraded primary benefits all children.

---

[30]George Myers Roberts, "Two non-graded Elementary School Programs: Facility Requirements and Utilization," Dissertation Abstracts, XXV, No. 5 (November, 1964), 2830.

Gifted children are not allowed to underachieve, nor are the slow learners frustrated by repeated failure.[31]

Halliwell, in comparing the spring achievement scores of 46 first grade students, 50 second grade students, and 50 third grade students who had been in the nongraded program for eight months with the scores of a similar sampling, found that it was readily apparent that the nongraded pupils in the first grade obtained significantly higher achievement scores than did the graded pupils. Analysis of the data at the second grade level indicated that, although the nongraded pupils attained higher scores than the graded pupils in every subject area except word discrimination, only in arithmetic was the difference significant. In the third grade level all scores were higher for the nongraded pupils, but only three were statistically significant, arithmetic computation, spelling, and arithmetic problem solving. Halliwell concluded from these findings that a nongraded approach to the teaching of reading and spelling has proved quite effective and worthy of further investigation.[32]

In a controlled experimental situation, Hillson, Jones, and More assessed the effects of a nongraded program on reading achievement of a group of elementary school pupils. Their findings revealed that the nongraded group scored significantly higher than the control

---

[31]Mary King Skapski, "Ungraded Primary Reading Program: An Objective Evaluation," The Elementary School Journal, LXI (October, 1960), 41-45.

[32]Joseph W. Halliwell, "A Comparison of Pupil Achievement in Graded and Nongraded Primary Classes," The Journal of Experimental Education, XXXII (Fall, 1963), 59-64.

group on all three measures of achievement used to test reading: The Lee Clark Reading Test, and the Paragraph Meaning and Word Meaning tests of the primary battery of the Stanford Achievement Test.[33]

Anderson, investigating two aspects of a Continuous Progress Plan in reading, found that 89 percent of students achieved above grade level expectation after three years in the plan. Differences in reading scores, in which 100 percent scored above grade level expectation, were significant.[34]

Sister Mary Paul Hickey analyzed and evaluated the ungraded primary program of seven experimental schools in the Diocese of Pittsburgh. Her results revealed that pupils who attended the ungraded schools for three years showed significantly greater achievement in reading and arithmetic than did pupils who attended graded schools for the same number of years. She also concluded that pupils of superior intellectual ability in the ungraded schools benefited to a significantly greater extent than did other ability groups with respect to arithmetic computation achievement.[35]

Sister M. Bernarda Bockrath compared reading achievement of fourth graders in the Saint Louis Archdiocesan Schools who had been

---

[33]Maurie Hillson, Charles J. Jones, and William More, "A Controlled Experiment Evaluating the Effects of a Non-Graded Organization on Pupil Achievement," The Journal of Educational Research, LVII (July, 1964),548-550.

[34]Charlotte Colby Anderson, "A Systematic Investigation of Individual Progress Under an Ungraded Primary Plan" (unpublished Master's dissertation, Willimantic State College, Willimantic, Conn., 1963).

[35]Sister Mary Paul Hickey, "An Analysis and Evaluation of the Ungraded Primary Program in the Diocese of Pittsburgh" (unpublished Doctoral dissertation, Fordham University, 1962).

in nongraded primary classes with the reading achievements of fourth graders who had been in conventional graded primary classes. The comparison revealed a median increase of five months for the ungraded fourth grade pupils in 1956 over the reading performance of the graded fourth grade pupils in 1953. The mean nongraded reading score for the fifty schools showed a six-month increase over that of the 1953 graded sampling. A highly significant "t" test result of 15.17 indicated that some definite factor or factors were responsible for this increase. The mean I.Q. of 104 was the same for both groups. A new entrance age of 6.0 by September 15th was introduced in 1952. Operating within the framework of the ungraded primary, this later entrance age seemed to be a contributing factor to increased reading achievement. Comparative data showed a mean of two months' increase in entrance age for first year primary entrants in 1953. The Primary School teachers favored the program and considered it as contributing to more effective learning and to teacher growth.[36]

A study was undertaken by Ingram to evaluate the primary ungraded cycle program in use in the Flint Schools for three years. When the test scores of the sixty-eight pupils who had completed the three-year cycle were compared with the scores of 337 children who had completed the third grade at Washington School in 1956, 1957, and 1958, and also when compared with the scores of all third graders in the public schools in Flint who attended the traditional graded

---

[36]Sister M. Bernarda Bockrath, "An Evaluation of the Ungraded Primary as an Organizational Device for Improving Learning in Saint Louis Archdiocesan Schools," Dissertation Abstracts, XIX, No. 10 (April, 1959), 2819-2820.

classes, the pupils in the primary cycle scored significantly higher in all language arts and reading areas.[37]

Dobbs compared thirty pairs of children, each pair consisting of a once-retained first grader and a never-retained second grader who were matched on race, sex, socio-economic level, type of classroom assignment, age, mental ability, and reading achievement. The Metropolitan Achievement Test scores of 1962, 1963, and 1964 were used as a measure of the reading and arithmetic achievement gain of the two groups over the two-year period of the study. The matched pairs showed both the reading and arithmetic achievement gain of the promoted group to be significantly greater than that of the non-promoted group during the length of the study. It was concluded that non-promotion was not an aid to achievement.[38]

Hart undertook a matched study comparison of arithmetic achievement at Peter Boscow School of pupils in graded classrooms and in the nongraded primary school who had been in the program for three years. Using the Arithmetic Battery of the California Achievement Test to compare the nongraded group with the control group, he concluded that the achievement of the pupils in the nongraded primary were significantly higher than that of the pupils in graded classrooms. The author also found that the nongraded primary gave the pupils self-

---

[37]Vivian Ingram, "Flint Evaluates Its Primary Cycle," The Elementary School Journal, LXI (November, 1960), 76-80.

[38]Virginia Dobbs and Donald Neville, "The Effect of Nonpromotion on the Achievement of Groups Matched from Retained First Graders and Promoted Second Graders," The Journal of Educational Research, LX, No. 10 (July-August, 1967).

confidence and made their learning experience more interesting.[39]

Knight led an investigation to discover whether children who were placed in a double or combination grade, a room containing two grades, could be expected to advance as rapidly in their education as children in the traditional elementary school where the procedure is to have a single grade in a room. His study attempted to discover the advantages or disadvantages, if there were any, in the double grades. His sample was composed of 329 fourth graders in New Haven, Connecticut. The completed Stanford Achievement Test indicated that fourth grade children in double grades, whether combined with the grade above or with the grade below, equaled or surpassed in growth children in rooms having only fourth grade pupils.[40]

Goodlad and Anderson have reported that in the typical graded, upper-elementary class, the range of reading, language arts, and social studies achievements is between four and six years. The mean range of I.Q. in language arts, social studies classes, and in mathematics and science classes in a typical school probably shows a range of fifty points. Since teaching is directed toward the student of median ability, it would appear that pupils ranging above or below the mean would have greater advantages in an ungraded program.

While reporting his own study, Anderson cited a study in Milwaukee comparing 99 pupils in four nongraded schools with 123 pupils

---

[39]Richard H. Hart, "The Nongraded Primary School and Arithmetic," The Arithmetic Teacher, IX (March, 1962),130-133.

[40]L. E. Knight, "A Study of Double Grades in New Haven City Schools," Journal of Experimental Education, VII (September, 1938), 11-18.

in four graded schools. The test data of this study on reading and personality adjustment slightly favored the nongraded group, even though this group was slightly younger and scored slightly lower in mental maturity.

Anderson further noted an investigation in Appleton, Wisconsin, in which ten fourth-grade classes were compared with three nongraded groups at the beginning of their fourth year in school. The median composite achievement test score for the graded group was 4.57, and a significantly higher score of 4.83 for the nongraded group.[41]

Not all studies flatly endorsed the nongraded plan as a result of their investigations. Williams felt that there had not been enough empirical testing to reach conclusive results as to whether the nongraded plan was any more effective than the graded structure in meeting the goals of education. Williams undertook to examine relationships between organizational structure and pupil achievement. In a comparison of the brighter pupils of two schools, there was a significant difference in favor of the nongraded pupils; but in a comparison of the total group, a statistically significant difference was found on only one test-Paragraph Meaning, which favored the graded school. These findings suggest that the nongraded organization favors the brighter pupils, and the graded organization, the lower achieving pupils.[42]

---

[41]Richard C. Anderson, "The Case for Nongraded Homogeneous Grouping," Elementary School Journal, LXII, No. 4 (January, 1962), 193-197.

[42]Wilmajean Williams, "Academic Achievement in a Graded and in a Nongraded School," Elementary School Journal, LXVII (December, 1966), 135-139.

Another investigation revealing discrepancies has been related by Provus. The staff of Homewood Public Schools wanted to make a careful study of the effect of ability grouping on arithmetic achievement. It was believed that children taught in homogeneous classes would learn more arithmetic than those not so grouped. The results showed that the experimental high and middle groups of the nongraded program had higher growth scores at each grade level, but the low graded control groups had a somewhat higher growth score than the low nongraded group. Consequently, the author concluded that the more competent students profited most from ability grouping while average children profited slightly, and the slow learner no more than in a heterogeneous class.[43]

Hopkins found no significant differences in his study to determine variations in reading vocabulary and comprehension between pupils in a graded and in an ungraded primary group. The sampling was composed of eighteen schools in Los Angeles County comprising forty-five schools, twenty of which were ungraded and twenty-five of which were graded.

Hopkins' data concluded that there were no significant differences between means of the graded and the ungraded pupils at the end of three years of schooling. On the average, the girls were found to be superior to the boys on all measures of reading. Nor were there any significant interactions, that is, no differences between pupils

---

[43]Malcolm M. Provus, "Ability Grouping in Arithmetic," Elementary School Journal, LX (April, 1960), 391-398.

in graded and ungraded classes were significantly associated with intelligence or sex.[44]

Enevoldsen attempted to determine the degree of success of the ungraded program in Lincoln, Nebraska, in relation to pupil achievement and pupil attitude toward school. His sample comprised fourth grade children in three selected experimental schools and four selected control schools which had been in an ungraded situation or a graded situation for three years. There was a total of 210 ungraded pupils compared with 210 graded pupils. His findings indicated that there were no significant differences in academic achievement between the two plans in thirty-three of the forty testing situations. The graded pupils had the advantage in six cases, the ungraded pupils in one. He also found that there were twenty-four pupils who were retained in the graded school and only nine pupils who stayed an additional year in the ungraded program.[45]

Muck's study was to find an answer to the question, "Are the academic achievements of children in a nongraded primary classroom more advanced than the academic achievements of children in a graded primary classroom in the Campus School of the State University College at Buffalo, New York?" Six classrooms were involved, and each child in

---

[44]Kenneth D. Hopkins, O. A. Oldridge, and Malcolm Williamson, "An Empirical Comparison of Pupil Achievement and Other Variables in Graded and Ungraded Classes," American Educational Research Journal, II (November, 1965), 207-215.

[45]Corwin Leonard Enevoldsen, "An Evaluation of the Ungraded Primary Program in Selected Schools in the Lincoln, Nebraska, Public School System," Dissertation Abstracts, XXIII, No. 9 (March, 1962), 3054-3055.

the three experimental groups was matched with a child in a corresponding controlled group which proceeded through the regular first, second, and third grade plan. Tests were administered to determine the level of performance of basic skills in the curriculum goals.

A summary of the mean differences of all tests for all groups in Muck's study indicated that there were very few differences significant at the .05 level. Therefore, the nongraded classes did not achieve better than the graded classes in academic areas of the curriculum.[46]

Russell compared two groups that were matched on the basis of initial reading level and results on a group intelligence measure. The experimental group consisted of 278 fourth, fifth, and sixth graders grouped in nongraded, homogeneous classes for reading instruction. The control group of 248 pupils attended graded classes. At the end of the two years, there were no significant differences in pupil achievement when measured by standardized tests.[47]

Some investigators, after their examination of the ungraded schools, were led to the conclusion that the traditional graded plan achieved higher results, and therefore, a better organizational device.

The most exhaustive study available since Goodlad and Anderson is that of Carbone, who reviewed in 1961 his unpublished doctoral

---

[46]Ruth E. S. Muck, "The Effect of Classroom Organization on Academic Achievement in Graded and Nongraded Classes," Dissertation Abstracts, XXVII (1967), 2923-2924.

[47]David H. Russell, "Inter-class Grouping for Reading Instruction in the Intermediate Grades," Journal of Educational Research, XXXIX (February, 1946), 462-470.

dissertation. Carbone, believing that the effectiveness of nongraded organization was yet to be established because the studies indicating better results from nongraded schools were, in his opinion, not very scientific, undertook his investigation to compare differences in achievement. His sampling was composed of comparable groups of pupils who had attended graded and nongraded primary schools. His results indicated that in all areas of achievement--reading, language arts, and arithmetic, as well as in total achievement--graded pupils scored significantly higher than the nongraded when the original scores were adjusted for intelligence.[48]

Chastain conducted a study to determine to what extent three plans for homogeneous grouping affected the achievement of grades four, five, and six elementary school pupils in arithmetic and in reading, and to determine if homogeneous grouping plans based on achievement and/or ability promote greater achievement in arithmetic and reading than homogeneous grouping based on chronological age. His findings based on 360 intermediate grade pupils of the Rangely, Colorado, Elementary School revealed that grouping plans for pupils in the representative group had no significant effects on achievement in reading or in arithmetic, except when the graded school and the achievement-platoon school were compared for achievement in arithmetic. Grouping primarily by achievement in arithmetic was detrimental. Homogeneous grouping plans based on achievement and/or ability did not promote

---

[48]Robert F. Carbone, "A Comparison of Graded and Nongraded Elementary Schools," Elementary School Journal, LXII (November, 1961), 82-88.

greater achievement in arithmetic and reading for pupils in the representative group. Homogeneous grouping based on achievement and/or ability was accepted by pupils, teachers, and parents.[49]

Moore investigated the differences in reading and arithmetic achievement between children in an ungraded primary organization and children in a conventional graded school system, and compared instructional grouping practices of teachers in both types of organizations. He selected four elementary schools in Wayne, Michigan, during the 1961-1962 school year, involving a total of twelve teachers and 329 pupils using the conventional graded plan, and a total of twelve teachers and 292 pupils under the ungraded system. The results showed the mean score of pupils enrolled in graded classes exceeded the mean score of pupils enrolled in ungraded classes in nearly all measures of achievement. It also appeared from the data that within the confine of one academic school year, the idea of greater flexibility is not a unique attribute of the ungraded organization and the provision for the variability of pupils can be as adequately met in the graded organization as in the ungraded.[50]

The purpose of Aigner's study was to determine whether or not the academic achievement of the children involved in the nongraded

---

[49]Clarence Shelton Chastain, "An Experimental Study of the Gains in Achievement in Arithmetic and Reading Made by the Pupils in the Intermediate Grades in the Rangely, Colorado, Elementary School who were Instructed in Traditional Classrooms, in Achievement Platoons, and in Nongraded Classrooms," Colorado Field Studies, XXXIII (1961), 75-80.

[50]Daniel I. Moore, "Pupil Achievement and Grouping Practices in Graded and Ungraded Primary Schools," Dissertation Abstracts, XXIV, No. 5 (November, 1963), 3233.

primary program of the Bellevue School District in Washington was heightened by a structured situation. The following conclusions were drawn from the findings of this study:

1. In the area of Reading the performance of the Bellevue Continuous Growth Program children was not as high as was that of the control group. The greatest disparity occurred at the lower percentile levels.

2. In the area of Writing the performance of the Bellevue Continuous Growth Program children as compared to the control group did not show any great over-all dissimilarity.

3. In the area of Mathematics the performance of the Bellevue Continuous Growth Program children was not as high as was that of the control group. The greatest disparity in performance occurs at the lower percentile levels.

4. In the area of Social Studies the performance of the Bellevue Continuous Growth Program children was not as high as was that of the control group. The disparity of performance was not as centered in Social Studies as it was in Reading or Mathematics.

5. In the area of Listening the performance of the Bellevue Continuous Growth Program children as compared to the control group did not show any great over-all dissimilarity.

6. In the area of Science the performance of the Bellevue Continuous Growth Program children as compared to the control group did not show any great over-all dissimilarity.[51]

Summary of the Literature

The literature reviewed in this section indicates that innovations in organizational plans to facilitate pupil progress have been many and varied. Since the 1930's, a movement to eliminate grade barriers has been spreading throughout the country. Ungraded programs

---

[51] Boyd Westen Aigner, "Statistical Analysis of Achievement Differences of Children in a Nongraded Primary Program and Traditional Classrooms," Colorado Field Studies, XXIII (1961), 1-5.

have been introduced into many school systems, principally at the primary level. Although valid research is meager, investigators reported evidence of improved learning on the part of pupils as well as favorable reactions from teachers and parents in schools where the program has been tried. These reports indicate that the Ungraded Primary shows great promise.

Those studies reviewed in the literature corroborate the hypothesis of this research. Many studies have been identified, variously concerned with the influence of nongrading on reading achievement, arithmetic performance, development of language arts, and total achievement scores. Judged by these, the academic development of children from nongraded classes surpasses that of children from graded classes.

CHAPTER III

DESIGN OF THE STUDY

Population

In March, 1966, the pupils attending Heights Parochial School, which had adopted the ungraded approach, were compared for academic achievement with the children of Zia Elementary School, which utilized the traditional graded plan. The samples compared were those children who had attended both of these schools for three consecutive years.

The schools were selected on the basis of socio-economic areas and proximity in an effort to equalize the social and cultural backgrounds of the selected sample. To minimize the effect of the parochial vs. the public institution, another set of similar schools were utilized as a control. This was an attempt to keep minimal those factors influencing and jeopardizing external validity.

The control group was composed of Inez Elementary School, which is a public school using the graded elementary approach, and Lady of Assumption School, which also used the graded elementary plan during the period of this study. At that time, the Heights Parochial School was the only one in Albuquerque, New Mexico, which had adopted the ungraded school organization.

The sample tested in 1966 totaled 250 students, while only 181 students comprised the 1968 sample. However, the final sample used for the statistical analysis amounted to 140 children from all sets of schools. Only those children taking all the tests were

included in the statistical analysis. If a child missed a single test, he was omitted from the study. This, therefore, caused sample shrinkage.

The sample used was as follows:

School	Sample Size
Heights Ungraded	47
Zia Elementary	23
Lady of Assumption	18
Inez Elementary	52

Instrumentation

Achievements of children in both sets of schools were compared to determine if the ungraded school approach was superior to that of the traditional graded school approach. In order to compare achievement of the students from these various schools, all pupils reported in the project were given the S.R.A. Achievement Series, Form D, 2-4. This test had been found to be well standardized and showed substantial validity and reliability. The developmental procedure, including the establishing of norms, has proven to be sound and thorough. Statistical data reveals that split-half reliabilities have been found to be in the high 0.80's and low 0.90's, which was reasonably sufficient for the evaluation of this study. Factor analysis data are extensive and consistent.

The three tests comprising the S.R.A. Achievement Series are essentially unspeeded measures of "power" or "level" designed to measure the pupil's basic achievement in broad curricular areas. Since much

criticism has been reported indicating that the ungraded school confines individualization of instruction to reading, special effort was made to incorporate various instructional areas.

The following areas of instruction were tested:

I. Reading

A. Comprehension
B. Vocabulary

II. Language Arts

A. Capitalization
B. Grammatical Usage
C. Spelling

III. Arithmetic

A. Concepts
B. Reasoning
C. Computation

The reading section has a high interest level in keeping with the concepts and vocabulary for which it was intended.

> The reading test is composed of complete stories rather than isolated and disconnected short paragraphs. The stories reportedly were constructed on the basis of surveys of children's interests at the various grade levels and on the types of reading matter that children are called upon to read.[1]

The Language test contains items presented in the context of a story within the realm of the child's everyday experiences.

> The test . . . consists of four passages, mainly narrative, on such subjects as pet dogs, pet birds, or birthday parties. The print is large, the instructions are simple, and the

---

[1] Worth R. Jones, The Fifth Measurement Yearbook, ed. Oscar K. Buros (New Jersey: The Gryphon Press, 1959), p. 54.

open page is inviting.[2]

The Arithmetic Tests are all inclusive of the pupil's mathematical knowledge at grade level.

> The reasoning section uses a "story" approach to word problems; the concepts and usage section is composed of many different types of items in which the pupil is asked to translate verbal forms into mathematical symbols, to demonstrate his knowledge of the vocabulary of arithmetic, and to indicate the degree of his understanding of mathematical ideas; and the third section of the test measures the pupil's ability to compute whole numbers, fractions, decimals, and denominate numbers.[3]

Knowledge of raw achievement in children is valueless unless the I.Q.'s of these children are predetermined. That is, a bright child showing the same achievement as a dull child has, in essence, not achieved as much. Therefore, as a further control on each group, an I.Q. test was administered to each child studied.

The verbal battery of the Lorge-Thorndike Intelligence Test, Form 2, Level A-H, was administered. The Lorge-Thorndike Intelligence Tests are a series of tests of abstract intelligence. They encompass ability to work with ideas and relationships among ideas. The tests are based on the premise that most abstract ideas with which the school child deals are expressed in verbal symbols, so much so that verbal symbols are the appropriate medium for the testing of abstract intelligence. The Verbal Battery is made up of five subtests which use only verbal items: vocabulary, verbal classification, sentence completion, arithmetic reasoning, and verbal analogy.

---

[2]Winifred L. Post, The Fifth Measurement Yearbook, ed. Oscar K. Buros (New Jersey: The Gryphon Press, 1959), p. 54.

[3]Jones, op. cit., p. 54.

To further investigate the hypothesis that the ungraded school system produces higher achievement than does the traditional school approach, data from the same group of children studied in 1966 were analyzed. This was accomplished in 1968, two years after the original study, which afforded an additional period of time to verify the previous results. The testing sample included only those students tested in 1966 who remained in the same school for a continued period of five years.

A reliable intelligence test such as the Lorge-Thorndike is assumed not to vary to any great extent. Therefore, another intelligence test was of no additional benefit for the purpose of this study. The results of the 1966 I.Q. test administration were further utilized.

> Under ordinary conditions an individual's I.Q. is supposed to remain the same throughout life, or at least throughout the age limits covered by the scale. Psychologists refer to this property as the constancy of the I.Q. The constancy of the I.Q. is the basic assumption of all scales in which relative degrees of intelligence are defined in terms of it. It is not only basic, but absolutely necessary that I.Q.'s be independent of the age at which they are calculated, because unless the assumption holds, no permanent scheme of intelligence classification is possible.[4]

The S.R.A. Tests, Levels 4-6, Batteries C and D, are used for sweep testing in the Albuquerque Public Schools. These are administered to all students during their fourth and sixth grades of school. Because children can become testwise repeating the same test, this investigator felt it unwise to use the S.R.A. again.

---

[4]David Wechsler, The Measurement and Appraisal of Adult Intelligence (Baltimore: The Williams and Wilkins Co., 1958), p. 29.

The Stanford Achievement Test, Intermediate II Battery for the end of the fifth grade level was substituted. This test correlates highly with the S.R.A. Tests.

To evaluate achievement tests used for academic grade placements in the California State Testing Program, a study[5] was made to compare five standardized achievements tests. The California Achievement Tests, S.R.A. Achievement Tests, Iowa Tests of Basic Skills, Stanford Achievement Tests, and Metropolitan Achievement Tests were administered to matched groups of fifth and eighth grade children. The average scores of the matched groups were placed in rank order to determine how their achievement grade placements compared from battery to battery and from subtest to subtest.

Children taking the California Achievement Tests consistently received higher scores, while those taking the Metropolitan Achievement Tests and the Stanford Achievement Tests fairly consistently received lower scores. There were variations among subgroups and subtests resulting in similarities between the Stanford Achievement Tests and the S.R.A. Achievement Tests.

Further evidence supporting the use of the Stanford Achievement Test was the comparison with eight other elementary level batteries reviewed in the Fifth Mental Measurement Yearbook. Three were considered by their reviewers to have very little to recommend them,

---

[5]Edward A. Taylor and James H. Crandall, "A Study of the 'Non-Equivalence' of Certain Tests Approved for the California State Testing Program," California Journal of Educational Research, XIII, No. 4 (September, 1962), 186-192.

thus promising to offer little competition to the Stanford. Favorable reviews were given to only three other tests, the California Achievement Tests, the S.R.A. Achievement Tests, and the Scholastic Achievement Series.

> The Stanford Achievement Test is the designation of a series of comprehension achievement tests developed to measure the important knowledge, skills, and understandings commonly accepted as desirable outcomes of the major branches of the elementary curriculum. The tests are intended to provide dependable measures of these outcomes, comparable from subject to subject and grade to grade, for use in connection with improvement of instruction, pupil guidance and evaluation of progress.[6]

In the 1964 Revision of the Stanford Achievement Test, there is reported an average estimate of reliability ranging from 0.88 to 0.90, indicating that the test may appropriately serve the purpose of this study.

The tests administered to the sample population included: Word Meaning, Paragraph Meaning, Spelling, Language, Arithmetic Computation, Arithmetic Concepts, and Arithmetic Applications. These subtests were grouped into three parts corresponding to the division of the S.R.A. subtests. Word Meaning and Paragraph Meaning were combined to comprise the Reading Achievement. Spelling and Language were used together to determine the Language Achievement level of the students. Arithmetic Computation, Arithmetic Concepts, and Arithmetic Applications were merged into a single arithmetic score.

---

[6]"Directions for Administering," Stanford Achievement Test (New York: Harcourt, Brace, and World, Inc., 1964), p. 3

Data Collection

Testing of the children in third grade was done between March 28, 1966, and April 22, 1966, when the sample had completed 2.7 years of formal schooling. The fifth grade tests began on March 28, 1968, and all testing was accomplished as quickly as possible. The fifth graders had thus completed 4.7 years in the selected schools.

Plan for Analysis

Analysis of covariance (ACV) was used to analyze the data. ACV is based on two statistics: correlation and analysis of variance.

> Basically all correlation measures describe the reduction in our uncertainty about one variable brought about by a knowledge of some other variable . . . and . . . analysis of variance is a technique for testing the hypothesis that several samples were drawn at random from one population. Two estimates of the population variance are obtained: one based on the variation within the subgroups and one based on differences among the means of the subgroups. These two are compared in the form of an F ratio.[7]

By using this statistical tool, achievement was adjusted in relationship to the I.Q. It equalized all the children being tested in reference to their native intelligence.

The "F" ratio at the five percent confidence level was used to signify differences among the various groups.

---

[7] Virginia L. Senders, Measurement and Statistics (New York: Oxford University Press, 1958), pp. 273,521.

CHAPTER IV

RESULTS

Introduction

This chapter includes the statistical treatment employed and the description of the data. Analysis of covariance results and correlation results are presented to determine the acceptance or rejection of the hypothesis.

The 140 children who made up the sample for this study came from four schools. The experimental group consisted of forty-seven children from the Heights Catholic School, known as School I for the purpose of this study, and twenty-three subjects from Zia Elementary School, known as School II. Eighteen students from Assumption Parochial School, defined as School III, and fifty-two students from Inez Elementary School, defined as School IV, comprised the control group.

Statistical Treatment

The Research Center at the University of New Mexico prepared the programs selected for treatment of the data. Raw data for all the measuring instruments were compiled on IBM data cards. These were used for Program U6604, Analysis of Covariance, and Program U6601, Correlation.

Variables

The three variables studied were Reading Achievement, Arithmetic Achievement, and Language Achievement, which were measured for

each subject area by the S.R.A. Achievement Tests in 1966 and by the Stanford Achievement Tests in 1968. The scores from these tests were treated as the dependent variables. In addition, the Lorge-Thorndike Verbal Intelligence Test was utilized as a control. The scores from this test were treated as an independent variable.

To measure gain in achievement over the two-year period, the S.R.A. Achievement Tests and the Stanford Achievement Tests were covaried. For this measurement, the S.R.A. Achievement Tests were treated as the independent variable, while the Stanford Achievement Tests were treated as the dependent variable. For ease in reference and understanding during the remaining discussion of the statistics, the tests will be designated as LT for the Lorge-Thorndike Intelligence Test, SRA for the Science Research Associates Achievement Test, and SAT for the Stanford Achievement Tests.

Treatment of the Data

For testing the hypothesis, analysis of covariance and correlation were applied to the raw scores to measure the significance of the gains of the four schools in the three areas tested: Reading Achievement, Arithmetic Achievement, and Language Achievement.

These results are presented in a table in Appendix A. This data comprises the code for each child which includes the school, sex, teacher, and name, I.Q. scores, S.R.A. Achievement scores (reading, arithmetic, and language), and all the Stanford Achievement scores (reading, arithmetic, and language). These test results are the raw data upon which the statistical analysis is based.

These results are also presented in a series of tables located in the Appendix. Appendix B represents the results of LT covaried against the results of SRA Reading; Appendix C represents the results of LT covaried against the results of SAT Reading; Appendix D portrays the results of SAT Reading covaried against the results of SRA Reading; Appendix E depicts the results of LT; Appendix F represents the results of SAT Arithmetic covaried against the results of LT; Appendix G illustrates the results of SAT Arithmetic covaried against the results of SRA Arithmetic; Appendix H depicts the results of SRA Language covaried against the results of LT; Appendix I shows the results of SAT Language against LT; and Appendix J gives the results of SAT Language against SRA Language.

The data were also analyzed to show the correlation which exists. These data are included in Appendix K.

Reading Results

By covarying the results of SRA Reading against the results of LT, the F score of 2.1 was not significant at the .05 level of confidence (3.94). See Appendix B. The results of SAT Reading were covaried against the results of LT in order to determine an F score. See Appendix C. The F obtained of 0.35 was not significant at the .05 level of confidence. The covariance of the results of SAT Reading against the results of SRA Reading yielded an F of 0.69 which was not significant at the .05 level of confidence. See Appendix D. The hypothesis must be rejected when this section of the study is considered. Students taught in the ungraded school did not gain in reading achievement

more appreciably than children taught in the traditional graded schools.

Although the scores were not significant, the ungraded school did show greater gain than did the other schools. See Tables I, II, and III, following. These tables reveal that the Parochial Schools had larger gains than did either of the Public Schools after the scores were adjusted for the SRA Reading against the SAT Reading. The Ungraded School revealed an adjusted mean score of 66.32, while School II had 62.65, School III had 63.93, and School IV had 62.24. When examining the means before they were adjusted, the experimental schools demonstrated higher achievement than did the control schools. After the initial testing at the third grade level, the experimental graded school revealed a higher mean score, 57.13, than did the experimental graded school, 56.60. After a duration of two years, the experimental ungraded school surpassed the experimental graded school in reading achievement.

The correlation coefficent, "r," was 0.654 for SRA Reading and SAT Reading. See Appendix K.

Arithmetic Results

By covarying the results of SRA Arithmetic against the results of LT, an F of 9.5 was obtained which is significant at the .05 level of confidence (3.94). See Appendix E. The adjusted mean score for School I was 86.56, revealing that the students attending this school had accrued more knowledge in arithmetic than did the children attending School II with an adjusted mean score of 81.59. There were substantial differences between the experimental and control schools.

TABLE I

MEAN SCORES OF LORGE-THORNDIKE I.Q., MEAN SCORES OF SRA READING, AND ADJUSTED MEAN SCORES OF EXPERIMENTAL AND CONTROL SCHOOLS

Schools	Heights	Zia	Assumption	Inez	F
Means of LT	116.66	114.96	106.39	107.48	4.8
Means of SRA Reading	56.60	57.13	50.22	54.35	3.5
Adjusted Means	54.65	55.84	52.27	55.97	2.1*

*F of 2.1 was not significant at the .05 level of confidence (3.94).

TABLE II

MEAN SCORES OF LORGE-THORNDIKE I.Q., MEAN SCORES OF SAT READING, AND ADJUSTED MEAN SCORES OF EXPERIMENTAL AND CONTROL SCHOOLS

Schools	Heights	Zia	Assumption	Inez	F
Means of LT	116.66	114.96	106.39	107.48	4.8
Means of SAT Reading	68.72	65.87	56.61	61.21	2.3
Adjusted Means	64.09	62.81	61.47	65.06	0.35*

*F of 0.35 was not significant at the .05 level of confidence (3.94).

TABLE III

MEAN SCORES OF SRA READING, MEAN SCORES OF SAT READING, AND ADJUSTED MEAN SCORES OF EXPERIMENTAL AND CONTROL SCHOOLS

Schools	Heights	Zia	Assumption	Inez	F
Means of SRA Reading	56.60	57.13	50.47	54.33	3.4
Means of SAT Reading	68.72	65.87	56.95	61.18	2.3
Adjusted Means	66.32	62.65	63.83	62.24	0.69*

*F of 0.69 was not significant at the .05 level of confidence (3.94).

School II had an adjusted mean score of 75.10, which was quite similar to School IV with an adjusted mean score of 75.85.

By covarying the results of SAT Arithmetic against the results of LT, an F score of 9.8 was obtained which was significant at the .05 level of confidence (3.94). See Appendix F. An examination of the means as presented in Tables IV, V, and VI demonstrates substantial variation in arithmetic achievement before the mean scores were adjusted with the ungraded school, School I, the highest in this subject area. Even after the mean scores were adjusted, School I continued to display greater achievement that did the other schools. The adjusted mean score of 55.91 for School I was materially greater than the adjusted mean score of 39.25 for School II for the experimental group. The control group also showed large variance in scores with School III, revealing an adjusted mean score of 40.85, while School IV revealed an adjusted mean score of 50.01

The covariance of the results of SAT Arithmetic against the results of SRA Arithmetic yielded an F of 6.4, which was significant at the .05 level of confidence (3.94). See Appendix G. The hypothesis must be accepted when this section of the study is considered. Students attending an ungraded school achieve more in arithmetic in five years of schooling than do their counterparts attending a traditional graded school.

Upon further examination of the adjusted mean scores of SRA Arithmetic against SAT Arithmetic, it is learned that there are substantial differences in the experimental group, with School I displaying an adjusted mean score of 52.81 and School II with an adjusted mean

score of 39.14. This is a remarkable gain for a two-year period of time. The gain in achievement when comparing the adjusted mean scores of the control group is not diversified. The adjusted mean score of School III was 44.40 while the adjusted mean score of School IV was 51.77. See Table VI.

When examining the correlation coefficients of the arithmetic tests, it is revealed that an "r" of 0.59 exists between the SRA Arithmetic Achievement Test and the SAT Arithmetic Achievement Test. See Appendix K.

Language Results

By covarying the results of SRA Language against the results of LT, an F score of 1.0 obtained was not significant at the .05 level of confidence (3.94). See Appendix H. Although the scores are not significant, the ungraded school, School I, reveals a higher adjusted mean score than the other schools.

The results of SAT Language were covaried against the results of LT. The resulting F of 3.3 is not significant at the .05 level of confidence (3.94). See Appendix I. Although the scores were not significant, the ungraded school revealed a higher adjusted mean score than that obtained by the other schools. See Table VIII. There were substantial differences in adjusted mean scores for the experimental group. School I had an adjusted mean score of 123.40, while School II had an adjusted mean score of 111.59. There was also noticeable variation in the scores of the control group. School III revealed an adjusted mean score of 113.73, while the adjusted mean score of School IV was 122.62.

TABLE IV

MEAN SCORES OF LORGE-THORNDIKE I.Q., MEAN SCORES OF SRA ARITHMETIC, AND ADJUSTED MEAN SCORES OF EXPERIMENTAL AND CONTROL SCHOOLS

Schools	Heights	Zia	Assumption	Inez	F
Means of LT	116.66	114.96	106.39	107.48	4.8
Means of SRA Arithmetic	89.62	83.61	71.89	73.31	15.1
Adjusted Means	86.56	81.59	75.10	75.85	9.5*

*F of 9.5 is significant at the .05 level of confidence (3.94).

C = Heights and Zia, not significant.
C = Heights and Assumption, significant.
C = Heights and Inez, significant.

TABLE V

MEAN SCORES OF LORGE-THORNDIKE I.Q., MEAN SCORES OF SAT ARITHMETIC, AND ADJUSTED MEAN SCORES OF EXPERIMENTAL AND CONTROL SCHOOLS

Schools	Heights	Zia	Assumption	Inez	F
Means of LT	116.66	114.96	106.39	107.48	4.8
Means of SAT Arithmetic	59.15	41.39	37.44	47.31	10.7
Adjusted Means	55.91	39.25	40.85	50.01	9.8*

*F of 9.8 is significant at the .05 level of confidence (3.94).

C = Heights and Zia, significant.
C = Heights and Assumption, significant.
C = Heights and Inez, not significant.

TABLE VI

MEAN SCORES OF SRA ARITHMETIC, MEAN SCORES OF SAT ARITHMETIC, AND ADJUSTED MEAN SCORES OF EXPERIMENTAL AND CONTROL SCHOOLS

Schools	Heights	Zia	Assumption	Inez	F
Means of SRA Arithmetic	89.62	83.61	71.74	73.39	15.1
Means of SAT Arithmetic	59.15	41.39	38.58	47.08	10.3
Adjusted Means	52.81	39.14	44.40	51.77	6.4*

*F of 6.4 is significant at the .05 level of confidence (3.94).

C = Heights and Zia, significant.
C = Heights and Assumption, significant.
C = Heights and Inez, not significant.

The results of SAT Language were covaried against the results of SRA Language in order to determine an F score. See Appendix J. The F obtained of 2.3 was not significant at the .05 level of confidence (3.94). The hypothesis must therefore be rejected when the language section of this study is being considered. Pupils attending an ungraded school do not accrue more language knowledge than their counterparts attending a traditional graded school.

Even though the results were not statistically significant, the mean gain was in the predicted direction. See Table IX. The total raw gain of the mean for the ungraded school, School I, revealed a growth from 102.26 to 128.70, while the raw gain for experimental School II on the same tests revealed a growth from 99.13 to 115.09.

The correlation coefficients of SRA Language and SAT Language were high at 0.71. The Language Achievement Tests also have a high correlation coefficient score with the Reading Achievement Tests. See Appendix K.

TABLE VII

MEAN SCORES OF LORGE-THORNDIKE I.Q., MEAN SCORES OF SRA LANGUAGE, AND ADJUSTED MEAN SCORES OF EXPERIMENTAL AND CONTROL SCHOOLS

Schools	Heights	Zia	Assumption	Inez	F
Means of LT	116.66	114.96	106.39	107.48	4.8
Means of SRA Language	102.26	99.13	91.22	94.94	4.4
Adjusted Means	99.05	97.01	94.59	97.61	1.0*

*F of 1.0 is not significant at the .05 level of confidence (3.94).

TABLE VIII

MEAN SCORES OF LORGE-THORNDIKE I.Q., MEAN SCORES OF SAT LANGUAGE, AND ADJUSTED MEAN SCORES OF EXPERIMENTAL AND CONTROL SCHOOLS

Schools	Heights	Zia	Assumption	Inez	F
Means of LT	116.66	114.96	106.39	107.48	4.8
Means of SAT Language	128.70	115.09	108.17	118.21	4.2
Adjusted Means	123.40	111.59	113.73	122.62	3.3*

*F of 3.3 is not significant at the .05 level of confidence (3.94).

TABLE IX

MEAN SCORES OF SRA LANGUAGE, MEAN SCORES OF SAT LANGUAGE, AND ADJUSTED MEAN SCORES OF EXPERIMENTAL AND CONTROL SCHOOLS

Schools	Heights	Zia	Assumption	Inez	F
Means of SRA Language	102.26	99.13	92.11	94.69	4.2
Means of SAT Language	128.70	115.09	109.05	118.08	4.1
Adjusted Means	112.83	113.16	116.01	121.77	2.3*

*F of 2.3 is not significant at the .05 level of confidence (3.94).

CHAPTER V

SUMMARY, CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

Summary

The primary aim of this investigation was to determine significant achievement differences of students taught in the ungraded school system and those taught in the traditional graded school system. One hundred and forty students comprising four groups, two experimental and two control, were tested and analyzed. The SRA Achievement Tests in Reading, Arithmetic, and Language were administered to the same students at the fifth grade level. The Lorge-Thorndike Group Intelligence Test was also administered to this sample. An analysis of covariance design adjusted for any differences intelligence.

There were no significant achievement differences in reading. Likewise, no significant differences were noted in language achievement. However, significant differences in arithmetic achievement were revealed at both the third and the fifth grade levels. These differences favor the ungraded school and were significant at the .05 level of confidence.

Conclusions

Based on the analysis of the data, the following conclusions were drawn:

Table of Results

	Grade 3	Grade 5
Reading	Not significant	Not significant
Arithmetic	Significant	Significant
Language	Not significant	Not significant

1. At the five percent level of confidence, there were no significant differences among the four schools tested in Reading Achievement at the third grade level.

2. There were no significant differences in Reading Achievement at the five percent level of confidence among the four schools tested at the fifth grade level.

3. Significant differences were noted in the statistical data in Arithmetic Achievement at the five percent level of confidence at the third grade level favoring the ungraded school system.

4. At the fifth grade level, there were significant differences in Arithmetic Achievement at the five percent level of confidence, demonstrating that the ungraded school system produced greater results.

5. At the five percent level of confidence, there were no significant differences in Language Achievement at the third grade level.

6. No significant differences in Language Achievement existed at the fifth grade level at the five percent level of confidence.

Implications

This study tends to imply that in those areas where attempts have been made to individualize instruction, maximum achievement has been obtained. The graded school system has traditionally grouped students for reading instruction based on individual ability. As a result, a student can advance only after he is assured of a basic foundation at a given level. The ungraded school likewise groups children according to their ability. Here grouping is less formal and is independent of the age of the student. However, here again, the student can only advance to a higher level by proving proficiency at a given level. In either type of ability groupings, brighter students are able to accelerate while the less gifted child is not subjected to material too difficult for him to comprehend and is assured of a mastery of basic material.

The statistical data obtained through this research reveal that there is a high correlation between reading skills and ability in language subject matter. Since individual instructional groupings in language are not used in the graded schools, one may assume that this reciprocal expertise is a reflection of the individual emphasis in reading. Therefore, one is able to postulate that gains in language achievement among the various schools would be comparable to gains in reading achievement.

However, in the field of arithmetic, little attempt is made in the graded school to individualize instruction. Brighter students are held back to keep the level of instruction uniform, and poorer students are pushed beyond their abilities and comprehension, again to

maintain the level of teaching. It therefore becomes obvious that the mean score in arithmetic achievement would be a low one. The bright students can only achieve the maximum that they have been taught and therefore cannot skew the curve upward to compensate for the poor scores of the less gifted children. In the ungraded school, the better students progress faster in arithmetic achievement and their scores reflect this difference. Empirically, the poorer students in the ungraded system also do better in that they seem to understand that material which they have been taught, and the whole subject of arithmetic is not an enigma to them.

The ungraded school, at the request of the State Board of Education, used the Scott, Foresman textbooks for the first three years attended by the ungraded sample, and then at the fourth grade level, switched to the SRA Arithmetic Textbooks. The graded schools continued to use the Scott, Foresman arithmetic textbooks throughout the five years of the study. It is highly unlikely that significant gains in arithmetic achievement were caused by the use of a different textbook by the ungraded school in the last two years of this research, especially when significant gains in achievement were obtained through data compiled at the time when all groups were using the identical texts.

It is more likely, however, that the students in the ungraded school system developed a better basic concept of arithmetic principles and were able to build on this foundation. Assuming that this is the case, then the divergence will continue to become greater as these children advance in their education.

Only additional testing in the future, for example, at the seventh and ninth grade levels, will validate this theory.

Recommendations

1. Ability groupings might be tried in the graded schools to find out if these yield higher achievement in arithmetic.

2. This study should be repeated without shifting the use of textbooks in arithmetic in the ungraded group, or if a shift occurs in such usage, both groups (graded and ungraded) should be shifted at the same time to control for variance introduced by textbook usage.

3. An item analysis to locate differences in arithmetic of either computation or comprehension might locate the deficiency of the graded school's arithmetic instruction.

4. Other scales might be devised to measure such variables as anxiety, drive or motivation, independence, self-confidence, and self-concept, and see how each of these affect achievement.

5. Further research might be more controlled in order to determine more accurately the particular aspects of the study which account for the obtained results.

6. Although the arithmetic achievement results were significant, this singular study would not justify, in itself, a revision of the current graded organizational structure of the Albuquerque public school system.

APPENDIX A

GENERAL STATISTICS

Variable	Mean	Deviation	Standard Error
SRA Reading	55.0	8.1	0.7
Stan. Reading	63.9	19.2	1.6
SRA Arithmetic	80.3	15.3	1.3
Stan. Arithmetic	49.0	18.1	1.5
SRA Language	97.6	13.2	1.1
Stan. Language	119.9	28.0	2.0

APPENDIX D

RESULTS OF THE COVARIANCE BETWEEN LT AND SRA READING

	Source	df	Sum of Squares	Mean Square	F
LT	Treatments	3	2831	944	4.8
	Within	136	26570	195	
	Total	139	29400		
SRA Reading	Treatments	3	657	219	3.5
	Within	136	8427	62	
	Total	139	9084		
Analysis of Sum of Cross Product					
	Treatments		1132		
	Within		10350		
	Total		11480		
Completed Covariance Table					
	Treatments	3	205	68	2.1*
	Within	135	4398	33	
	Total	138	4603		

*Not significant at the .05 level of confidence (3.94).

APPENDIX C

RESULTS OF THE COVARIANCE BETWEEN LT AND SAT READING

	Source	df	Sum of Squares	Mean Square	F
LT	Treatments	3	2831	944	4.8
	Within	136	26570	195	
	Total	193	29400		
SAT Reading	Treatments	3	2515	838	2.3
	Within	136	48690	358	
	Total	139	51210		
Analysis of Sum of Cross Product					
	Treatments		2558		
	Within		24560		
	Total		27120		
Completed Covariance Table					
	Treatments	3	204	68	0.35*
	Within	135	25990	192	
	Total	138	26200		

*Not significant at the .05 level of confidence (3.94).

APPENDIX D

RESULTS OF THE COVARIANCE BETWEEN SRA READING AND SAT READING

	Source	df	Sum of Squares	Mean Square	F
SRA Reading	Treatments	3	636	212	3.4
	Within	136	8448	62	
	Total	139	9084		
SAT Reading	Treatments	3	2479	826	2.3
	Within	136	48730	358	
	Total	139	51210		
Analysis of Sum of Cross Product					
	Treatments		1149		
	Within		12950		
	Total		14100		
Completed Covariance Table					
	Treatments	3	4484	149	0.69*
	Within	135	28890	214	
	Total	138	29340		

*Not significant at the .05 level of confidence (3.94).

APPENDIX E

RESULTS OF THE COVARIANCE BETWEEN LT AND SRA ARITHMETIC

	Source	df	Sum of Squares	Mean Square	F
LT	Treatments	3	2831	944	4.8
	Within	136	26570	195	
	Total	139	29400		
SRA Arithmetic	Treatments	3	8147	2716	15.1
	Within	136	24440	180	
	Total	139	32590		
Analysis of Sum of Cross Product					
	Treatments		4757		
	Within		16210		
	Total		20970		
Completed Covariance Table					
	Treatments	3	3084	1028	9.5*
	Within	135	14550	108	
	Total	138	17630		

*Significant at the .05 level of confidence (3.94).

APPENDIX F

RESULTS OF THE COVARIANCE BETWEEN LT AND SAT ARITHMETIC

	Source	df	Sum of Squares	Mean Square	F
LT	Treatments	3	2831	944	4.8
	Within	136	16570	195	
	Total	139	19400		
SAT Arithmetic	Treatments	3	8725	2908	10.7
	Within	136	36890	271	
	Total	139	45620		
Analysis of Sum of Cross Product					
	Treatments		3272		
	Within		17200		
	Total		20470		
Completed Covariance Table					
	Treatments	3	5605	1868	9.8*
	Within	135	25760	191	
	Total	138	31370		

*Significant at the .05 level of confidence (3.94).

APPENDIX G

RESULTS OF THE COVARIANCE BETWEEN SRA ARITHMETIC AND SAT ARITHMETIC

	Source	df	Sum of Squares	Mean Square	F
SRA Arithmetic	Treatments	3	8159	2720	15.1
	Within	136	24430	180	
	Total	139	32590		
SAT Arithmetic	Treatments	3	8424	2808	10.3
	Within	136	37190	273	
	Total	139	45620		
Analysis of Sum of Cross Product					
	Treatments		6238		
	Within		16610		
	Total		22850		
Completed Covariance Table					
	Treatments	3	3699	1233	6.4*
	Within	135	25900	192	
	Total	138	29600		

*Significant at the .05 level of confidence (3.94).

APPENDIX H

RESULTS OF THE COVARIANCE BETWEEN LT AND SRA LANGUAGE

	Source	df	Sum of Squares	Mean Square	F
LT	Treatments	3	2831	944	4.8
	Within	136	26570	195	
	Total	139	29400		
SRA Language	Treatments	3	2172	724	4.4
	Within	136	22150	162	
	Total	139	24330		
Analysis of Sum of Cross Product					
	Treatments		2392		
	Within		17020		
	Total		19420		
Completed Covariance Table					
	Treatments	3	258	86	1.0*
	Within	135	11250	83	
	Total	138	11510		

*Not significant at the .05 level of confidence (3.94).

APPENDIX I

RESULTS OF THE COVARIANCE BETWEEN LT AND SAT LANGUAGE

	Source	df	Sum of Squares	Mean Square	F
LT	Treatments	3	2831	944	4.8
	Within	136	26570	195	
	Total	139	29400		
SAT Language	Treatments	3	6801	2267	4.2
	Within	136	73060	537	
	Total	139	79860		
Analysis of Sum of Cross Product					
	Treatments		3183		
	Within		28100		
	Total		31280		
Completed Covariance Table					
	Treatments	3	3234	1078	3.3*
	Within	135	43340	321	
	Total	138	46580		

*Not significant at the .05 level of confidence (3.94).

APPENDIX T

RESULTS OF THE COVARIANCE BETWEEN SRA LANGUAGE AND SAT LANGUAGE

	Source	df	Sum of Squares	Mean Square	F
SRA Language	Treatments	3	2079	693	4.2
	Within	136	22250	164	
	Total	139	24330		
SAT Language	Treatments	3	6580	2193	4.1
	Within	136	73280	539	
	Total	139	79860		
Analysis of Sum of Cross Product					
	Treatments		3159		
	Within		28110		
	Total		31270		
Completed Covariance Table					
	Treatments	3	1904	635	2.3*
	Within	135	37750	280	
	Total	138	39660		

*Not significant at the .05 level of confidence (3.94).

APPENDIX K

CORRELATION COEFFICIENTS

Variables	SRA Read.	Stan. Read.	SRA Arith.	Stan. Arith.	SRA Lang.	Stan. Lang.
SRA Read.	1.0					
Stan. Read.	0.65	1.0				
SRA Arith.	0.67	0.59	1.0			
Stan. Arith.	0.52	0.63	0.59	1.0		
SRA Lang.	0.72	0.65	0.62	0.54	1.0	
Stan. Lang.	0.64	0.76	0.55	0.63	0.71	1.0

BIBLIOGRAPHY

Books

Beggs, David W. Nongraded Schools in Action. Bloomington: Indiana University Press, 1967.

Berthold, Charles Aubert. Administrative Concern for Individual Differences. New York: Bureau of Publications, Teachers College, Columbia University, 1951.

Change and Innovation in Elementary Organization: Selected Readings. Edited by Maurie Hillson. New York: Holt, Rinehart and Winston, 1965.

Dixon, Wilfrid J., and Massey, Frank J. Introduction to Statistical Analysis. New York: McGraw-Hill Book Company, Inc., 1957.

Dufay, Frank R. Ungrading the Elementary School. West Nyack, N. Y.: Parker Publishing Company, Inc., 1966.

Ekstrom, Ruth B. Experimental Studies of Homogeneous Grouping: A Review of the Literature. Princeton, N. J.: Educational Testing Service, 1959.

Glogau, Lillian, and Fessell, Murray. The Ungraded Primary School: A Case Study. New York: Parker Publishing Company, Inc., 1967.

Goodlad, John I., and Anderson, Robert H. The Nongraded Elementary School. New York: Harcourt, Brace and World, Inc., 1959.

Guilford, J. P. The Nature of Human Intelligence. New York: McGraw-Hill Book Company, 1967.

Jones, Worth R. The Fifth Measurement Yearbook. Edited by Oscar K. Buros. New Jersey: The Gryphon Press, 1959.

McLoughlin, William P. The Nongraded School, A Critical Assessment. New York: The State Education Department, The University of the State of New York, 1967.

Miller, Richard I. The Nongraded School, Analysis and Study. New York: Harper and Row, 1967.

Post, Winifred L. The Fifth Measurement Yearbook. Edited by Oscar K. Buros. New Jersey: The Gryphon Press, 1959.

Senders, Virginia L. Measurement and Statistics. New York: Oxford University Press, 1958.

Shearer, William J. The Grading of Schools. New York: H. P. Smith Publishing Company, 1899.

Wechsler, David. The Measurement and Appraisal of Adult Intelligence. Baltimore: The Williams and Wilkins Company, 1958.

Periodicals

Anderson, Richard C. "The Case for Nongraded Homogeneous Grouping," Elementary School Journal, LXII, No. 4 (January, 1962), 193-197.

Anderson, Robert H. "Ungraded Primary Classes," The Education Digest, XXI (November, 1955), 47-50.

_____, and Goodlad, J. I. "Self-appraisal in Nongraded Schools: A Survey of Findings and Perceptions," Elementary School Journal, LXII (February, 1962), 261-269.

Austin, Kent C. "The Ungraded Primary School," Childhood Education, XXXIII (February, 1957), 260-263.

Berman, Louise M. "New School Organization--Same Old Curriculum?" The Education Digest, XXXIII, No. 7 (February, 1968), 11-14.

Blumenthal, F. "A Study of the Correlation of Pupil Ability with Chronological Age," Educational Administration and Supervision, XXXV (May, 1949), 279-294.

Brearly, H. C. "Are Grades Becoming Extinct?" Peabody Journal of Education, XXXI (March, 1954), 258-259.

Brinkman, Albert R. "Now It's the Ungraded School," PTA Magazine, LV, No. 10 (June, 1961), 24-26.

Brown, Frank B. "Nongraded School," The Bulletin of the National Association of Secondary-School Principals, XLVII (May, 1963) 64-72.

Carbone, Robert F. "A Comparison of Graded and Non-graded Elementary Schools," Elementary School Journal, LXII (November, 1961), 82-88.

Dean, Stuart. "Nongraded School," School Life, XLVII, No. 3 (December, 1964), 19-23.

DiLorenzo, Louis T., and Salter, Ruth. "Co-operative Research on the Nongraded Primary," Elementary School Journal, LXV (February, 1965), 269-277.

DiPascuale, Vincent C. "The Relation Between Dropouts and the Graded School," The Phi Delta Kappan, XVI (November, 1964), 129-133.

_____. "Schools Without Grades," Better Homes and Gardens, XXXIII (September, 1955), 28, 33-34.

Dobbs, Virginia, and Neville, Donald. "The Effect of Non-promotion on the Achievement of Groups Matched from Retained First Graders and Promoted Second Graders," The Journal of Educational Research, LX, No. 10 (July-August, 1967).

Garlock, J. C. "A Comparative Study of Four Commonly Used Achievement Tests," California Journal of Educational Research, XI (September, 1960), 147-154.

Gilbert, Jerome H. "Tesla School Breaks the Lock-Step," Elementary School Journal, LXIV (March, 1964), 306-309.

Goodlad, John I. "Classroom Organization," in Encyclopedia of Educational Research, 3d ed. (1960), pp. 221-226.

_____. "In Pursuit of Visions," Elementary School Journal, LIX, No. 1 (October, 1958), 1-17.

_____. "More About the Ungraded Plan," NEA Journal, XLIV, No. 5 (1955), 295-296.

_____. "Ungrading the Elementary Schools," NEA Journal, XLIV (March, 1955), 170-171.

_____, and Anderson, Robert H. "Educational Practices in Nongraded Schools: A Survey of Perceptions," Elementary School Journal, LXIII (October, 1962), 33-44.

Halliwell, Joseph W. "A Comparison of Pupil Achievement in Graded and Nongraded Primary Classrooms," The Journal of Experimental Education, XXXII, No. 1 (Fall, 1963), 59-64.

Hart, Richard H. "The Nongraded Primary School and Arithmetic," The Arithmetic Teacher, IX, No. 3 (March, 1962), 130-133.

Hillson, Maurie, et al. "A Controlled Experiment Evaluating the Effects of a Non-graded Organization on Pupil Achievement," The Journal of Educational Research, LVII, No. 10 (July-August, 1964), 548-550.

Hoflich, Rt. Rev. Msgr. J. E. "Ungraded Primary," National Catholic Education Association Bulletin, LVII (November, 1960), 8-25.

Hopkins, Kenneth D., Oldridge, O. A., and Williamson, Malcolm. "An Empirical Comparison of Pupil Achievement and Other Variables in Graded and Ungraded Classes," American Educational Research Journal, II (November, 1965), 207-215.

Hunter, Madaline. "Dimensions of Nongrading," Elementary School Journal, LXV (October, 1964), 20-25.

Ingram, Vivien. "Flint Evaluates Its Primary Cycle," Elementary School Journal, LXI (November, 1960), 76-80.

Kelley, Florence C. "Doing Away with Grade Levels," NEA Journal, XXXVII (April, 1948), 222-223.

Kierstead, Reginald. "A Comparison and Evaluation of Two Methods of Organization for the Teaching of Reading," Journal of Educational Research, LVI, No. 6 (February, 1963), 317-321.

Knight, L. E. "A Study of Double Grades in New Haven City Schools," Journal of Experimental Education, VII (September, 1938), 11-18.

McLoughlin, William P. "The Phantom Ungraded School," The Education Digest, XXX, No. 7 (March, 1968), 11-13.

Norman, Ralph D. "A Review of Some Problems Related to the Mail Questionnaire Technique," Educational and Psychological Measurement, VIII, No. 2 (Summer, 1948), 235-245.

Otto, Henry J. "Survey Data on Departmentalized Teaching in Elementary Schools." Journal of Educational Research, XLII, No. 2 (October, 1948), 105-115.

Perkins, Hugh V. "Nongraded Programs: What Progress?" Educational Leadership, XIX (December, 1961), 166-169, 194.

Peters, Kenneth L. "Achievement Levels Are a Comfortable Half-Step to a Nongraded Plan," Nation's Schools, LXXIV (July, 1964), 32-33.

Pollack, Jack H. "Should We Separate Smart and Average Children," Parade (January, 1965), pp. 34-35, 126.

Provus, Malcolm M. "Ability Grouping in Arithmetic," Elementary School Journal, LX (April, 1960), 391-398.

Russell, David H. "Inter-class Grouping for Reading Instruction in the Intermediate Grades," Journal of Educational Research, XXXIX, No. 6 (February, 1946), 462-470.

Shane, Harold G. "Grouping in the Elementary School," Phi Delta Kappan, XLI (April, 1960), 313-319.

Sister Clara Francis and Sister Mary Loretta Rose. "Ungraded School System Offers Greater Advantages Than the Graded School System: Debate," National Catholic Education Association Bulletin, LX (August, 1963), 429-436.

Sister Josephine. "Student Reaction to the Ungraded Primary," Peabody Journal of Education, XL (March, 1963), 291-295.

Sister Mary Alice. "Administration of the Non-graded School," Elementary School Journal, LXI (December, 1960), 148-152.

_____, and D'Heurle, Adma. "New Ventures in School Organization--The Ungraded School and Use of Teacher Aides," Elementary School Journal, LVII (February, 1957), 268-271

Skapski, Mary King. "Ungraded Primary Reading Program: An Objective Evaluation," Elementary School Journal, LXI (October, 1960), 41-45.

Taylor, Edward, and Crandall, James H. "A Study of the 'Non-Equivalence' of Certain Tests Approved for the California State Testing Program," California Journal of Educational Research, XIII, No. 4 (September, 1962), 186-192.

Thompson, Ethel. "The Ungraded Plan Helps Provide for Continuity of Learning," NEA Journal, XLVII (January, 1958), 16-18.

Washburn, Carleton W., and Rath, Louis E. "The High School Achievement of Children Trained Under the Individual Technique," Elementary School Journal, XXVIII (1927), 214-227.

Wheat, Leonard B. "The Flexible Progress Group System," Elementary School Journal, XXXVIII (1937), 175-183.

Williams, Wilmajean. "Academic Achievement in a Graded and in a Non-graded School," Elementary School Journal, LXVII (December, 1966), 135-139.

Wolfson, B. J. "Look at Nongradedness," Elementary English, XLII (April, 1965), 455-457.

Wyman, R. "Let's Try the One-Room School Again," American School Board Journal, CXLIX (July, 1964), 9-10.

Zerby, John R. "Comparison of Academic Achievement and Social Adjustment of Primary School Children in the Graded and Nongraded School Program," Penn State Review of Education Research, XIII (May, 1961), 33.

Dissertations

Aigner, Boyd Weston. "A Statistical Analysis of Achievement Differences of Children in a Nongraded Primary Program and Traditional Classrooms." Unpublished Doctoral dissertation, Colorado State College, 1961. Abstracted in Colorado Field Studies, XXIII, 1-5.

Anderson, Charlotte Colby. " Systematic Investigation of Individual Progress Under an Ungraded Primary Plan." Unpublished Master's thesis, Willimantic State College, Willimantic, Conn., 1963.

Austin, Kent. "The Ungraded Primary Unit in Public Elementary Schools of the United States," Dissertation Abstracts, XIX, No. 1 (July, 1958), 73.

Buffie, George W. "A Comparison of Mental Health and Academic Achievement: The Nongraded School vs. the Graded School," Dissertation Abstracts, XXIII, No. 11 (May, 1963), 4255.

Chastain, Clarence Shelton. "An Experimental Study of the Gains in Achievement in Arithmetic and Reading Made by the Pupils in the Intermediate Grades in the Rangley, Colorado Elementary School Who Were Instructed in Traditional Classrooms, in Achievement Platoons, and in Nongraded Classrooms." Unpublished Doctoral dissertation, Colorado State University, 1961. Abstracted in Colorado Field Studies, XXIII, 75.

Delgado-Marcano, Marie T. "The Operation of Curriculum and Instruction in Twenty Nongraded Elementary Schools," Dissertation Abstracts, XXVII (1965), 698-699A.

Enevoldsen, Corwin L. "An Evaluation of the Ungraded Primary Program in Selected Schools in the Lincoln, Nebraska, Public School System." Unpublished Doctoral dissertation, University of Nebraska Teachers College, 1961. Abstracted in Dissertation Abstracts, XXIII, No. 9 (March, 1962), 3054.

Moore, Daniel I. "Pupil Achievement and Grouping Practices in Graded and Ungraded Primary Schools." Unpublished Doctoral dissertation, University of Michigan, 1963. Abstracted in Dissertation Abstracts, XXIV, No. 5 (November, 1963), 3233.

Muck, Ruth E. S. "The Effect of Classroom Organization on Academic Achievement in Graded and Nongraded Classes," Dissertation Abstracts, XXVII (1967), 2923-2924.

Ritzenhein, Betty Ann. "Survey of Personnel Perceptions of Selected Factors in Nongraded Programs in Eight Detroit Elementary Schools," Dissertation Abstracts, XXV, No. 9 (March, 1965), 5645.

Roberts, George Myers. "Two Non-graded Elementary School Programs: Facility Requirements and Utilization," Dissertation Abstracts, XXV, No. 5 (November, 1964), 2850.

Sister Mary Paul Hickey. "An Analysis and Evaluation of the Ungraded Primary Program in the Diocese of Pittsburgh." Unpublished Doctoral dissertation, Fordham University, 1962.

Publications

Dean, Stuart E. Elementary School Administration and Organization: A National Survey of Practices and Policies. Washington, D. C.: U. S. Department of Health, Education, and Welfare, 1963.

Department of Elementary-Kindergarten-Nursery Education, National Education Association of the United States. Multi-Age Groupings: Enriching the Learning Environment, Washington, D. C., 1968.

"Directions for Administering," Stanford Achievement Test. New York: Harcourt, Brace, and World, Inc., 1964, p. 3.

Gore, Lillian L., and Koury, Rose E. A Survey of Early Elementary Education in Public Schools, 1960-61. Washington, D. C.: U. S. Department of Health, Education, and Welfare, 1965.

National Education Association. Administrative Practices in Urban School Districts, 1958-59. Research Report 1961-R10. Washington, D. C.: Research Division, National Education Association, 1961.

_____. "Nongraded School Organization," Research Bulletin of the National Education Association, XLIII, No. 3 (October, 1965), 93-95.

_____. Nongraded Schools. Research Memorandum 1965-12. Washington, D. C.: Research Division, National Education Association, May, 1965.

_____. Nongrading: A Modern Practice in Elementary School Organization. Research Memorandum 1961-37. Washington, D. C.: Research Division, National Education Association, October, 1961.

_____. The Principals Look at the Schools. Washington, D. C.: Project on the Instructional Program of the Public Schools, The Association, 1962.

Slater, Eva May. The Primary Unit. Curriculum Bulletin, No. 3. Storrs, Conn.: Curriculum Center, School of Education, University of Connecticut, 1955.

Thorpe, Louis P., Lefever, D. Welty, and Naslund, Robert A. S.R.A. Achievement Series. Chicago: Science Research Associates, Inc., 1965.