

A COMPARISON OF TEACHER
CHARACTERISTICS AND STUDENT
ACHIEVEMENT IN INDIVIDUALLY GUIDED
EDUCATION (IGE) AND TRADITIONAL
INNER CITY ELEMENTARY SCHOOLS

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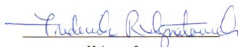
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presented by

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ABSTRACT

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By

Nathel Burtley

Purpose of the Study

The purpose of this study was to compare the characteristics of teachers and the achievement of students in an Individually Guided Education (IGE) and a traditional inner city elementary school. The Individually Guided Education school served as the experimental group and the traditional school served as the control group. The study covered a two year time period. The study attempted to answer the following specific questions:

1. Do teachers in the IGE school and teachers in the traditional school differ in group characteristics over multiple points in time?
2. Does size of the teaching team affect compatibility within the IGE setting over multiple points in time?

3. Is there a difference in reading achievement between interage grouped second grade students in IGE and traditional schools when measured over a two year time period?

4. Is there a difference in mathematical achievement between interage grouped second grade students in IGE and traditional schools when measured over a two year time period?

5. Is there a difference in reading achievement between interage grouped third grade students in IGE and traditional schools when measured over a two year time period?

6. Is there a difference in mathematical achievement between interage grouped third grade students in IGE and traditional schools when measured over a two year time period?

Procedure

The sample selected for this study consisted of 32 teachers and 292 inner city elementary school children in the second and third grades who were enrolled in the public schools of Woodberry, Illinois* - A midwestern urban community. About ninety-seven percent of the students in the study are Black.

*To protect the anonymity of the teachers at the control and experimental schools, assumed names are used for both the school and school district.

To make comparison between the experimental and control teachers, Hemphill's Group Dimensions Description Questionnaire was administered in October of 1971, June of 1972 and October of 1973. Various forms of the Metropolitan Achievement Test Battery were used to assess the students. These tests were administered in May of 1971, May of 1972 and May of 1973.

The design of the study was the "non-randomized control group pre-test, post-test design". This design was employed since the researcher was unable to randomly assign subjects to comparison groups. Both students and teachers constitute naturally assembled groups.

Findings

1. There was a significant difference between teachers in the IGE and traditional school in favor of the IGE teachers when measured by the Group Dimension Description Questionnaire. The two groups differed specifically on the dimensions of visciduity, stability, hedonic tone and homogeneity.

2. There was no significant difference between four member and three member teaching teams in the IGE school when measured by the Group Dimension Description Questionnaire.

3. Second grade students in the IGE school achieved significantly greater mean gain reading scores than the students

in the traditional school when measured by the Metropolitan Achievement Test over a two year time period.

4. Second grade students in the IGE school achieved significantly greater mean gain mathematical scores than the students in the traditional school when measured by the Metropolitan Achievement Test over a two year time period.

5. Third grade students in the IGE school achieved significantly greater mean gain reading scores than the students in the traditional school when measured by the Metropolitan Achievement Test over a two year period.

6. Third grade students in the IGE school achieved significantly greater mean gain mathematical scores than the students in the traditional school when measured by the Metropolitan Achievement Test over a two year time period.

The conclusion relative to teacher characteristics is that the IGE organizational structure encourages group compatibility. This may be due to the Instructional Improvement Committee (IIC) which serves as the policy making body of the school. Teachers critique each other which serves as the team's ongoing evaluation of their own performance. Another conclusion is that the individualization of instruction in mathematics and reading accounts for the increased gains in achievement scores for the IGE students, since a block time for planning encourages the teams or units to constantly assess and evaluate their activities.

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DEDICATION

To Mama, who instilled in each of six children the need for and value of an education....and whose encouragement and expectation served as a source of motivation.

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CHAPTER I

INTRODUCTION

Introduction to the Study

In the Fall of 1970, the entire staff at *Bruce Elementary School in Woodberry, Illinois, met to identify and discuss the educational needs of its students. A number of problems were identified and a seven-member Curriculum Committee was formed, including the writer, who served as Chairman. It represented twenty-three (23) staff members and five hundred ten (510) students in Grades pre K - 5.

The Curriculum Committee was charged with the task of recommending to the staff innovative programs that would be applicable to the Bruce Elementary School students. A number of instructional programs were studied. It was decided that the most suitable instructional program was one that would individualize instruction to meet the educational needs of students.

A program called Individually Guided Education (IGE) was recommended to the staff for adoption. After a number of

*Bruce Elementary School and Woodberry, Illinois are assumed names to assure the anonymity of the staffs that participated in the study.

staff discussions, an IGE consultant was invited to further explain the program. The staff later voted unanimously to implement the IGE program during the 1971-1972 school year.

Community support was essential if the program was to be successfully implemented. The Individually Guided Education concept required time for team planning, and the staff wanted to use Wednesday afternoons for that purpose--without the students present. This was a radical departure from practices in other schools in the system. It was felt that the community would accept the total plan since the school had developed good relations with the community through a series of school-community projects. For example, through the Peace Corps School Partnership Program, the school and community built a school in Upper Volta (Africa). The school and community initiated its own sickle cell anemia testing program for which responsibility was later assumed by the County Health Department. The school community projects, which involved parents, students, and teachers, helped to establish an esprit de corps within the school community.

A series of meetings were held at the school and information was sent to parents explaining the proposed instructional program. A questionnaire was sent to parents concerning the new program to assess the level of parental support or opposition.

School Board approval was necessary for implementation. The Curriculum Committee developed and presented a comprehensive educational plan to the Woodberry School Board called "A Program for Educational Renewal." The plan requested the following: authorization of the Individually Guided Education Program; building renovation; appointment of an assistant principal; implementation of a full-day kindergarten program; establishment of a Learning Center; and that Wednesday afternoons be used as a block planning time for teaching teams. Students would attend school the usual five days, but would do so in four and a half days by increasing the length of morning and afternoon sessions. This meant that the teachers would be contributing an extra half day of planning time on the job. After considerable discussion and presentation of documented support (staff approval and parent survey results), the School Board granted all of the requests except the request for an assistant principal.

In January of 1971, an IGE consultant was employed to conduct staff in-service each Thursday after school for one and a half hours. The in-service program terminated in June and the IGE program was implemented in September of 1971.

The school was organized into five teaching teams (IGE refers to teaching teams as units, i.e., multi-units). Three teams consisted of three members and two teams consisted of four members. In each team the students were multi-age

grouped covering a three-year age span. Each team was responsible for the cooperative planning of its own educational program. Reading and mathematics were two areas in which substantial emphasis was placed by the IGE school and traditional inner-city schools since students in these schools had not made sufficient gains on standardized achievement tests.

How well teachers functioned in the team teaching situation was of major concern. This was particularly so since all of the staff members in the IGE school were experienced teachers but with no team teaching experience. It was recognized that teacher compatibility within the teaching teams was crucial if students were to make gains in reading and mathematics.

The following study considered two aspects of the program over a two year period: the characteristics of teaching teams as small groups; and a secondary consideration was the mathematics and reading achievement of inner city students in traditional and non-traditional elementary schools.

Need for the Study

The incidence of teaming teachers for instruction has grown from its formative years at Lexington, Massachusetts; Englewood, Florida; and Carson City, Michigan, to the point where it has been estimated that 7,000 schools were using

some form of team teaching in 1963.¹ A very conservative estimate by Shaplin² in 1964 placed the number of teachers participating in team teaching at 1,500 with more than 45,000 students involved. An NEA report of a 1962 survey of 1,500 principals indicated that team teaching was being practiced in nearly 15 percent of the nation's elementary schools, and that this figure was expected to increase to 30 percent by 1966.³ A more recent survey of 550 Michigan school districts by the Research Division of the Michigan Education Association indicated that 20 percent of the elementary schools and 27 percent of the secondary schools reported the practice of teaming teachers for instruction in 1965-66.⁴ A rapidly growing innovative program called Individually Guided Education explicitly incorporates the practice of team teaching.

¹M. P. Heller, "Team Teaching and Independent Study," Keynote Address at Team Teaching Conference, Central Michigan University, April 22, 1963.

²J. T. Shaplin and H. F. Olds, Jr. (ed.) Team Teaching (New York: Harper and Ross, 1964).

³"Principals Indicate Classroom Changes," Michigan Education Journal, (September 1, 1962), pp. 24, 42.

⁴S. E. Hecker, T. J. Northey, "A Survey of Instructional Practices and Services in Michigan Public Schools, 1965-66," (Lansing: Michigan Education Association, 1966), pp. 3,4.

The growth of teaming teachers, however, has not been accompanied by adequate research and evaluation.

According to Heathers, "...most of the research on team teaching yields limited and uncertain findings."⁵ Anderson writes that, "...the recent research upon which policies of staff utilization and development must be based, at least temporarily, is woefully inadequate."⁶ Douglass⁷ reports that little research has been conducted on the evaluation of team teaching, and insufficient information is available to form an authoritative opinion of its merit.

Most writers agree that it is necessary for teachers to be compatible within teaching teams. However, we know little about what happens to teachers once they have become members of the teaching teams. It might be that dispersion within teaching teams on selected team characteristics may be such as to render teaching teams ineffective. This study is needed because it will provide descriptive data on characteristics of teaching teams in a non-traditional school.

⁵G. Heathers, "Research on Implementing and Evaluating Cooperative Teaching," The National Elementary Principal, XLIV, No. 3 (January, 1965), p. 30.

⁶R. Anderson, "Organizational Character of Education: Staff Utilization and Development," Review of Educational Research, XXXIV, No. 4 (October, 1964), p. 466.

⁷M. P. Douglass, "Team Teaching: Fundamental Change or Passing Fancy," The Education Digest (May, 1963), pp. 49-50, reported from the CTA Journal, LIX (March, 1963).

The information gained will be helpful in developing strategies for teaming teachers, understanding what happens between teachers within teaching teams, and understanding how traditional staffs differ from teaching teams. The reading and mathematics data will help in determining whether IGE is an effective organizational model that will lead to an improved delivery system in inner-city elementary schools.

Assumptions

Whenever a group of individuals attempt to achieve a common objective, conflict is always possible; teachers are no exception, particularly in the team teaching situation. Writers such as Lobb,⁸ Wagner,⁹ Chamberlain,¹⁰ Polos,¹¹ and Beggs¹² assume that any organizational structure which teams teachers for instruction contains an inherent potential for conflict. Beggs reflects the feeling of these writers when

⁸M. D. Lobb, Practical Aspects of Team Teaching (Belmont, California: Fearon Publishers, 1964, p. 21).

⁹H. Wagner, G. Hanslovsky, and Sue Moyer, Why Team Teaching, Columbus, Ohio: Charles E. Merrill Publishing Co., 1969, p. 52.

¹⁰Leslie J. Chamberlain, Team Teaching, Columbus, Ohio: Charles E. Merrill Publishing Co., 1969, p. 138.

¹¹N. Polos, The Dynamics of Team Teaching, Dubuque, Iowa: W. C. Brown Company, 1965, p. 56.

¹²D. Beggs and Harold Spears, Team Teaching, Bold New Venture, Indianapolis, Indiana: Unified College Press, Indiana, 1964, p. 147.

he states:

Some teachers do not seem to be able to share responsibility or to work harmoniously with teachers in developing course goals and in carrying out instructional strategy. Only time and research will give us the final answers as to why everyone doesn't work successfully in a team.¹³

One phenomenon that may contribute to conflict in teaming of teachers is the size of the team. Davis noted that "undoubtedly the character of the group tends to change with size."¹⁴ Williams reported that "even in a structurally simple group...the addition of members rapidly produces changes in the internal organization."¹⁵ Coyle¹⁶ stated that structural form is affected by the number of those involved. However, it was Simmel who earlier observed the effect of group size upon internal relationships.¹⁷ Simmel observed that groups of three members tend to divide into a

¹³Ibid.

¹⁴Kingsley Davis, Human Society, (New York: The McMillian Company, 1950, p. 293).

¹⁵R. M. Williams, Jr., American Society, (New York: Alfred A. Knopf, 1965, p. 458).

¹⁶G. L. Coyle, Social Processes in Organized Groups, (New York: Richard R. Smith, Inc., 1930, p. 89).

¹⁷K. H. Wolff, The Sociology of George Simmel, (Glencoe, Illinois: The Free Press, 1950).

pair and an isolate. Mills¹⁸ and Caplow¹⁹ have demonstrated this effect experimentally. Strodbeck,²⁰ Torrance, Bales and Borgatta²¹ have also conducted experiments which demonstrated the reality of the phenomenon which Simmel stressed. They also demonstrated that small differences in "power", "activity", and other characteristics of the members of the triad have considerable influence upon the formation and persistence of coalitions.

While the team teaching organizational structure requires a new and different behavior pattern of its teachers than those in the traditional school, conflict need not characterize the teaching teams and inhibit the instructional program.

The IGE system requires pre-service training of the staff prior to implementation. Moreover, teachers in the IGE program share in the policy making decisions of the school by serving on the school's policy making body. Other components of the system contribute to the professional growth of

¹⁸T. M. Mills, "Power Relations in Three-Person Groups," American Sociological Review, 1953, 18, p. 355.

¹⁹T. Caplow, "A Theory of Coalitions in the Triad," American Sociological Review, 1954, 19, pp. 23-29.

²⁰F. L. Strodbeck, "The Family as A Three-Person Group," American Sociological Review, 1954, 19, pp. 23-29.

²¹R. F. Bales and F. Borgatta, "Size of Group as A Factor in the Interaction Profile." American Sociological Review, 1953, 18, pp. 396-413.

the IGE staff. The researcher, therefore, assumes that the staff and teams in the IGE school will be more cohesive than the staff in the traditional school when measured on selected characteristics.

It is generally accepted that student achievement is about the same with team teaching schools as with traditional schools when measured by standardized tests. Most schools, however, until recently have not utilized a systems approach to instruction. IGE differs from the traditional school in that it systematizes and individualizes the instructional program. In reading and mathematics, for example, each student is pre-tested prior to instruction. Behavioral objectives are prepared for concepts and skills. The students are multiage grouped covering a three year span. The diagnostic test determines how students are grouped for instruction within the team. Continuous testing determines whether or not students have achieved instructional objectives. Flexibility in instruction and grouping characterize the IGE school. The learning styles of students are given major consideration. Small group, large group, peer group, and one-to-one tutoring are the various instructional modes employed in the IGE school. This study, therefore, assumes that students in the IGE school will demonstrate greater achievement in reading and mathematics than students in the traditional school.

Limitation of the Study

There are many characteristics that could be used to describe behavior of teachers in team teaching and traditional schools. This study was limited in that it employed only thirteen of the many possible characteristics. Another limitation is that it utilized group members' perceptions and descriptions of the behavior of their group and is therefore only as valid as the respondents were honest in their responses to the instrument administered. An additional limitation is that the teacher questionnaire attempted only to describe objectively the thirteen characteristics. It did not attempt to determine the desirability of these characteristics. Presentation of the results, however, will discuss the desirability of such characteristics in the team teaching situation.

Sources of student data were four samples of students from the IGE and traditional school who were tested for a period of two years. Two groups were tested at the end of the second grade and two groups were tested at the end of the third grade. These students were chosen because of the availability of data. Another limiting factor is that the study was conducted over a two year time period which might not have been adequate time for both students and teachers to adjust to the new IGE program. An additional limitation is that the study was conducted with a limited

sample of two elementary schools within the same school district. Caution should, therefore, be used in generalizing beyond the sample.

Statement of the Problem

Teaming different individuals for group action is a problem in organizations. Most school administrators have been guided by their intuition in determining how well teachers will work together to achieve a particular objective. It would be beneficial if school administrators were knowledgeable of the characteristics of teachers in the traditional setting and in the teaming situation.

Assuming that the goals of a group are congruent with the tasks defined prior to its organization, one can hypothesize that the degree to which individuals within the group are compatible, the group will approximate those goals. Schultz states, "...the members of the compatible group will be more productive, more cohesive, more satisfied, like one another more, work better together, and respect one another more than will those of the incompatible group."²² The attainment of group goals, of course, presumes the skills and knowledges that are necessary for its accomplishment. No amount of compatibility can overcome lack of capacity.

²²W. C. Schultz, FIRO, A Three Dimensional Theory of Interpersonal Behavior (Chicago: Rinehart and Co., Inc., 1958), p. 115.

Characteristics of small groups have been the concern of many persons in the field as well as those who are engaged in research. Sociologists, and social psychologists have been studying the problems of interpersonal relations for a number of years. School staffs and various organizational patterns within schools have gone virtually unnoticed as a meaningful area for small group research. Moreover, the application of small group research findings in teaming individuals for instruction has been given little consideration in the school setting. School principals who have the responsibility for assigning teachers to various school tasks do so without adequate preparation in small group research findings. Most administration classes, in preparing school administrators, fail to even fleetingly mention the body of data relative to small groups - despite the fact that administrators spend a large amount of time in small groups. At the elementary level many recent innovations include teaming teachers as a necessary element of the program. It is crucial then that school staffs and teaching teams be considered as small groups and experimental techniques be applied for the purpose of determining how teachers function in such settings.

The major purpose of this study is to describe the characteristics of teachers in their interpersonal relations in a traditional school setting and in an IGE school

and examine the nature of differences on selected dimensions over a two year time period.

The study has a secondary purpose, the comparison of student gains in reading and mathematics in an IGE school and in a traditional school over a two year time period.

The major problems to be studied are:

1. Do teachers in the IGE school and teachers in the traditional school differ in group characteristics over multiple points in time?

2. Does size of the teaching team affect compatibility within the IGE setting over multiple points in time?

The Secondary problems to be studied are:

3. Is there a difference in achievement in mathematics between interaged grouped students in the IGE school and students in the traditional schools over a two year time period?

4. Is there a difference in achievement in reading between interage grouped students in the IGE school and students in the traditional schools over a two year period?

Research Questions

1. Is there a difference between teachers in the IGE school and teachers in the traditional school when measured by the thirteen dimensions (autonomy, control flexibility, Hedonic Tone, Homogeneity, intimacy, participation,

permeability, polarization, potency, stability, stratification, viscosity) of the Group Dimension Description Questionnaire over a two year time period?

2. Is there a difference between teachers on three- and four-member teams in the IGE school when measured by the thirteen dimensions of the Group Dimensions Description Questionnaire over a two year time period?

3. Is there a difference between mean reading gain achieved by second grade students in the IGE school and second grade students in the traditional school when measured by Metropolitan Achievement Tests over a two year time period?

4. Is there a difference between mean mathematics gain achieved by second grade students in the IGE school and second grade students in the traditional school when measured by Metropolitan Achievement Tests over a two year time period?

5. Is there a difference between mean reading gain achieved by third grade students in the IGE school and third grade students in the traditional school when measured by Metropolitan Achievement Tests over a two year time period?

6. Is there a difference between mean mathematics gain achieved by third grade students in the IGE school and third grade students in the traditional school when measured by Metropolitan Achievement Tests over a two year time period?

Definition of Terms

Assessment - The act of obtaining information about the individual pupil regarding current achievement learning style and attitudes, predications of rate of learning, for the purpose of planning subsequent learning programs. Some types of assessment are: paper and pencil test, performance test, observations, and work samples.

Clerical Aide - A paraprofessional member of a unit whose duties are primarily secretarial.

Critiqueing - The Unit's ongoing evaluation of their own performance.

Elementary School - A school in a school district in Illinois which receives the majority of its financial support from the people of the community it serves, having Grades K - 5, and serving the educational needs of children ages 5 - 10.

Group Dimension Description Questionnaire - An instrument containing 150 statements designed to measure group characteristics and attributes, (autonomy, control flexibility, hedonic tone, homogeneity, intimacy, participation, permeability, polarization, potency, stability, stratification, viscidty). The respondents to the questionnaire express their answers about a specific group by indicating to what degree they regard each statement as stating something that is true about the group.

Individualized Learning - A learning experience which is tailored to an individual child - should not be confused with independent study which presupposes each child doing a different thing at any given time or tutorial situation which requires a constant one-to-one relationship between adult and child.

Individually Guided Education (IGE) - An educational process which uses clearly stated (usually locally adapted) discreet learning objectives, individually tailored learning activities, and an ongoing system of assessment that monitors the performance of pupils.

IGE Learning Program - The combination of teacher/learner activities, materials, mode, time, space and equipment that is tailored to meet any given learning objective for each individual pupil.

Inner City School Children - Those children who reside in the core city and attend an elementary school populated predominantly by a minority ethnic group and who are potentially capable of successfully completing a regular academic program, but who, because of language, cultural, economic, racial isolation, and environmental handicaps, are unlikely to achieve at grade level.

Interage Grouped - A unit of students in an IGE school consisting of a two or three year age spread, preferably a three year age spread.

Learning Mode - The number of people in any given learning situation. The four learning modes are:

1. The independent mode (pupil working alone)
2. One-to-one mode (pupil working with another pupil, teacher, aide or other adult)
3. Small group mode (usually 4 - 11 pupils)
4. Large group mode (usually 40 or more pupils)

Learning Style - A combination of characteristics of the individual child which determine the way he learns best. Learning style is a complex phenomenon which is assessed primarily by determining what factors have worked before for a particular child. Knowing "how" a child had learned becomes fully as important as knowing that he has, in fact, learned.

Mathematics - Those cognitive skills taught in the instructional area of mathematics in the first six years of the elementary school program.

Multiunit School - A school divided into instructional units. The Unit consists of a Unit Leader, aides, teachers and 75-150 pupils. In the IGE system, the Unit will have a multiaged pupil population, a non-graded approach to curriculum design and learning programs designed for individual pupils.

Reading - Those cognitive skills taught in the instructional area of reading in the first six years of the elementary school program.

School District - A school district is a legal entity created by the Illinois State Legislature for the

purpose of operating and maintaining public education within the boundaries established by law.

Self-contained Classroom - The classroom organization in which a single teacher is responsible for the education of a group of children usually between 25 and 30 in number. This single teacher is responsible for teaching all of the subject matter for a particular grade level. Often referred to as the "traditional" classroom organization.

Overview of the Thesis Organization

In this chapter the introduction provided the background for the study. The need for the study and certain assumptions were discussed in detail. The limitations of the study were explained and a statement of the problem was presented. Research questions and definitions of terms concluded the chapter. Chapter II will contain a review of the literature which is relevant to the study. Chapter III will explore the method of investigation. Chapter IV will present the analyses and discussion of the data with respect to the research questions. Chapter V will present a summary of conclusions, implications, and recommendations for future research.

CHAPTER II

REVIEW OF RELATED LITERATURE

Recent attempts at improving American public elementary schools have resulted in changes in the school curricula and staffing patterns. Predominantly, changes in the school curricula have occurred independently of changes in staffing patterns. Seldom have changes in curricula and school organization resulted in a systems approach to instruction.

The terms "individualized instruction" have become buzz words of curricula. Such individualized programs as Individually Prescribed Instruction (IPI), Program for Learning in Accordance With Needs (PLAN), Learning Unlimited, Alpha, and Individually Guided Education (IGE) are some of the more popular. Each of these learning programs attempts to gear the level of instruction to meet each student's learning needs.

Changing the internal organization of schools from the traditional, isolated classroom has proven more difficult than changing the curricula. When changes in the staffing pattern have occurred they usually consisted of some form of teaming of teachers. Teaching teams of two or more people can be considered as small groups. It is unfortunate that

many administrators are responsible for the smooth functioning of team teaching schools without adequate knowledge of small group research. Moreover, research has been lacking that described the characteristics of teachers in teaching teams.

Group Characteristics

The lack of adequate research on the characteristics of teaching teams can be traced to the clamor for validation of greater student achievement in the team teaching school as opposed to the traditional school; it had to be determined whether students made greater academic gains in one organizational pattern than the other. The interpersonal characteristics of teachers in the team teaching setting had not emerged as a vital area for investigation.

The absence of a definitive and consistent definition of a social group is another reason for the inadequate study of the characteristics of teaching teams. The lack of agreement as to what constitutes a group can be seen in the various definitions. Gibb defines a group as "two or more people in a state of social inter-action."²³ Shepherd gives a similar definition and adds four qualifications. In commenting on the qualifications, he states, "The criteria we use to qualify the definition of a small

²³C. A. Gibb, "The Principles and Traits of Leadership," Journal of Abnormal Social Psychology, 1947, pp. 267-284.

group will have to be arbitrary because there is no widespread agreement among students of small groups on relevant criteria."²⁴ His four qualifications are:

1. The small group is more organized and more enduring than a social relation.
2. Small groups of two or three persons possess characteristics due to their size which are sharply modified or tend to disappear in groups of four or more.
3. As a small group increases in size, it reaches some upper limit where the group seems to become altered so that its members establish formal rules and regulations and the group becomes more like a formal organization than a small group.
4. Small groups possess some general characteristics (purposes or goals) to which attention is directed.²⁵

Smith defines a group as a "unit consisting of a plural number of separate organisms (agents) who have collective perception of their unity and who have the ability and tendency to act and/or are acting in a unitary manner toward the environment."²⁶ Lewin views interdependence as a necessary characteristic for a group. He states "...a group is more than, or more exactly, different from the sum of its members. It has its own structure, goals and relations to other groups. The

²⁴C. R. Shepherd, Small Groups: Some Sociological Perspectives, (San Francisco: Publishing Co., 1964), pp. 2-4.

²⁵Ibid.

²⁶M. Smith, "Social Situation, Social Behavior, Social Group," Psychological Review, 1945, 52, pp. 227-229.

essence of a group is not the similarity or dissimilarity of its members, but their interdependence. A group can be characterized as a 'dynamic whole'; this means that a change in the state of a subpart changes the state of any other subpart, "...it depends, among other factors, upon the size, organization and intimacy of the group."²⁷ Wilson reviewed the sociological literature and concluded that there was "no consensus as to the meaning of the group."²⁸ For the purpose of this study, a group is defined as three or more teachers working together as a team with a set of common objectives and goals and having shared responsibility for the instructional program of a given number of multiage grouped students.

Lack of methodology was still another reason for the absence of studies on group characteristics. However, it was McDougall²⁹ who, in 1920, initiated the study of the group as a fertile field for research, although his pioneering analysis of the "group mind" was rejected at the time by many American psychologists.³⁰ Nevertheless, he conceived

²⁷K. Lewin, Resolving Social Conflict (New York: McGraw-Hill, 1935).

²⁸L. Wilson, "Sociography of Groups," in G. Gurvich and W. E. Moore (eds.), Twentieth Century Sociology (New York: Philosophical Library, 1945), pp. 139-171.

²⁹W. McDougall, The Group Mind, New York: Putnam, 1920.

³⁰R. B. Cattell, "Concepts and Methods in the Measurement of Group Syntality," Psychological Review, 55, 1948, p. 51.

a task for Group Psychology that required it to:³¹

1. Examine the conception of the collective or group mind, in order to determine whether and in what sense this is a valid conception.
2. Display the general principle of collective mental life which are incapable of being deduced from the laws of the mental life of isolated individuals.
3. Distinguish the principle types of collective mental life or group mind.
4. Describe the peculiarities of those types and as far as possible to account for them.
5. Establish the general principles of group life.
6. Apply these principles in the endeavour to understand particular examples of group life.

McDougall was concerned, too, about the lack of methodology in examining group characteristics. But he was also concerned about whether sociologists would consider the study of groups by psychologists as discipline intrusion. McDougall commented:

Group Psychology, thus conceived, meets at the outset a difficulty which stands in the way of every attempt of psychology to leave the narrow field of highly abstract individual psychology. It finds the ground already staked out and occupied by the representatives of another science, who are inclined to resent its intrusion as an encroachment on their rights. The science which claims to have occupied the field of Group Psychology is Sociology; and it is of some importance that the claims of these sciences should be reconciled, so that they may live and work harmoniously together. I have no desire to claim for Group Psychology the whole province of Sociology. As I conceive it, that province is much

³¹McDougall, op. cit., p. 10.

wider than that of Group Psychology. Sociology is essentially a science which has to take a comprehensive and synthetic view of the life of mankind, and has to accept and make use of the conclusions of many other more special sciences of which psychology, and especially Group Psychology, is for it perhaps the most important.³²

McDougall's arguments for treating the group as an entity or as an organism have never been refuted:

1. A group preserves characteristic behavior habits and structure despite the continual replacement of actual individuals.
2. It shows memory for group experiences and learning.
3. It is capable of responding as a whole stimuli directed to its parts, i.e., it tends to solve problems of individuals and sub-groups by group action.
4. It possesses drives which become more or less integrated in executive functions of nutrition, acquisition, aggression, defense, etc. Groups vary in dynamic integration analogously to the variation of individuals in character.
5. It experiences 'moods' of expansiveness, depression, pugnacity, etc. which modify characteristic behavior and energy output as do emotional states in the individual.
6. It shows collective deliberation, a process highly analogous to the trial-and-error thinking of the individual, when held up in a course of action. Similarly the act of collective volition, through legislatures and executives, is closely analogous to the resolution of conflicting dynamic demands in the individual.³³

Cattell agreed with McDougall on the need to study groups, but also recognized the need for advanced methodology.

³²Ibid., pp. 10-11.

³³Cattell, op. cit., p. 51.

Cattell stated: "It could be argued that any study of total organisms, such as McDougall proposed, should have been postponed until new methods had been invented..."³⁴

McDougall's initiative served as the genesis for the social group research that followed. His basic contention that it is rewarding to deal with groups as single entities remains the springboard for research into new fields.³⁵

Group Dimensions

A number of individuals proposed schemes for the classification of various groups. Among these were Dodd,³⁶ DeGre,³⁷ Lundberg,³⁸ Wilson,³⁹ and Sanderson.⁴⁰ Krech and

³⁴Ibid.

³⁵Ibid.

³⁶S. G. Dodd, Dimensions of Society: A Quantitative Systematics for the Social Sciences (New York: Macmillan, 1942).

³⁷G. DeGre, "Outlines for a Systematic Classification of Social Groups," American Sociological Review, 1949, 14, pp. 145-148.

³⁸G. A. Lundberg, "Some Problems of Group Classification and Measurement," American Sociological Review, 1940, 5, pp. 351-560.

³⁹L. Wilson, "Sociography of Groups," in Gurvitch, G. and More, W. (eds.) Twentieth Century Sociology (New York: Philosophical Library, 1945).

⁴⁰D. Sanderson, "A Preliminary Group Classification Based on Structure," Social Forces, 1938, 17, pp. 196-201.

Crutchfield,⁴¹ Lewin,⁴² and Simmel⁴³ defined and described a large number of specific group characteristics. These schemes, however, did not consist of an integrated system of concepts for the description of groups. Nor did they provide tools for objective measurement of variations among groups.

One useful typology or method in the study of groups is the trait or dimensional approach. The dimensional approach attempts to isolate important characteristics which cut across groups and on which groups differ. Cattell used a factorial approach to isolate and describe group dimensions. He recommended three broad areas or "panels" in the study of group dimensions.

1. Syntality - behavior of the group as a group. The group behavior recorded here concerns any effect the group has as a totality upon other groups or its physical environment.
2. Internal Structure - these concern the relationships among the members of the group. They issue in syntality traits but are not themselves the behavior of the group.
3. Population - these are aggregate values - definitions of the personality of the average member of

⁴¹D. Krech and R. S. Crutchfield, Theory and Problems of Social Psychology (New York: McGraw-Hill, 1948).

⁴²Lewin, op. cit.

⁴³G. Simmel, "The Persistence of Social Groups," American Journal of Sociology, 1898, 3, pp. 622-298, 829-836.

the group. They include such characteristics as average intelligence, crime incidence, attitudes on moral and religious questions, etc.⁴⁴

A list of universal traits for classifying and measuring a wide variety of groups have been compiled by Cattell and Stind.⁴⁵ They include the following:

1. Size, i.e. number of members.
2. Self Consciousness. The extent to which members are conscious of the boundaries and purposes of the group.
3. Explicitness of structure vs. tradisionalism. Extent to which members have explicit contractual understanding of why they have their roles, as opposed to blind traditional acceptance of habits, some of which are unconscious.
4. Accidentalness of membership. Extent to which it is a neighborhood or kinship group into which the members are born rather than a group in which they have deliberately elected to join.
5. Degree of overlap. The mean number of other definable groups per member to which the member also belongs, additionally to the present group.
6. Autonomy. The degree of independence of a group can be conceived in two senses: additional to the overlap which has created it and secondly the extent to which persons in the group have loyalties to other groups which interfere with their loyalty to this group.
7. Intimacy of communication. Extent to which face-to-face communication is distinct from the remote communication through symbols and curves. This brings with it a difference in degree of knowledge of other members' lives and personalities.

⁴⁴Cattell, op. cit., pp. 52-53.

⁴⁵C. Rush, Group Dimensions of Aircrews. Unpublished Doctor's Dissertation, Ohio State University Library, 1953, p. 68.

8. Complexity of participation and structure. Numbers and kinds of duties that members perform, i.e. variety of specialized roles and subdivisions within the group.
9. Degree of effective synergy vs. narcissism. Extent to which the group produces other than social or internal interaction satisfactions for its members, i.e. the expenditure of effort outside itself.
10. Control. Degree to which the group regulates the behavior of individuals and restricts their freedom in the name of group government.
11. Stability and duration. Persistence with recognizably the same characteristics over a period of time.
12. Stratification. Extent to which the structure involves status hierarchies, e.g. of prestige, power, duties, sexual or personal attraction.
13. Homogeneity of population. Extent to which the group is homogeneous in individual personality measures, i.e. population measures, relative to the larger group of which the given group is a part. This could be standard deviations alone.
14. Flexibility vs. conservatism. Degree to which roles, regulations, status, etc. defined by other dimensions are rigid and stable or subject to change.
15. Hedonic tone or morale. There are at least three dimensions of morale, two being related to numbers 5 and 10 here. The third is this morale of success and harmony evidenced by pleasantness of internal relations, cheerfulness and absence of destructive criticism and complaints.
16. Synergy. (Viscidity, Cohesion). This is the ability of the group to resist disruptive forces, also sometimes called the degree of "we feeling".

It was Hemphill, however, who created a useful system for group description which he later called group dimensions. Hemphill states that if one had such measures he might find it more meaningful to speak of degrees of

groupness rather than in terms of the all or none dichotomy imposed by groups or non-groups.⁴⁶ He felt that any system for describing groups should meet the following criteria:⁴⁷

1. Generally applicable to most groups.
2. Psychologically meaningful.
3. Describe molar rather than molecular characteristics.
4. Independent of one another.
5. Amendable to quantitative treatment.

Hemphill and Weiste⁴⁸ used these criteria to construct a series of scales to describe group characteristics called Group Dimensions Descriptions Questionnaire (GDDQ). The instrument resulted from an earlier study "Situational Factors in Leadership," conducted by Hemphill while at the University of Maryland,⁴⁹ which was part of a ten-year study of leadership by the Ohio State Leadership Studies.⁵⁰

Using the above criteria and after considering forty descriptive variables employed by sociologist and

⁴⁶J. K. Hemphill and C. Westie, "The Measurement of Group Dimensions," The Journal of Psychology, 1950, 29, p. 325.

⁴⁷Ibid.

⁴⁸Ibid.

⁴⁹Ibid.

⁵⁰Ibid.

social psychologists, Hemphill and Weiste⁵¹ selected thirteen of these variables by an "inspectional factor analysis." They then used four judges to categorize 500 (five hundred) items into thirteen dimensions. A group can be described (by its members) with respect to its characteristics of behavior on the 13 variables. Definitions of these variables are presented below.

Definition of the GDDQ Dimensions⁵²

1. Autonomy is the degree to which a group functions independently of other groups and occupies an independent position in society. It is reflected by the degree to which a group determines its own activities, by its absence of allegiance, deference and/or dependence relative to other groups. (13 items, numbers 48 to 60).

2. Control is the degree to which a group regulates the behavior of individuals while they are functioning as group members. It is reflected by the modifications which group membership imposes on complete freedom of individual behavior and by the amount of intensity of group-derived government. (12 items, numbered 1 to 12).

⁵¹J. K. Hemphill, Situational Factors in Leadership (Columbus, Ohio: Bureau of Educational Research, Ohio State University, 1949).

⁵²John K. Hemphill, Group Dimensions A Manual For Their Measurements (Columbus, Ohio: Bureau of Business Research Monograph Number 87, Ohio State University, 1956) p. 15.

3. Flexibility is the degree to which a group's activities are marked by informal procedures rather than by adherence to established procedures. It is reflected by the extent to which duties of members are free from specification through custom, tradition, written rules, regulations, codes of procedure, or even unwritten but clearly prescribed ways of behaving. (13 items, numbers 123 to 135).

4. Hedonic Tone is the degree to which group membership is accompanied by a general feeling of pleasantness or agreeableness. It is reflected by the frequency of laughter, conviviality, pleasant anticipation of group meetings, and by the absence of griping and complaining. (5 items, numbers 43 to 47).

5. Homogeneity is the degree to which members of a group are similar with respect to socially relevant characteristics. It is reflected by relative uniformity of members with respect to age, sex, race, socio-economic status, interests, attitudes, and habits. (15 items, numbers 136 to 150).

6. Intimacy is the degree to which members of a group are mutually acquainted with one another and are familiar with the most personal details of one another's lives. It is reflected by the nature of topics discussed by members, by modes of greeting, forms of address, and by interactions which presuppose a knowledge of the probable reaction of others under

widely differing circumstances as well as by the extent and type of knowledge each member has about other members of the group. (13 items, numbers 18 to 30).

7. Participation is the degree to which members of a group apply time and effort to group activities. It is reflected by the number and kinds of duties members perform, by voluntary assumption of non-assigned duties and by the amount of time spent in group activities. (10 items, numbers 101 to 110).

8. Permeability is the degree to which a group permits ready access to membership. It is reflected by absence of entrance requirements of various kinds, and by the degree to which membership is solicited. (13 items, numbers 88 to 100).

9. Polarization is the degree to which a group is oriented and works toward a single goal which is clear and specific to all members. (12 items, numbers 111 to 123).

10. Potency is the degree to which a group has primary significance for its members. It is reflected by the kind of needs which a group is satisfying or has the potentiality of satisfying, by the extent of readjustment which would be required of members should the group fail, and by the degree to which a group has meaning to the members with reference to their central values. (15 items, numbers 61 to 75).

11. Stability is the degree to which a group persists over a period of time with essentially the same characteristics. It is reflected by the rate of membership turnover, by frequency of reorganizations and by constancy of group size. (5 items, numbers 13 to 17).

12. Stratification is the degree to which a group orders its members into status hierarchies. It is reflected by differential distribution of power, privileges, obligations, and duties and by asymmetrical patterns of differential behavior among members. (12 items, numbers 31 to 42).

13. Viscosity is the degree to which members of the group function as a unit. It is reflected by absence of dissension and personal conflict among members, by absence of activities serving to advance only the interests of individual group members, by the ability of the group to resist disrupting forces, and by the belief on the part of the members that the group does function as a unit. (12 items, numbers 76 to 87).

The instrument has been used extensively but seldom in a school setting. It has been used in a number of different settings reflecting the criterion that it be applicable to most groups. For example, in one study Gekowski⁵³

⁵³N. Gekowski, The Relationship of Group Characteristics to Productivity. Unpublished Doctor's Dissertation, Ohio State University Library, 1951.

described the group work characteristics of women office workers employed by a large insurance company. Knight⁵⁴ employed the instrument in describing nine selected religious organizations. Rush⁵⁵ isolated a set of characteristics on which aircrews differed and could be described. Hemphill⁵⁶ reported on a study of faculty members at a liberal arts college where members of eighteen departments were asked to provide a description of their departments. The results indicated the following:

1. More members of the college departments regard their group as heterogeneous and few regard their departments as homogeneous.
2. More members describe their departments as involving a relatively high degree of participation than regard their department as low in participation.
3. College departments are seen by most members as low on the permeability dimension. Very few members describe college departments above average on permeability.
4. More members of the college departments describe their groups as relatively high in importance to them than see their groups as unimportant.
5. More members of the department describe their group as relatively low on control than describe them as high in this respect.

⁵⁴R. Knight, A Study of Thirteen Group Characteristics of Selected Religious Organizations at Ohio State University. Unpublished Master's Thesis, Ohio State University Library, 1950.

⁵⁵C. Rush, Group Dimensions of Aircrews. Unpublished Doctor's Dissertation, Ohio State University Library, 1953.

⁵⁶Hemphill, op. cit., p. 15.

6. College departments appear to more of their members to be highly stratified with marked emphasis on rank and status differences than to be low on the dimension stratification.
7. There is a tendency for college faculty members to regard their departments as relatively low on teamwork, cohesion, and freedom from dissension (viscidity) rather than the opposite.
8. There are fewer department members who describe their groups as low in pleasantness (hedonic tone) than in the standard population.

Seeman⁵⁷ described the group dimensions of both high school and elementary school staffs and reported:

1. The school unit is seen to exercise moderately high control over the conduct of teachers (control).
2. The unit is described as relatively less intimate than other groups in the standard population (intimacy).
3. The school unit is seen to be moderately difficult to join as a staff member (permeability).
4. The teachers regard the school unit as relatively important to them as a group (potency).
5. The school unit is seen to be a relatively autonomous group by teachers.
6. The school unit is regarded by teachers to be relatively heterogeneous in membership.
7. The school is seen by teachers as a relatively stable group with little turnover or change in its basic characteristics.
8. There is a tendency for the teachers to regard their group as requiring considerable participation but with little emphasis on stratification.

⁵⁷Ibid., p. 20.

The writer was unable to locate any data that described the characteristics of teaching teams or compared and/or contrasted teaching teams with traditional staffs. The lack of descriptive data concerning teaching teams exists in spite of increasing usage of team teaching as an organizational strategy. One central concern that is constantly mentioned in the team teaching literature is that of staff relations between team members. Moreover, it could very well be that the complexity of staff relations increases with the team size.

Group Size

The IGE model recommends that three or four professional staff members be assigned to a unit or team. In schools, the size of the teaching team is determined by the number of students and teachers available. The size of the teaching team, however, may affect group relations. Davis noted that "undoubtedly the character of the group tends to change with size."⁵⁸ Williams⁵⁹ reported that even in a structurally

⁵⁸K. Davis, Human Society (New York: The McMillan Company, 1950), p. 293.

⁵⁹R. M. Williams, Jr., American Society (New York: Alfred A. Knopf, 1951), p. 458.

simple group...the addition of members rapidly produces changes in the internal organization. Bossard⁶⁰ commented that the relationship between persons increases as the group increases by simple whole numbers. Coyle⁶¹ observed that structural form is affected by the number of those involved. It was Simmel,⁶² however, who earlier observed the isolation phenomena and the effect of size upon the internal relations of the dyad and triad.

Isolation

Simmel⁶³ considered isolation as a relation which is within the individual but exists between him and another group. Isolation may also be viewed as an interruption or periodic occurrence in a given relationship between two or more persons. The isolation phenomenon is more significant in those groups or relations where solidarity and compatibility are presumed essential to group function.

The isolated individual's condition is a result of negative association. A well-known psychological fact, is

⁶⁰J. H. Bossard, "The Law of Family Interaction," The American Journal of Sociology, 50 (January, 1945), pp. 292-294.

⁶¹G. L. Coyle, Social Processes in Organized Groups (New York: Richard R. Smith, Inc., 1930), p. 89.

⁶²K. H. Wolff, The Sociology of George Simmel (Glencoe, Illinois: The Free Press, 1950).

⁶³Ibid.

that the isolation which an individual experiences when physically alone is rarely as intense as when one is a stranger without relations at a party or in a group setting.⁶⁴ When a purposeful group, with a common set of objectives, permits such isolation in its midst, then that group may have difficulty achieving its goals.

The Triad

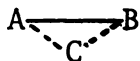
The simplest group or social system is the dyad or two member group.⁶⁵ It is an association itself, containing as many elements as more complex groupings. The dyad differs from larger groups, however, in the kind of relations that exist between its two parts, or members. If the group is to function successfully, it must be cooperative and compatible. If either member withdraws or becomes isolated, the group is destroyed. Interdependence is a necessary requirement of this group. With a three member group, the group continues to exist even if one of the members drops out or becomes isolated.

In the triad the members need not be interdependent. According to Simmel,⁶⁶ each individual in the three member group operates as an intermediary between the other two

⁶⁴Ibid.

⁶⁵Ibid.

⁶⁶Ibid.

serving a dual role, to unite and separate. In the triad there are two relationships. One is the direct relationship between two members (A and B). The other is their indirect relationship through the third member (C). The two elements are not only connected by a straight line, which is the shortest, but also by a broken line. This arrangement may be enriching from a formal sociological standpoint. For example, points that cannot be contacted by the straight line relationship of A-B, may be connected by their dotted line relationship to (C) . The third element (C) may offer a different view to each of the other two members, while at the same time arriving at consensus. Thus, conflict which cannot be resolved by two elements is accommodated by the third or by absorption in a comprehensive whole.

The indirect relation, however, may have an adverse effect upon the group. It may disturb the triad.⁶⁷ Two of the three members may regard the third as an intruder and, therefore, isolate him. Simmel believed that the sensitive union of two is always irritated by the spectator and that it is rare for three people to form a compatible functioning group. Fundamentally, he considered the triad as inherently unstable.

⁶⁷Ibid.

Caplow⁶⁸ examined the triad model from the standpoint of the members not having equal power. He theorized that the formation of a given coalition depended upon the initial distribution of power within the triad. Moreover, when the initial distribution of power is known, the formation of a coalition within the triad can be predicted to some extent. He proposed six types of coalitions based upon the following assumptions:

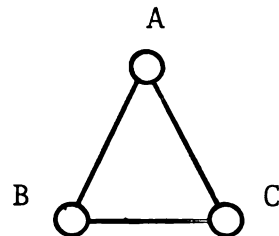
1. Members of a triad may differ in strength. A stronger member can control a weaker member, and will seek to do so.
2. Each member of the triad seeks control over the others. Control over two others is preferred to control over one other. Control over one other is preferred to control over none.
3. Strength is additive. The strength of a coalition is equal to the sum of the strength of its two members.
4. The formation of coalitions takes place in an existing situation, so that there is a pre-coalition condition in every triad. Any attempt by a stronger member to coerce a weaker member into joining a non-advantageous coalition will provoke the formation of an advantageous coalition to oppose the coercion.

The six types⁶⁹ of triads proposed by Caplow reflect the above assumptions. Type 1 is the classic case

⁶⁸T. Caplow, "A Theory of Coalitions in the Triad," American Sociological Review, p. 489.

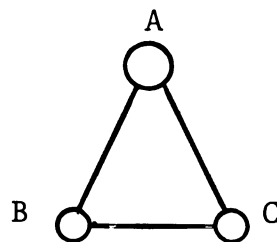
⁶⁹Ibid.

where all members are of equal strength. It is not the most common, however. The possible coalitions are AB, BC, and CA. Each member attempts to enter a coalition within which he is equal to his ally and stronger than the isolate.



Type 1
 $A=B=C$

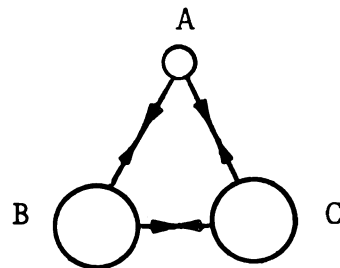
In Type 2, one member is stronger than the other two, but not much stronger. Each of the members seek a coalition. The three possible coalitions are not of equal advantage. For example, if B forms a coalition with A, he will be stronger than C. Within the coalition, however, he will be weaker than A. If B forms a coalition with C he will be equal to C within the coalition and stronger than A because of the coalition. The strength of B is the same as C, therefore, the resulting coalition would be BC. When the coalition of BC is formed, the strongest member of the triad A becomes the weakest.



Type 2
 $A > B$
 $B = C$
 $A < (B + C)$

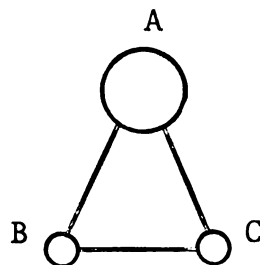
Two members of the triad are equal in strength in Type 3, while the third is weaker. In this situation A, the

weakest member, may strengthen his position by forming a coalition with either B or C. B does not strengthen his position by joining with C. The only reason for B to join with C would be to prevent the coalition of AC. The strength of C is the same as B. Therefore, C would prefer A as a coalition member rather than B. The two most likely coalition would be AB and AC.



Type 3
 $A < B$ $B = C$

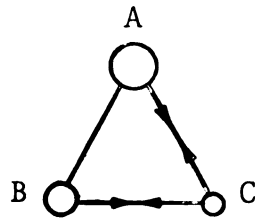
In Type 4, the strength of A is greater than the combined strength of B and C. It is obvious that it would not be advantageous for B and C to form a coalition. If such a coalition would form, it would still be weaker than the single strength of A. Moreover, A would not be threatened by such a coalition. A coalition could only be formed if B or C found some means to attract A to join them.



Type 4
 $A > (B + C)$
 $B = C$

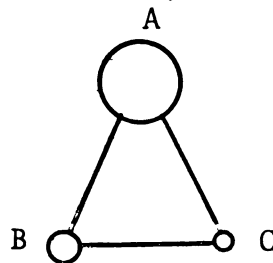
No two members of the triad are equal in strength in Type 5. The combined strength of any two members, however, is greater than that of the isolate. The weakest

member has an advantage since he would be included in any coalition. A is the strongest member of the triad and attempts to join both B and C. The weakest member of the triad is C and seeks to join either A or B. The strength of B lies between A and C. Both A and B seek to enter a coalition with C.



Type 5
 $A > B > C$
 $A < (B + C)$

In type 6, three members are unequal in the triad with A being stronger than B and C combined. In such a triad, A has no reason to join in a coalition. B cannot improve its position by forming a coalition, but A can.



Type 6
 $A > B > C$
 $A > (B + C)$

In three of the types proposed by Caplow, it appears that the triad favors the weak member over the strong member when coalitions are formed. For example, in Type 2, initially A is the strongest member in the triad. But his strength is not so great where he can feel comfortable. Each member desires to form a coalition. Since coalition with A by either B or C would cause either of

them to be the weaker member within the coalition, the probable coalition is BC where each member will have equal strength. The combined strength of BC is greater than A. Therefore, A becomes the weakest member in the triad. The same assumption is true in Type 3 where A is the weakest member and B and C are equal in strength. The only member who can improve his pre-coalition position by joining a coalition is A. The probable coalitions are AB and AC. In Type 5 A has more strength. Any coalition exceeds the strength of the isolate. B would probably not seek to form a coalition with A since he would be the weaker member of the coalition. It can be seen that whatever coalition is formed, the weakest member in the triad, C, will be a part of the coalition.

Other research studies have investigated the phenomenon proposed by Simmel⁷⁰ - the tendency of the triad to become a coalition of two against one. None of these studies, however, has investigated whether this phenomenon is operative in a team teaching setting. Mills⁷¹ examined the isolation principle in the triad and the extent to which relationships were interdependent. He made observations of the interaction of forty-eight three-person

⁷⁰Wolff, op. cit.

⁷¹T. M. Mills, "Power Relations in Three Person Groups," American Sociological Review, p. 351.

discussion sessions of student volunteers. Each group of three students met for two thirty minute sessions. Each group was asked to select three pictures from the T.A.T. series and then create a single dramatic story on which they all agreed. The results confirmed Simmel's theory that the primary tendency in the triad is segregation into a pair and an isolate. The more active members formed the pair and the least active member became the isolate. A closer examination of the data revealed that when the initial division is increased a real power structure is formed with internal differentiation, interdependence of relationships between members, stability of activity position, steady trends in receipt of support that are congruent with the initial differentiation and stability of the pattern itself.

A follow-up study was conducted by Mills.⁷² In this study he examined the coalition pattern in three person groups. He specifically investigated the interdependence and persistence of the pair in the triad. He also attempted, in a "preliminary" fashion, to specify the conditions under which the pair in the triad was more persistent and those under which it tended to dissolve. The first problem was

⁷²T. M. Mills, "The Coalition Pattern in Three-Person Groups," American Sociological Review, p. 657.

examined by using two trained role players who established the coalition pattern while interacting with a subject. The strength of the pair or coalition force was determined by analyzing the reactions of the subject. The second problem was investigated by selecting subjects on the basis of their status classification and certain of their personality needs. The effects of these variables were tested upon their reactions and, consequently, upon the persistence or dissolution of the pair in the triad.

Mills⁷³ data support Simmel's principle of the pair and isolate in a three member group. Moreover, he accepted his results as evidence that the structural fact of two members being in coalition against the third was more important in determining behavior in the group than temporal change itself or previous position within the group. On the basis of Mills' study, it may be reasoned that the coalition pattern is a fully interdependent structure of relationships with respect to behavior - namely, how well people function in a three member group.

To examine the second problem - the conditions under which the pair was more persistent and those under which it would tend to dissolve - Mills used three hypotheses. The first hypothesis was that the coalition would be more apt to persist when the isolate was of higher status relative to

⁷³Ibid.

others in the group than when he was of lower status. Mills discovered that high status was not associated with resistance to the coalition. Contrary to his expectations, he found that the low status isolate offered more resistance to the coalition than did the high status member, although the difference was not statistically significant. The low status isolate was also more likely not to conform to majority opinion.

The second hypothesis was that the coalition would be more apt to persist when the isolate has a low need for the acceptance of others than when he had a strong need for their acceptance. The results indicated that there were no significant differences in changes of instrumental activity or in changes of positive and negative reactions between the strongly dependent and less dependent isolate. Moreover, it was found that greater active resistance to the coalition was offered by the dependent person with low status, rather than the less dependent person with high status.

Mills' third hypothesis was that the coalition would be more likely to persist when the isolate has a strong need for self-enhancement than when he had a minimum need for self-enhancement. The results revealed self-enhancement was more important for high status members than for low. High status members with a strong need were more

apt to resist actively the coalition while his counterpart with low need was likely to show positive acceptance of the other members.

In another study, Strodbeck⁷⁴ examined the family as a three person group by using the mother, father and son as subjects. A sample discussion was obtained from the family by administering a forty-seven (47) item check list. A second questionnaire was given and three items were developed for each coalition; mother - father, mother - son, and father - son. Nine disagreements were presented with the role of the isolate rotated. In each of the nine presentations, the family was asked to discuss the topic, understand why each person chose his particular answer, and try to choose an alternative on which the family could agree.

Analysis of the discussion consisted of breaking it into units and identifying the originator and target of each act.⁷⁵ Each act was assigned to one of Bale's twelve categories (shows solidarity, shows tension release, agrees, gives suggestion, gives opinion, gives orientation, asks for orientation, asks opinion, asks for suggestion, disagrees, shows tension, shows antagonism). The originator and target of each act and the category in which it was placed were

⁷⁴Strodbeck, Ibid., pp. 23-24.

⁷⁵Ibid., p. 24.

used to form an index of supportiveness which reflected the tendency of a particular actor to give positive responses to the attempts at problem solution by another actor.

Among other things, Strodtbeck⁷⁶ concluded that the triad phenomenon was an operative concept in the family setting. He found, also, that the decision making power in families was associated with high participation. Mills'⁷⁷ finding was confirmed that when the two most active members were solidary in their relation, the stability of their rank participation was high. Strodtbeck did not find the stability to be as low in families as Mills found in ad hoc groups when the two most active members were in conflict.

Probably the most significant evidence on coalitions in the triad was done by Vinacke and Arkoff⁷⁸ who tested Caplow's⁷⁹ six types of coalitions formation relative to the power of each member in the triad. The three subjects played a game where each moved his counter along a game board. The first subject to reach the goal received

⁷⁶Ibid., p. 29.

⁷⁷Mills, "The Coalition Pattern in Three-Person Groups," op. cit., 658.

⁷⁸W. E. Vinacke and A. Arkoff, "Experimental Study of Coalitions in The Triad," American Sociological Review, 1957, 22.

⁷⁹Caplow, "A Theory of Coalitions in the Triad," op. cit., p. 489.

one hundred points. The experimenter rolled a die and each player advanced a certain number of spaces. Each player was randomly assigned a weight from one to four. The number of spaces advanced was the product of the weight assigned to that particular player and the number on the die. Each player advanced each time the die was rolled. Any pair in the triad could form a coalition any time by combining their weights. When such a coalition was formed, the coalition advanced on subsequent rolls according to the sum of their combined weights. When a coalition was formed it could not be dissolved, and the experimenter recognized a coalition only when they agreed how they would divide the one hundred points should they win.

The experiment revealed some unexpected results. Six different sets of weights were used, and the weight each player received was considered power. The three players treated the weight four (4) as if it yielded great power. For example, the player with the four (4) weight always demanded a greater share of the 100 points when he was in a coalition. Players with weights of two (2) and three (3) formed a majority of the coalitions because they could make a better deal with each other than they could with the four weight player. The subjects tended to attribute to the four (4) weight player a power that he did not have which resulted in his exclusion from coalitions. The weakest member

was most often a part of the winning coalition, which confirmed one observation made by Caplow.

The small group studies presented here support Simmel's earlier discovery of coalitions in a triad. Almost all of the studies, however, were in a laboratory setting. It remains a matter in investigation whether the coalition-isolation phenomenon in the triad is operative in a non-laboratory setting. Specifically, a matter for investigation is whether the coalition-isolation phenomenon is operative in teaching teams where the members are presumed to be initially compatible and have presumed common objectives.

Team Teaching

During the past two decades innovations such as independent study, large group instruction, small group instruction, use of teacher assistants, the application of technology to teaching, performance contracting and team teaching have all been adopted by many schools. These approaches, however, have been tried in isolation and not as an integrated systems approach toward individualizing the elementary school. Moreover, most of those isolated innovations have been instructional changes without an accompanying organizational restructuring in which the instructional change could function; they have been tried within the traditional school setting. Consequently, it is suggested that we have witnessed little significant difference

in the organizational structure of the elementary school and in academic achievement of its students.

Team teaching, when conducted on a school-wide basis, changes the organizational structure of the school, but mixed results are reported for student achievement. Drummond⁸⁰ found that the differences in student achievement in team teaching and traditional schools was not statistically significant. The Norwalk, Connecticut Board of Education⁸¹ studied student achievement for students in grades 2 - 6 involving seven, three member teaching teams for a period of two years. In the design of the study, no control groups were utilized, rather grade equivalent gain in Stanford Achievement Tests were computed for students in each of the seven teams and compared with gains of national norms. The results indicated that of the 48 comparisons made, the Norwalk students equalled or exceeded the norms in 38 of the comparisons. Heathers⁸² states that the practice of comparing local test results with national norms instead of using control groups is common with most suburban team

⁸⁰H. D. Drummond, "Team Teaching: An Assessment," Educational Leadership, Vol. XIX, December, 1961, pp. 160-165.

⁸¹The Norwalk Plan: A Two Year Study, Norwalk, Connecticut, The Norwalk Board of Education, September, 1960.

⁸²Heathers, op. cit.

teaching projects. In high socio-economic areas it can be assumed that student gains will exceed national norms regardless of the organizational structure. In another study, Sterns⁸³ studied the achievement of fourth and sixth grade students in team teaching and traditional schools. He found no significant differences in achievement between the two groups in either reading or language. Lambert⁸⁴ also used control groups in comparing achievement between students in team teaching and traditional schools. He found significant differences in student achievement between the students in two groups. Team teaching is credited by its proponents as combining the best features of departmentalization and the self-contained classroom because each team member teaches most subject areas in addition to an area of specialization. The team structure helps insure that constant communication, cooperative planning, evaluation and coordination will result in competent specialized instruction within a totally interrelated instructional program.

A recent approach at reforming the elementary school and its instructional program is that of non-graded

⁸³H. N. Sterns, "Student Adjustment and Achievement in a Team Teaching Organization," (unpublished dissertation, Department of Education Administration, 1970), p. 42.

⁸⁴P. Lambert, et al., Classroom Interaction, Pupil Achievement and Adjustment in Team Teaching as Compared with the Self-Contained Classroom, Cooperative Research Project No. 1391 (Madison, Wisconsin, 1964). p. 15.

education. The non-graded approach attempts to release the student from a locked-in graded structure where each student is expected to complete the same amount of material by the same time table or repeat the whole process, thereby denying individual differences between students. The non-graded concept maintains that children are not alike and that each child comes to school with a unique set of educational, psychological and emotional needs, and that the school accept each child with all his uniqueness and treat him as an individual.

Various attempts at individualizing instruction have been made. A review of the literature reveals attempts at individualizing instruction as far back as 1888 in Pueblo, Colorado,⁸⁵ and in 1911 at the San Francisco State College Training School.⁸⁶ These were the precursor of a number of laboratory approaches to education such as the Winnetka Plan.

A large number of non-graded schools are non-graded in name only, for they remain tied to the graded organizational practice. As late as 1972, McLaughlin claims, "Almost without exception, converts to the non-graded school rely on one or more of the organizational schemes mentioned by Shane.

⁸⁵W. P. McLaughlin, "Individualization of Instruction vs. Non-grading," Phi Delta Kappan, (February, 1972), pp. 378-381.

⁸⁶Ibid.

Also, and again virtually without exception, no substantial changes in instructional procedure accompany contemporary plans to non-grade the graded school."⁸⁷ It appears then that what is needed to improve instruction at the elementary school is a total restructuring which involves a system that changes the organizational complexity and the instructional program - a systems approach. Anderson probably had such a system in mind when he stated:

"...team teaching and non-gradedness in combination...appears to represent an ideal or ultimate form of elementary school organization."⁸⁸

Individually Guided Education

During the years 1965-70, the Wisconsin Research and Development Center for Cognitive Learning developed a bold new approach for individualizing elementary education which utilized team teaching and non-graded classrooms as a systematized approach to instruction. This systems approach is called Individually Guided Education (IGE). It is sometimes referred to as the Multi-Unit Elementary School. "Individually Guided Education has been labeled by its proponents as the first realistic alternative to the traditional age-graded

⁸⁷Ibid.

⁸⁸R. H. Anderson, "Some Types of Cooperative Teaching in Current Use," The National Elementary Principal, XLIV, No. 3, (January, 1965), pp. 24-25.

self-contained system of elementary schooling."⁸⁹

Individually Guided Education is a comprehensive system of education and instruction designed to increase educational achievement by providing for differences in a student's rate of learning, learning style, and other characteristics. The IGE school is organized without traditional grade levels and self-contained classrooms. Instead, it has instruction-research units - each with its own supporting staff - equipped to stimulate individual learning. A unit leader heads each unit which usually consists of two or three teachers, and support personnel. The building principal and unit leaders form the Instructional Improvement Committee (IIC), which is the school's planning and policy-making body. Each unit leader and his staff develop, present, and evaluate individualized learning programs for pupils varying in age by three or four years, in levels of motivation and in rates of learning and learning styles.

Little research has been conducted on the IGE school. The research that has been reported offers mixed

⁸⁹H. J. Klausmeier, The Development and Evaluation of the Multi-Unit Elementary School, 1966-1970 (Madison, Wisconsin: Wisconsin Research And Development Center for Cognitive Learning, The University of Wisconsin), 1971, p. 1.

results relative to academic achievement. Wardrop⁹⁰ compared the individualized and traditional spelling instruction at the fourth grade level in an IGE and a traditional school. Effects of the instructional programs were not significantly different from each other. In another IGE study of fourth graders, Quilling⁹¹ found no significant difference in achievement in mathematics between the experimental and control groups. Both groups, however, made progress as great as or greater than their average rate of progress since entering school. Bradford⁹² reported no significant difference in reading gains between the experimental and control groups. However, significantly greater gains in mathematics were reported for the IGE students than in the control group.

⁹⁰J. L. Wardrop, D. M. Cook, M. Quilling and H.J. Klausmeier, Research And Development Activities in Research And Instructional Units of Two Elementary Schools of Manitowoc, Wisconsin, 1966-67, (Madison, Wisconsin: Wisconsin Research and Development Center for Cognitive Learning, The University of Wisconsin), 1967, p. 3.

⁹¹M. Quilling, D.M. Cook, J. L. Wardrop and H.J. Klausmeier, Research And Development Activities in Research And Instructional Units of Two Elementary Schools of Milwaukee, Wisconsin, 1966-67, (Madison, Wisconsin: Wisconsin Research And Development Center for Cognitive Learning, The University of Wisconsin), 1968, p. 10.

⁹²E. F. Bradford, A Comparison of Two Methods of Teaching in the Elementary School as Related to Achievement in Reading, Mathematics, and Self-Concept of Children. Unpublished Doctor's Dissertation, Michigan State University, Department of Secondary Education and Curriculum, 1972, p. 119.

Summary

How various personnel function in groups has long been a concern of research in industry but one of conjecture in education, particularly in team teaching.

Writers such as Lobb,⁹³ Wagner,⁹⁴ Chamberlain,⁹⁵ Polos,⁹⁶ and Beggs⁹⁷ recognize the potential for conflict when teachers are teamed for instruction. They offer general guidelines and recommendations for teaming teachers, derived from their experience. They fail to refer to any objective research that supports their conjectures. Yet there are probably many educators who share their views. It appears then that what is needed is data describing the characteristics of teachers in teaching teams and those in traditional schools. Administrators need to know these characteristics and be aware of what actually happens to teachers once they are teamed so as to reduce inter-group conflict.

⁹³Lobb, Practical Aspects of Team Teaching, op. cit., p. 21.

⁹⁴Wagner, Why Team Teaching, op. cit., p. 52.

⁹⁵Chamberlain, Team Teaching, op. cit., p. 138.

⁹⁶Polos, The Dynamics of Team Teaching, op. cit., p. 56.

⁹⁷Beggs, Team Teaching - Bold New Adventure, op. cit., p. 147.

A body of data does exist which indicates that conflict is a function of the number of people in the group. Simmel⁹⁸ was first to observe the triad phenomenon. He reported that when three people are grouped for a particular purpose, two form a coalition and isolate the other. A review of the literature indicates that the triad concept is an operative one. For example, Caplow⁹⁹ examined the concept relative to power relations and theorized that the formation of a coalition was dependent on the initial distribution of power within the triad. When the initial distribution of power is known, the formations of coalition can be predicted. Caplow proposed six types of possible coalitions. A principle contribution derived from Caplow's models is that the weakest member in the triad is almost always a member of the coalition, and the strongest is the isolate.

Mills¹⁰⁰ examined the extent to which relations in the triad were interdependent. He found that the more active members formed the coalition and the least active became the isolate. When this initial division is heightened

⁹⁸Wolf, The Sociology of George Simmel, op. cit.

⁹⁹Caplow, "A Theory of Coalitions in the Triad," op. cit., p. 489.

¹⁰⁰Mills, "Power Relations in Three Person Groups," op. cit., p. 351.

a power structure is formed characterized by interdependence of relationships between members, internal differentiation, stability of activity position, and steady trends in receipt of support. In a follow-up study, Mills¹⁰¹ investigated the interdependence and persistence of the pair in the triad. He also attempted to specify the conditions under which the coalition would be more persistent and those under which it would tend to dissolve. Mills concluded that the structural fact of two members being in coalition against a third was more important in determining behavior in the group than temporal change itself or previous position within the group. Moreover, the coalition pattern was found to be a fully interdependent structure of relationships. In examining the persistence of the coalition, Mills found, contrary to his belief, that: the low status isolate offered more resistance to the coalition than did high status members; greater active resistance was offered by the dependent person with low status, rather than the less dependent person with high status; high status members with a strong need were more apt to resist actively the coalition while the low status member with a low need was likely to show positive acceptance of the other members.

¹⁰¹Mills, "Coalition Pattern in Three Person Groups," op. cit., p. 657.

Strodtbeck¹⁰² studied the three member family - father, mother and son. He concluded that the coalition was a viable phenomenon in the family and that decision making power in families was associated with high participation. Vinacke and Arkoff¹⁰³ tested Caplow's six types of coalitions and confirmed Caplow's observation that the weakest member in the triad was most often a part of the coalition, while the strongest was the isolate.

A review of the literature indicates that the characteristics of teaching teams and the triad phenomenon are necessary areas for investigation. The IGE system recommends three or four professional members on a team and thus provide an interesting organizational model for investigation of the triad phenomenon.

¹⁰²Strodtbeck, "The Family as a Three Person Group," op. cit., p. 28.

¹⁰³Vinacke and Arkoff, "Experimental Study of Coalitions in The Triad," op. cit., p. 24.

CHAPTER III

DESIGN AND METHODOLOGY

Introduction

It should be recalled that the major purpose of this study was to examine the characteristics of teachers in their interpersonal relations in a traditional elementary school setting and in an IGE setting over a two-year time period utilizing thirteen dimensions. A secondary purpose of the study was to determine the effect of the IGE instructional approach on the achievement gains in mathematics and reading of third and fourth grade inner city students over a two year time period.

The School District

Woodberry is a middle size city of approximately 200,000 people located in the mid-western section of the United States. It is basically an urban community with light industry. A large percentage of the population are home owners. Woodberry contains a mixture of ethnic and racial groups. Its population consists of 80 percent Caucasian, 15 percent Black, 4 percent Latinos, and 1 percent other minorities.

The school district enrolls forty thousand (40,000) students. These students attend fifty-three (53) elementary, nine (9) middle, four (4) high schools, one (1) junior college, and a number of special schools. Sixty-five percent of the student enrollment are Caucasians, thirty percent Blacks, and five percent Latinos. Student services and the quality of education provided are relatively equal for all groups.

The Population and Sample Selection

The socio-economic background of students is important when measuring one group of students with another. Moreover, the evidence suggests that schools teaching one type of student population can be measured only against other schools with similar student populations. Therefore, the selection of schools in the study was determined by a set of socio-economic and student background factors as well as by reading and mathematic achievement scores as measured by standardized test scores.

The communities from which the experimental and control students are drawn are basically the same. Both school communities are poor, predominately Black and located in the inner city of Woodberry. Most dwellings are single family with a few renovated to apartments. A large number of the families are on welfare with females serving as heads of the households. The populations for this study are

teachers and students from two inner city elementary schools. Specifically, the experimental teachers are members of the IGE school, while the control teachers are members of a traditional elementary school. The students are second and third graders in each school. Both students and teachers are preassembled groups.

To assure meaningfulness of the comparison, the student population of the two schools were matched as closely as possible. Percentage of families on welfare, median family income, pupil ethnicity, and percentage of families eligible for free school lunches were used as matching criteria. The schools were also similar in size and enrollment. Because of their high incidence of poverty and mathematic and reading retardation in their student population, both schools were designated by the State and Woodberry School Board of Education as "Special Service" and Title I schools.

Tables 1 and 2 provide demographic data for the two schools.

Administration of the Instruments

The students in the experimental and control groups were administered the Metropolitan Achievement Test in Reading and Mathematics. A pretest was given in the Spring of 1971 prior to the implementation of the IGE program and a post-test in the Spring of 1973 at the termination of the

Table 1. Student and School Characteristics, 1971-72*

Characteristics	Bruce	Washington
School population receiving aid-to-families with dependent children	70%	75%
Pupils eligible for free lunch	85%	88%
Median family income	\$4,500	\$4,300
School type	Pre K - 5	Pre K - 6
School enrollment	570	520
Black pupils	98%	97%
Other pupils	2%	3%

*Data Source: Pupil Services, Woodberry Public Schools.

Table 2. Comparison of Faculty Characteristics Between the Schools, 1971-72*

Characteristics	Bruce	Washington
Male classroom teachers	2	5
Female teachers	21	16
Tenured teachers	17	15
Degree status: BA	15	13
Degree status: MA	8	8
Racial/ethnic: Black	8	6
Racial/ethnic: Caucasian	15	15
Average age	35	37
Average teaching experience	6 Years	8 Years

*Data Source: Personnel Department, Woodberry Public Schools.

experimental period. The experimental period was for a duration of two years, the school years of 1971-72 and 1972-73. The following specific tests were administered to the groups:

Reading and Mathematics

Pre-test, Third Grade: Metropolitan Achievement Test--Primary II Battery, Form G.

Intermediate Test, Third Grade: Metropolitan Achievement Test, Elementary Battery, Form F.

Post-test, Fourth Grade: Metropolitan Achievement Test, Elementary Battery, Form F.

Pre-test, Fourth Grade: Metropolitan Achievement Test, Elementary Battery, Form G.

Intermediate Test, Fourth Grade: Metropolitan Achievement Test, Elementary Battery, Form F.

Post-test, Fifth Grade: Metropolitan Achievement Test, Intermediate Battery, Form F.

Teachers in the experimental and control group were administered Hemphill's Group Dimensions Description Questionnaire (GDDQ) in October of 1971; June, 1972; and September, 1973. The GDDQ contains thirteen variables for systematic group description. These dimensions measure the expressed behavior of individuals completing the instrument. There is no "right" or "wrong", "good" or "bad" determined by the questionnaire; in this sense it is an inventory of personal predispositions in the area of interpersonal

behavior. According to Hemphill,¹⁰⁴ the GDDQ may be used either (a) to assess an individual group member or (b) to obtain a description of major dimensions of a group as seen by its members. It is for the latter purpose that the GDDQ is used in this study.

There is a wide variation of reliability scores with each dimension. Table 3 presents the means, standard deviations, and reliabilities of the GDDQ based upon one hundred respondents where each described a different group.

Table 3. Means, Standard Deviations, and Reliabilities of Group Dimension Scores Describing 100 Groups in Sample A.

Group Dimension	Raw Score Mean	Standard Deviation	Estimates of Reliability ^a
1. Autonomy	31.90	12.55	.92
2. Control	31.46	6.84	.66
3. Flexibility	29.80	9.95	.72
4. Hedonic Tone	17.72	3.10	.28
5. Homogeneity	36.60	10.15	.80
6. Intimacy	51.18	7.32	.79
7. Participation	33.95	6.15	.62
8. Permeability	35.00	11.55	.78
9. Polarization	38.02	8.92	.80
10. Potency	47.90	9.16	.80
11. Stability	12.68	4.26	.50
12. Stratification	36.02	9.08	.79
13. Viscidity	38.90	10.35	.86

^aEstimates are based on the correlation of odd vs. even items corrected for full length of the dimension.

Table 4 gives comparisons of estimates of reliability for three groups. The first group is that in Table 3. The

¹⁰⁴Hemphill, op. cit.

second is members of a college, and the third consists of teachers in a public school system. While there is wide variation in estimates of reliability between samples, in one of the samples the reliability estimates for each dimension "meets the minimum standards of adequacy (.64 to .92)."

Table 4. Estimates of Reliability of Group Dimension Scores from Three Studies

Group Dimensions	Miscellaneous Groups (N = 100)	College Departments (N = 130)	Public School Systems (N = 83)
V1 Autonomy	.92	.83	.88
V2 Control	.66	.45	.60
V3 Flexibility	.72	.64	.59
V4 Hedonic Tone	.28	.64	.49
V5 Homogeneity	.80	.69	.67
V6 Intimacy	.79	.84	.85
V7 Participation	.62	.70	.63
V8 Permeability	.78	.60	.85
V9 Polarization	.80	.87	.82
V10 Potency	.80	.72	.84
V11 Stability	.50	.73	.64
V12 Stratification	.79	.72	.78
V13 Viscidity	.86	.90	.87

Validity has a somewhat different meaning in assessing the quality of the GDDQ than is used in some other test, advises Hemphill. He reports that there are three principle questions that bear upon the validity of the GDDQ:¹⁰⁵

(1) Do individuals who belong to the same group give similar

¹⁰⁵Ibid.

descriptions? (2) Are obvious differences among groups of differing general classes reflected in the dimension score? (3) Are the group dimension scores related to variables of group behavior and/or performance? Hemphill states, "If the GDDQ yields valid descriptions of group attributes, all of these questions should be answered in the affirmative."¹⁰⁶ He cautions, however, that each member in the group should not be expected to have the same attitudes. An individual's status within the group, length of membership, and degree of active participation can all affect one's description. The validity of the GDDQ then is based upon its ability to reveal differences between groups relative to certain characteristics or dimensions.

The Design

The "non-equivalent control group pre-test, post-test design" is employed in this study as defined by Campbell and Stanley. This design is used with naturally assembled groups where the researcher is unable to randomly assign subjects to the comparison groups. Campbell and Stanley state:¹⁰⁷

¹⁰⁶Ibid.

¹⁰⁷D. T. Campbell and J. C. Stanley, Experimental and Quasi-Experimental Designs for Research (Chicago: Rand McNally and Co., 1966) p. 47.

One of the most widespread experimental designs in educational research involves an experimental group and a control group both given a pre-test and a post-test, but in which the control group and the experimental group do not have pre-experimental sampling equivalence. Rather the groups constitute naturally assembled collectives such as classrooms, as similar as availability permits but yet not so similar that one can dispense with the pre-test. The assignment of X to one group or the other is assumed to be random and under the experimenter's control.

Sax¹⁰⁸ prefers the nonequivalent control groups design in school settings where groups are naturally assembled. He considers the use of a control group as a major advantage. A minimum requirement for the nonequivalent control groups is that the pre-test scores for the experimental and control groups be as close as possible. But even if the original mean scores vary, the control group's participation aids interpretation of past results.

Treatment of the Data

The data were programmed and processed by the computer at Michigan State University. In treating the teachers' data, scores were summed for each of the 13 dimensions of the G.D.D.Q. for each person during the three measuring periods. A total score for the experimental school was derived by averaging each of the five teams'

¹⁰⁸G. Sax, Emperical Foundations of Educational Research (Englewood: Prentice-Hall, 1968), p. 366.

scores for each dimension during the three measuring points. Scores for the control school were determined by averaging the scores for each dimension during the three points in time. A multivariate repeated measure analysis was conducted for experimental and control teachers to determine if there was any significant mean difference between the two groups. A univariate analysis was used to determine the nature of the difference. A multivariate repeated measure analysis was also conducted for four and three member teaching teams to determine if there was significant difference between the two groups. A multivariate repeated measures analysis was conducted of second grade control and experimental students in reading and mathematics to determine if the groups differed significantly. A simple effect analysis was then conducted for reading and mathematics to determine the nature of the difference in each. A table of means for reading and mathematics was presented to further examine the nature of the differences. The data was then illustrated graphically. The same treatment method was employed in examining the data of third grade experimental and control subjects in reading and mathematics.

IGE In-Service Education Program
January, 1971 - June, 1971

A perennial concern and complaint of teachers when implementing a new instructional program is that of lack of in-service. It can be assumed that these complaints and concerns will be compounded when both the organizational structure and the instructional program are new. Bruce School, therefore, participated in a half year of IGE in-service program. This was necessary since most of the staff's teaching experience had been in self-contained classrooms. Moreover, IGE's organizational structure and instructional program represented a radical departure from the staff's past practices and experiences. The Thursday after school in-service was ninety minutes long. The in-service program was not only concerned with the IGE components, but also with dissipating some apprehensions about team teaching, multiage grouping, behavioral objectives and flexible space classrooms, etc. The in-service training program is discussed at length, for it is suggested that it was vital to the successful implementation of the IGE program.

Initially, teachers were given an overview of the IGE program. Reasons for individualizing were discussed by the teachers and the university consultant. Various individualized systems were discussed such as continuous progress, Individually Prescribed Instruction (IPI) and

Project Plan. Early in the in-service program, units or teaching teams were formed by the principal for the following school year. The principal selected the team members with their consent. This was an acceptable approach since he had been principal of Bruce for three years and knew the staff quite well. Figure 3 illustrates a model IGE multiunit school and related components. The model was discussed extensively, including roles and functions of the various members. The Instructional Improvement Committee (IIC) serves a vital role in IGE school.

The Instructional Improvement Committee is chaired by the building principal. Its other members are unit (team) leaders and consultants who may have a need to attend. The IIC is the policy making body of the school and it meets one hour each week after school. It is the IIC that resolves conflicts and allocates the school's space and resources. It can be seen that the role of the principal changes in the IGE school. The teachers share in the decision making process. It is in the IIC meetings where the unit leaders, representing their staff, make known their concerns. The unit leader and teachers share in the responsibility and functions of the IGE school. Following is a list of their functions:

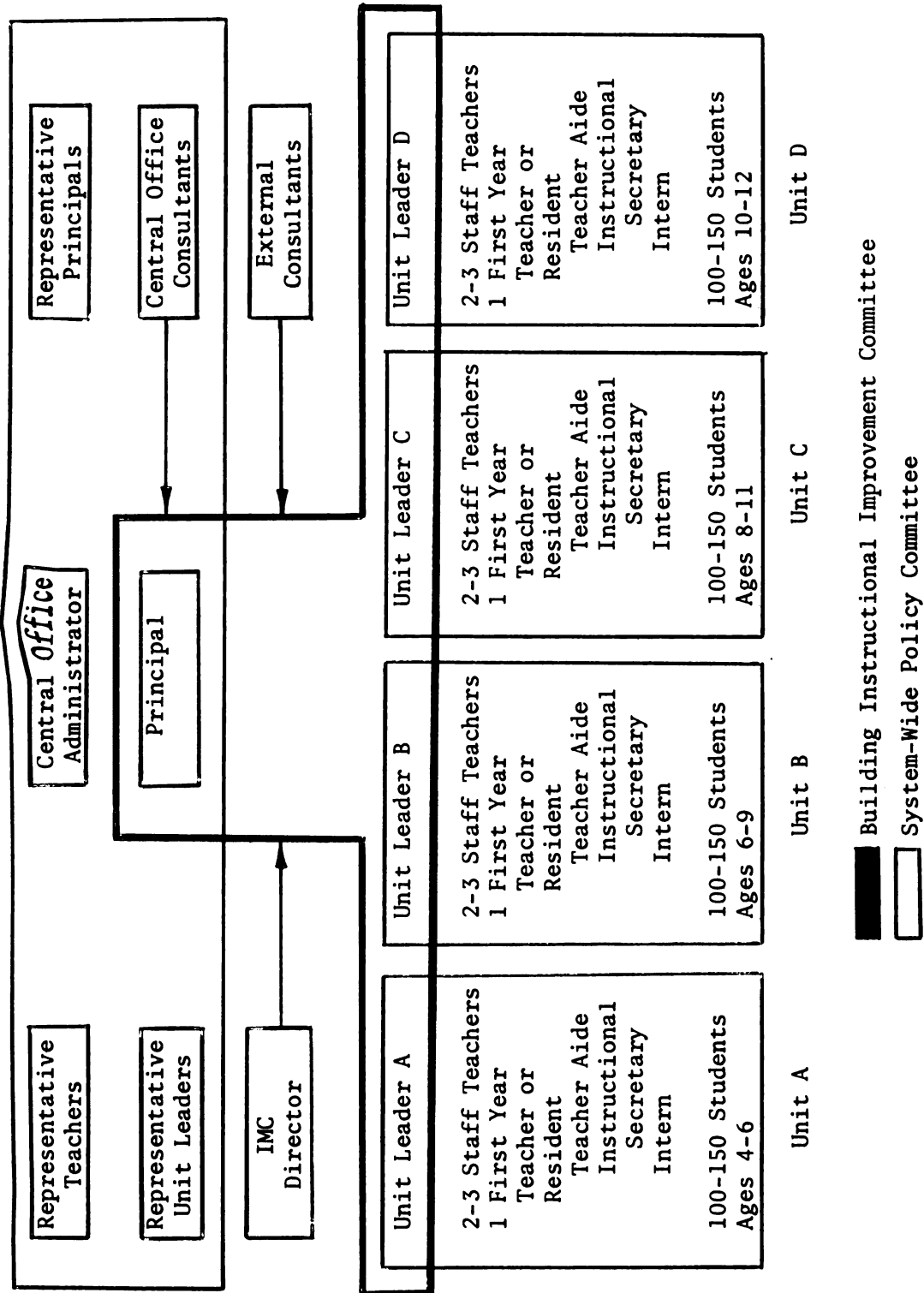


Figure 1. Organizational Chart of a Multiunit School.

Unit Functions

1. Responsibilities of a unit for instructional improvement are:
 - A. Develop and/or select goals to be achieved in instructional improvement.
 - B. Develop and/or select outlines of skills and concepts to be learned which are appropriate to the children in the unit.
 - C. Develop and/or select behavioral objectives related to the skills and concept outline developed from overall goals.
 - D. Assess each child prior to instruction, during instruction and post-instruction.
 - E. Select instructional objectives for each child.
 - F. Specify materials, personnel, space, time and other resources.
 - G. Specify teacher activities - instructional methods, techniques, presentation.
 - H. Specify student learning more - individual study, one-to-one, small group, large group.
 - I. Evaluate and refine all components of the instructional system.
2. Responsibilities of the Unit in teacher education, both pre- and in-service.
 - A. In-service
 - 1) Some of the in-service education of the unit is a function of cooperative ventures characteristic of the Unit. Teachers learn from each other as they work.
 - 2) Other activities are more formal and are coordinated by the Unit leader.
 - 3) Instruction on components of the instructional system.

- 4) Instruction on research procedures.
- 5) Instruction on development procedures.
- 6) Instruction on pre-service education.
- 7) In-service education also includes instruction about roles and responsibilities.
- 8) In-service education may be on an individual basis or with the whole staff.
- 9) In-service education ordinarily is conducted during regular school hours.

B. Pre-service (where appropriate)

- 1) Pre-service is a joint venture with the intern's college or university and the state agency responsible for certification.
- 2) Although the intern or student teacher is placed in a unit, the university supervisor works with the Unit in determining the overall program for pre-service.
- 3) The activities of the intern/student teacher are expected to include experience in:
 - a. assessing students - administering, scoring, interpreting tests, and using non-test information.
 - b. planning learning programs - writing and/or selecting objectives, determining methods and procedures, and selecting materials.
 - c. instruction - using a variety of materials and procedures, one-to-one instruction, small groups, class size groups, large groups.
- 4) The intern/student teacher progresses from observation to full participation; the objective is that the pre-service teacher will experience involvement in the entire process of teaching from assessing to instructing.

3. The responsibility of the Unit in research and development when appropriate.
 - A. Evaluating promising instructional materials and procedures.
 - 1) Small scale trial prior to adoption.
 - 2) Assessed in terms of:
 - a. requisite teacher skills.
 - b. teacher acceptance.
 - c. time required for pupil use.
 - d. pupil achievement - (pre- and post-test design).
 - 3) Little, if any, outside assistance required.
 - B. Researching materials and procedures.
 - 1) A controlled experiment design in which materials, procedures and variables are controlled to determine the best instructional combination of materials, procedures, modes, etc.
 - 2) Outside assistance will be required.
 - C. Development
 - 1) Design locally constructed curricula.
 - 2) Test in research activities.
 - 3) Refine
 - 4) Interim design is used until the objectives are reached.
 - 5) Outside assistance required.
 - D. Research and Development with other agencies.
 - 1) Unit provides students, teachers and environment for classroom research conducted by the University.

- 2) Unit and University collaboratively develop large scale instructional programs or systems.
- 3) Unit staff participates but probably will not initiate or execute independently.

Unit Leader Functions

1. As a member of the Instructional Improvement Committee, the Unit leader:
 - A. Contributes to planning and coordinating of the school's educational program.
 - 1) Formulating school-wide objectives.
 - 2) Determining policies and guidelines related to improving instruction, conducting research and development, and participating in pre-service and in-service.
 - 3) Coordination in use of school-wide facilities and resources.
 - 4) Evaluating the progress of the school in achieving its objectives.
 - B. Is the formal liaison between Unit Staff and principal communicating:
 - 1) Input from the Unit Staff on policies and guidelines and vice versa.
 - 2) Problems beyond the scope of the Unit.
 - 3) Proposed school-wide plans to Unit Staff for feedback.
2. As leader, Unit Leader is responsible for:
 - A. Coordinating activities and resources of the Unit.
 - B. Seeing that consultants, central office and other, are utilized appropriately and as needed.
 - C. Assuring that individually guided education is implemented by the Unit.

- 1) Content is outlined.
 - 2) Behavioral objectives are formulated.
 - 3) Children are assessed.
 - 4) Instructional objectives are prepared for each child.
 - 5) Media, materials, and supplies are provided.
 - 6) Appropriate student activities are planned - modes - individual study, one-to-one, small group, class group and large group.
 - 7) Time, space, and other resources.
- D. Seeing that in-service education programs are developed and implemented, that information about advances in knowledge, new and promising materials and procedures is provided to Unit Staff by:
- 1) Formulating the Units in service.
 - 2) Instructing Unit Staff.
 - a. some in-service is conducted on a cooperative group basis with teachers planning, executing and evaluating together.
 - b. may conduct some in-service activities both with the Unit Staff and with individuals.
 - c. beginning teachers and teachers new to the system will need additional individual attention. The labor should be divided among experienced members of the Unit. Such teachers are not expected to become proficient in all Unit operations in a short time, but provision should be made to move the new teacher along in a systematic fashion.
 1. Some will work independently reading a book or released to attend workshops.

2. some will be in one-to-one with Unit Leader or experienced member of the staff.
 3. others will work in groups as they proceed with research and development activities.
 4. some instruction will be in whole Unit Staff meetings when they attack a common problem with consultants.
- d. brings in outside personnel.
 - e. helping individual members who may experience difficulty.
 1. help beginning teachers.
 2. assist those having discipline problems.
 3. help with student activities or materials and procedures they are not up to handling.
 - f. assuring that Unit function is systematically and regularly evaluated and that corrective measures are made.
 - g. calls on the principal for assistance at appropriate times.
 - h. communications between Unit and parents of children in the Unit.
 - i. training paraprofessionals in the group.
 - j. working with University personnel.

Function of Unit Teacher

1. Determining content.
2. Establishing objectives.
3. Assessing and diagnosing each child.
4. Selecting student activities.

5. Selecting materials, media, supplies.
6. Selecting methods, lecture, small group, project, independent study, etc.
7. Grouping pupils.
8. Frequent assessment of pupils.
9. Using student participation in the above as a sensitive listener and observer.

The staff was taught how to write behavioral objectives. A large part of the in-service consisted of sequentializing the reading and mathematics materials and keying these to behavioral objectives written by the staff. Pre- and post-assessment materials were also constructed. These materials were then utilized with the IGE instructional programming model.

In May, the students were multiage grouped, covering a three year age span. In June, the Woodberry School Board approved a building renovation program for Bruce School. It consisted of opening walls to make three and four classes continuous. Carpet was installed in each unit. A large art room was carpeted and converted into a media center. A team leader was hired for six weeks during the summer to re-organize all audio visual materials. Eight teachers were employed in Summer School along with the principal, and they piloted the in-service material. Bruce School implemented the IGE program in September of 1971.

Summary

This chapter described the setting of the study, the participants, the instruments used and how they were measured. In describing the in-service program, the IGE system was explained.

Specifically, the study was conducted in two inner city elementary schools in an urban midwestern town. Both schools were closely matched relative to size, ethnic composition, student achievement and socio-economics. One school, however, was traditional while the other was an Individually Guided Education school.

Pre-tests and post-tests in reading and mathematics were administered to the students over a two year period. Pre- and post-tests were also administered to teachers in both schools to describe the characteristics of teachers. The data gathered were analyzed by a multivariate analysis test and is presented in Chapter Four.

CHAPTER IV

ANALYSIS OF DATA

This chapter contains the results of the statistical analysis of data. It is divided into two main sections; the first section presents the quantitative analysis of teacher data, and the second presents the student data. Each question is restated and accompanied by the results of the multivariate analysis. The alpha level for rejection of the hypotheses was established at .05.

It should be recalled that the major purpose of this study was to describe the group characteristics of teachers in an IGE school and teachers in a traditional elementary school using the thirteen dimensions of the GDDQ. A second purpose was to examine the effect of the IGE and traditional instructional approaches in mathematics and reading of second and third grade inner city students over a two year time period.

Results of Teacher Group Characteristics

Testing of Hypotheses

The hypothesis which tested the difference between teachers in the experimental and control schools was:

Hypothesis One

There is no difference between teachers in the experimental and control schools when measured by the thirteen dimensions of the Group Dimension Description Questionnaire over a two year time period.

In the control school the above hypothesis was measured by a summation of each teacher's score on each of the thirteen dimensions of the GDDQ during the three measuring periods. A total score for the experimental school was derived by summing each of the five teams' scores for each of the dimensions during the three measuring periods. The scale was 1 to 5 on each question of the 150-item questionnaire. A mean score for the control and experimental school was computed and a multivariate analysis conducted on the differences between mean scores. A multivariate repeated measures test indicated that there was a significant difference ($P < .0001$) between teachers in the IGE school and teachers in the traditional school. Thus, the null hypothesis was rejected. Table 5 reports the results of the multivariate repeated measures analyses. Table 6 illustrates the mean scores and standard deviations for each dimension during each measuring period.

To find the nature of the multivariate significance, individual dimensions were compared between the experimental and control groups. The univariate analysis indicated that

Table 5. Multivariate Repeated Measures of Experimental and Control Schools on GDDQ, 1971-1973

Sources	DF	Multivariate		MS	Univariate	
		F	P		F	P
Groups	13, 18	12.26	.0001*			
Control	1			8	.4717	.4915
Stability	1			213	62.1603	.0001**
Intimacy	1			125	4.1952	.0494
Stratification	1			6	.2146	.6466
Hedonic Tone	1			56	19.6512	.0002**
Autonomy	1			13	1.6043	.2151
Potency	1			.0207	.0008	.9773
Viscidity	1			490	16.1330	.0004**
Permeability	1			196	8.9736	.0050
Participation	1			67	4.8993	.0347
Polarization	1			111	7.1733	.0119
Flexibility	1			1	.0715	.7910
Homogeneity	1			651	28.1350	.0001**
Repeated Measure	26, 5	2.88	.1205			
Control	1			13.53	1.33	.2574
Control	1			23.24	1.16	.2895
Stability	1			15.16	4.64	.0394
Stability	1			2.80	.6639	.4217
Intimacy	1			13.53	.5994	.4449
Intimacy	1			4.88	.2369	.6301
Stratification	1			159.31	10.07	.0035
Stratification	1			73.58	6.00	.0204
Hedonic Tone	1			.1301	.0273	.8700
Hedonic Tone	1			1.29	.3961	.5339
Autonomy	1			43.07	3.34	.0773
Autonomy	1			23.18	1.91	.1772

Interaction	26,	5	3.02	.1101
Control	36.68	3.61	.0670	
Control	13.49	.6748	.4179	
Stability	.0020	.0006	.9803	
Stability	11.72	2.77	.1065	
Intimacy	40.27	1.78	.1917	
Intimacy	.5009	.0243	.8773	
Stratification	33.47	2.11	.1560	
Stratification	78.59	6.41	.0169	
Hedonic Tone	.8407	.1763	.6776	
Hedonic Tone	3.4323	1.05	.3129	
Autonomy	13.75	1.06	.3096	
Autonomy	.0060	.0005	.9825	
Potency	.6610	.0329	.8573	
Potency	10.7020	.4514	.5069	
Viscosity	4.24	.1051	.7481	
Viscosity	63.62	2.11	.1565	
Permeability	40.44	2.29	.1404	
Permeability	4.42	.2174	.6444	
Participation	1.98	.2643	.6110	
Participation	14.57	1.54	.2232	
Polarization	75.83	6.39	.0170	
Polarization	1.35	.0801	.7792	
Flexibility	14.18	.7276	.4005	
Flexibility	47.42	4.25	.0479	
Homogeneity	43.90	2.86	.1008	
Homogeneity	41.75	2.25	.1441	

*Significant at .05 level.

**Significant at .0038 level.

Table 6. Means and Standard Deviations of GDDA for Experimental and Control Schools, 1971-1973

		Control	Stability	Intimacy	Stratification	Hedonic Tone
N=17	Experimental Mean, 1971	33.4	19.5	43.1	33.9	18.1
	Std. Devs.	6.9	4.5	10.4	8.0	4.4
N=15	Control Mean 1971	36.1	15.2	41.8	35.0	15.5
	Std. Devs.	6.3	2.3	6.4	4.3	2.8
N=17	Experimental Mean, 1972	32.4	19.2	45.9	31.5	18.1
	Std. Devs.	11.4	3.9	9.9	8.0	3.1
N=15	Control Mean 1972	35.2	12.4	42.3	36.8	14.5
	Std. Devs.	3.5	2.8	6.7	2.4	
N=17	Experimental Mean, 1973	37.4	17.8	47.3	41.7	17.5
	Std. Devs.	4.7	2.2	10.1	8.1	3.5
N=15	Control Mean 1973	34.9	13.5	40.4	37.8	15.8
	Std. Devs.	4.5	2.9	5.2	7.5	2.7

Autonomy	Potency	Viscosity	Permeability	Participation	Polarization	Flexibility	Homogeneity
37.0	45.8	41.9	29.5	37.2	44.2	36.1	35.1
6.5	7.2	11.2	8.5	4.4	7.9	9.2	7.9
34.2	45.4	35.2	31.2	34.0	37.0	35.8	27.3
7.7	7.1	8.6	8.2	5.7	6.2	4.3	8.0
33.1	43.1	43.0	24.1	35.1	42.5	37.0	34.8
4.4	9.5	12.3	7.9	8.8	8.3	6.7	6.6
31.8	44.8	31.2	30.2	34.1	38.2	33.2	29.0
5.5	5.8	6.5	7.6	4.9	6.8	7.3	7.9
32.7	45.5	39.3	24.9	40.0	34.0	32.6	41.4
3.0	11.7	11.0	3.5	2.3	4.0	7.6	7.7
33.0	44.4	34.4	32.1	35.6	34.3	35.6	27.9
6.2	5.8	8.5	9.2	4.6	5.2	5.2	6.8

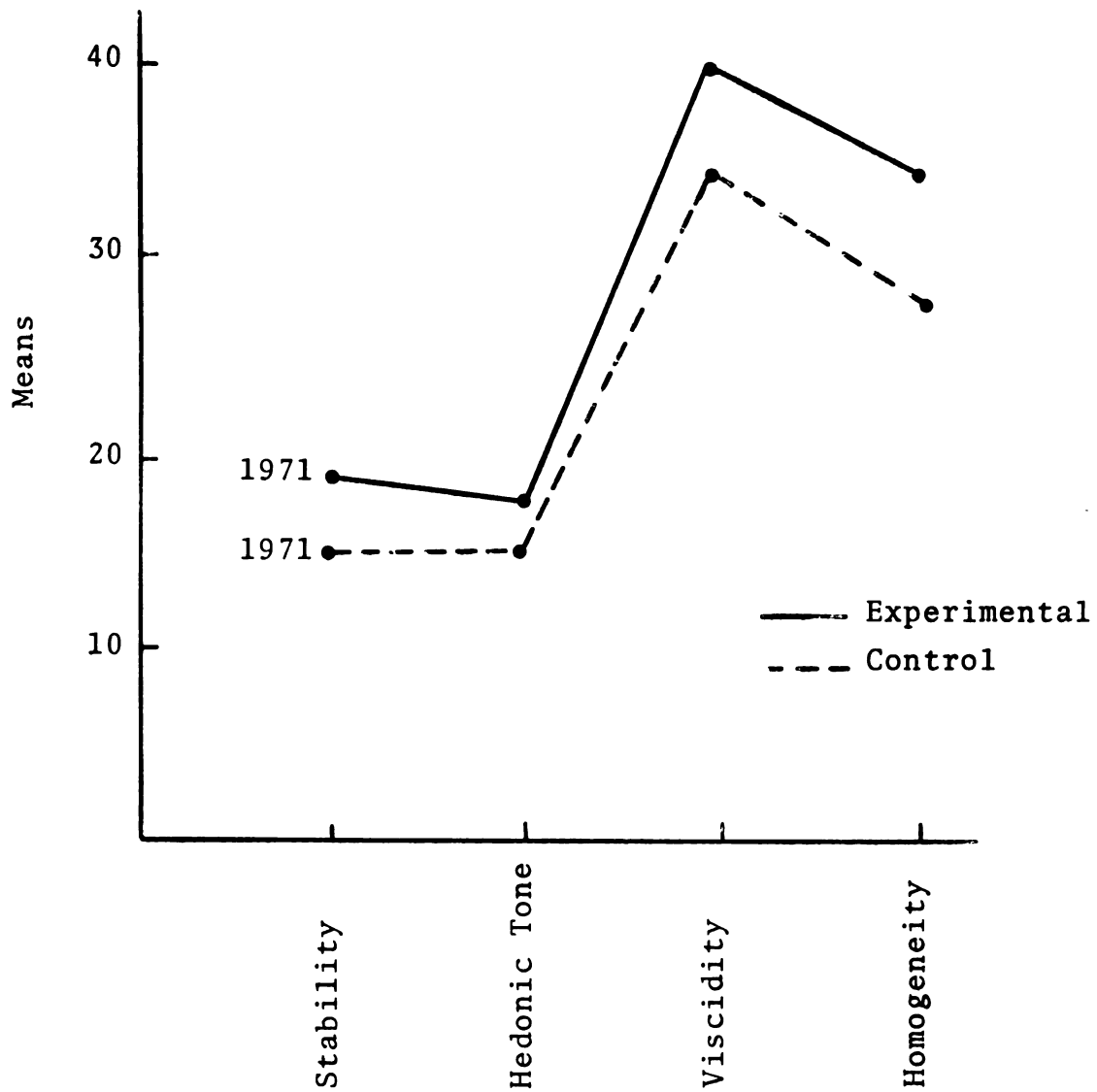


Figure 2. Profile of Significant GDDQ Dependent Variables for Experimental and Control Schools - 1971.

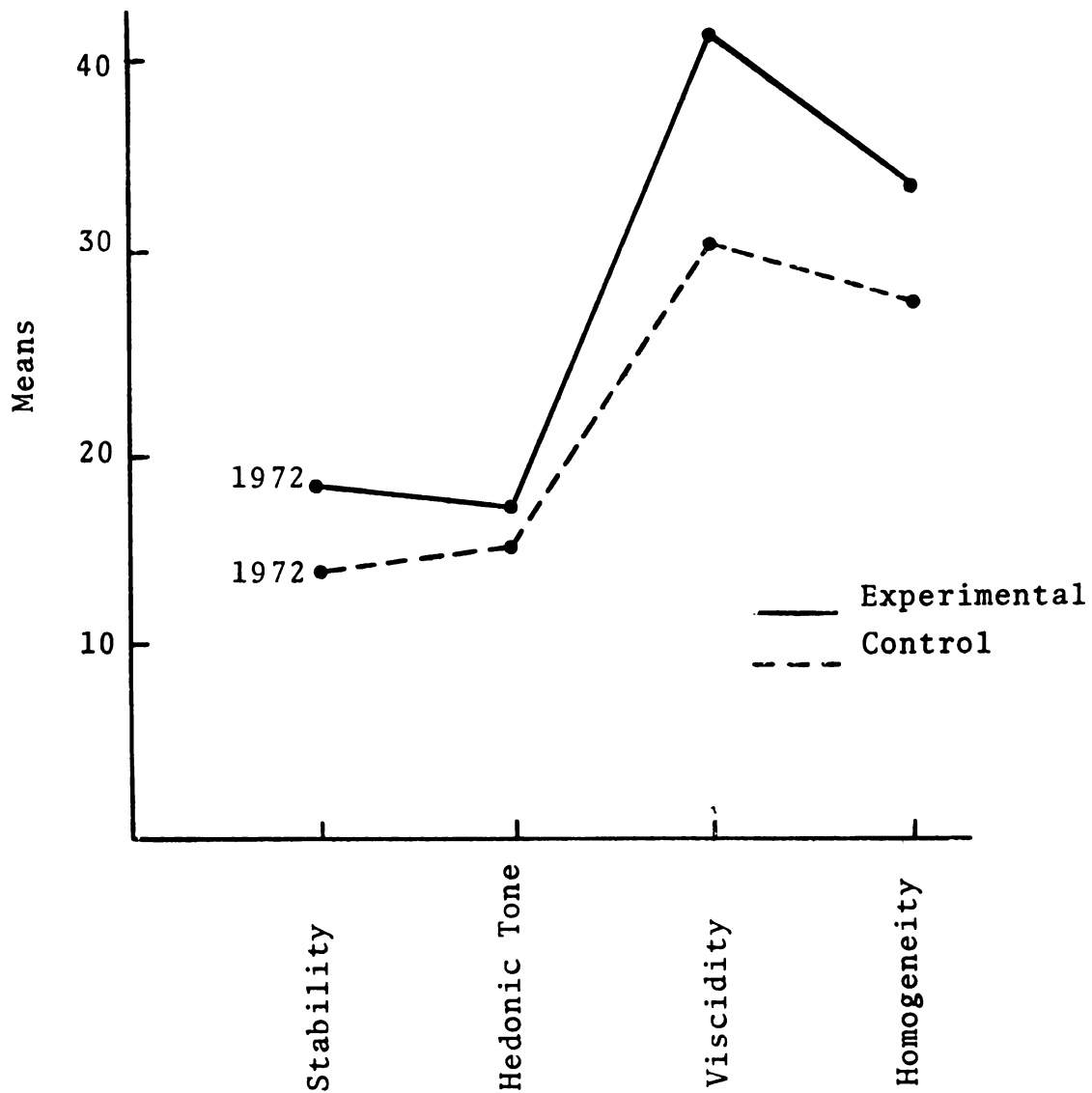


Figure No. 3. Profile of Significant GDDQ Dependent Variables for Experimental and Control Schools - 1972.

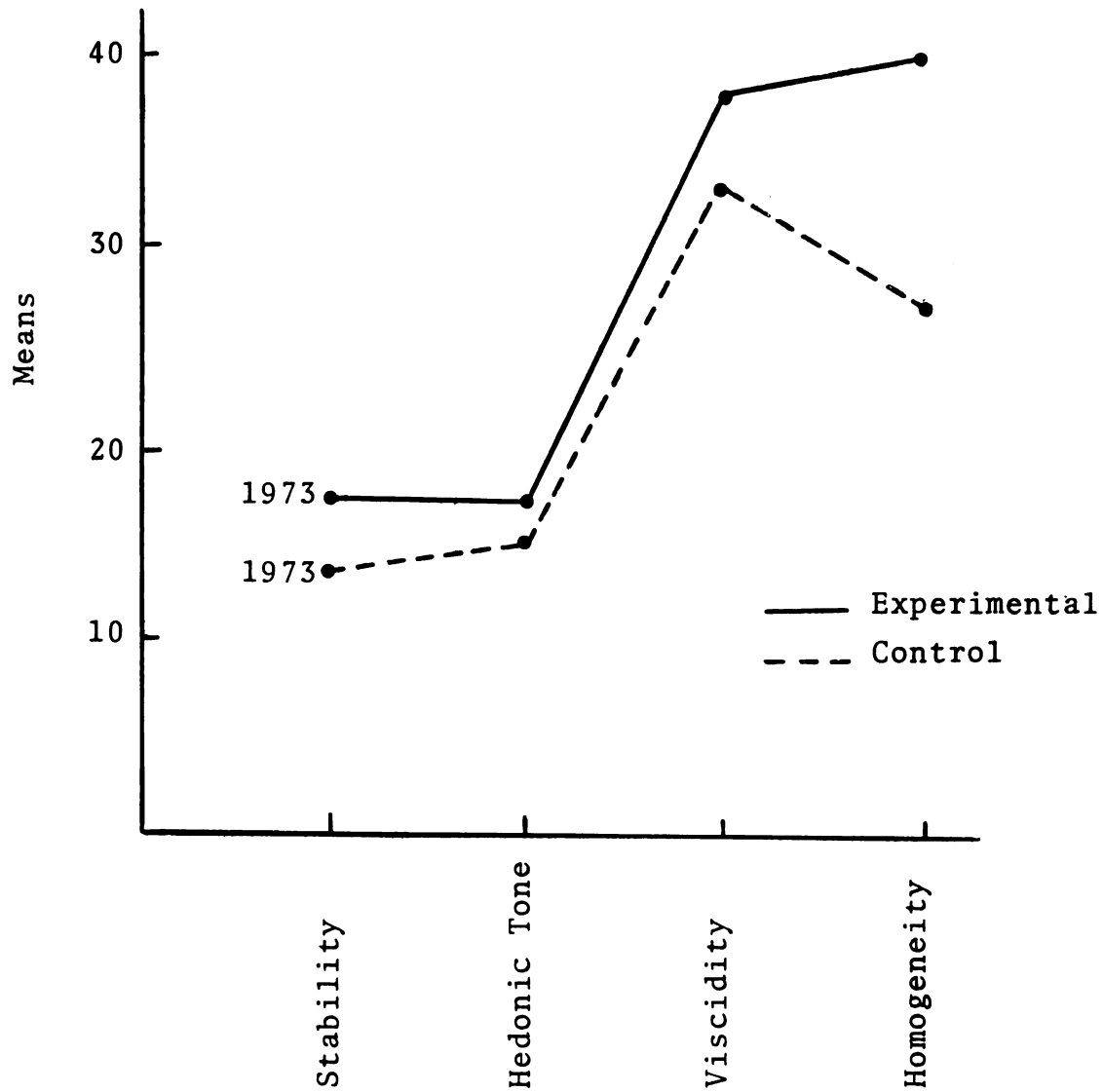


Figure 4. Profile of Significant GDDQ Dependent Variables for Experimental and Control Schools - 1973.

the groups differed on variable 2, Stability ($P < .0001$), variable 5, Hedonic Tone ($P < .0002$), variable 8, Viscidity ($P < .0004$), and variable 13, Homogeneity ($P < .0001$). Figures 2, 3, and 4 show the mean differences and the pattern of the differences for each of the three measuring points. For example, in 1971, the means of the experimental group were higher than those of the control group for each of the four variables. This pattern continued for each measuring period.

Hypothesis Two

There is no difference between teachers on three and four member teams in the IGE school when measured by the thirteen dimensions of the Group Dimension Description Questionnaire over a two year time period.

Table 7. F-Ratio Multivariate Test of Four-and Three-Member Teams on GDDQ, 1971-1973.

Degrees of Freedom	F	P Less Than
13, 3	1.40	.4417

The null hypothesis was retained since the overall multivariate test of equality of vectors was not statistically significant ($P < .4417$). This implies that

Table 8. Means and Standard Deviations of Four- and Three-Member Teams on GDDQ, 1971-1973.

		Control	Stability	Intimacy	Stratification	Hedonic Tone
N=8	Two Experimental Groups of 4					
	1971	37.8	19.5	37.6	35.2	15.8
	Std. Devs.	6.73	5.42	10.44	8.13	4.38
N=9	Three Control Groups of 3					
	1971	29.4	19.5	48.1	32.7	20.1
	Std. Devs.	4.36	4.10	8.00	8.12	3.62
N=8	Two Experimental Groups of 4					
	1972	30.3	17.2	43.7	34.3	18.1
	Std. Devs.	8.05	3.91	7.10	8.87	1.95
N=9	Three Control Groups of 4					
	1972	34.2	21.1	47.8	29.1	18.1
	Std. Devs.	14.12	3.01	11.99	6.84	3.98
N=8	Two Experimental Groups of 4					
	1973	37.8	19.1	48.1	43.8	18.8
	Std. Devs.	5.48	1.72	4.70	7.54	1.00
TOTAL N=17	Three Control Groups of 3					
	1973	37.1	16.6	46.6	39.8	16.4
	Std. Devs.	4.40	2.17	13.59	8.62	4.66

Autonomy	Potency	Viscosity	Permeability	Participation	Polarization	Flexibility	Homogeneity
37.1 6.12	42.7 3.88	35.2 11.53	31.8 8.55	34.8 5.05	43.0 8.83	33.7 5.49	36.7 7.83
37.0 7.30	48.6 8.58	47.8 7.23	27.4 8.50	39.3 2.44	45.4 7.38	38.2 11.54	33.6 8.24
32.6 4.03	42.2 6.06	41.0 9.71	26.0 11.00	32.7 8.49	39.5 9.75	35.7 6.75	35.7 6.18
33.6 4.94	44.0 12.24	44.8 14.46	22.5 3.94	37.2 9.05	45.2 6.32	38.2 6.83	34.0 7.29
30.8 1.88	43.7 16.18	43.7 11.20	22.7 2.49	40.0 2.77	36.1 2.03	36.2 9.31	41.3 9.67
34.3 3.04	47.2 6.36	35.4 9.96	26.8 3.17	40.1 2.14	32.1 4.56	29.4 3.90	41.5 6.20

the teachers in four member teams did not perceive their relationship any differently than did teachers in the three member teams. Table 7 provides the MANOVA Data. Table 8 reports the means and standard deviations of the teams on the GDDQ for the measuring periods. No further analysis was conducted since the null hypothesis was retained.

Pupil Achievement Results

In addition to examining the group characteristics of teachers in IGE and traditional programs, the performance of students in the individualized reading program was also studied in comparison with a control group. The reading score of the students on the Metropolitan Achievement Tests was used as the dependent variable and IGE and traditional programs served as the independent variables.

Hypothesis Three

There is no difference in mean reading gain achieved by second grade students in the IGE and traditional schools when measured by the Metropolitan Achievement Tests over a two year time period.

Table 9 reports the results of the multivariate repeated measures analyses. It can be observed that in reading both repeated measures ($F = 243.91$ with 4 and 135 degrees of freedom, $P < .0001$) and interaction ($F = 13.34$ with 4 and 135 degrees of freedom, $(P < .0001)$) are statistically significant. The null hypothesis of no difference is therefore rejected. To determine the nature of the difference a simple effect analysis of interaction was conducted as reported in Table 10. Since the interaction was significant, no analyses were conducted for main effects.

Table 10 shows that in 1971, prior to implementation of the IGE program, the difference between the experimental and control group was statistically significant ($F = 17.3234$ with 6 and 133 degrees of freedom, $P < .0001$). This pattern was constant in 1972 where the mean reading difference between the two groups was again statistically significant ($F = 17.3234$ with 6 and 133 degrees of freedom, $(P < .0001)$). In 1973, however, there was no significant difference between the two groups.

Table 11 presents the means and standard deviation in reading for experimental and control students. It can be observed that the control group was 4.4 points higher than the experimental group on the pre-test in 1971; and in 1972, after the first year of implementation, the control group was 6.0 points higher, an increase of 1.6 points. The

Table 9. Multivariate Repeated Measure of Second Grade Experimental and Control Students in Reading and Mathematics, 1971-73.

Sources	DF	<u>Multivariate</u>		MS	<u>Univariate</u>	
		F	P		F	P
Groups	2, 137	21.52	.0001*			
Read	1			500.18	10.22	.0018**
Math	1			102.31	1.50	.2731
Repeated Measure	4, 135	243.91	.0001*			
Read 71-73	1			6219.05	644.83	.0001**
Read 72-73	1			19.66	4.56	.0344
Math 71-73	1			6769.13	630.79	.0001**
Math 72-73	1			1.22	.1709	.6800
Interaction	4, 135	13.34	.0001*			
Read 71-73	1			76.56	7.93	.0056**
Read 72-73	1			93.29	21.65	.0001**
Math 71-73	1			448.37	41.78	.0001**
Math 72-73	1			51.63	7.18	.0083**

*Significant at .05 level.

**Significant at .0038 level.

Table 10. Simple Effect Analysis of Interaction for Reading Between Second Grade Experimental and Control Students, 1971-1973.

Source	DF	Mean SQ	F	P
Reading - 1971	6	689.78	18.37	.0001*
Reading - 1972	6	1301.84	23.49	.0001*
Reading - 1973	6	23.20	.2417	.6238

*F-ratio significant at the .008 level.

Table 11. Means and Standard Deviations of Reading Scores for Second Grade Experimental and Control Students, 1971-1973.

Source	Reading 1971	Reading 1972	Reading 1973
Experimental - M=72	20.2	28.4	38.3
Std. Devs.	5.67	6.48	10.81
Control - N = 68	24.6	34.5	39.1
Std. Devs.	6.57	8.34	8.58
TOTAL N = 140			

second year of participating in the program, however, the IGE students gained 9.9 points while the students in the control school gained only 4.6 points.

Figure 5 graphically illustrates the initial difference between the two groups in 1971 and the absence of that difference in 1973. While both groups continued to gain, the rate of gain was greater for the experimental group. The

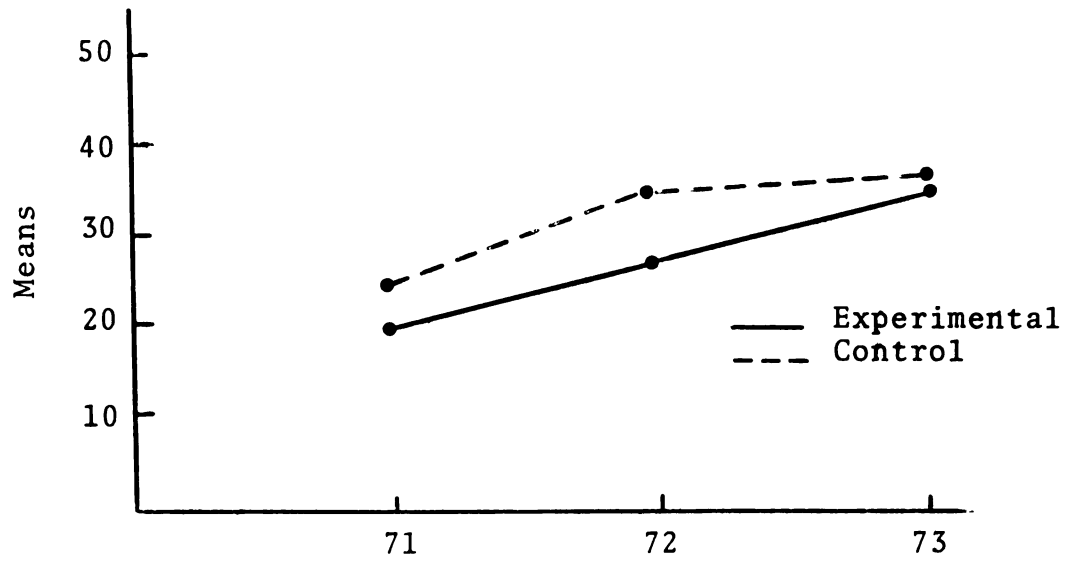


Figure 5. Profile of Mean Reading Scores for Second Grade Experimental and Control Students.

overall reading gain was 18.1 for the experimental and 14.5 for the control students.

Hypothesis Four

There is no difference in mean mathematics gain achieved by second grade students in the IGE and traditional schools when measured by the Metro-politan Achievement Tests over a two year time period.

Table 9 presents the results of the multivariate repeated measures analyses. The table shows that interaction is significant for mathematics ($F = 13.34$ with 4 and 135 degrees of freedom, $P < .0001$). The univariate tests further indicate that between the first and third measure the difference was significant ($P < .0001$) and also between the second and third measure ($P < .0083$). The null hypothesis of no difference was rejected. A simple effect analysis was conducted to determine the nature of interaction between the two groups.

Table 12 shows that there was no difference between the IGE control students at the beginning of the study in 1971. After one year of participating in the program in 1972, there was no difference between the two groups in mathematics. At the end of the second year, however, the groups were significantly different in mean gain in favor of the experimental (IGE) students.

Table 12. Simple Effect Analysis of Interaction for Mathematics Between Second Grade Experimental and Control Students, 1971-1973.

Source	DF	Mean SQ	F	P
Math - 1971	6	115.56	2.0827	.1513
Math - 1972	6	.0000	.0000	.9978
Math - 1973	6	1693.26	12.8477	.0005*

*F-ratio significant at the .008 level.

The mathematical means and standard deviations are presented in Table 13. In 1971, the experimental students had a mean score of 21.4 and the traditional had a mean score of 23.2, a difference of 1.8 which, as previously indicated, is not significantly different. Both groups gained in mathematics during the second year. The control group gained 7.8 points, while the experimental students gained 9.6 points. The difference in mean gain was 1.8. The 1.8 higher mean gain for the IGE students equaled the 1.8 original mean difference between the two groups. Therefore, at the end of 1972, their means equaled 31.0 points. At the end of the 1973 school year, the two groups were significantly different. The IGE students gained 11.7 points, while the traditional students only gained 4.7. The IGE students compiled a final mean mathematics score of 42.7, while the final score for the control group was 35.7. The IGE students had surpassed the control students at the end of the study by 7.0 points. Both groups made gains in

mathematics during the study; however, the rate was greater for the students in the IGE experimental group. The overall mathematics gain was 21.3 points for the IGE students and 12.5 points for the control group.

Table 13. Means and Standard Deviations of Mathematics Scores for Second Grade Experimental and Control Students, 1971-1973.

Source	Math 1971	Math 1972	Math 1973
Experimental - N = 72	21.4	31.0	42.7
Std. Devs.	7.71	8.9	12.96
Control - N = 68	23.2	31.0	35.7
Std. Devs.	7.15	8.75	9.65
TOTAL N = 140			

Figure 6 gives a graphic illustration of the interaction between the experimental and control students. It can be seen that the control students began the study with higher mean scores than the experimental students, although not significant. By 1972, the two groups had equal mean scores. In 1973, the rate of increase for the IGE student remained constant while the rate of increase for the traditional students decreased. The difference between the mean mathematical gain of the two groups was significant by the end of the 1973 school year.

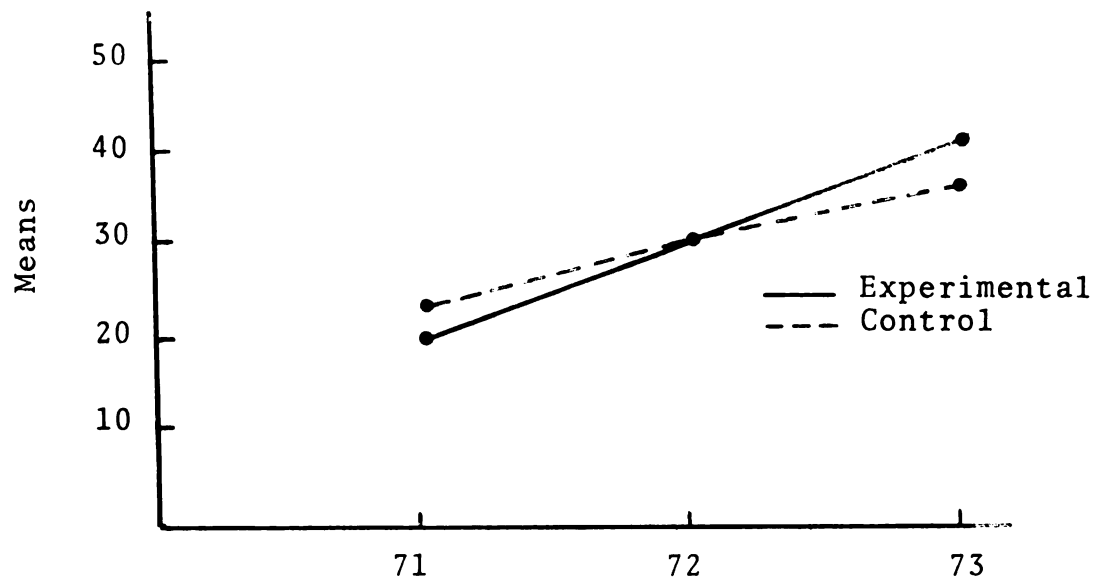


Figure 6. Profile of Mean Math Scores for Second Grade Experimental and Control Students.

Hypothesis Five

There is no difference in mean reading gain achieved by third grade students in the IGE school and third grade students in the traditional school when measured by the Metropolitan Achievement Tests over a two year time period.

Table 14 reports the multivariate repeated measure analyses of third grade experimental and control students in reading and mathematics. Interaction is statistically significant ($F = 4.0140$ with 4 and 157 degrees of freedom, $P < .0040$). The univariate further reveals that the interaction was significant for reading between the first and third years ($P < .0057$). The null hypothesis of no difference in mean reading gain between the IGE and traditional students was rejected.

A simple effect analysis of interaction was conducted to determine the nature of the difference between the two groups. Table 15 shows that the groups were significantly different ($P < .0001$) at the beginning of the study in 1971. The difference remained constant during the first year. After participating in the program for two years, the initial significant difference between the IGE and control students no longer existed.

The means and standard deviations in reading for the experimental and control groups are shown in Table 16.

Table 14. Multivariate Repeated Measure of Third Grade Experimental and Control Students in Reading and Mathematics, 1971-1973.

Sources	DF	<u>Multivariate</u>		<u>Univariate</u>	
		F	P	F	P
Groups	2,159	8.6317	.0003*		
Read	1			1141.21	15.45 .0002**
Math	1			197.44	2.58 .1100
Repeated Measure	4,157	251.40	.0001*		
Read 71-73	1			6914.25	646.52 .0001**
Read 72-73	1			1.91	.2721 .6027
Math 71-73	1			8027.28	757.62 .0001**
Math 72-73	1			3.54	.4697 .4942
Interaction	4,157	4.0140	.0040*		
Read 71-73	1			84.02	7.85 .0057**
Read 72-73	1			.4108	.0583 .8095
Math 71-73	1			25.74	2.43 .1210
Math 72-73	1			36.80	4.87 .0287

*Significant at .05 level.

**Significant at .0038 level.

Table 15. Simple Effect Analysis of Interaction for Reading Between Third Grade Experimental and Control Students, 1971-1973.

Source	DF	Mean SQ	F	P
Reading - 1971	6,155	2068.30	28.20	.0001*
Reading - 1972	6,155	1086.16	11.28	.0010*
Reading - 1973	6,155	529.53	5.02	.0265

*F-ratio significant at .008 level.

Table 16. Means and Standard Deviations of Reading Scores for Third Grade Experimental and Control Students, 1971-1973.

Source	Reading 1971	Reading 1972	Reading 1973
Experimental - N = 95	27.9	36.6	45.4
Std. Devs.	7.83	9.52	10.87
Control - N = 67	35.2	41.9	49.1
Std. Devs.	9.50	10.21	9.33
TOTAL N = 152			

In 1971, the IGE students had a mean reading score of 27.9 while the traditional students had a mean reading score of 35.2. A difference of 7.3 points separated the two groups. In 1971, the third grade students were significantly different in reading. Both groups gained in reading during the 1971-72 school year. But the difference between the two groups remained constant. The IGE students gained 8.7 points

for a mean of 36.6. The control students gained 6.7 for a mean of 41.9. At the end of the 1972-73 school year, however, there was no significant difference between the IGE and control students on reading. During the final year, students in the IGE program gained 8.8 points while students in the traditional program gained 7.2. The overall mean reading gain of the experimental group was 17.5 points. The overall mean reading gain of the control group was 13.9 points. The IGE students had an overall 3.6 points greater mean reading gain than did the traditional students.

The graph presented in Figure 7 illustrates the interaction between the two groups of students. The distance between the two original points at the beginning of the study in 1971 represents a significant mean difference in favor of the control students. There was a decrease in the mean difference between the IGE and traditional students at the end of the first year, but the difference remained significant. It was at the end of the final year of the study, 1973, that no significant difference existed between the experimental and control students. While the traditional students' overall mean reading score remained higher than the score of the IGE students, the difference that existed was not significantly different. It should be observed that both groups gained in reading. However, their rate and pattern of gain was different. The IGE students gained in reading at a greater rate than did the traditional students.

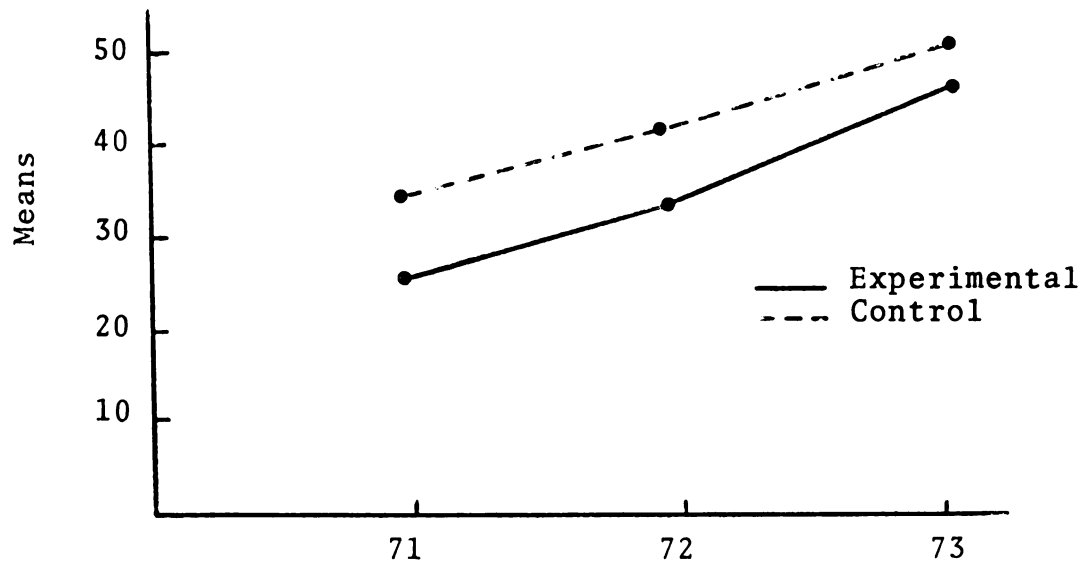


Figure 7. Profile of Mean Reading Scores for Third Grade Experimental and Control Students.

Hypothesis Six

There is no difference in mean mathematic gain achieved by third grade students in the IGE and traditional schools when measured by the Metro-politan Achievement Tests over a two year time period.

The results of the multivariate repeated measures analyses reported in Table 14 indicate that interaction is statistically significant for mathematics ($F = 4.0140$ with 4 and 157 degrees of freedom, $P < .0040$). The null hypothesis of no difference in mean mathematical gain between third grade students in the traditional school was rejected. The nature of the difference was then determined by conducting a simple effect analysis of interaction.

In 1971, Table 17 reports that the mathematical difference between the IGE students and the traditional students was significant ($P < .0010$) in favor of the traditional student. However, after one year of the program, there was no longer a significant difference between the two groups. This pattern remained constant during the final year of the study.

Table 18 reports the means and standard deviations.

When the study began in 1971, the control students had a mean mathematics score of 32.5. The mean score of the experimental group was 28.6. There was a difference of 3.9

Table 17. Simple Effect Analysis of Interaction for Math Between Third Grade Experimental and Control Students, 1971-1973.

Source	DF	Mean SQ	F	P
Math - 1971	6	603.41	7.53	.0068*
Math - 1972	6	30.30	.2969	.5866
Math - 1973	6	147.08	1.44	.2318

*F-ratio significant at the .008 level

Table 18. Means and Standard Deviations in Mathematics for Third Grade Experimental and Control Students, 1971-1973.

Source	Math 1971	Math 1972	Math 1973
Experimental - N = 95	28.6	38.3	46.7
Std. Devs.	8.30	9.26	9.62
Control - N = 67	32.5	39.1	48.6
Std. Devs.	9.78	11.19	10.74
TOTAL N = 152			

points between the groups. The two groups were significantly different. In 1972, there was no significant difference between the IGE and traditional students. Both groups gained in mathematics. The mean of the IGE students increased to 38.3, a gain of 9.7 points. The mean of the traditional students increased to 39.1, a gain of 6.6 points. The IGE students experienced a 3.1 point greater gain during the

first year of the program. In 1973, the mean of the IGE students increased to 46.7, a gain of 8.4. The mean of students in the traditional program increased to 48.6, a gain of 9.5 points. For the two year study the IGE students achieved an 18.1 overall mean mathematics point gain while the students in the traditional program achieved a 16.1 overall mean mathematics gain.

The relationship is illustrated graphically in Figure 8. The graph indicates that the control group began the study with a greater mean than the experimental. But in 1972, the distance between the means narrowed which indicates no significant differences between the two groups. Nor was there a difference between the IGE and traditional students when the study terminated in 1973.

Summary

As indicated at the beginning of the chapter, this chapter compares the characteristics of teachers in an IGE school and those in a traditional school. It also compares the achievement of students in reading and mathematics in an IGE and traditional school. Both students and teachers participated in the study over a two year time period. Students and teachers in the experimental and control schools constituted naturally assembled groups.

Data were collected for each measuring period and applied to the various hypotheses to determine whether

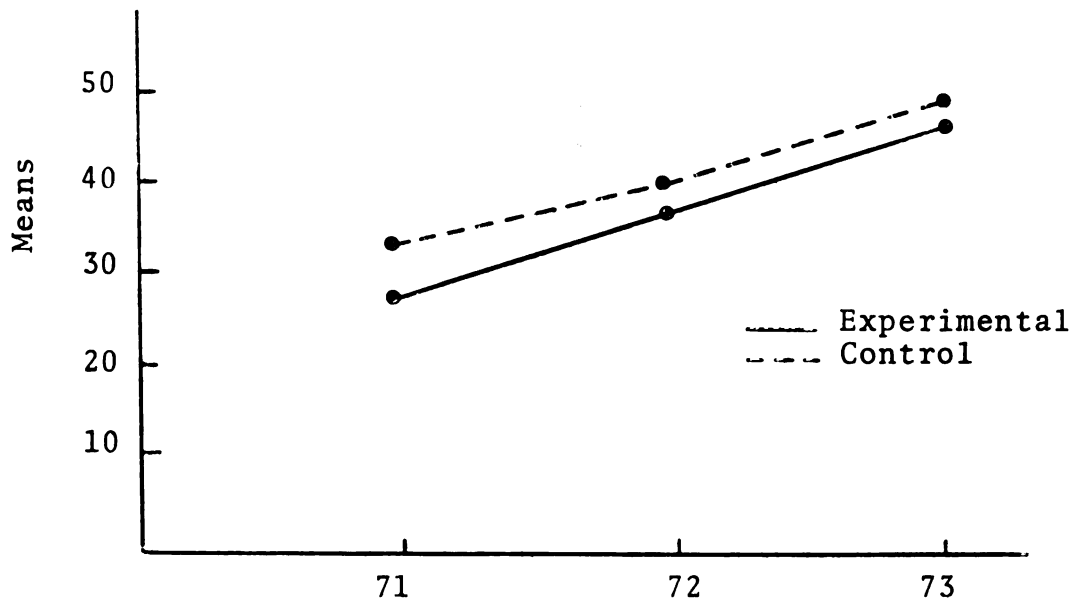


Figure 8. Profile of Mean Math Scores for Third Grade Experimental and Control Students.

differences existed between the experimental and control students and teachers. The multivariate repeated measure test was employed in analyzing both teacher and student data. In analyzing the teacher data it was found that there was a significant difference between teachers in the IGE and the traditional school when measured by the Group Dimension Description Questionnaire over a two year time period. Specifically, IGE teachers scored favorably on the four characteristics of hedonic tone, homogeneity, viscosity and stability. There was no significant difference between four and three member teaching teams in the IGE school.

The IGE students made greater gains in both reading and mathematics than did the control students. For example, at the beginning of the program, second grade control students scored significantly higher in reading than did the experimental students, but at the termination of the program there was no significant difference between IGE and traditional students. This same rate of growth was also true in mathematics. At the beginning of the study there was no difference in mathematic scores between the two second grade groups. After one year of participating in the program, no difference existed, but after two years in the program, the IGE students had made significantly greater mean gains in mathematics.

Third grade IGE students also made greater mean gains in reading and mathematics than students in the traditional school. At the beginning of the program third grade students in the traditional school scored significantly higher in reading than third grade students in the IGE school. The difference remained constant during the first year. But at the end of the second year of the program there was no significant difference between the two groups. In mathematics there was a significant difference in favor of the traditional students at the beginning of the study. However, after one year of the program there was no longer a significant difference between the IGE and traditional students. This pattern was constant during the final year of the program.

A summary of the study, discussion, implications for education, and recommendations for future research are presented in Chapter 5.

CHAPTER V

SUMMARY, DISCUSSION, IMPLICATIONS AND RECOMMENDATIONS

Summary

Almost all of the recent innovations in elementary education involve some form of individualized instruction. The Individually Guided Education Program provides an organizational structure, the multi units (teams) in which the individualized instructional program can function. The literature, however, shows a growing concern among some educators relative to the difficulty that a number of teachers experience functioning in a team teaching situation. A few even suggest that the difficulty in interpersonal relations caused by teaming is so great that the risk is not worth the effort. Whether or not team teaching improves student achievement has been a perennial argument in education. It remains to be determined what effect team teaching, in cooperation with individualized instruction, has on the achievement of students. The purpose of this study, however, was to compare the group characteristics of inner city elementary teachers in an IGE and traditional school and the achievement of second and third grade students in

reading and mathematics over a two year time period.

Population Sample

The teachers in the experimental group were members of the five units or teams in the IGE school. The control teachers were members of a traditional school. The experimental and control group students were naturally assembled groups. They were matched relative to achievement, socio-economics and school size.

Instruments Employed

The teachers in the experimental and control schools were administered Hemphill's Group Dimensions Description Questionnaire in October of 1971, June of 1972 and October of 1973. The second and third grade students in both schools were administered various forms of the Metropolitan Achievement Tests over a two year time period. These tests were given in May of 1971, May of 1972, and May of 1973. All students in the IGE school were multiage grouped. Second and third grade students, however, were identified for this study. All students in the traditional school were in self-contained classrooms and had not taken part in any kind of multiage grouping arrangement.

Treatment of Subjects

The teachers in the IGE school were actively involved in determining to which team they were assigned. A conference was held with each teacher and a team agreed upon. There were five teams; two teams consisted of four members and three consisted of three members. In the traditional school, teachers were assigned to a school and grade by the central office. In the IGE school, each team interviewed potential teachers and paraprofessionals. The school principal and team members agreed on new building personnel. As was reported in Chapter III, teachers in the IGE school assumed more professional responsibilities. They were diagnosticians as well as teachers, a function designed by the IGE instructional program and the IGE learning cycle. Moreover, the regular five day student week was condensed into four and one-half days. The students still attended school an equivalence of five days; but they did so in four and a half days. Students did not report to school on Wednesday afternoons. Wednesday afternoons were used for team planning. No such arrangement existed in the control school. The Instructional Improvement Committee (IIC) permitted the team leader to become actively involved in the affairs of the school. The team leaders were able to determine as well as interpret building-wide policy. This differed, of course, from the traditional

school where the building administrator determined policy two weeks prior to the teachers' arrival and interpreted it the first day of arrival.

Second and third grade students in the IGE school experienced a different instructional program than second and third grade students in the traditional school. The students in the IGE school were multiage grouped covering a three year age span. This permitted the teachers to direct their instruction at the instructional level of the students. Moreover, students themselves were able to share information and perceptions. The IGE staff organized the reading and mathematics material into sequential skill levels. The skill levels were then stated as behavioral objectives. Students were pre-tested to determine their instructional level. To accomplish particular objectives, various instructional modes were used such as large and small groups, one-to-one tutoring, independent study and pairing. Diversified learning materials that would accommodate the various learning styles were also employed. Some of these were: filmstrips, single concept loop films, records, tapes, cassettes, manipulative devices, programmed instruction and self-instructional curriculum packages. Another important difference between the two instructional programs is in the IGE school reading was not taught in isolation. Rather, it was taught as part of the language

arts block so that reading skills were constantly being reinforced. There was no media center in the control school. While each unit or team attempted to be self-sufficient relative to instructional materials, the media center served as an additional source for different materials and methods.

Discussion

Teachers, as a group, in the Individually Guided Education Program were significantly different than teachers in the traditional school when measured by the Group Dimension Description Questionnaire. The Individually Guided Education teachers differed specifically on the variables of stability, hedonic tone, viscidty, and homogeneity. Moreover, the differences on the above four variables were constant over the duration of the study. This held true in spite of some unanticipated consequences district-wide which resulted in staff changes in each school in the district. The IGE school, however, was able to retain each of the five team leaders.

It should be indicated here that the GDDQ was first administered in October to the two schools, after the study had begun. Therefore, the discussion does not concern itself with a pre-test measure. Rather, the discussion of the initial group measures consists of after implementation differences instead of pre-implementation differences on stability, hedonic tone, viscidty and homogeneity. Additionally,

discussion must emphasize constancy of the pattern and suggest probable causes for the relationship. Such an approach need not present a problem since the researcher was a participant observer. Halpin¹⁰⁹ pointed out certain inherent methodological advantages in this approach:

"First it take place in situ, in a thoroughly live and real situation....Second, structural variables can be studied both in terms of the perceptions of the group members and from the vantage point of [partially] outside the observation."

Hedonic tone¹¹⁰ is the degree to which the group has a climate of pleasantness and agreeableness. Laughter and pleasant anticipation of group meetings characterize the group. Homogeneity¹¹¹ refers to how much alike the group is on socially relevant characteristics such as age, sex, race, socio-economic status and attitudes. Viscidity¹¹² considers whether or not the group functions as a unit. It is characterized by the lack of dissension and group conflict. Hedonic tone, homogeneity and viscosity each reflect the

¹⁰⁹Halpin, A. W., and Winer, B.J., Studies in Aircrew Composition--III: The Leadership Behavior of the Airplane Commander. Technical Report No. 3, Columbus, Ohio, the Ohio State University Research Foundation, 1952.

¹¹⁰J. K. Hemphill, op. cit., p. 15.

¹¹¹Ibid.

¹¹²Ibid.

climate of the organization or group. Stability¹¹³ consists of how the group persists over time and maintains its essential characteristics for group function.

It is a favorable reflection on the IGE staff to differ as a group on stability, hedonic tone, homogeneity and viscidty for each of these characteristics reflect the climate of the organization or group. The differences between the two groups on the four dimensions were present during the first measure of the groups which occurred after the study began. Although direct cause of these differences cannot be attributed to the IGE program, it is interesting to observe, however, that the initial differences between the two schools did not change significantly during the duration of the study; they persisted during subsequent measures. As a participant observer, it seems logical to suggest that the in-service training and the organizational structure of the IGE program described in Chapter III accounted for the maintenance of the initial group differences and may, in fact, account for the original differences.

It is particularly noteworthy that the IGE staff differed from the traditional staff in stability probably because of the organizational structure. In the IGE, school group leadership is recognized and rewarded. Effective teachers usually are assigned team or unit leadership positions. While experiencing the same amount of staff loss

¹¹³Ibid.

as the traditional school, the IGE staff was able to retain its team leaders. It is suggested that maintaining constant team leadership contributed to the difference in the perception of group stability. The findings of this study do not support the contentions of writers such as Lobb,¹¹⁴ Waggoner,¹¹⁵ Chamberlain,¹¹⁶ Polos,¹¹⁷ and Beggs¹¹⁸ who assume that any organizational structure which teams teachers for instruction contains an inherent potential for conflict. There was no manifestation of conflict among the teams.

Teachers who were members of three and four men teams in the IGE school showed no difference in describing their teams when measured by the Group Dimension Description Questionnaire. The results do not support the isolation phenomenon suggested by Simmel.¹¹⁹ Simmel reported that when three people organize a group to perform a particular function, two will develop into a coalition and isolate the third individual. Moreover, he reported that the isolation phenomenon was more significant in those groups or relations

¹¹⁴Lobb, op. cit., p. 21.

¹¹⁵Waggoner, op. cit., p. 52.

¹¹⁶Chamberlain, op. cit., p. 138.

¹¹⁷Polos, op. cit., p. 56.

¹¹⁸Beggs, op. cit., p. 147.

¹¹⁹K. H. Wolf, op. cit., p. 170.

where solidarity and compatibility are essential to successful group function. Caplow¹²⁰ confirmed the existence of the isolation factor in triads where members did not have equal power. Mills¹²¹ discovered isolation in the triad where relationships were interdependent.

This study did not find the isolation factor to be present in the three member teams. There was no difference in perception of the groups between three and four men team members. This was a positive result for the IGE school since it tended to indicate that team cohesiveness is not a function of team size. The IGE model recommends three to four regular professional staff members to a team. It is further suggested that the lack of difference between the IGE teams can be attributed to the in-service training program by the IGE consultant and the stability of team leadership.

In both reading and mathematics, the second and third grade IGE students made more significant gains than did the traditional students. For example, the scores of second grade IGE students were significantly lower than the scores of traditional students in reading at the beginning of the study. Two years later there was no significant

¹²⁰T. Caplow, op. cit., p. 489.

¹²¹T. M. Mills, op. cit., p. 351.

difference in mean reading gain between the two groups. The same pattern of growth existed in mathematics. In 1971 and 1972, there was no significant difference between the students. At the end of the 1973 year, however, the mean mathematical gain significantly favored the IGE students.

Third grade IGE students scored significantly lower than traditional students in reading at the beginning of the study and after the end of the first year. When the study terminated there was no significant difference in mean reading gain between the two groups. In mathematics, the IGE students also scored lower than the traditional students in 1971. In 1972 and 1973, there was no difference in mean mathematical score between the experimental and control students.

The IGE students' pattern of growth was constant in both reading and mathematics during the first year as well as the second. It is the initial and constant growth pattern of the IGE students that characterized the achievement data of the study. These results differed from other studies that focused on achievement gains in IGE schools. For example, Morrow,¹²² Quilling and Fox compared achievement of pupils in grades 1, 3 and 5 of IGE and control schools. They concluded that there was no systematic

¹²²Morrow, op. cit., p. 3.

differences in student achievement. Wardrop¹²³ compared individualized and traditional spelling programs at the fourth year and found no significant difference between the groups. In another study, Quilling¹²⁴ compared IGE and traditional fourth grade students and found no differences between the group in reading and mathematics. Bradford¹²⁵ found no difference between IGE and traditional students in reading. However, the gains were significant in mathematics.

The mean gains made by IGE students can be attributed to the six months in-service program which taught teachers how to individualize their instructional program. Behavioral objectives were written by the teachers in both reading and mathematics. Diagnostic along with pre- and post-test materials were developed. Instructional units were also developed. When school began in September, the teachers were well prepared to implement the Individually Guided Education Program.

Implications

Working in inner city elementary schools and communities can be an exciting and rewarding experience for

¹²³Wardrop, op. cit.

¹²⁴Quilling, op. cit., p. 10.

¹²⁵Bradford, op. cit., p. 119.

both administrators and teachers. The building administrator is the most essential element in the successful operation of the school, for he determines the school's climate. One of the implications of this study is that given a positive school climate where teachers and principal work together for common objectives, much can be accomplished in inner city schools. Implementing the IGE program was no small undertaking. For it was a radical organizational and instructional program when compared to the staff's previous experiences. A positive school climate had to exist before the teachers would consider: multiage grouping, team teaching, open space, staying after school for in-service one day each week for six months, writing behavioral objectives, sequentializing material in two content areas, and finally working overtime without compensation in order to have a block time for planning.

The building administrator must feel secure in his position before he can request his school community to be in the vanguard of educational innovations. To be secure in his position, the inner city elementary principal must involve his school in community affairs. The inner city school as well as its leadership must be identified with the community in which it serves. Building principals must assess their own communities and determine how this can be accomplished. Each community differs. The inner city principal then must

extend his school beyond the playground and become an integral part of his school's community. This study implies then that the secure and successful inner city elementary principal will be one who sees his role not only as an educational leader for his school, but as a school community leader, also.

A significant implication in this study is that inner city parents will make the necessary sacrifices for the education of their children. The Woodberry School Board had to be convinced that inner city parents would permit their children to return home each Wednesday afternoon. Inner city parents continue to view education as the vehicle by which their children might attain a better life and enter into the main stream of the American good life.

Another implication is that inner city children can learn if given dedicated teachers and adequate resources. The students at Bruce School did learn and they are continuing to learn. These students are learning, however, because their teachers: cooperate with each other; enjoy working in a program where they can demonstrate their skills and capabilities; can actively participate in the operation of the school; and, most of all, like kids.

Recommendations

The findings of this study indicate a need for continued study of the IGE program. This is especially so since

IGE is a recent innovation in the field of education.

An interesting study would be that of examining the changed role of the building principal in the IGE school as perceived by himself and the staff.

IGE provides for teacher input in the decision making process and the opportunity to display leadership. Another study should compare the job satisfaction of IGE teachers and teachers in traditional schools.

A longitudinal study of five or six years, when the students leave elementary school, should be undertaken to determine the impact of the IGE program upon academic achievement and self-concept. When implementing the IGE program, evaluations should be built into the design so that measures can be taken prior to implementation.

Some skeptics still express opposition to early elementary students in the team teaching setting. A study should examine the adjustment of six, seven, and eight year old students to the multiage and multiunit concept.

As a result of being a participant-observer, some other recommendations are in order for the administrators contemplating adopting the IGE program. Adequate team planning time is essential for a successful IGE program. Teachers must not be expected to allow the job responsibilities to consume ninety percent of their working time. Time should be provided within each teaching day, if possible, to permit the teachers to assess the day-to-day operations. A block

of time should be provided some time during the week for team planning. Another recommendation is that team leaders must be chosen carefully. The team leader is essential to a smooth functioning team. Another consideration in determining team membership is that teachers who are close socially do not necessarily make good team partners. Compatibility of team members must be given major consideration in the selection of team membership. Finally, the in-service program should be carefully planned so as to dissipate some teachers' concerns about multiage grouping, team teaching, and moving of students between teachers. The potential pitfalls of teaming should be openly discussed so that teachers may understand their own behavior. The in-service consultant should understand small group dynamics and consider the teaching team as a small group.

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APPENDICES

APPENDIX A

LETTERS TO IGE AND TRADITIONAL
STAFF MEMBERS

APPENDIX A

LETTERS TO IGE AND TRADITIONAL
STFFF MEMBERS

WOODBERRY PUBLIC SCHOOLS
Testing and Evaluation Center
October 16, 1971

(FORM #1)

Dear Colleague:

The Testing and Evaluation Center is gathering data on the internal organizational structure of schools in the Woodberry Public School System. Your school is one of the schools involved.

The questions on the enclosed questionnaire are quite general. If your school has a "team teaching" organizational pattern the questions should be answered as they relate to your team and not the total staff. If your school has self-contained classrooms the questions should be answered as they relate to the total staff.

All information is confidential. Teachers are requested not to sign the answer sheet. The answer sheet and questionnaire booklet should be returned to your building principal in the envelope provided at the Monday staff meeting. Your principal will then forward them to the Testing and Evaluation Center.

We appreciate your cooperation.

Appendix A. Continued.

WOODBERRY PUBLIC SCHOOLS
Testing and Evaluation Center
June 12, 1972
(FORM #2)

Dear Colleague:

The Testing and Evaluation Center is completing its study of the internal organizational structure of schools in the Woodberry Public School System. In the Fall your school completed a questionnaire similar to the one enclosed. To complete the study, it is necessary that the enclosed questionnaire be completed.

The questions are quite general. If your school has a "team teaching" organizational pattern the questions should be answered as they relate to your team and not the total staff. If your school has self-contained classrooms the questions should be answered as they relate to the total staff.

All information is confidential. Teachers are requested not to sign the answer sheet. The answer sheet and questionnaire booklet should be returned to your building principal in the envelope provided no later than Thursday, June 15, 1972. Your principal will then forward them to the Testing and Evaluation Center.

We appreciate your cooperation at such a busy time during the school year.

Best wishes for an enjoyable summer.

APPENDIX B

GROUP DIMENSIONS DESCRIPTION QUESTIONNAIRE

APPENDIX B

GROUP DIMENSIONS DESCRIPTION QUESTIONNAIRE

DIRECTIONS:

Record your answer to each of the items on the answer sheet which is furnished you for that purpose. Make no marks on the question booklet itself. Be sure that you are using the special I.B.M. pencil provided for use with the answer sheet.

In considering each item, go through the following steps:

1. Read the item carefully.
2. Think about how well the item tells something about the group you are describing.
3. Find the number on the answer sheet which corresponds with the number of the item you are considering.
4. After each number on the answer sheet you will find five pairs of dotted lines lettered A, B, C, D, or E.

If the item you are considering tells something about the group which is definitely true, blacken the space between the pair of dotted lines headed by A.

If the item you are considering tells something which is mostly true, blacken the space between the pair of lines headed by B.

If the item tells something which is to an equal degree both true and false, or you are undecided about whether it is true or false, blacken the space between the pair of lines headed by C.

If the item you are considering tells something which is mostly false, blacken the space between the pair of lines headed by D.

If the item you are considering tells something about the group which is definitely false, blacken the space between the pair of dotted lines headed by E.

5. When blackening the space between a pair of lines, fill in all the space with a heavy black line from the special I.B.M. pencil. If you should make an error in marking your answer, erase thoroughly the mark you made and then indicate the correct answer.
6. In rare cases where you believe that an item does not apply at all to the group or you feel that you do not have sufficient information to make any judgment concerning what the item tells about the group, leave that item blank.
7. After you have completed one item, proceed to the next one in order. You may have as long as you need to complete your description. Be sure the number on the answer sheet corresponds with the number of the item being answered in the booklet.

QUESTIONS:

The questions which follow make it possible to describe objectively certain characteristics of social groups. The items simply describe characteristics of groups; they do not judge whether the characteristic is desirable or undesirable. Therefore, in no way are the questions to be considered a "test" either of the groups or of the person answering the questions. We simply want an objective description of what the group is like.

1. The group has well-understood but unwritten rules concerning member conduct.
2. Members fear to express their real opinions.
3. The only way a member may leave the group is to be expelled.
4. No explanation need to be given by a member wishing to be absent from the group.
5. An individual's membership can be dropped should he fail to live up to the standards of the group.
6. Members of the group work under close supervision.
7. Only certain kinds of ideas may be expressed freely within the group.
8. A member may leave the group by resigning at any time he wishes.
9. A request made by a member to leave the group can be refused.
10. A member has to think twice before speaking in the group's meetings.
11. Members are occasionally forced to resign.
12. The members of the group are subject to strict discipline.
13. The group is rapidly increasing in size.
14. Members are constantly leaving the group.
15. There is a large turnover of members within the group.
16. Members are constantly dropping out of the group but new members replace them.
17. During the entire time of the group's existence, no member has left.
18. Each member's personal life is known to other members of the group.

19. Members of the group lend each other money.
20. A member has the chance to get to know all other members of the group.
21. Members are not in close enough contact to develop likes or dislikes for one another.
22. Members of the group do small favors for one another.
23. All members know each other very well.
24. Each member of the group knows all other members by their first names.
25. Members are in daily contact either outside or within the group.
26. Members of the group are personal friends.
27. Certain members discuss personal affairs among themselves.
28. Members of the group know the family backgrounds of other members of the group.
29. Members address each other by their first names.
30. The group is made up of individuals who do not know each other very well.
31. The opinions of all members are considered as equal.
32. The group's officers hold a higher status in the group than other members.
33. The older members of the group are granted special privileges.
34. The group is controlled by the actions of a few members.
35. Every member of the group enjoys the same group privileges.
36. Experienced members are in charge of the group.
37. Certain problems are discussed only among the group's officers.

38. Certain members have more influence on the group than others.
39. Each member of the group has as much power as any other member.
40. An individual's standing in the group is determined only by how much he gets done.
41. Certain members of the group hold definite office in the group.
42. The original members of the group are given special privileges.
43. Personal dissatisfaction with the group is too small to be brought up.
44. Members continually grumble about the work they do for the group.
45. The group does its work with no great vim, vigor, or pleasure.
46. A feeling of failure prevails in the group.
47. There are frequent intervals of laughter during group meetings.
48. The group works independently of other groups.
49. The group has support from outside.
50. The group is an active representative of a larger group.
51. The group's activities are influenced by a larger group of which it is a part.
52. People outside the group decide on what work the group is to do.
53. The group follows the examples set by other groups.
54. The group is one of many similar groups which form one large organization.
55. The things the group does are approved by a group higher up.

56. The group joins with other groups in carrying out its activities.
57. The group is a small part of a larger group.
58. The group is under outside pressure.
59. Members are disciplined by an outside group.
60. Plans of the group are made by other groups above it.
61. The members allow nothing to interfere with the progress of the group.
62. Members gain a feeling of being honored by being recognized as one of the group.
63. Membership in the group is a way of acquiring general social status.
64. Failure of the group would mean little to individual members.
65. The activities of the group take up less than ten percent of each member's waking time.
66. Members gain in prestige among outsiders by joining the group.
67. A mistake by one member of the group might result in hardship for all.
68. The activities of the group take up over ninety percent of each member's waking time.
69. Membership in the group serves as an aid to vocational advancement.
70. Failure of the group would mean nothing to most members.
71. Each member would lose his self-respect if the group should fail.
72. Membership in the group gives members a feeling of superiority.
73. The activities of the group take up over half the time each member is awake.

74. Failure of the group would lead to embarrassment for members.
75. Members are not rewarded for effort put out for the group.
76. There are two or three members of the group who generally take the same side on any group issue.
77. Certain members are hostile to other members.
78. There is constant bickering among members of the group.
79. Members know that each one looks out for the other one as well as for himself.
80. Certain members of the group have no respect for other members.
81. Certain members of the group are considered uncooperative.
82. There is a constant tendency toward conniving against one another among parts of the group.
83. Members of the group work together as a team.
84. Certain members of the group are responsible for petty quarrels and some animosity among other members.
85. There are tensions between subgroups which tend to interfere with the group's activities.
86. Certain members appear to be incapable of working as part of the group.
87. There is an undercurrent of feeling among members which tends to pull the group apart.
88. Anyone who has sufficient interest in the group to attend its meetings is considered a member.
89. The group engages in membership drives.
90. New members are welcomed to the group on the basis "the more the merrier."
91. A new member may join only after an old member resigns.
92. A college degree is required for membership in the group.

93. A person may enter the group by expressing a desire to join.
94. Anyone desiring to enter the group is welcome.
95. Membership is open to anyone willing to further the purpose of the group.
96. Prospective members are carefully examined before they enter the group.
97. No applicants for membership in the group are turned down.
98. No special training is required for membership in the group.
99. Membership depends upon the amount of education an individual has.
100. People interested in joining the group are asked to submit references which are checked.
101. There is a high degree of participation on the part of the members.
102. If a member of the group is not productive, he is not encouraged to remain.
103. Work of the group is left to those who are considered most capable for the job.
104. Members are interested in the group but not all of them want to work.
105. The group has a reputation for not getting much done.
106. Each member of the group is on one or more active committees.
107. The work of the group is well divided among members.
108. Every member of the group does not have a job to do.
109. The work of the group is frequently interrupted by having nothing to do.
110. There are long periods during which the group does nothing.

111. The group is directed toward one particular goal.
112. The group divides its efforts among several purposes.
113. The group operates with sets of conflicting plans.
114. The group has only one main purpose.
115. The group knows exactly what it is to get done.
116. The group is working toward many different goals.
117. The group does many things that are not directly related to its main purpose.
118. Each member of the group has a clear idea of the group's goals.
119. The objective of the group is specific.
120. Certain members meet for one thing and others for a different thing.
121. The group has major purposes which to some degree are in conflict.
122. The objectives of the group have never been clearly recognized.
123. The group is very informal.
124. A list of rules and regulations is given to each member.
125. The group has meetings at regularly scheduled times.
126. The group is organized along semi-military lines.
127. The group's meetings are not planned or organized.
128. The group has an organization chart.
129. The group has rules to guide its activities.
130. The group is staffed according to a table of organization.
131. The group keeps a list of names of members.

132. Group meetings are conducted according to "Robert's Rules of Order."
133. There is a recognized right and wrong way of going about group activities.
134. Most matters that come up before the group are voted upon.
135. The group meets any place that happens to be handy.
136. Members of the group are from the same social class.
137. The members of the group vary in amount of ambition.
138. Some members are interested in altogether different things than other members.
139. The group contains members with widely varying backgrounds.
140. The group contains whites and Negroes.
141. Members of the group are all about the same ages.
142. A few members of the group have greater ability than others.
143. A number of religious beliefs are represented by members of the group.
144. Members of the group vary greatly in social background.
145. All members of the group are of the same sex.
146. The ages of members range over a period of at least 20 years.
147. Members come into the group with quite different family backgrounds.
148. Members of the group vary widely in amount of experience.
149. Members vary in the number of years they have been in the group.
150. The group includes members of different races.

APPENDIX C

SCORING KEY FOR GROUP DIMENSIONS DESCRIPTION QUESTIONNAIRE

1

APPENDIX C

SCORING KEY FOR GROUP DIMENSIONS

DESCRIPTION QUESTIONNAIRE

A subject's score for a particular dimension is the sum of the item scores for that dimension. For example, the raw score for the dimension "Control" is the sum of the scores for items 1 to 12 inclusive. The total (raw) score for this dimension can range from 12 to 60.

Occasionally a respondent may fail to indicate his answer. Such omissions are scored as C responses (neither true nor false). However, if the number of omitted items exceeds half the total number of items assigned to a given dimension no score for that dimension is assigned. In general, experience has shown that few respondents deliberately omit items.

The answers are marked on a separate answer sheet (IBM Answer Sheet No. 1100 A 3870). A separate blank answer sheet may be used for preparing a scoring Key for each dimension.

SCORING KEYS

<u>Control</u>	A	B	C	D	E	<u>Hedonic Tone</u>	A	B	C	D	E
1	5	4	3	2	1	43	5	4	3	2	1
2	5	4	3	2	1	44	1	2	3	4	5
3	5	4	3	2	1	45	1	2	3	4	5
4	1	2	3	4	5	46	1	2	3	4	5
5	5	4	3	2	1	47	5	4	3	2	1
6	5	4	3	2	1						
7	5	4	3	2	1	<u>Autonomy</u>	A	B	C	D	E
8	1	2	3	4	5	48	5	4	3	2	1
9	5	4	3	2	1	49	1	2	3	4	5
10	5	4	3	2	1	50	1	2	3	4	5
11	5	4	3	2	1	51	1	2	3	4	5
12	5	4	3	2	1	52	1	2	3	4	5
						53	1	2	3	4	5
<u>Stability</u>	A	B	C	D	E	54	1	2	3	4	5
13	1	2	3	4	5	55	1	2	3	4	5
14	1	2	3	4	5	56	1	2	3	4	5
15	1	2	3	4	5	57	1	2	3	4	5
16	1	2	3	4	5	58	1	2	3	4	5
17	5	4	3	2	1	59	1	2	3	4	5
						60	1	2	3	4	5
<u>Intimacy</u>	A	B	C	D	E	<u>Potency</u>	A	B	C	D	E
18	5	4	3	2	1	61	5	4	3	2	1
19	5	4	3	2	1	62	5	4	3	2	1
20	5	4	3	2	1	63	5	4	3	2	1
21	1	2	3	4	5	64	1	2	3	4	5
22	5	4	3	2	1	65	1	2	3	4	5
23	5	4	3	2	1	66	5	4	3	2	1
24	5	4	3	2	1	67	5	4	3	2	1
25	5	4	3	2	1	68	5	4	3	2	1
26	5	4	3	2	1	69	5	4	3	2	1
27	5	4	3	2	1	70	1	2	3	4	5
28	5	4	3	2	1	71	5	4	3	2	1
29	5	4	3	2	1	72	5	4	3	2	1
30	1	2	3	4	5	73	5	4	3	2	1
						74	5	4	3	2	1
<u>Stratification</u>	A	B	C	D	E	75	1	2	3	4	5
31	1	2	3	4	5						
32	5	4	3	2	1						
33	5	4	3	2	1						
34	5	4	3	2	1						
35	1	2	3	4	5						
36	5	4	3	2	1						
37	5	4	3	2	1						
38	5	4	3	2	1						
39	1	2	3	4	5						
40	5	4	3	2	1						
41	5	4	3	2	1						
42	5	4	3	2	1						

<u>Viscosity</u>	A	B	C	D	E
76	1	2	3	4	5
77	1	2	3	4	5
78	1	2	3	4	5
79	5	4	3	2	1
80	1	2	3	4	5
81	1	2	3	4	5
82	1	2	3	4	5
83	5	4	3	2	1
84	1	2	3	4	5
85	1	2	3	4	5
86	1	2	3	4	5
87	1	2	3	4	5

<u>Permeability</u>	A	B	D	C	E
88	5	4	3	2	1
89	5	4	3	2	1
90	5	4	3	2	1
91	1	2	3	4	5
92	1	2	3	4	5
93	5	4	3	2	1
94	5	4	3	2	1
95	5	4	3	2	1
96	1	2	3	4	5
97	5	4	3	2	1
98	5	4	3	2	1
99	1	2	3	4	5
100	1	2	3	4	5

<u>Participation</u>	A	B	C	D	E
101	5	4	3	2	1
102	5	4	3	2	1
103	1	2	3	4	5
104	1	2	3	4	5
105	1	2	3	4	5
106	5	4	3	2	1
107	5	4	3	2	1
108	1	2	3	4	5
109	1	2	3	4	5
110	1	2	3	4	5

<u>Polarization</u>	A	B	C	D	E
111	5	4	3	2	1
112	1	2	3	4	5
113	1	2	3	4	5
114	5	4	3	2	1
115	5	4	3	2	1
116	1	2	3	4	5
117	1	2	3	4	5
118	5	4	3	2	1
119	5	4	3	2	1
120	1	2	3	4	5
121	1	2	3	4	5
122	1	2	3	4	5

<u>Flexibility</u>	A	B	C	D	E
123	5	4	3	2	1
124	1	2	3	4	5
125	1	2	3	4	5
126	1	2	3	4	5
127	5	4	3	2	1
128	1	2	3	4	5
129	1	2	3	4	5
130	1	2	3	4	5
131	1	2	3	4	5
132	1	2	3	4	5
133	1	2	3	4	5
134	1	2	3	4	5

<u>Homogeneity</u>	A	B	C	D	E
136	5	4	3	2	1
137	1	2	3	4	5
138	1	2	3	4	5
139	1	2	3	4	5
140	1	2	3	4	5
141	5	4	3	2	1
142	1	2	3	4	5
143	1	2	3	4	5
144	1	2	3	4	5
145	5	4	3	2	1
146	1	2	3	4	5
147	1	2	3	4	5
148	1	2	3	4	5
149	1	2	3	4	5
150	1	2	3	4	5

<u>Item</u>	A	B	C	D	E
135	5	4	3	2	1

APPENDIX D

IDGE TERMS AND DEFINITIONS

1

APPENDIX D
IGE TERMS AND DEFINITIONS

Assessment: The act of obtaining information about the individual pupil regarding current achievement, learning style and attitudes, predictions of rate of learning, for the purpose of planning subsequent learning programs.

Assessment, types of: IGE

1. paper and pencil tests.
2. performance tests.
3. observation.
4. work samples.

Chart Positions	Four Kinds of Assessment	
Situation	what is assessed	
	written work	overt behavior
Formal Testing	paper and pencil	performance test
Normal Classroom Environment	work samples	observation of behavior

Critiqueing: The Unit's ongoing evaluation of their own performance.

Individualized Learning: A learning experience which is tailored to an individual child - should not be confused with independent study which presupposes each child doing a different thing at any given time or tutorial situation which requires a constant one-to-one relationship between adult and child.

Individually Guided Education: An education process which uses clearly stated (usually locally adapted) discreet learning objectives, individually tailored learning activities, and an ongoing system of assessment that monitors the performance of pupil.

IGE Learning Program: The combination of teacher/learner activities, materials, mode, time, space and equipment that is tailored to meet any given learning objective for each individual pupil.

Intern: A university student assigned to work with a Unit as completion of teacher training. The Intern performs all normal teaching duties under the supervision of teacher training institution and Unit Leader.

Learning Style: A combination of characteristics of the individual child which determine the way he learns best. Learning style is a complex phenomenon which is assessed primarily by determining what factors have worked before for a particular child. Knowing "how" a child has learned becomes fully as important as knowing that he has, in fact, learned.

Learning Mode: The number of people in any given learning situation. The four learning modes are

1. the independent mode (pupil working alone),
2. one-to-one mode (pupil working with another pupil, teacher, aide or other adult),
3. small group mode (usually 4-11 pupils),
4. large group mode (usually 40 or more pupils).

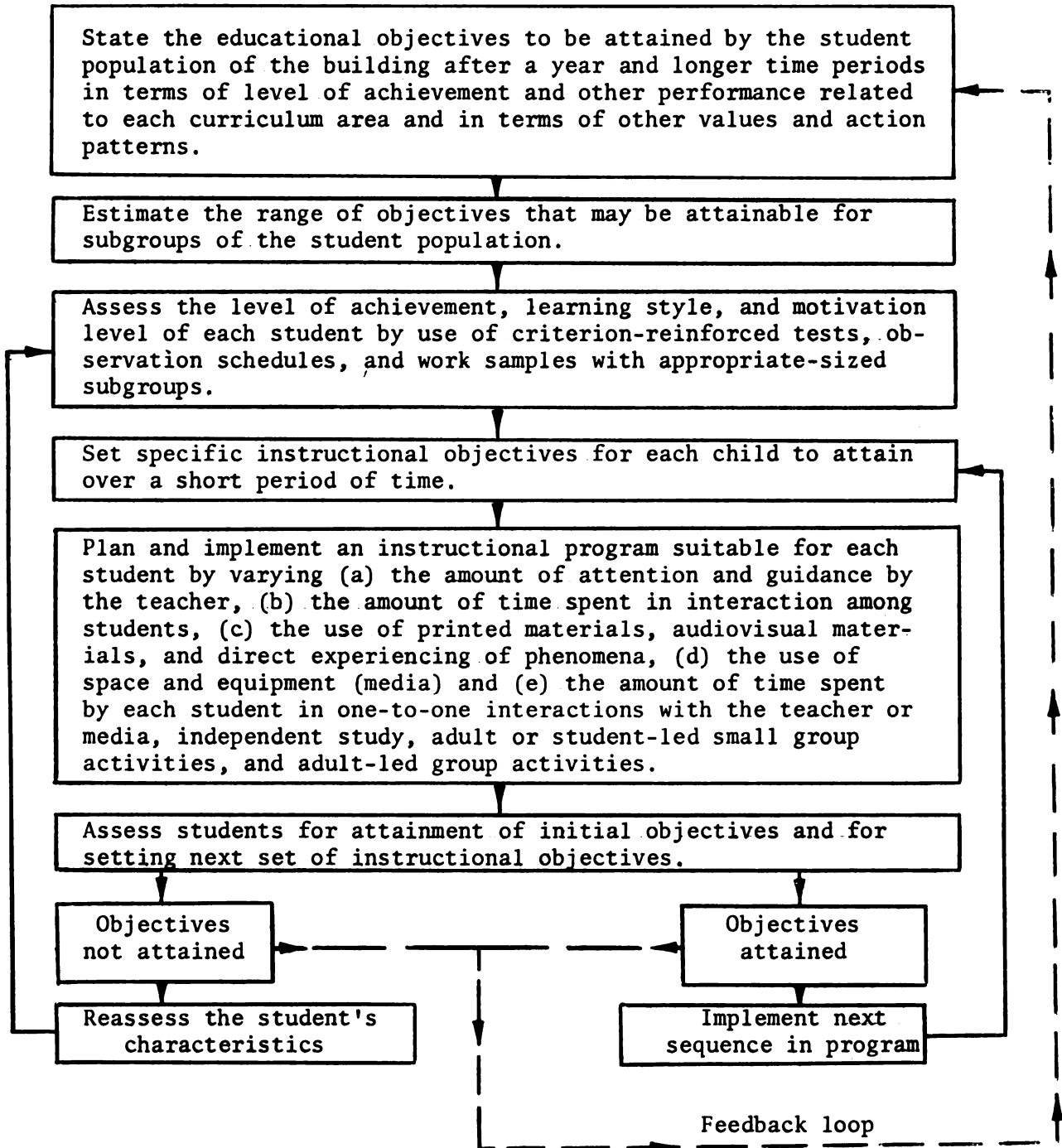
Multiunit School: A school divided into instructional units. The unit consists of a Unit Leader, aides, teachers and 75-150 pupils. In the IGE system, the Unit will have a multiaged pupil population, a non-graded approach to curriculum design and learning programs designed for individual pupils.

APPENDIX E

INSTRUCTIONAL PROGRAMMING MODEL IN IGE

APPENDIX E

INSTRUCTIONAL PROGRAMING MODEL IN IGE





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