1976

Effectiveness of individually guided education schools as measured by indicators of quality

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Effectiveness of individually guided education schools as measured by indicators of quality

by

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A Dissertation Submitted to the
Graduate Faculty in Partial Fulfillment of
The Requirements for the Degree of
DOCTOR OF PHILOSOPHY

Department: Professional Studies
Major: Education
(Educational Administration)

Approved:

Signature was redacted for privacy.

In Charge of Major Work

Signature was redacted for privacy.

For the Major Departmen

Signature was redacted for privacy.

For the Graduate College

Iowa State University
Ames, Iowa

1976

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CHAPTER I. INTRODUCTION

> The view of change, whether innovative or not, as being no improvement until proved to be improvement, places a high value on evaluative activity. If American education is to capitalize on the growing public's consciousness of education's essential role in national survival, the next decades will be distinguished by refinements and increased capabilities of educational evaluation. Reliable and prompt feedback on the effects of changes is an essential element in an adoptive educational system. (96, p. 630)

With the increased demands upon the schools for an enlightened citizenry needed in a modern industrial society have come increased amounts of change in the schools in an attempt to meet these demands. "The concern for change in our schools, and for the processes which effect change, is paramount among American educators" (13, p. 1). The results of these demands and attempts to meet them on the part of the school are evidenced by an increasing commitment of student time, increasing numbers of school personnel needed in the schools, and increasing expenditures of public money. At the same time that schools are striving to improve the educational environment, school personnel are being asked ever more insistently to account for the results of their programs. One does not have to be very observant to recognize the widespread public concern over the effectiveness of the schools.

Educators, in one attempt to improve the effectiveness of schools, have responded with the development of an innovative program called Individually Guided Education (IGE). "A new form of elementary school organization--Individually Guided Education--has been revolutionizing U.S. classrooms at an ever increasing rate" (60, p. 1). IGE is an approach

to schooling that provides a framework for individualizing instruction. It is an in-service program designed to reorganize and redirect the time, talents, and energy of all concerned with the educational process. IGE creates a personalized school environment that integrates continuous progress and team teaching.

However, IGE is more than just an instructional program. In fact, there are seven major components of IGE. The first two components, the school organization and the instructional program, are the primary parts of IGE. The school organization, called the multiunit organization, is designed to provide for educational and instructional decision-making at several different levels; to open communication among students, teachers and principals; and to institute accountability by educational personnel at various levels. The instructional programming for the individual student is designed to aid teachers in planning and carrying out an instructional program for each student that takes into account his objectives, rate of learning, and level of motivation.

Additional IGE components include a model for developing measurement tools and evaluation procedures, curriculum materials, a program of home-school communications, facilitative environments from the district level to the state education agency level, and a continuing research and development component. A more detailed description of each of the components can be found in Appendix A.

Processes of the IGE program have been summarized in 35 outcomes to be achieved by various members of the IGE school personnel (see Appendix B). Although all 35 outcomes are important to achieving total "IGEness"

in a school, only the following deal directly with this investigation (38, pp. 13-15).

-- Each Learning Community selects broad educational goals to be emphasized by the Learning Community.

-- Each Learning Community makes decisions regarding the arrangements of time, facilities, materials, staff, and students within the Learning Community.

-- Each Learning Community has effective internal working relationships as evidenced by members responding to one another's needs, trusting one another's motives and abilities, and using techniques of open communication.

-- Each student's learning program is based on specified learning objectives.

-- A variety of learning activities using different media and modes are included in each learning program.

-- Students pursue their learning programs within their own Learning Communities except on those occasions when their unique learning needs can only be met in another setting using special human or physical resources.

-- A variety of data sources are used when learning is assessed by teachers and students, with students becoming increasingly more responsible for self-assessment.

-- Teachers and students have a systematic method of gathering and using information about each student which affects his or her learning.

-- Both student and teacher consider the following when a student's learning activities are selected:

    Peer relationships
    Achievement
    Learning styles
    Interest in subject areas
    Self-concept.

-- Each student has an advisor whom he or she views as a warm, supportive person concerned with enhancing the student's self-concept; the advisor shares accountability with the student for the student's learning program.

-- Each student plans and evaluates his or her own progress toward educational goals (individually, with other students, with staff members, and with his or her parents).

-- Each student accepts increasing responsibility for selecting his or her learning objectives.

-- Each student accepts increasing responsibility for selecting or developing learning activities for specific learning objectives.

-- Each student can state learning objectives for the learning activities in which she or he is engaged.

-- Each student demonstrates increasing responsibility for pursuing her or his learning program.

Purpose of Study

Regrettably, enthusiastic educational innovators are not always enthusiastic educational evaluators. The simple truth is that the answers to questions regarding the effectiveness of schools, whether innovative

or not, have in many instances been largely an attestation of professional opinion and subjective judgments. Those educators who have attempted to communicate objective results of educational programs have for the most part relied on output measures such as achievement tests. However, the need for greater scope and more immediate results than is possible with any kind of output measure presently available suggests the use of a process measure to provide reliable and prompt feedback on the effects of the educational program. (A process measure looks at operations within the schools, and evaluation is made based on previously identified criteria.)

IGE is a relatively new program designed to produce more effective schools. Processes of the IGE program has been summarized in 35 outcomes. Does the implementation of IGE and ensuing work toward the achievement of the 35 outcomes make the school program more effective? This question needs to be answered if we are to determine if IGE makes a difference in those schools which have implemented the program. Is change taking place in IGE schools? How does the IGE change program affect students and schools? Do schools differ markedly from non-IGE schools? The intent of this investigation was to pursue answers to these questions. The purpose of this study was to use a process measure to evaluate the effectiveness of the IGE change program at the elementary level. The process measure used to evaluate IGE was Indicators of Quality.

Statement of the Problem

This study was designed to determine if there was significant change over a one-year period in the Indicators of Quality measures of individualization, group activity, creativity, and interpersonal regard when IGE organized schools were compared to non-IGE organized schools. The newly developed assessment system Indicators of Quality was used to appraise the differences (if any) in selected components, produced by the IGE delivery system for elementary schools.

More specifically the problem was to test the following hypotheses:

H_1 There will be no significant difference in the composite score (all 51 items) as measured by Indicators of Quality, between IGE schools and non-IGE schools.

H_2 There will be no significant difference in the quality (amount) of individualization, as measured by Indicators of Quality, between IGE schools and non-IGE schools.

H_3 There will be no significant difference in the quality (amount) of interpersonal regard, as measured by Indicators of Quality between IGE schools and non-IGE schools.

H_4 There will be no significant difference in the quality (amount) of creativity, as measured by Indicators of Quality, between IGE schools and non-IGE schools.

H_5 There will be no significant difference in the quality (amount) of group activity, as measured by Indicators of Quality, between IGE schools and non-IGE schools.

H_6 There will be no significant difference in the quality (amount) of positive teacher behavior items, as measured by Indicators of Quality, between IGE schools and non-IGE schools.

H_7 There will be no significant difference in the quality (amount) of positive pupil behavior items, as measured by Indicators of Quality, between IGE schools and non-IGE schools.

H_8 There will be no significant difference in the quality (amount) of teacher pupil interaction, as measured by Indicators of Quality, between IGE schools and non-IGE schools.

Additionally, it was the problem of this study to determine how principals compared to each other in their leadership behavior as perceived by the teachers and principals and measured by the Leadership Behavior Description Questionnaire-Form XII (LBDQ-XII).

The following hypotheses were tested:

H_9 There will be no significant difference in IGE and non-IGE teachers' perceptions of their principal's leader behavior as measured by the twelve dimensions of the Leadership Behavior Description Questionnaire-Form XII.

H_{10} There will be no significant difference in IGE and non-IGE principals' perceptions of their leader behavior as measured by the twelve dimensions of the Leadership Behavior Description Questionnaire-Form XII Self.

H_{11} There will be no significant difference in IGE principals' perception of their leader behavior and IGE teachers' perception of their principal's leader behavior as measured by the twelve dimensions of the Leadership Behavior Description Questionnaire-Form XII.

H_{12} There will be no significant differences in non-IGE principals' perception of their leader behavior and non-IGE teachers' perception of their principal's leader behavior as measured by the twelve dimensions of the Leadership Behavior Description Questionnaire-Form XII.

Source of Data

Data to investigate IGE were obtained through the use of Indicators of Quality as an evaluation instrument. The instrument was applied in four school districts in Central Iowa. A total of thirty-six elementary schools made up the elementary program in the four districts. Twelve of the schools were in Ames, four in Indianola, twelve in Marshalltown, and eight in Newton. However, only fifteen schools were utilized in the investigation.

A November 1972 application of Indicators of Quality was made in five IGE schools and eleven non-IGE schools in the Ames, Indianola, Marshalltown, and Newton public school districts. A December 1973 application of Indicators of Quality was made in the same schools except that one of the eleven non-IGE schools had been closed and two of the other ten non-IGE schools began implementation of IGE in September 1973.

The data from the two previously non-IGE control schools were retained for use in the investigation. This decision was made based on the fact that at the time of the 1973 application of Indicators of Quality, the IGE model had only recently been initiated and was not fully implemented in the schools. Data were not utilized from the elementary school that was closed.

The LBDQ-XII was administered to principals and teachers in the same IGE and non-IGE schools in order to secure data for the examination of the principal's leadership behavior.

Definition of Terms

To provide clarity and brevity all abbreviations in this dissertation are listed with the complete terms the first time they appear. Only the abbreviation will be used in subsequent references to the term. Following is a list of abbreviations and terms used in this study:

1. Creativity: Opportunities for pupil expression that take account of the fact that there are many methods for the expression of intelligence, and many talents employed in human creativeness, and much divergence of thinking and differences of opinion in

intellectual pioneering (93, p. 6).

2. Group Activity: Procedures for taking account of the fact that pupils are members of groups and must be equipped to be successful members of adult groups, and that group interaction is an important instrument in learning (93, p. 6).
3. I & R Unit: An abbreviation for Instructional and Research Unit. The instructional unit is an IGE school; it consists of a unit leader, teachers, teacher associates, and a multiage group of students. I & R Unit is used synonymously with Unit and Learning Community in this dissertation.
4. /I/D/E/A/: An abbreviation for the Institute for the Development of Educational Activities, Inc. /I/D/E/A is the educational affiliate of the Charles F. Kettering Foundation.
5. IGE: An abbreviation for Individually Guided Education. Multiage grouping, team teaching, differentiated staffing, continuous progress learning and other innovations are all components of IGE. IGE is used synonymously with IGE/MUS-E in this dissertation. See description in this chapter.
6. IGE/MUS-E: An abbreviation for Individually Guided Education/ Multiunit School-Elementary. It is used synonymously with IGE in this dissertation.
7. IIC: An abbreviation for Instructional Improvement Committee. Made up of the building principal and unit leaders, this committee coordinates instructional decision-making at the building level. IIC is used synonymously with PIC in this dissertation.

8. "Indicators of Quality": Sometimes referred to as "Indicators", an instrument used for obtaining quantitative measures of school quality by means of observation of critical behavior within the classroom. It is used to measure the internal school behavior in regard to individualization, interpersonal regard, creativity, and group activity.
9. Individualization: Procedures for taking account of the fact that individuals differ in their rate and manner of cognitive development, and that every child is unique to every other child in background, requirements, goals, capacities, learning styles, and in most other respects (93, p. 5).
10. Interpersonal Regard: General behavior reflecting warmth, kindness, respect, consideration, empathy among pupils and between teachers and pupils (93, p. 6).
11. LBDQ-XII: An abbreviation for Leadership Behavior Description Questionnaire - Form XII. An instrument developed by the Bureau of Business Research, College of Commerce and Administration of Ohio State University in order to measure leadership behavior.
12. League: Group of schools which cooperatively support each others' efforts to implement IGE.
13. Learning Community: Used synonymously with Unit and I & R Unit in this dissertation.
14. Non-IGE: Schools which are not associated with IGE either through the Wisconsin R & D Center or /I/D/E/A/.
15. PIC: An abbreviation for Program Improvement Council. PIC is

used synonymously with IIC in this dissertation.

16. SPC: An abbreviation for System-Wide Policy Committee. The purpose of this committee is to coordinate system-wide curricular development, inservice, and home-school communications.
17. Unit: Used synonymously with I & R Unit and Learning Community in this dissertation.
18. Wisconsin R & D Center: An abbreviation for the Wisconsin Research and Development Center. The R & D Center is located in Madison, Wisconsin and is supported in part by funds from the United States Office of Education.

Delimitations of the Study

The scope of this investigation was confined to five IGE schools and ten non-IGE schools, kindergarten through grade six, in the Iowa public school districts of Ames, Indianola, Marshalltown, and Newton. Two of the IGE schools were located in Ames and one IGE school was studied in each of the other three districts. All five IGE schools were members of the Central Iowa IGE League. The non-IGE schools in the investigation were represented by three elementary schools in Ames, three elementary schools in Indianola, two elementary schools in Marshalltown, and two elementary schools in Newton.

Non-IGE control schools were selected due to similarities to the IGE schools under investigation. In each school district an effort was made to select control schools with a staff and program similar to the IGE school(s) being examined. The socio-economic level of the students

being served was also considered when a control school was selected. In general, control schools were selected that were as comparable to the IGE schools as was possible. Also, consideration was given to selecting control schools that would be good representatives of the elementary program in each district.

CHAPTER II. REVIEW OF LITERATURE

Continuous educational improvement has been sought and promoted since the mid-1960s by two organizations instrumental to the development and growth of IGE. In 1964 the Wisconsin Research and Development Center (Wisconsin R & D Center) was funded by the United States Office of Education and in 1965 /I/D/E/A/ (Institute for the Development of Educational Activities, Inc.) was established by the Charles F. Kettering Foundation. The two organizations worked parallel to each other until 1969 when they combined efforts to facilitate the growth of IGE.

The multiunit concept emerged in 1964-65 when the Wisconsin R & D Center began work on Project Models (Maximizing Opportunities for Development and Experimentation in Learning in the Schools) (60, p. 1-2). In 1965-66 thirteen nongraded instructional and research units replaced traditional classrooms in three Wisconsin cities. By 1967-68 seven schools were completely organized in a multiunit structure. The total number was increased to fifteen in 1968-69 when the Wisconsin State Department of Public Instruction established eight more multiunit schools.

In 1966, /I/D/E/A/ began working with a group of eighteen elementary schools in southern California labeled the League of Cooperating Schools (99, p. 1-4). This concentrated effort known as the Study of Educational Change and School Improvement was instrumental in the development of the "/I/D/E/A/ Change Program for Individually Guided Education."

The combined efforts of the R & D Center and /I/D/E/A/, additional state department support in some states, and funding by the United States

Department of Health, Education and Welfare (HEW) increased the number of IGE schools to over 500 in 1971-72. By 1974 the number had grown to more than 2000 elementary schools in thirty-seven states plus American sponsored schools in thirty-six other countries (77, p. 29). IGE had been introduced to junior high and high school levels by the 1973-74 school year.

The Review of Literature was limited to three major areas. They are a) Investigations Related to IGE, b) Indicators of Quality, and c) Use of LBDQ and LBDQ-XII in Education.

Investigations Related to IGE

IGE as educational change

Howes (37) investigated some of the variables of change related to the institutionalization of the organizational component of the multiunit elementary school. In addition, she identified some of the elements involved in the successful implementation and use of educational change. Five descriptive organizational change questionnaires were designed and distributed to a selected national sample of over 2,000 unit teachers, unit leaders, principals, district coordinators and superintendents in multiunit schools and school districts.

The variables of change which were found to be directly related to the institutionalization of IGE/MUS-E were:

1) The perceived relative advantage, observability and simplicity of IGE/MUS-E.
2) The degree to which the individual was informed, involved and

supported in the change process.

3) The way and degree to which the individual communicated with others.

4) The way and degree to which the school organization was complex and less formalized.

Paul (69) also investigated the institutionalization of IGE/MUS-E. The diffusion of IGE/MUS-E from the Wisconsin R & D Center to the local schools was explored by collecting and analyzing data from system representatives in three states. The findings indicated that linkage between the teacher education institutions and local schools was positively related to diffusion of IGE, but linkages between and among the R & D Center and state education agencies had less direct impact on diffusion. Teacher education institutions exhibited a disproportionately high influence on the diffusion of IGE. Two interesting unanticipated findings were: 1) student teachers facilitated linkage between the college and the local schools, and 2) physical arrangements of the local schools affected diffusion--schools designed with open-space were consistent with and supportive of IGE.

It is important to note, however, that open-space buildings are not a prerequisite to implementing IGE. A field study involving fifteen IGE/MUS-E elementary schools of traditional and open-space design comprised the sample for a study by Strand (85). The purpose of the study was to survey and analyze the relationship of selected school plant characteristics to the seven learning modes in IGE. Structured interviews and on-site observations were used to obtain the data. The focus

of the interviews was on the relationship of five school plant characteristics (size of space, shape of space, deployment of space, energy sources, and services) to the IGE learning modes.

Even though the research utilized perception rather than scientific measures, there were some valuable findings. One of the most important was that IGE and its concomitant learning modes can be implemented in any type building, providing teacher commitment to the concept and the program is strong. Independent study and small group learning were most often restricted by school plant characteristics. However, the characteristics of each space were more critical in the accommodation of IGE learning modes than was the design of the building.

Professional satisfaction and decision-making in the multiunit school were the objects of an inquiry by Pellegrin (70). (A multiunit school is organized by units instead of grade levels. Each unit has professional staff, teacher aides, and 75-150 children.) He found a high rate of professional satisfaction, enthusiasm for group decision-making, and improvements in morale and work effectiveness by teachers in the multiunit schools. In this comparison of multiunit schools with self-contained classroom schools, it was concluded that these findings were a result of heavy involvement of teachers in decisions that bear directly upon the work they perform.

Walter (in 101) also found that IGE/MUS-E schools had substantially lower centralization than non-IGE/MUS-E schools and that they were significantly more adaptive. In the comparison of twenty IGE/MUS-E schools to eighteen non-IGE/MUS-E schools it was found that there was higher

participation by IGE teachers in decision-making and that they were also more willing to adapt program to differences in children than were the non-IGE teachers.

Herrick (35) determined that teachers in multiunit schools were more highly motivated than were teachers in nonmultiunit schools. Additionally, it was found centralization was a significant predictor of teacher motivation in both the multiunit and nonmultiunit elementary schools.

Another study focusing on staff morale and staff attitudes about the organizational climate within IGE schools was conducted by staff members of Teachers College, University of Nebraska (46). Five hundred forty-five IGE schools were assessed using the Organizational Climate Index. The investigators found no differences in teacher perception of school climate between IGE schools and the national norms for all schools. However, the researchers did observe that positive results were obtained by the implementation of the IGE model.

Student attitudes in IGE/MUS-E schools were studied by Nelson (61). Results show that IGE/MUS-E students do like school, have a higher opinion of themselves, and show greater self-respect than pupils in a traditional school.

The most comprehensive study of perception of the value and effectiveness of the IGE program was an investigation by Belden Associates (2b). Based on a representative sample of administrators, teachers, students, and parents in seventy-three schools, it was found that teacher's and parents' perceptions of the effect of IGE on children was positive. Although IGE was rated favorably by all four groups, administrators were

the most favorable and parents the least favorable. Similar results were found in a single school case study conducted by the College of Education, University of Missouri (10). The Missouri investigators concluded that a large majority of parents were pleased with the IGE program and that a majority of students liked the IGE program better than a traditional program.

In addition to the findings mentioned previously, the cost of IGE was also considered by the Missouri project staff. They found that IGE need not cost more than traditional programs. Developmental research of a related nature was conducted by Boardman and Hudson (4) to develop a cost analysis model which could be used to identify various cost factors directly associated with implementation and continuation of IGE. A variety of eight types of IGE schools were included in the study. The cost analysis model consisted of a self-reporting instrument, personal interviews, and on-site visitations.

There have been several efforts directed toward measuring the degree of implementation of IGE. The yearly administration of the /I/D/E/A/ IGE Implementation Questionnaire (40), the studies by Ironside (41, 42), and the development and field testing of an instrument by Halvorsen (32) represent major efforts to measure the degree of implementation of IGE. In general, all of these studies distinguished between situations where IGE processes were in operation and where they were not in operation. Paden (65) in an /I/D/E/A/ staff memorandum reported that teachers' perceptions of the degree to which the thirty-five outcomes had been implemented were very similar, regardless of whether they had been involved

with IGE for three months or fifteen months. However, Halvorsen (32) found that implementation mean scores were higher for schools with three years' implementation experience than for schools with two years' implementation. This would indicate that the instrument, An Objective Measure of Educational Practices, in addition to being able to discriminate between non-IGE and IGE schools on the degree of implementation of IGE processes, may also be effective in discriminating between IGE schools with different amounts of experience.

The Ironside evaluations of the implementation of IGE concepts in schools were nationwide in scope. Conclusions reached in the first assessment (42) of installation of the IGE/MUS-E model were that implementation problems stemmed from 1) failure to fully inform staff members of the IGE process previous to implementation, 2) failure to obtain staff agreement and commitment to the process, and 3) failure to establish adequate understanding through inservice training during implementation. In the follow-up study (41) of ninety-eight schools included in the 1971-72 assessment it was concluded that the IGE/MUS-E organizational and instructional changes had taken hold in the majority of schools responding to the follow-up.

IGE's impact on student achievement was investigated by Paden (66), and Morrow, Quilling and Fox (59). Based on comparisons of student scores on standardized achievement tests, no differences were found between student achievement in multiunit schools and control schools. There were no schools experiencing achievement problems following implementation of IGE.

Roles and relationships in IGE

The instructional improvement committee (IIC) was investigated by Smith (in 100) in an attempt to determine those variables which associate with operationally effective IICs. The Leadership Behavior Description Questionnaire-Form XII (LBDQ-XII) and the Fundamental Interpersonal Relations Orientation-Behavior (FIRO-B) questionnaires were used to collect data on the IIC chairman's leader behavior and on the IIC chairman's and IIC members' interpersonal relations orientations. Significant positive multiple intercorrelation coefficients were observed between IIC effectiveness and the following independent variables:

1) The IIC chairman's leader consideration behavior.
2) The amount of time the IIC met each month.
3) The IIC whose members have a preference for interaction with others.
4) The IIC whose members have a preference for close personal relations both toward people and from them toward self.

Significant negative regression coefficients were obtained for the variable "number of IIC members" and the variable "leader-member compatibility."

The results of this study led to the conclusion that increases in the effectiveness of IICs tend to be related to increases in 1) leader consideration behavior, 2) the number of hours an IIC meets each month, and 3) inter-IIC member interchange compatibility in the inclusion and affection need area. Decreases in 1) the number of IIC members and 2) leader-member compatibility in the control need area is also related to

an increase in the effectiveness of IICs.

The unit leader, a key member of the IIC, was the subject of an investigation by Sheridan (78). This study investigated the perceived role and effectiveness of the unit leader in conducting unit functions. Data were collected using the Unit Leader Role Analysis (ULRA), a survey instrument containing fifty-six tasks typically performed by unit leaders. The sample consisted of forty-eight principals, forty-eight unit leaders and ninety-six teachers from forty-eight Wisconsin elementary schools.

Some of the major findings were as follows: 1) Statistically significant differences were found between principals and unit leaders for tasks related to instructional coordination and between principals and unit teachers for tasks related to instructional coordination and intraorganizational relationships. However, for the same tasks no significant differences were found in expectations between unit leaders and unit teachers. 2) A significant positive relationship was found between principal and unit leader agreement on expectations for tasks dealing with management activities and principal ratings of unit leader overall effectiveness.

While differences did exist between principals and unit leaders regarding instructional coordination tasks and between principals and teachers regarding intraorganizational and instructional coordination tasks, it was felt by the investigator that these differences were primarily due to a lack of mutual understanding regarding the tasks the unit leader should be expected to perform.

The fact that principals differed from both unit leaders and

teachers regarding expectations for instructional tasks suggests that this area is in need of further clarification.

Considering the results of this study, Sheridan suggested that principal, teacher, and unit leader communication be increased; that the organizational model and unit leader role be further refined; and that the factors of the ULRA be examined for their relevance to problems in selection, training and operation of IGE/MUS-E schools.

An investigation by Gramenz (25) was designed to study the interrelationships between the leader behavior of principals, structure of IGE/MUS-E, and the effectiveness of the I & R unit. Structure in this case referred to centralization, formalization, and stratification. Centralization was conceived as the degree to which power was distributed in an organization. Formalization was defined as the degree of job codification in an organization and the latitude tolerated within the rules defining the job. Stratification was defined as the number of formal authority levels and the degree to which these levels are perceived to be linked with salary and status.

It was found there were no significant relationships between principals' satisfaction with their leader behavior and their perceptions of a) I & R unit effectiveness and b) the organizational-structural dimensions. However, there were significant positive relationships between unit leaders' and unit teachers' perceptions of the instrumental, supportive, and participative leadership effectiveness of principals and I & R unit effectiveness.

Significant positive relationships were found between unit leaders'

perceptions of a) the participative leadership effectiveness of principals and the degree of centralization and b) instrumental, supportive, and participative leadership effectiveness and the degree of stratification. The same positive relationships were found for unit teachers' perceptions.

For principals, there were no statistically significant predictors of I & R unit effectiveness. For unit leaders, the degrees of centralization, formalization, and stratification were statistically significant predictors of I & R unit effectiveness. For unit teachers, the degrees of centralization and formalization and the instrumental and supportive leadership effectiveness of principals were significant predictors of I & R unit effectiveness.

The implications of these findings indicate that principals of IGE/MUS-Es should clarify expectations, specify procedures to be followed, assign specific tasks, be friendly and approachable, and allow participative leadership. These implications are congruent with leadership theory.

As a result of the data analysis the investigator recommended that principal and unit leaders work cooperatively to clarify the role expectations held for principals. It was also noted that in order for I & R units to operate effectively, a reasonable degree of latitude be allowed in the manner in which unit members perform their jobs.

Evers (16) studied the interrelationships of I & R unit effectiveness to I & R unit member compatibility, the unit leaders' leader behavior, and the level of task structure as perceived by I & R unit members. Data were collected from 163 I & R units from forty-five

IBE/MUS-E schools in twelve different states. Of the variables considered, only unit leader behavior was identified as a significant positive influence on the measures of I & R unit effectiveness. There was no significant relationship found between I & R unit effectiveness and the number of I & R unit members or between I & R unit effectiveness and the number of hours the I & R unit met per week. A significant positive relationship was found between the percentage of the I & R unit members who participated in staff development activities and the following: 1) I & R unit total effectiveness, 2) I & R unit organizational operations effectiveness, 3) I & R unit school-community relations effectiveness, and 4) I & R unit staff development effectiveness.

On the basis of these findings, those who are concerned with staffing an I & R unit should consider the selection of a unit leader who clarifies expectations, assigns tasks, specifies procedures, and considers the needs of subordinates.

The finding that I & R unit effectiveness is related to the percentage of the I & R unit members who participated in staff development activities points out the need to provide necessary resources for staff development activities.

Benka (3) analyzed the involvement of the director of instruction in organizational change. The study involved thirty-three Wisconsin school districts which were implementing IGE/MUS-E and which employ a director of instruction. Thirty-three directors of instruction, ninety-one principals, and three hundred one unit leaders were involved in the study. It was concluded that the director of instruction's involvement in the change process from traditional to IGE/MUS-E is unrelated to the

achievement of the indicators of the key dimensions of IGE/MUS-E. Although the principals and directors of instruction are to function as part of the same administrative team, the principals did not view the director of instruction as a highly involved colleague. Unit leaders did not perceive any benefit from the director of instruction's input into the IGE/MUS-E structure. It was also found that even though change should be a planned and prescribed strategy, the director of instruction's activities did not seem to be in concert with a strategy of planned change.

Indicators of Quality

Development and description

Indicators of Quality (90), a measure of school system process, was developed over a period of seven years. It was specifically designed to assess a school system's classroom processes on four criteria: individualization, interpersonal regard, group activity, and creativity. As pointed out by Vincent and Olson (94, p. 26), "The primary purpose of the instrument Indicators of Quality is to serve as a quality criterion in school evaluation."

Indicators of Quality is not a teacher evaluation scheme. Elaborate steps have been taken to "decouple" the score sheet from any information which could enable anyone to later identify the individual teacher by the score of the time sample obtained in his or her class. The only result is an evaluation of total program, school, or system based upon a sampled cross section of all kinds of class meetings that occur on a typical day.

Under the direction of William S. Vincent, Director of the Institute

of Administrative Research at Teachers College, Columbia University, a search was begun to identify what it is in the educational process that is critical to school quality. During the 1963-64 school year, three groups of educators, working under the auspices of the Institute of Administrative Research, undertook the task of specifying the meaning of school quality. The three groups who undertook this task were the Basic Research Commission of the Metropolitan School Study Council; a special ad hoc committee called to assist in this project and composed of administrators and supervisors from the Metropolitan School Study Council; and the professors and students constituting the 1963-64 seminar of the Institute of Administrative Research, Teachers College, Columbia University. The three groups worked separately but their work was coordinated. All participants had experience as teachers, administrators, or supervisors. Their experience represented not only typical public schools but also schools where the staff and financial conditions allowed superior teacher and exceptional educational experiences.

At the outset it was specified that any characteristic of the educational process selected as an indicator of school quality would have to satisfy these conditions (93, p. 5):

1) The characteristics must relate to the social and economic trends, historical and modern, as these are revealed in writings concerned with our nation's purposes and goals.
2) The characteristic must be reported as significantly related to quality by those who have explored theoretical aspects of education.

3) The characteristic must be observable in the report of those who have concerned themselves with empirical investigation of the relationships between educational practice and the learning process.

The literature was searched, authorities were consulted, results from open-ended questionnaires were pooled, and discussions were conducted on what constitutes quality in schools. The deliberation of the three groups were finally synthesized by Nicoll (62) and Chisholm (11) and four key areas appeared as characteristic of school quality. They were: 1) individualization, 2) interpersonal regard, 3) creativity, and 4) group activity. Individualization refers to those behaviors which demonstrate an awareness of differing levels and rates of cognitive development and of each child's unique characteristics. Interpersonal regard refers to behaviors which reflect mutual concern by teacher and students for other human beings and their feelings. Creativity refers to actions which demonstrate that pupils are provided with materials, methods, and opportunities to develop creative arts, approaches, and thinking. Group activity refers to procedures which enable pupils to take part in group membership and foster the growth of skills necessary for life in social groups (93, p. 5).

The key concepts underlying each of the four indicators of quality, along with citations from the literature which were significant in the derivation of each key concept, make up the next four parts of this section of the Review of Literature.

Individualization

Recognition of the worth and uniqueness of the individual is a cornerstone of the American way of life. From its first recognition in the Declaration of Independence to recent statements in a report from the United States President's Commission on National Goals (89, p. 6), individualization has been one of the basic goals of our educational system.

The educational literature is full of recognition of individual differences and the need to provide for them in a good school program. As early as 1930, Broady (6) listed hundreds of practices for individualizing instruction. Later, Cook (12, p. 143), Havighurst (33, p. 170) and Pugh (74, p. 14) were encouraging educators to individualize instruction and giving examples of how to do it.

Individualization of instruction is defined in many ways. The term as it is used in Indicators of Quality refers to classroom procedures that take account of variation in rate, manner, and style of cognitive growth. This allows each child to progress at his own rate in his own manner. It does not necessarily mean that each pupil is doing something different or that a teacher always works with one pupil at a time (93, p. 19).

Just what goes on in the classroom of a teacher who truly individualizes instruction? Pupil participation is one clue. Another is that a variety of resources is provided in order for different pupils to work with materials most suited to their learning styles. Larrick (51, p. 286), Cook (12, p. 146) and Lee (53, p. 282) all stress this point.

The simplest level of individualized learning is acceleration. A second way instruction is individualized is through enrichment--pupils performing much the same tasks but attack the tasks at a greater level of sophistication or depth. A third method of individualizing learning experiences is pupils in the same class doing entirely different things. Havighurst (33, p. 170) observes, "Children should be doing a variety of different things, even when they are working together." Different tasks to match individual needs appear to be a key to individualization.

Individual evaluation is another concept mentioned by writers. Weaver (97, p. 302) and Farley (17, p. 72) both feel that individual evaluation is important. In an individualized program evaluation should be based upon each pupil's rate of development and need.

Knowledge of the pupil and teacher communication are indicated by Lazar (52, p. 285) and Danowski (14) respectively as being other elements necessary to individualization. The student should be taught as an individual with as complete a knowledge of his problems, strengths and weaknesses as it is possible to attain. A teacher who communicates different messages to different pupils in small groups is attempting to individualize instruction.

In addition to communicating with small groups the teachers questioning technique is cited by Pugh (74, p. 14) as another clue to individualization. Constant monitoring by the sender of how a message is being received results in messages coming back from the receiver to modify the original message. Good teachers do this. They do not harp on the same questions when pupils are unable to comprehend them.

Complementary roles played by teacher and pupil in a classroom is the final key concept of individualization. The teacher is a resource and the pupil's presence has an active and positive influence upon the teacher/pupil relationship. The pupil is not a passive recipient, his presence results in adaptation and modification of the lesson. A set lesson plan rigidly adhered to by the teacher is not a part of this concept.

See Appendix C for a list of the nine key concepts of individualization and authorities consulted on individualization.

Interpersonal regard

The concept of empathy is more recent in our schools than is individualization. However, it is of no less vital concern in the midst of today's intergroup conflicts. Current writers such as Phenix (72) and Lerner (54) have focused attention on the pupil as a human being. Shoben (79), Melton (58), and Haggard (29) agree that schools must concern themselves with the student's motives, attitudes, interests, desires, character, and general affective structure if the goals of education and the needs of the individual are to be served. The educational literature is replete with inferences that the quality school is one which accepts responsibility for the humanizing of its students.

There is a large body of literature in the area of interpersonal regard, much of it under headings like affective learning or classroom climate. Indicators of Quality (93, p. 27) defines interpersonal regard as ". . . a matter of human relationships between pupil and teacher, pupil

and pupil, and between the institution of the school itself and the pupil." Only one thing is required to make a school, and that is human beings. Part of being educated is to have a human outlook. A school that is aware of this reflects empathy, warmth, understanding and acceptance.

Withall (102, p. 93) felt that the humane element in a school could be measured. Perkins (71, p. 2), Flanders (19, p. 110), Kelley (44, p. 456) and Ripple (75, p. 477) have all reported on the effect of interpersonal regard on pupil achievement. The evidence shows that pupils learn better and teachers teach better in schools that have a high degree of interpersonal regard. Many authorities hold the view that such feelings as warmth, empathy, and mutual respect are important in the classroom.

Authorities talk about behavior that is conducive to a satisfactory classroom climate (81) and also define it by describing behavior that is just the opposite (1). They emphasize the importance of warmth, cheerfulness, patience, praise, encouragement, respect, permissiveness, pupil involvement, knowing pupils, meeting pupils on their level, and accepting their problems, difficulties, and errors (81, 1, 80, 86).

Appendix D lists authorities consulted on interpersonal regard and also lists the ten key concepts of interpersonal regard.

Creativity

The United States has long encouraged unity without uniformity. Creativity is central to our culture. The nation has long believed that each individual should be able to develop to the full, in his own style,

and to his own limit. Lerner (54, p. 112) and Killian (47b, p. 73) suggest that the creative, the original, the divergent people are an important element if society is to reach its full potential. They also suggest the importance of having an educational system that produces this great variety of capabilities.

A large number of researchers and theorists qualify as authorities in the field of creativity by virtue of the volume and influence of their writing. Among them are E. Paul Torrance, Calvin Taylor, Carl Rogers, Joy Guilford, Jacob Getzels and Philip Jackson. The importance of creativity in education and of cultivating and nourishing creativity in pupils is evidenced by volumes of literature available on the topic. This section of the Review of Literature is limited to those authors and writings instrumental in the identification of key concepts in creativity.

Many writers stress the importance of materials being made available in a creative teacher's classroom. Patrick (68, p. 169), McPherson (56, p. 13), and Brogan (7, p. 162) all indicate that materials are the most important thing necessary to helping create a liberating and stimulating atmosphere. Torrance (88, p. 93) suggests that teachers make resources available for working out ideas.

Time, likewise, is an essential element in being able to develop creativity. Bostwick (5, p. 143) devotes an entire article of thirty-six pages to the importance of time, space and materials in fostering creativity in the classroom. Lack of teacher pressure (55, p. 147) and playing with facts and ideas (55, p. 339) are also important to the

creative classroom. Rogers (76, p. 79), Holt (36, p. 46) and Torrance (88, p. 93) all echo the importance of time as a necessary ingredient for the emergence of creative ideas.

Openness is another classroom procedure that fosters creativity. Rogers (76, p. 75), Foshay (20, p. 27), and Franseth (21, p. 303) suggest that an open system permits originality, experimentation, initiative and invention. The teacher needs to provide an environment that facilitates the development of creative, imaginative people able to change in light of new knowledge and new requirements. Praise and encouragement, open-ended questions, problem-solving lessons and constructive criticism are all ways of showing children that their own ideas have value. Delaying evaluation or omitting it entirely is suggested by Torrance (88, p. 105).

Pupil creativity is fostered by teacher involvement. Torrance (88, p. 93) advises teachers, "Be adventurous--spirited yourself." McPherson (57, p. 142) encourages high personal involvement on the part of the teacher to encourage creativity.

The key concepts of creativity and authorities consulted on creativity are given in Appendix E.

Group activity

The essence of the group is the reaction of people to each other. Although the focus of attention is upon the individual child's learning, superior schools study, understand, and utilize the socializing influences of group role. Group activity as defined by Indicators of Quality (93, p. 55), ". . . lies at the heart of democracy. Group interaction,

even intergroup competition and conflict, are the principal motivation in the formulation of public policies in a democracy." The school can offer opportunities for establishing a balance between self and social realization.

When the literature on group activity is examined, one finds a considerable body of research. For the purposes of this section of the Review of Literature, only those authors will be cited who have given attention to the classroom and group process.

Requirements for group activity range from the physical arrangement of the room and furniture to conflict resolution. The importance of face-to-face seating is recognized by Parnes and Meadow (67, p. 313) as encouragement to the greatest amount of group participation and discussion.

Another requirement to cultivating group interaction is that the teacher's purpose must be to encourage and facilitate social skills as well as the conceptual and intellectual skills. The teacher must have as purposes the exchange of ideas, cooperation, and shared problem-solving (23, 30, 63b).

Communication and participation are other frequently mentioned concepts of group activity. Gibb (22, p. 54) suggests that poor communication is simply a symptom of all the basic problems that people have in relating to one another. In addition, Gibb (22, p. 52) gives a number of signs of development of participation, thus indicating the necessity for participation. Gordon (23, p. 159) also indicates the importance of the element of participation. Underlying the concepts of communication and

participating is the need for the teacher to vary the learning activities so it is possible for all pupils to experience these concepts.

The terms interdependence (87, p. 449), cohesiveness (63b, p. 112) and group personality are used frequently by the group process authorities. Cattell (9, p. 108) discusses group personality.

> We have, in short, to establish a branch of psychology concerned with the "personality" of groups. . . . Examination of many possible verbal roots indicates syntality as best indicating the "togetherness" of the group, while having sufficient suggestive parallelism to "personality" and "totality."

The authorities consulted and the key concepts of group activity and group process may be found in Appendix F.

Use of LBDQ and LBDQ-XII in Education

The origin of the Leader Behavior Description Questionnaire (LBDQ) goes back to 1945 when the Ohio State Leadership Studies were organized. At that time nothing existed in the way of satisfactory leadership theory. The research prior to World War II had sought to identify the differentiating traits of leadership. However, analysis of this type of research indicated that the personality trait approach had proved fruitless. It was decided that an attempt should be made to study the behaviors rather than the traits of leaders. Items describing different aspects of leader behavior were used to develop the first form of the LBDQ (34). It was found by factor analytic studies of item intercorrelations that two factors identified as consideration and initiation of structure in interaction were produced. These two subscales, consideration and structure, have been used extensively in research.

The LBDQ received its first extensive use in military studies. Considerable data have also been assembled in numerous studies in business and industry. In these studies it seems clear that initiating structure and consideration are dimensions that are essential to the behavior of leaders. Just what proportion of the two dimensions will make the best "mix" for leadership is not clear, but leaders in business and industry who are perceived as being effective tend to be high in both consideration and initiating structure. For the purpose of this study, however, this section of the Review of Literature was limited to the use of the LBDQ and the Leadership Behavior Description Questionnaire-Form XII (LBDQ-XII) in educational studies.

Halpin (31) used the LBDQ to study the leadership of school superintendents. In this study superintendent's leadership was described by staff members, school board members, and self on both "real" and "ideal" forms of the LBDQ. The findings from this study showed that both board members and staff members agree among themselves in description of the superintendent's behavior, but the two groups differ in perceptions. Staff members saw the superintendent as less considerate than either he or board members saw him. Board members described the superintendent higher in initiating structure than did staff members or the superintendent themselves. Effective superintendents, as perceived by both staff and school board members, were rated highly in both consideration and initiation of structure.

The LBDQ was used to measure the behavior of the school principal in a cross section of forty large and small high schools in Illinois.

Evenson (15) reported mean scores for the principal's behavior in initiating structure and consideration in the ten largest and ten smallest high schools. No relationship was found between the two leadership dimensions and the size of the school.

Utilizing the LBDQ Real and Ideal, Gott (24) examined the perceptions and expectations among superintendents, principals, and subordinates. He found that faculties and superintendents agreed on their perception of actual leader behavior of principals. Faculties and superintendents also agreed on their expectations of the ideal consideration leader behavior of principals but disagreed on initiating structure. Significant differences were found between perceptions of the "real" leader behavior dimension and expectations of the "ideal" behavior dimension for each of the groups.

The LBDQ-XII evolved through several stages to its present form. Stogdill (84) observed that it had not seemed reasonable to believe that two factors are sufficient to account for all the observable variance in leader behavior. Consequently, a new theory of role differentiation and group achievement by Stogdill (83), and the survey of a large body of research data that supported that theory, suggested that a number of identifiable patterns of behavior operate to enable a member to achieve leadership status in social groups. Thus, both theory and research suggest the following dimensions of leader behavior: representation of group interests, role assumption, production emphasis, orientation toward superiors (factors suggested by empirical research), and tolerance of uncertainty, persuasiveness, tolerance of member freedom of action,

predictive accuracy, integration of the group, and reconciliation of conflicting demands (factors suggested by theory). These dimensions of leader behavior are now all part of the fourth revision of the LBDQ-XII.

The LBDQ-XII was utilized by Brown (8) to obtain descriptions of 170 principals by 1,551 teachers in Canadian schools. The teachers were surveyed regarding their principals' leadership behavior and its relationship to administrative outputs. Administrative outputs were interpreted in terms of teacher satisfaction, confidence in the principal, and school performance estimate. The results of this study suggest that teacher satisfaction and confidence in the principal are sensitive to the perceived leadership of the school. However, teachers' estimates of the schools' performance is not. Background data gathered by Brown including size and type of school, social class of neighborhood, staff age, sex, training, experience, and longevity at that school considered individually or in combination did not indicate any significant relationship with the subscales of the LBDQ-XII.

Jacobs (43) used the LBDQ-XII to investigate the relationship between the leader behavior of junior high principals and the number of curricular innovations which had occurred during two years of their administration. There were sixteen schools selected for the study, eight were identified as having the largest number of innovations and eight were identified as having the fewest. Analysis of the data revealed that principals in schools with larger numbers of innovations exhibited a significantly different type of leadership behavior than the other principals on six of the twelve subscales of the LBDQ-XII. Innovative principals received

higher ratings on initiating structure, predictive accuracy, representation, integration, persuasion, and consideration. This investigation seems to support the belief that an important factor in establishing meaningful innovation in the school is the leadership behavior of the principal. Successful innovation is possible only if the principal is capable of creating an appropriate climate for change. As this study reveals, innovations are more likely to succeed where the principal facilitates communication, shares decision-making power, manages conflict situations, and expedites problem-solving activities.

Feitler (18) measured the leadership characteristics of school principals by administering the LBDQ-XII. He found that of the twelve dimensions measured, four were significantly higher for schools which exhibited the participative organizational style than for schools which exhibited the authoritative organizational style. The four items which were significantly higher for the participative style were: tolerance of freedom, integration, consideration, and tolerance of uncertainty. Feitler's study suggests a significant relationship between principals with interpersonal leadership characteristics and schools with participative organizational style. The use of the LBDQ-XII as an instrument to measure the behavior of a principal is supported by this study.

Four variations of the LBDQ-XII were developed for use in investigating eight California schools from the eighteen-member League of Cooperating Schools sponsored by the Research Division of the Institute for Development of Educational Activities, Inc. (/I/D/E/A/). The study involved 203 elementary teachers and eight principals (98). Four of the

schools in the investigation were identified as having high organizational renewal and four were identified as having low organizational renewal. The organizational renewal process was defined as the process by which the schools endeavor to attain their goals. For measurement purposes the process was further divided into three steps:

1) dialogue--two-way communication between and among principals and teachers,
2) decision-making--those school decisions made in a shared situation involving both teachers and the principal,
3) action--some form of change resulting from the first two steps.

Principals who scored high and principals who scored low in dialogue, decision-making, and action exhibited differing behaviors as measured by the LBDQ-XII. Effective principals were described higher than ineffective principals in consideration and tolerance of freedom. Ineffective principals were described high in production emphasis. Teachers in seven of the eight schools believed that principals ought to initiate more structure. Teachers in ineffective schools believed that the principals should exhibit more persuasion, demand reconciliation, and integration of the group than they were perceived to do.

The investigators concluded from this study that a high organizational renewal school will have a principal who emphasizes the personal dimensions in his leader behavior and has greater concern for his teaching staff than he does for institutional maintenance. Principals in low organizational schools deemphasize staff needs in favor of institutional

needs and expectations. Based on the results of this study it was also concluded that age, sex, length of teaching experience, length of time at present school, and educational background have no bearing upon how a teacher will perceive the principal's "real" or "ideal" leader behavior.

Gress (27) examined participatory leadership as employed by selected Iowa secondary school principals. The LBDQ-XII was one of several instruments utilized to gather data for the study. Fifty-five principals and 568 teachers were involved in the investigation. Analysis of the data compiled for this study seem to justify the following conclusions: 1) There was a significant inverse relationship between teacher participation in decision-making and the principal leadership characteristic of demand reconciliation. 2) There was a significant inverse relationship between teacher participation in decision-making and the principal leadership characteristic of initiation of structure. 3) A significant positive relationship was found between teacher participation in decision-making and the principal leadership characteristic of tolerance of freedom. 4) There was no relationship established between teachers' perceived participation in decision-making and the principals' leader behavior characteristics on any of the other nine subscales of the LBDQ-XII.

Other findings from this investigation are of interest. Generally, it was more often reported by older teachers that their principals reconciled conflicting demands, tolerated uncertainty, used persuasion effectively, and clearly defined their own role. Likewise, older teachers felt the principal allowed the teachers opportunity for initiative, considered the well-being of the teachers, exhibited foresight, resolved

internal conflicts, and maintained cordial relations with their superiors. Principals in schools with vice-principals reported that they acted as the representatives of the teachers more frequently than did principals in schools without vice-principals. In addition, principals with more tenure in their present position showed a positive relationship for tolerance of freedom and reported that they allowed teachers more opportunity for initiative, decisions, and action.

Judging from the results of this study, it appears that the leader behavior of the principal is related to the amount of perceived participation by the teachers in the making of decisions.

Summary

Judging from the survey of literature, evidence of change in IGE schools is definite. IGE schools a year or two into the program differ markedly from their prior IGE status in terms of organizational components, centralization, availability of various learning options for students, and use of physical space in a building. These changes are evidence of progress toward achievement of various elements important to providing individualized learning.

Attitudes toward IGE are positive. A high rate of professional satisfaction on the part of administrators and teachers is evident. Staff morale is high and teachers are involved in decision-making. Students like school and feel they learned more through IGE than through traditional programs. Parents also indicate a great deal of satisfaction with IGE teaching methods.

IGE's impact on cost is not clear. Studies have indicated both increased costs and no increase in costs as a result of the implementation and continuation of the IGE program. Data does indicate that matters of cost are determined by individual schools.

The impact of IGE on student achievement test scores also is mixed. Most of the comparisons of student scores on standardized achievement tests indicate no significant differences. However, there have been no reports of schools experiencing achievement problems. Students are learning just as much as in traditional schools and like school better. They are also developing more self-direction and taking more responsibility for their own learning.

Observations of positive attitudes of students toward learning and improved development of student self-direction and responsibility reveal a concern in program evaluation. It should be kept in mind that standardized achievement tests do not measure any of the affective areas of learning. Consequently, standardized achievement tests should only be part of a comprehensive school evaluation program.

Communication is an important element in the effective implementation and utilization of IGE. There seems to be an obvious concern in IGE schools for the lack of interunit communication on personal, professional, IGE, or general school matters. A number of studies regarding the roles of various staff members within the IGE school have found communication to be a critical element in the achievement of an effective program. It is imperative that lines of communication be established between principals and unit leaders, between principal and teachers, and between unit

leaders and teachers. Communication is an important contributing factor in the achievement of educational change.

Indicators of Quality was specifically designed to assess a school system's classroom processes on four criteria: individualization, interpersonal regard, creativity, and group activity.

The educational literature is full of recognition of individual differences and the need to provide for them in a good school program. Pupil participation, varieties of resources, acceleration, varieties of experiences, individual evaluation, and complementary roles played by teacher and pupil are all elements necessary to individualization.

Much of what is written on the subject of interpersonal regard is concerned with its importance in teaching or with the effect that a warm affective climate, or the lack of it, has on pupils.

From the Review of Literature regarding creativity it can be concluded that, in general, creativity entails an abundance and variety of materials; time to think and discover; and openness and attention to divergent ideas. In all of this a special kind of evaluation is used, if used at all. Praise, encouragement, and rewards should accompany unusual and diverse contributions.

In general, key concepts of group activity in the classroom include consideration of physical arrangements that facilitate interaction; teacher purpose to facilitate cooperation; idea exchange and shared problem-solving; and group-sharing in decision-making. Pupils share the leadership role and the teacher's group role is that of a member of the group. Cohesiveness and a feeling of internal interdependency

characterizes group personality.

The review of research tends to document the use of the leader behavior approach in studying school administration. The shift from the study of personality traits to the study of leader behavior was initiated by the development of the LBDQ at the Ohio State Leadership Center. The LBDQ was expanded from the two original subscales to twelve subscales making up the LBDQ-XII. Numerous studies in business, industry, the military and education support the use of the LBDQ-XII as an instrument to measure the behavior of a leader.

CHAPTER III. METHODS AND PROCEDURES

The joint efforts of Iowa State University and the Iowa Department of Public Instruction were responsible for the formation of the Central Iowa IGE League. Dr. George Hohl, representing the College of Education, Iowa State University, was instrumental in early contacts with /I/D/E/A/ for the purpose of establishing an IGE league. Dr. Hohl's initial contact with /I/D/E/A/ was in September of 1971. The Dean of the College of Education, Dr. Virgil Lagomarcino, received confirmation from /I/D/E/A/ in January of 1972 that the Iowa State University College of Education and the Department of Public Instruction would serve as a joint intermediate agency. As an intermediate agency, Iowa State University and the State Department of Public Instruction were authorized by /I/D/E/A/ to implement the /I/D/E/A/ Inservice Program for Individually Guided Education (IGE) in selected schools.

The joint intermediate agency was responsible for providing facilitators. Dr. George Hohl was appointed as facilitator and A. John Martin from the Department of Public Instruction was appointed as assistant facilitator. Their responsibilities were to see that the policies of /I/D/E/A/ were followed and be directly responsible for working with the schools that would be selected for membership in the league. The intermediate agency was also to provide workshops and adequate quantities of IGE training materials such as filmstrips, films, and publications. In addition, Iowa State University was to provide student teachers for the IGE schools.

Dr. Don Cox, Associate Superintendent of Instruction and Professional Education, provided Department of Public Instruction support and direction to establishing the joint intermediate agency. Dr. Cox's efforts along with the efforts of A. John Martin, Department of Public Instruction assistant facilitator, contributed greatly to the successful establishment of the Central Iowa League.

Following two general conferences at Iowa State University in February and March, 1972, seven elementary schools in four school districts (Ames, Indianola, Marshalltown, Newton) were selected to form the Central Iowa IGE League to function under the leadership of the joint Iowa State University-Department of Public Instruction agency.

The first four-day training session for selected principals and unit leaders was held at Iowa State University in May of 1972. Under the direction of George Hohl and John Martin, personnel from each of the selected schools began preparations for initiating the IGE program in September of 1972. The success in implementing IGE in these schools during the 1972-73 school year led to an expansion of the league to include additional schools from the four school districts. There are presently ten elementary schools in the Central Iowa IGE League. Plans call for the addition of two more elementary schools to the league in the 1975-76 school year.

The operation of the league has been conducted by means of a HUB committee made up of representatives of each of the schools. The IGE facilitators have planned and arranged for periodic meetings of the HUB committee in addition to observing and assisting with the implementation

process in the individual schools. Maintaining communications, sharing concerns and ideas, and making resources available to the schools are some of the functions of the HUB committee.

Selection of the Sample

The scope of this investigation was confined to five IGE schools and ten non-IGE schools, kindergarten through grade six, in the cluster of schools that make up the Central Iowa League. The districts involved were as follows: Ames, Indianola, Marshalltown, and Newton. Fifteen elementary schools out of a total of thirty-six were utilized in the investigation. Five of the schools were in Ames, four in Indianola, three in Marshalltown, and three in Newton.

The non-IGE control schools were selected due to similarities to the IGE schools under investigation. Prior to the November, 1972 application of Indicators of Quality, each of the four school districts matched IGE schools with non-IGE schools in the district. Control schools were selected that were comparable to the IGE schools in the areas of staff, program, and socio-economic level of students. Attention was also given to selecting control schools that would be good representatives of the elementary program in each district.

The principal and ten teachers from each of the fifteen schools under investigation were desired as participants in the study of the principal's leadership behavior. Teachers participating in this aspect of the study were selected randomly by the participating principals from their faculty.

Description of Instruments

Several instruments were utilized to gather data for this study. Indicators of Quality was used to measure individualization, group activity, creativity, and interpersonal regard in IGE and non-IGE elementary schools. The LBDQ-XII was completed by teachers in order to measure the leader behavior of their school principal. The principals completed the LBDQ-XII Self as a self-evaluation of their own leader behavior. Biographical data were gathered from all respondents through the use of a Background Data sheet. IGE principals also completed the Principal Survey--IGE Implementation.

Indicators of Quality

Indicators of Quality is an instrument used for obtaining quantitative measures of school quality by means of observation of critical behavior within the classroom. It is based upon four characteristics of internal school behavior that have been judged to be basic to quality: individualization, interpersonal regard, group activity, and creativity. A score obtained by the application of this instrument to a school system or school building is a quantification of quality based on these four criteria (64, p. 26).

The instrument utilized by observers consists of fifty-one polarized items: seventeen are observable in teacher behavior, seventeen in pupil behavior, and seventeen in interaction between teacher and pupils. A method of polarizing items is employed whereby each key concept is identified by an extremely positive sign and an extremely negative sign.

These signs are described as the polar characteristics of each of the fifty-one items which comprise the instrument. The fifty-one items are derived from the four criterion characteristics of school behavior: eight items derive from individualization, fifteen from interpersonal regard, nine from group activity, six from creativity, and twelve from two categories in various combinations.

Observers gather data through the use of an optical scan score sheet. The instrument is designed to obtain a series of time samples of standard length and structure. Five minutes of observation and scoring is alloted to each of three areas of the instrument. The areas are identified as "teacher sign summary," "pupil sign summary," and "teacher-pupil sign summary" (91, p. 3). Observers follow precise instructions in timing their attention and in completing the observer instrument.

Observer schedules are set up to obtain throughout the observation day a sampling of all class meetings in the school. The observation schedule is constructed by computer.

As a result of applying Indicators of Quality, three types of score distributions are provided (64, p. 1):

1) All fifty-one items on the instrument.
2) Items which pertain only to the specific Indicators: individualization, interpersonal regard, creativity, and group activity.
3) Items which pertain to the three times segments of focused observation of teacher behavior, pupil behavior, and the interactions between teacher and pupils.

Computer printouts also provided the following information:

N	The Number of classrooms observed from which all scores this grade level band (indicated in parentheses) were computed.
St. Dev.	How much these classroom scores vary from each other. A Standard Deviation of one says that about 67% of the scores are within one point on each side of the mean. A standard deviation of five indicates scores are distributed over an area five points above and below the mean.
MN+	The average number of positive (favorable) signs found in N classrooms (Mean Positive Score).
High+	The highest number of positive signs found in a single classroom.
Low+	The lowest number of positive signs found in a single classroom.
MN-	The average number of negative (unfavorable) signs observed in N classrooms (Mean Negative Score).
High-	The highest number of negative signs observed in a single classroom.
Low-	The lowest number of negative signs observed in a single classroom.
MN D	The difference between the average of positive and negative signs observed in the classrooms of the district (Mean Difference Score).
High D	The highest difference between positive and negative signs reported for a single classroom.
Low D	The lowest difference between positive and negative signs reported for a single classroom.
PCT +	The percentage of classroom observations in which positive signs were found to exceed negative signs, i.e., the percentage of Mean Difference Scores above zero (Percent Positive Difference Score).

Reliability of the Indicators of Quality was computed by utilizing the split-half technique. The difference score was used as a criterion,

and on the basis of mean difference scores a correlation coefficient of .84 was obtained. The reliability of the total instrument was established by means of the Spearman-Brown formula, which provided a reliability coefficient of .91 (64, p. 24).

Leader Behavior Description Questionnaire-XII

The Leader Behavior Description Questionnaire-XII referred to as the LBDQ-XII was developed to obtain descriptions of superiors from group members under their supervision (Appendix M). The instrument, with appropriate modification, can also be utilized by a leader to describe his own behavior (84, p. 12) (Appendix L).

The LBDQ-XII consists of 100 items describing leader behavior. Each item is answered by one of five possible responses: always, often, occasionally, seldom, and never. Each item is scored on a one to five or five to one scale. The score for each subscale is found by summing up the total items for that subscale.

Either five or ten items comprise each subscale. Each subscale represents a pattern of leader behavior. The following twelve dimensions of leader behavior are defined in the LBDQ-XII:

1. Representation - speaks and acts as the representative of the group. (5 items)
2. Demand Reconciliation - reconciles conflicting demands and reduces disorder to system. (5 items)
3. Tolerance of Uncertainty - is able to tolerate uncertainty and postponement without anxiety or upset. (10 items)

4. Persuasiveness - uses persuasion and argument effectively; exhibits strong convictions. (10 items)
5. Initiation of Structure - clearly defines own role, and lets followers know what is expected. (10 items)
6. Tolerance of Freedom - allows followers scope for initiative, decision, and action. (10 items)
7. Role Assumption - actively exercises the leadership role rather than surrendering leadership to others. (10 items)
8. Consideration - regards the comfort, well-being, status, and contributions of followers. (10 items)
9. Production Emphasis - applies pressure for productive output. (10 items)
10. Predictive Accuracy - exhibits foresight and ability to predict outcomes accurately. (5 items)
11. Integration - maintains a closely knit organization; resolves intermember conflicts. (5 items)
12. Superior Orientation - maintains cordial relations with superiors; has influence with them; is striving for higher status. (10 items)

The LBDQ-XII reliability has been measured in use by the military, industry, and education. Resulting reliability coefficients ranged from .54 to .91 for eight different groups of leaders. The procedure for obtaining the reliability of each of the subscales was explained by Stogdill (84, p. 8) as follows:

> The reliability of the subscales was determined by a modified Kuder-Reichardson formula. The modification consists in the fact that each item was correlated with the remainder of the items in its subscale rather than with the subscale score including the item. This procedure yields a conservative estimate of subscale reliability.

Background Data - Principal

A biographical data sheet was provided each principal. Questions to be answered concerned age, sex, formal education, number of professional staff, number of students, number of years in present school, number of years in present position, total number of years of administrative experience, and total number of years in elementary education (Appendix G).

Background Data - Teachers

A biographical data sheet was provided each teacher. Questions to be answered concerned age, sex, formal education, number of years in present position, number of years in present school system, and total years in teaching (Appendix H).

Principal Survey - IGE Implementation

A Principal Survey - IGE Implementation was provided each principal of an IGE school (Appendix I). The questionnaire is designed to determine implementation efforts in IGE schools. The set of questions consists of four items to which the principal responds by checking the most appropriate response.

Questions were framed to compare IGE schools with non-IGE schools in the same school district. Two of the questions are designed to determine if additional teachers or teacher aides were provided for IGE

implementation. Instructional budget and total school budget are the subjects of the remaining two questions.

Methods of Collecting Data

Indicators of Quality

Continued cooperation between Iowa State University and Department of Public Instruction resulted in the application of Indicators of Quality to the four school districts in the Central Iowa League. Dr. Max Morrison, Director of Planning, Research and Evaluation for the Iowa State Department of Public Instruction made it possible for the Central Iowa IGE League to join with a larger application of Indicators of Quality that was planned for a number of school districts in central Iowa. The cooperation and financial support provided by the Department of Public Instruction allowed the use of Indicators of Quality as an instrument to evaluate the IGE program in the four school districts.

The superintendent and director of elementary education from each of the four districts involved in the Central Iowa League were contacted in the fall of 1972 and agreed to cooperate in the Indicators of Quality study. In addition, superintendents agreed to send personnel from their district to be trained as an observer for applying the Indicators of Quality instrument.

An informational meeting was held October 16, 1972 at the Grimes State Office Building in Des Moines, Iowa. The purpose of the meeting was to provide inservice for the people who would coordinate the study in each school district. Dr. Max Morrison, State Department of Public

Instruction hosted the meeting. Dr. Martin N. Olson of Vincent and Olson School Evaluation Service conducted the inservice session on the use of Indicators of Quality. At the completion of this meeting, a list of participating schools and coordinators from each district had been finalized.

On November 6, 7, and 8, 1972, fifteen persons representing the four school districts and Iowa State University were provided observer training sessions by Dr. Martin Olson. Training and observation sessions were held in the Grinnell Community School District.

During the week of November 13-17, 1972 these trained observers conducted over 256 classroom observations in the four participating school districts in both IGE and non-IGE schools. It was estimated that the four school districts contributed over $2,000 to the project by releasing the observers. At the completion of the collection of data in November, fourteen observers had each participated in four days of observation time in the classroom. This amounted to fifty-six man days spent observing classrooms. This amount plus thirty-five days of workshop training totals ninety-one days expended in order to complete the 1972 application of Indicators of Quality to the five IGE schools and the ten non-IGE schools.

Consultant services were provided by Vincent and Olson School Evaluation Services. Partial analysis of the data was completed by the Computation Center at Syracuse University. A total of $4,000 was provided by the State Department of Public Instruction to make the consultant services and computer time available for the IGE study.

In November 1973, a one-day retraining session was held for the same

observers that had conducted the November 1972 observations. This session was conducted by Dr. Martin Olson for the purpose of maintaining a high degree of reliability on the part of the observers.

During the week of December 5, 1973 twelve observers conducted classroom observations in the same elementary schools that were observed during the 1972 application of Indicators of Quality. The amount of man days needed in these observations was slightly less than the ninety-one used in the 1972 application.

Funds for the retraining program, computer time, substitutes for observers, plus transportation and other incidentals totaling an estimated $4,500.00 were provided by the Iowa State University College of Education, the State Department of Public Instruction, and the Ames, Indianola, Marshalltown, and Newton school districts.

LBDQ-XII

In February, 1975, participating school districts received packets containing instruments for the principal and ten teachers. Fifty-five of the packets were personally delivered to the fifteen principals. Each principal received a packet and was also provided with ten teacher packets. A conference was held with each principal to explain the purpose of the instruments, and to recommend a random sampling procedure for the selection of teachers. Teachers participating in the study were selected by the participating principals. The principal's packet contained a letter (Appendix J) providing necessary instructions, Background Data - Principal (Appendix G), and a Leader Behavior Description Questionnaire-Form

XII Self (Appendix L). In addition, IGE principals were provided a Principal Survey - IGE Implementation (Appendix I).

Each principal was provided with ten teacher packets. The teacher packets contained a set of Teacher Instructions (Appendix K), Background Data - Teachers (Appendix H), and Leader Behavior Description Questionnaire-Form XII (Appendix M). Upon completion of the instruments, the teachers sealed them in envelopes provided and returned them to the principal. Provisions had been made in each school district for the collection of all completed instruments.

Participants were advised that all information received would be held in confidence and that no school would be identified by name in this study. Telephone calls were made and letters were sent to encourage completion of the questionnaires. This procedure, coupled with the personal contact with each principal, enabled the researcher to obtain returns from all of the principals and participating schools. The teacher responses to this aspect of the study represented a return of 96 percent.

Treatment of Data

Data were coded and punched onto IBM cards for computer analysis. Statistical treatment of the data was performed using analysis of covariance, regression procedures and t-tests as contained in the Statistical Analysis System (SAS) (2a) and the Statistical Package for the Social Sciences (SPSS) (63a). Indicators of Quality data were investigated for linearity and homocedasticity. Relationships between the variables were found to be linear and comparable variances existed. Consequently, the

needed assumptions were met in order to legitimately use and interpret analysis of covariance and regression procedures. All data met the necessary assumptions for the use of the pooled variance t-tests. T-tests, analysis of covariance, and regression procedures were used to test hypotheses one through eight which dealt with the effects of IGE as measured by Indicators of Quality.

T-tests were used to test the remaining hypotheses for differences in perceptions of IGE and non-IGE principal's leader behavior as measured by the LBDQ-XII.

All hypotheses were tested in the null form and the confidence level for determining significance was established at the .05 level.

CHAPTER IV. FINDINGS

The purpose of this study was to determine if IGE causes changes to take place in those schools which have implemented the program. Do IGE schools differ from non-IGE schools? Are these changes and differences desirable? Additionally, the study attempted to determine if the perceived leadership qualities of IGE principals were different from the perceived leadership qualities of non-IGE principals.

Twelve specific hypotheses were presented in Chapter I. The first eight hypotheses deal with selected components of the IGE delivery system as measured by Indicators of Quality. The remaining hypotheses relate to comparing IGE and non-IGE principal's leadership behavior as perceived by teachers and principals and measured by the LBDQ-XII.

The data were obtained from fifteen elementary schools, fifteen elementary principals, and one hundred forty-four teachers. Three devices were used to collect the data: 1) Indicators of Quality, 2) Leadership Behavior Description Questionnaire-Form XII, and 3) a principal survey regarding IGE implementation during the 1972-73 school year.

Table 1 provides a summary of schools and observations for Indicators of Quality. The five IGE schools had eighty-four observations in 1972 and seventy-nine observations in 1973. The ten non-IGE schools had one hundred seventy-two and one hundred fifty-four observations respectively during the 1972 and 1973 applications of Indicators of Quality. Considering both IGE and non-IGE schools, this accounted for a total of two hundred fifty-six observations in 1972 and two hundred thirty-three

observations in 1973.

Table 1. Summary of schools and observations for Indicators of Quality

	Number of schools	Number of observations[a] 1972	Number of observations[a] 1973
IGE schools	5	84	79
Non-IGE schools	10	172	154
Total		256	233

[a]An observation consists of a fifteen minute time sample for classroom observation and instrument scoring. Observers follow precise instructions in timing their attention and in completing the observer instrument.

Table 2 contains a listing of schools and numbers of observations for Indicators of Quality. Four school districts were involved in the research. Two of the IGE schools involved in the study were in the Ames school district. The Indianola, Marshalltown, and Newton school districts each had one IGE school in the study. There were ten control schools in the study representing each of the four school districts. A similar number of observations were completed in each district for the two applications of Indicators of Quality.

Table 2. Schools and numbers of observations for Indicators of Quality

	School	Number of observations[a] 1972	Number of observations[a] 1973
Ames	A(IGE)	22	25
	B(IGE)	18	15
	C	21	20
	D	18	16
	E	22	13
		101	89
Indianola	A(IGE)	12	13
	B	15	16
	C	19	17
	D	18	16
		62	64
Marshalltown	A(IGE)	14	14
	B	12	12
	C	17	14
		43	40
Newton	A(IGE)	18	12
	B	14	14
	C	16	16
		48	42
		256	233

[a]An observation consists of a fifteen minute time sample for classroom observation and instrument scoring. Observers follow precise instructions in timing their attention and in completing observer instrument.

Profile of the Teachers

To provide a teacher profile, respondents were asked to indicate their age interval, sex, level of professional preparation, number of years in present position, number of years in present school system, and total number of years in teaching. Both IGE and non-IGE teachers

indicated ages ranging from the twenty to twenty-five age interval up to the age interval of sixty-one or over. Twenty-eight of the forty-six (or 60.8 percent of the IGE teachers responding) were in the twenty to forty age range; however, for the ninety-eight non-IGE teachers who responded, forty-seven (or 47.9 percent) were in the same age range. Out of a total of one hundred forty-four teachers responding for both groups, only eleven or 7.6 percent were males. The level of professional preparation ranged from less than a bachelor's degree (one teacher in the IGE group and one teacher in non-IGE) to a master's degree plus fifteen semester hours for both groups of teachers. Table 3 contains the mean and range for the number of years in present position, number of years in present school system, and years in teaching. It can be seen that IGE and non-IGE teachers are comparable in each of the three categories.

Table 3. Profile of teachers

	Number of years in present position		Number of years in present school		Years in teaching	
	IGE	Non-IGE	IGE	Non-IGE	IGE	Non-IGE
Mean	6.4	7.7	7.9	8.6	13.9	14.5
Range	0-24	1-30	0-26	1-30	1-46	1-42

Profile of the Principals

Principals were asked to indicate their age interval, sex, level of professional preparation, number of professional staff members, number of students, years in present school, years in present position, total years of administrative or supervisory experience, and years of experience in elementary education. IGE principals indicated ages ranging from the thirty-six to forty age interval up to the interval of fifty-one to fifty-five years. Ages ranging from the thirty-one to thirty-five year interval up to the fifty-six to sixty year interval were indicated by non-IGE principals. Only two of the fifteen responding principals were female. The level of professional preparation ranged from a master's degree to a master's degree plus thirty semester hours for both groups of principals. IGE principals averaged approximately thirteen years in their present school and the same number of years in their present position, whereas non-IGE principals averaged approximately seven years in their present school and ten years in their present position. Table 4 illustrates the mean and range for the number of professional staff members, number of students, years administrative experience, and years experience in elementary education. There is no substantial difference between IGE and non-IGE principals in regard to the four categories.

Table 4. Profile of principals

	Number of professional staff members		Number of students		Years administrative or supervisory experience		Years of experience elementary education	
	IGE	Non-IGE	IGE	Non-IGE	IGE	Non-IGE	IGE	Non-IGE
Mean	18.2	20.9	350.6	390.0	15.6	17.2	22.0	22.5
Range	13-26	10-30	275-468	208-600	6-27	4-28	8-32	9-32

Description of Data

Mean difference score

A mean difference score is one of the ways Indicators of Quality reports results. The instrument contains fifty-one items that may be scored positive or negative depending upon behavior of teacher and pupils in the classroom. Some observations will be positive and some will be negative, i.e., if behavior being observed fits the description of quality, the results will be positive. A mean difference score is determined by subtracting the negatives from the positives and averaging the results arithmetically for a school or a school system.

Seventeen of the fifty-one polarized items are observable in teacher behavior, seventeen in pupil behavior, and seventeen in the interaction between teacher and pupils. The Indicators of Quality observer instrument has fourteen items that can be scored in relation to individualization, nineteen items in the area of interpersonal regard, fifteen items

in the creativity area, and seventeen items in the area of group activity. This is a total of sixty-five items that can be scored either positively or negatively (or not scored if they are not observed) during an observation. The apparent difference between the sixty-five items accounted for on the observation instrument and the fifty-one items mentioned as a total when considering each of the three behavior areas is due to overlap of items on the instrument. Some items are observable in more than one of the four criterion areas of individualization, interpersonal regard, creativity, or group activity.

It is not expected, however, that any situation observed would have all fifty-one items positively or negatively present. The fifty-one items are meant to cover all kinds of subjects, styles, contingencies that occur in the intricate process of education. Only a small sample of the fifty-one items would be expected to be seen in any single classroom during any fifteen minutes of a typical day.

Indicators of Quality

Table 5 affords a comparison between IGE and non-IGE schools' means and ranges for each of the subscales on the 1972 application of Indicators of Quality. Means and ranges for the 1973 application are shown in Table 6. For easy comparison, Table 7 presents the means for IGE and non-IGE schools on the 1972 and 1973 application along with the means for the national sample. In 1972 the means for the IGE schools ranged from a low of 1.67 on the creativity subscale to a high of 7.26 on the composite subscale. The creativity subscale was again the lowest mean in 1973,

Table 5. Indicators of Quality means and ranges (1972)

Indicator subscales	IGE schools (N=5) Mean	IGE schools (N=5) Range	Non-IGE schools (N=10) Mean	Non-IGE schools (N=10) Range
1. Composite	7.26	4.67-8.83	6.50	3.33-10.13
2. Individualization	2.29	1.07-3.50	1.86	0.73-3.05
3. Interpersonal regard	2.98	2.17-4.27	3.50	1.95-5.50
4. Creativity	1.67	0.47-2.75	0.81	0.00-1.86
5. Group activity	2.42	1.71-3.00	2.37	1.27-3.69
6. Teacher signs	2.81	1.00-3.77	2.70	1.74-4.31
7. Pupil signs	2.27	1.86-2.68	1.68	0.47-2.95
8. Teacher-pupil signs	2.19	1.47-2.83	2.11	0.68-3.24

Table 6. Indicators of Quality means and ranges (1973)

Indicator subscales	IGE schools (N=5) Mean	IGE schools (N=5) Range	Non-IGE schools (N=10) Mean	Non-IGE schools (N=10) Range
1. Composite	7.61	4.92-11.27	5.05	1.69-9.19
2. Individualization	3.10	2.08-4.33	1.83	-0.19-3.75
3. Interpersonal regard	3.04	1.67-3.77	2.41	0.76-4.13
4. Creativity	1.03	0.54-2.13	0.52	-1.06-2.00
5. Group activity	2.99	1.83-5.33	1.70	0.65-3.00
6. Teacher signs	3.12	2.25-3.71	2.16	0.94-4.50
7. Pupil signs	2.22	1.00-3.80	1.24	0.00-3.46
8. Teacher-pupil signs	2.27	1.67-4.07	1.65	0.53-2.88

Table 7. Indicators of Quality means for IGE and non-IGE schools and the norming sample

Indicator subscales	IGE schools Four school dist. 1972 Mean	IGE schools Four school dist. 1973 Mean	Non-IGE schools Four school dist. 1972 Mean	Non-IGE schools Four school dist. 1973 Mean	National sample 218 school dist. Mean
1. Composite	7.26	7.61	6.50	5.05	6.60
2. Individualization	2.29	3.10	1.86	1.83	1.50
3. Interpersonal regard	2.98	3.04	3.50	2.41	4.10
4. Creativity	1.67	1.03	0.81	0.52	1.10
5. Group activity	2.42	2.99	2.37	1.70	2.10
6. Teacher signs	2.81	3.12	2.70	2.16	3.10
7. Pupil signs	2.27	2.22	1.68	1.24	1.60
8. Teacher-pupil signs	2.19	2.27	2.11	1.65	1.90

1.03, and the composite subscale was the highest at 7.61. The 1972 means for the non-IGE schools ranged from a low of 0.81 on the creativity subscale to a high of 6.50 on the composite subscale. The creating subscale was the lowest mean in 1973, dropping to 0.52. The composite subscale mean for IGE schools in 1973 was 5.05.

Subscale means for the 1972 application of Indicators of Quality were higher for beginning IGE schools than for non-IGE schools except for the area of interpersonal regard. (This difference in means suggested the use of analysis of covariance to statistically equate the means and subsequently test for significant differences in the 1973 subscale means.)

All subscale means for the 1973 application were higher for IGE schools than for non-IGE schools. With the exception of the creativity and pupil sign subscales, all subscale means for IGE schools were higher for the 1973 application. However, all subscale means for non-IGE schools were lower for the 1973 application than they were for the 1972 application of Indicators of Quality.

What is a good score? A comparison can be made of the scores in this study with the scores of the original national norming sample. The norm sample consists of 218 school districts across the nation that have had an Indicators of Quality application in the past.

Table 7 compares IGE and non-IGE schools' means with norming sample means for each of the subscales on Indicators of Quality. Comparisons can be made between the schools involved in this study and the 218 school districts representing the Indicators of Quality norm sample. (Note: Iowa usually scores high on standardized tests, etc., when compared to national norms.) The mean norm composite score was 6.60. Means for the composite subscale for IGE schools (7.26 and 7.61) were higher than the norm sample for both the 1972 and 1973 application. However, the non-IGE school composite means in both applications were slightly lower than the mean for the composite for the nation.

All subscale means for individualization in this study were higher (IGE schools were substantially higher) than the subscale mean for individualization in the national sample. However, the subscale mean for interpersonal regard was substantially higher for the norming sample than for the same subscale means on IGE or non-IGE schools in this study. Iowa

schools may not score well in the area of interpersonal relations. This may be due to the "Iowa stubborn" demanding more of their children. Likewise, not having minority children in many of Iowa's schools, it could be teachers have had little human relations training.

In 1972 the subscale mean for creativity in IGE schools was higher than the mean for creativity in the norming sample. The 1973 mean for creativity, however, was slightly lower for IGE schools than for the national sample. Non-IGE schools subscale means for creativity in both the 1972 and 1973 application were lower than the means for the norming sample. These scores raise the question: Have Iowa schools kept pace in teaching for creativity?

Subscale scores for group activity in this study were higher than the norming sample score with the exception of the 1973 subscale mean score for the non-IGE schools. High positive scores are not only desirable for the areas of individualization, interpersonal regard, creativity, and group activity; high positive scores are also desirable in pupil signs, teacher signs, and teacher-pupil signs. Non-IGE schools scored lower in 1973 than did the national sample on the pupil signs subscale. However, IGE schools in both the 1972 and 1973 application had subscale mean scores on pupil signs that were higher than for the norming sample.

Subscale means for teacher signs in most cases were lower in this study than were those for the national sample. In the 1973 application of Indicators of Quality, IGE schools' subscale means for teacher signs were slightly higher than those of the norm group.

Subscale means for teacher-pupil signs were, in most cases, higher

for schools in this study than subscale means for the national sample. The 1973 subscale mean for non-IGE schools was the only subscale score below the national sample mean in the area of teacher-pupil signs.

No statistical analysis was attempted to test for significant differences between the scores secured in this study and those given for the norm sample. This study used single buildings to make comparisons between IGE and non-IGE schools, whereas the norm sample resulted from the application of Indicators of Quality to a total district. Thus no comparison could be tested between different units of measure. However, Martin N. Olson of Vincent and Olson Evaluation Services verified by telephone that scores above the national mean were good scores. In general, Iowa schools compared quite favorably with schools in the national norming sample.

LBDQ-XII

In addition to the Indicators of Quality data, data was collected using the LBDQ-XII. The means for the principals' leader behavior characteristics for this study ranged from a low score of 18 on the demand reconciliation subscale to a high of 41.6 on the consideration subscale. The minimum obtainable score for the subscales of representation, demand reconciliation, predictive accuracy and integration is five and for all other subscales, ten. The maximum attainable score for the subscales of representation, demand reconciliation, predictive accuracy and integration is twenty-five and for all other subscales, fifty.

Table 8 illustrates the comparison between IGE principals' and non-IGE principals' means, standard deviations and range of scores as

Table 8. Leader Behavior Description Questionnaire means, standard deviations, and ranges (principals)

Leader behavior subscales	IGE principals (N=5) Mean	Std. dev.	Range	Non-IGE principals (N=10) Mean	Std. dev.	Range
1. Representation	20.00	2.00	18-22	19.80	2.34	16-23
2. Demand reconciliation	18.40	1.14	17-20	18.00	2.53	15-24
3. Tolerance of uncertainty	33.20	1.92	31-36	35.40	2.17	32-39
4. Persuasiveness	37.60	3.05	33-40	34.70	4.29	30-42
5. Initiating structure	34.00	4.30	28-38	36.50	4.50	28-43
6. Tolerance of freedom	41.40	4.45	38-48	40.60	2.98	35-45
7. Role assumption	37.00	3.31	32-41	37.60	3.16	33-44
8. Consideration	39.00	1.00	38-40	41.60	3.74	37-48
9. Production emphasis	30.20	4.86	25-38	30.10	5.38	18-37
10. Predictive accuracy	18.40	1.81	16-20	19.00	2.10	15-22
11. Integration	19.20	1.64	18-22	19.30	2.26	16-24
12. Superior orientation	34.60	3.64	29-39	35.00	2.16	31-38

perceived by principals for each of the subscales on the LBDQ-XII. Table 9 illustrates the same comparison of principals' leadership qualities as perceived by IGE and non-IGE teachers.

Table 9. Leader Behavior Description Questionnaire means, standard deviations, and ranges (teachers)

Leader behavior subscales	IGE principals (N=5) Mean	Std. dev.	Range	Non-IGE principals (N=10) Mean	Std. dev.	Range
1. Representation	20.28	1.33	15-25	19.67	1.19	12-25
2. Demand reconciliation	18.94	1.88	9-24	19.15	2.02	8-25
3. Tolerance of uncertainty	35.34	1.68	18-42	36.18	3.69	22-46
4. Persuasiveness	38.24	3.30	19-50	35.85	3.08	20-47
5. Initiating structure	37.95	2.23	27-45	37.85	2.87	24-47
6. Tolerance of freedom	41.08	1.65	29-48	40.21	2.87	27-50
7. Role assumption	38.52	2.17	21-48	37.90	3.26	22-49
8. Consideration	40.72	1.39	25-48	38.81	3.35	23-49
9. Production emphasis	31.77	3.15	21-44	30.30	2.55	20-43
10. Predictive accuracy	18.72	1.29	10-25	18.46	1.63	11-24
11. Integration	18.63	1.17	9-25	18.14	1.66	8-24
12. Superior orientation	38.55	2.95	29-49	36.11	2.13	27-46

No significant differences were found between the perceived leadership qualities of IGE and non-IGE principals. Likewise, no significant differences were found between teachers' and principals' perceptions of principals' leader behavior. The remaining paragraphs in this section provide additional information regarding the perceived leadership

qualities of IGE and non-IGE principals in this study.

The range of scores which describe the leader behavior of the principal was much wider among teachers than among principals. Nevertheless, the mean scores given by the principals and the teachers closely parallel one another. Both IGE and non-IGE teachers perceived that principals displayed the leader behavior characteristic of maintaining a closely knit organization and resolving intermember conflicts (subscale 11) to a lesser extent than the principals attributed these characteristics to themselves. In addition, teachers, more than principals, perceived that (subscale 12) principals maintained cordial relationships with superiors and were striving for higher status. Teachers also considered the principal's role to be more clearly defined than did the principals (subscale 5).

IGE teachers considered their principals' leader behavior to be higher than did non-IGE teachers in ten of the twelve subscales of the LBDQ-XII. Demand reconciliation and tolerance of uncertainty were the only subscales in which non-IGE teachers perceived their principals to be higher than did IGE teachers.

Non-IGE principals perceived their leadership behavior in seven subscales to be higher than did IGE principals. IGE principals saw themselves as using persuasion and argument effectively (subscale 4) to a greater extent than did non-IGE principals.

The LBDQ-XII has been utilized by Stogdill (84) to study leader behavior in the military, industry, education, and government. In nine different leader behavior studies comparisons were made of means and

standard deviations. Comparing this study with Stogdill's studies, the means of the principals' perceived leader behavior characteristics, are below the means of the studies completed by Stogdill on five subscales--demand reconciliation, persuasiveness, role assumption, production emphasis, and superior orientation. On the subscales of representation, tolerance of uncertainty, initiating structure, consideration, predictive accuracy and integration, the principals' mean scores parallel Stogdill's studies. The principals' mean score for tolerance of freedom was higher than those means reported by Stogdill. This finding is similar to that of Gress (27) who reported the subscale mean score for the tolerance of freedom as being the only subscale score in his study of fifty-five Iowa secondary principals that stood above Stogdill's studies.

Hypotheses Tested

Eight of the major hypotheses which guided this study were developed to allow testing for differences between IGE and non-IGE schools. These hypotheses were intended to aid in determining whether IGE schools were superior to conventional schools when measured by Indicators of Quality.

Are the leadership qualities of IGE principals different from the leadership qualities of non-IGE principals? Four additional hypotheses were tested which related to teachers' and principals' perceptions of leader behavior as measured by the twelve dimensions of the LBDQ-XII.

Hypotheses Concerning Indicators of Quality

Hypotheses 1-8 were developed to compare the Indicators of Quality measures of individualization, creativity, interpersonal regard, group activity, composite score, pupil signs, teacher signs, and teacher-pupil signs in IGE and non-IGE organized schools.

Hypothesis 1: There will be no significant difference in the composite score (all 51 items) as measured by Indicators of Quality, between IGE schools and non-IGE schools.

Hypothesis 2: There will be no significant difference in the quality (amount) of individualization, as measured by Indicators of Quality, between IGE schools and non-IGE schools.

Hypothesis 3: There will be no significant difference in the quality (amount) of interpersonal regard, as measured by Indicators of Quality, between IGE schools and non-IGE schools.

Hypothesis 4: There will be no significant difference in the quality (amount) of creativity, as measured by Indicators of Quality, between IGE schools and non-IGE schools.

Hypothesis 5: There will be no significant difference in the quality (amount) of group activity, as measured by Indicators of Quality, between IGE schools and non-IGE schools.

Hypothesis 6: There will be no significant difference in the quality (amount) of positive teacher behavior items, as measured by Indicators of Quality, between IGE schools and non-IGE schools.

Hypothesis 7: There will be no significant difference in the quality (amount) of positive pupil behavior items, as measured by Indicators of Quality, between IGE schools and non-IGE schools.

Hypothesis 8: There will be no significant difference in the quality (amount) of teacher-pupil interaction, as measured by Indicators of Quality, between IGE schools and non-IGE schools.

Initially, pooled variance t-tests were used to test for significant differences between means when comparing IGE and non-IGE subscale scores for the 1972 and 1973 application of Indicators of Quality. In addition, analysis of covariance procedures were used. This was done in order to

statistically equate the 1972 IGE and non-IGE schools' subscale means and subsequently test for significant differences in the 1973 subscale means. Finally, school type (IGE or non-IGE) over time was investigated with regression procedures to determine if there were differences in the amount of change over time.

T-tests

Pooled variance t-tests were computed to test for mean differences in IGE and non-IGE schools' subscale scores for the 1972 application of Indicators of Quality. Examination of the results revealed no significant differences.[1] (Note: All nonsignificant results in this study have been tabled in the Appendix.)

The significant means, standard deviations and the t-values for IGE and non-IGE school scores on the 1973 application of Indicators of Quality are presented in Table 10.[2]

Table 10. Comparison of means and standard deviations of the 1973 application of Indicators of Quality for IGE and non-IGE schools

Indicator subscales	IGE schools (N=5) Mean	S.D.	Non-IGE schools (N=10) Mean	S.D.	t-values
Individualization	3.10	0.80	1.83	0.99	2.41*
Group activity	2.99	1.36	1.70	0.74	2.40*

*($p < .05$).

[1]T-values for nonsignificant results have been placed in Appendix N.1.

[2]T-values for nonsignificant results have been placed in Appendix N.2.

The data in Table 10 yield sufficient evidence to reject hypotheses 2 and 5 regarding individualization and group activity. Examination of the results of the pooled variance t-tests for the hypotheses dealing with composite score, interpersonal regard, creativity, teacher behavior items, pupil behavior items, and teacher-pupil interaction revealed no significant differences; consequently, they could not be rejected.

Analysis of covariance

Hypotheses 1-8 were also tested using analysis of covariance techniques. Examination of all subscale means for the 1972 application of Indicators of Quality revealed that schools initiating IGE had slightly higher subscale mean scores (with the exception of interpersonal regard) than did non-IGE schools. In addition, all subscale mean scores for non-IGE schools were slightly lower for the 1973 application of Indicators of Quality than for the 1972 application. Consequently, analysis of covariance procedures were used to statistically equate the 1972 subscale mean scores for the two groups being studied. This was done because there was no method of adjusting the two groups when using the t-test analysis.

Results of the analysis of covariance techniques revealed no significant differences.[3] Therefore, hypotheses 1-8 could not be rejected based on covariance procedures.

Regression procedures

To further investigate, school type (IGE or non-IGE) over time was studied. The models $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$ and $Y = \beta_0 + \beta_1 X_1 + \beta_4 X_4$ (where $\beta_4 X_4$ is the linear composite of $\beta_2 X_2 + \beta_3 X_3$) were constructed.

[3]Nonsignificant results have been placed in Appendix N.3.

An X matrix for each subscale of Indicators of Quality was developed for regression analysis.[4] Using a regression procedure, the slopes for the IGE and non-IGE school data on each subscale were compared for amount of change over time. The following hypotheses were tested for each of the subscales:

H_0: slope for IGE variables = slope for non-IGE variables

H_A: slope for IGE variable $\neq$ slope for non-IGE variables

The equation from Kerlinger and Pedhazur (47a) utilized to test the differences between slopes is as follows:

$$F = \frac{(R^2_{y\cdot123} - R^2_{y\cdot14}) / (3 - 2)}{(1 - R^2_{y\cdot123}) / (N - k - 1)} \qquad \text{(Formula I)}$$

when F = F value

$R^2_{y\cdot123}$ = proportion of variance accounted for in the model $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3$ (Model I)

$R^2_{y\cdot14}$ = proportion of variance accounted for in the model $Y = \beta_0 + \beta_1X_1 + \beta_4X_4$ (Model II)

$1 - R^2_{y\cdot123}$ = proportion of variance not accounted for in Model I

N = total number of observations

k = number of groups

Results of the regression procedures and subsequent F tests revealed no significant differences.[5] Therefore, hypotheses 1-8 could not be rejected based on the analysis to determine significant differences in slope

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[4] An example of one of the matrices (composite subscale) has been placed in Appendix O.

[5] Nonsignificant results have been placed in Appendix N.4.

values. There was no significant difference in the amount of change over time (as measured by slope value) between IGE and non-IGE schools for any of the subscales of Indicators of Quality.

The scores (points) for individual IGE and non-IGE schools over time were plotted.[6] In the area of individualization there was a wide spread in the individual school scores obtained during the second application of Indicators of Quality. There was a difference of 4.52 in the means for the highest scoring IGE school and in the lowest scoring non-IGE school (Appendix P--Figure P.2). Likewise, there was a wide spread in the scores obtained for creativity and group activity. A difference of 3.19 and 4.45 in the means for the highest scoring IGE school and the lowest scoring non-IGE school was obtained for the subscales of creativity and group activity respectively (Appendix P--Figure P.4 and Figure P.5). In the areas of pupil signs and teacher-pupil signs differences in means for the highest scoring IGE school and lowest scoring non-IGE school were 3.80 and 3.54 for the two subscales (Appendix P--Figure P.7 and Figure P.8).

Hypotheses Concerning LBDQ-XII

Do the leadership qualities of IGE principals differ from those of non-IGE principals? Does it take a certain type of principal to "lead" an IGE school?

The subsequent hypotheses were developed in an attempt to determine how principals in this study compared to each other in their leadership behavior as perceived by the teachers and principals and measured by the

[6] Plots have been placed in Appendix P.

LBDQ-XII

Hypotheses 9 and 10 were made to compare principal's leadership behavior as perceived by IGE and non-IGE teachers and as perceived by IGE and non-IGE principals.

> Hypothesis 9: There will be no significant difference in IGE and non-IGE teachers' perceptions of their principal's leader behavior as measured by the twelve dimensions of the Leadership Behavior Description Questionnaire-Form XII.
>
> Hypothesis 10: There will be no significant difference in IGE and non-IGE principals' perceptions of their leader behavior as measured by the twelve dimensions of the Leadership Behavior Description Questionnaire-Form XII Self.

The comparison of principal's leadership behavior as perceived by IGE principals and IGE teachers and as perceived by non-IGE principals and non-IGE teachers was made with hypotheses 11 and 12.

> Hypothesis 11: There will be no significant difference in IGE principals' perception of their leader behavior and IGE teachers' perception of their principal's leader behavior as measured by the twelve dimensions of the Leadership Behavior Description Questionnaire-Form XII.
>
> Hypothesis 12: There will be no significant differences in non-IGE principals' perception of their leader behavior and non-IGE teachers' perception of their principal's leader behavior as measured by the twelve dimensions of the Leadership Behavior Description Questionnaire-Form XII.

Pooled variance t-tests were computed to test for mean differences in each hypothesis. Examination of the results revealed no significant differences.[7] Thus none of the hypotheses could be rejected. Consequently, no significant differences were found in the leadership qualities of IGE principals as compared to non-IGE principals. This was true

[7] T-values for nonsignificant results have been placed in Appendix N.5, N.6, N.7, and N.8.

for both the principals' and teachers' perception of principal leader behavior. In addition, there were no significant differences in the way teachers in either type of school perceived the leadership qualities of their principals as compared to the principals' own perceived leadership qualities.

Principal Survey - IGE Implementation

A survey was administered to determine if IGE principals received additional resources for IGE implementation during the 1972-73 school year. Resources were defined as teachers, teacher aides and budget.

Principals were asked to compare their teacher allotments with the allotments of non-IGE schools in their districts. All five principals responded that their school was given no special staffing consideration because it was IGE.

Three of the five IGE principals indicated that they were given no special teacher aide allotment to support IGE implementation. The remaining two principals responded that they were allotted no more than two additional aides.

When comparing instructional budgets with those of other schools in the district, four IGE principals reported they received no special instructional budget to support IGE implementation. One principal indicated that a budget increase of no more than five percent was received for implementation purposes.

Principals selected statements reflecting how much more their total school budgets were as a direct result of implementing the IGE program.

Three IGE principals indicated that their budgets were no larger than the budgets of non-IGE schools. One principal reported a budget of one to two percent larger than the budgets of non-IGE schools. A five to six percent larger budget than the budgets of non-IGE schools was indicated by one principal.

CHAPTER V. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Summary

This investigation sought to identify differences and changes in individualization, interpersonal regard, creativity and group activity effected by implementing IGE in five elementary schools. Ten elementary schools in the same four central Iowa school districts were used as a control.

It was also the problem of this study to determine how IGE and non-IGE principals compared to each other in their leadership behavior.

The research used Indicators of Quality (92), to assess classroom processes on four criteria: individualization, interpersonal regard, creativity, and group activity. The LBDQ-XII (84) was used to assess perceived leadership qualities of principals.

These two instruments were administered in fifteen elementary schools. Fifteen elementary principals and one hundred forty-four teachers were involved in the study. Indicators of Quality applications were made in November, 1972, and again in December of 1973. The LBDQ-XII was administered in February, 1975.

A survey of principals concerning IGE implementation during the 1972-73 school year was administered in February, 1975. The survey dealt with teacher and teacher aide allotments and budget comparisons with non-IGE schools in the district.

Indicators of Quality and LBDQ-XII data were placed on key-punched

cards. Statistical treatment of all data was performed by the IBM 360 computer at the Iowa State University Computation Center.

T-tests were used to test for differences between IGE and non-IGE subscale means for the 1972 and 1973 application of "Indicators". Results revealed no significant differences for the 1972 application, prior to implementation of IGE. However, results of the t-test analysis on the 1973 data led to the rejection of the hypotheses dealing with individualization and group activity ($P < .05$). No differences were found on any of the remaining subscales.

Examination of subscale means for the 1972 application of "Indicators" revealed that schools initiating IGE had, with the exception of interpersonal regard, slightly higher subscale mean scores than did non-IGE schools. In addition, subscale mean scores for non-IGE schools were slightly lower for the 1973 application of "Indicators" than for the 1972 application. Consequently, analysis of covariance procedures were used to statistically equate the 1972 subscale mean scores for the two groups and test for significant differences in the 1973 means. Results of the analysis of covariance revealed no significant differences in any of the subscales. These findings indicated no differences between IGE and non-IGE schools.

To further investigate, school type (IGE or non-IGE) over time was studied with regression procedures to determine if there were differences in the amount of change over time. The scores (points) for IGE and non-IGE schools over time were also plotted.

Regression procedures and F tests revealed no significant differences,

indicating no difference in the amount of change over time (as measured by slope value) between IGE and non-IGE schools for any of the subscales of "Indicators".

Plots revealed a wide spread in the individual school scores obtained for individualization during the second application of "Indicators" (Appendix P--Figure P.5). One IGE school scores very high and one non-IGE school scored quite low on the subscales for individualization and group activity.

Results of pooled variance t-tests on the twelve subscales of the LBDQ-XII revealed no significant differences. Consequently, no differences were found in the leadership qualities of IGE principals as compared to non-IGE principals. This was true for both principals' and teachers' perception of principal leader behavior. Also, no differences were found in the way teachers in either type of school perceived the leadership qualities of their principals as compared to the principals' own perceived leadership qualities.

The results of administering the Principal Survey - IGE Implementation indicated that IGE principals had comparable numbers of teacher aides and teachers and a comparable budget as compared to non-IGE schools.

Conclusions

Within the limitations presented and based upon the findings of this investigation, the following conclusions seem justified:

1) Using the t-test analysis, there was a significant difference in favor of IGE schools between IGE and non-IGE

schools on the Indicators of Quality subscale scores of individualization and group activity ($p < .05$). However, the importance of this finding is diminished by the subsequent analysis of covariance where no significant differences were found between IGE and non-IGE schools in any of the eight subscales measured by Indicators of Quality. Analysis of covariance statistically equated initial means and subsequently tests for differences in posttest means.

2) There was no significant difference in the IGE and non-IGE schools' amount of change over a one-year time period for any of the subscales of Indicators of Quality.

3) A wide spread in individual school scores obtained for the subscale score on individualization was noted when plots were made of the second application of Indicators of Quality (Appendix P--Figure P.2). One IGE school scored quite high and one non-IGE school scored very low. Positive key concepts of individualization were observed in the high scoring IGE school, but were absent in the low scoring non-IGE school.

4) The scores obtained by the high scoring IGE school and the low scoring non-IGE school, on the second application of Indicators of Quality for the subscale of group activity, exhibited a wide spread when plotted (Appendix P--Figure P.5). More key concepts of group activity were being observed in the IGE school than in the non-IGE school.

5) With the exception of the creativity and pupil sign subscales,

all subscale means for IGE schools were higher for the 1973 application of Indicators of Quality than for the 1972 application.

6) All subscale means for non-IGE schools were lower for the 1973 application of Indicators of Quality than for the 1972 application.

7) Both IGE and non-IGE schools evidenced more individualization than schools in the Indicators of Quality national sample. The mean for IGE schools was more than twice that of schools in the national sample.

8) IGE and non-IGE schools exhibited less interpersonal regard than schools in the Indicators of Quality national sample.

9) The 1973 Indicators of Quality subscale means for composite, group activity, pupil signs and teacher-pupil signs are somewhat higher for IGE schools than for the means of the 218 districts making up the national sample.

10) IGE and non-IGE principals' leadership behavior was perceived to be no different by teachers working in either type of school.

11) IGE and non-IGE principals' leader behavior was no different as perceived by principals.

12) IGE and non-IGE teachers perceived leadership qualities of their principals was no different than the principals' own perceived leadership qualities.

13) IGE and non-IGE principals evidenced more ability to allow followers scope for initiative, decision, and action (tolerance of

freedom) than did leaders in Stogdill's studies of the military, industry, and government.

14) Generally speaking, IGE schools did not receive any personnel or budget advantage to aid in the implementation of IGE.

Discussion

The thirty-five outcomes of IGE are directed toward achieving more individualization, interpersonal regard, creativity, and group activity in schools. Why were the hypothesized effects of IGE not obtained? One plausible explanation is that the time duration of the treatment was too short. Another reason no differences were found might be due to sampling error. Possibly the IGE model was incorrectly applied. Maybe IGE does not produce the outcomes seemingly promised in these four criterion areas? Could it be that not enough effort and/or resources were directed toward achievement of the thirty-five outcomes? Was the lack of IGE in some curriculum areas reflected in the "Indicators" applications?

Is the IGE principal no different than other principal peers? If there is a difference in principal leadership ability needed to facilitate IGE, why was it not found in this study? Was the sample of principals too small? Were the principals in the control schools just as "innovative" as IGE principals? Is it possible that the LBDQ-XII does not measure those behaviors needed by an innovative principal?

Results pertinent to Indicators of Quality

The t-test analysis on Indicators of Quality data secured after one year of IGE implementation initially indicated there were changes taking

place in IGE schools. The areas of individualization and group activity were found to be significantly different ($p < .05$) in favor of IGE schools. What does this mean? This finding indicates there was a large number of positive signs observed in IGE schools when considering the criterion areas of individualization and group activity; i.e., processes critical to school quality in these two areas (see Appendices C and F).

The score on individualization achieved by IGE schools during the 1973 application of "Indicators" is substantially higher than the mean reported for the 218 school districts in the national sample. This finding supports the contention that IGE schools are evidencing behaviors indicating an effort to individualize instruction.

IGE schools on the "Indicators" subscale mean for group activity scored higher than the national mean for the norming sample. This supports the contention that IGE schools are showing evidence that they are doing something positive toward establishing good group activity in their programs.

The analysis of covariance and regression procedures used to compare IGE and non-IGE schools suggested that no significant differences had been caused by the implementation of IGE. Considering the results of analysis of covariance and regression procedures, why were the t-test results for the 1973 application of the Indicators of Quality subscale scores for individualization and group activity found to be significant in favor of IGE schools?

This question was answered by the plots showing school scores (Appendix P--Figures P.2 and P.5). One IGE school scored quite high and one

non-IGE school scored quite low in the areas of individualization and group activity. This large difference in the means caused the significant t-values to result for the t-test analysis.

Can we attribute the significant differences found between IGE and non-IGE schools in the Indicators of Quality subscale areas of individualization and group activity to the IGE change process? Results of the analysis of covariance and regression procedures would suggest the answer to this question to be no. The significant differences found by the t-test were caused by "outlyers"; i.e., individual school scores for one IGE school were high and for one non-IGE school were low.

Nevertheless, with the exception of the "Indicators" subscale means for interpersonal regard and teacher signs, all other subscales for the 1973 application were higher than for the 1972 application. This indicates movement toward desired results in the IGE schools. Possibly it is too early to determine differences when schools have only been involved in a program of change for one year. Likewise, there is no way of knowing how much effort was expended by these schools in attempting to implement and maintain IGE. Furthermore, no attempt was made to determine or control the extent to which the IGE concepts were implemented as taught in the inservice program. At the time of this study only twenty-five to fifty percent of the school day was considered to be involved in IGE. Some of the Indicators of Quality observations would have been outside of the curriculum areas in which IGE was being implemented.

A nagging question that needs to be considered: Why were scores

for the non-IGE schools lower for the 1973 application of "Indicators" than for the 1972 application? Are these schools as a group not stressing the areas measured? Will the scores continue to decline slightly each year until the score becomes negative? If this group of schools (and their respective districts) philosophically support the criteria that "Indicators" encourages, they may want to evaluate their programs and make those necessary changes to bring about improvement.

IGE schools received substantially higher scores on individualization than did the Indicators of Quality national norming sample of 218 school districts. The mean for individualization in IGE schools is more than twice that given for schools in the national sample. How desirable is this? The norm sample was developed with scores from schools that have had an "Indicators" application in the past. There are 218 school districts in cities like Cincinnati, Ohio, and suburbs like Hampton, Virginia, with some scattered isolated school districts like Casper, Wyoming, or Pacific Grove, California which make up the norming sample. The mean for this norming sample now stands at 1.50. In these terms a mean of 3.10 for the Iowa IGE schools in this study looks pretty good. For that matter the non-IGE score of 1.83 on the second application of Indicators of Quality compares quite favorably with the mean for the national sample.

Looking at it from another viewpoint, it could be that Iowa scores are really not high, but that districts of the national sample have not solved the problems of providing individualization.

Both IGE and non-IGE schools seem to be least successful with interpersonal regard. Iowa scores are substantially lower than the mean for

the norm sample scores. The only Indicators of Quality subscale criteria mean that was lower for the 1972 application than for the 1973 application to IGE schools was interpersonal relations. Is it possible that schools stressing a highly individualized setting with recordings, earphones, TV screens, and punch cards are individualized but not particularly humane? Do teachers in Iowa schools lack training in interpersonal relations? Part of being educated is to have a human outlook. Schools need to be aware of the feelings of warmth, understanding and acceptance essential to students' psychological growth and personal adjustment.

Why weren't IGE schools given additional funding for personnel and budget? The obvious answer is that limited budgets do not allow for "seed money" to initiate educational change which has not been tested and proved. Boards of education may also be reluctant to give extra money to selected schools, thus encouraging an air of favoritism for those schools chosen. Likewise, schools not selected for IGE and additional funding may develop negative feelings toward schools who are seemingly "on the inside track". Moreover, parents' and taxpayers' questions are easier to answer if funds are spent equally in all schools across the district, regardless of whether the program is innovative or not. A "back to the basics" movement may even presently deter funds away from the so-called innovative school, or at least make funds more difficult to justify for schools seemingly "not basic".

Results pertinent to LBDQ-XII

The leader behavior of an elementary school principal is one determinant of the ability of a school to attain its stated goals. Consequently,

the leader behavior of IGE principals was of interest to this study. Is the principal in an IGE school different than other principals? Results of this study utilizing a small number of principals, five in IGE schools and ten in non-IGE schools, would suggest that there are no differences in leadership qualities. Teachers in both types of schools perceived the leadership qualities of their principals to be the same. Furthermore, teachers in both types of schools perceived the leadership qualities of their principals in the same manner in which principals perceived their own leadership qualities.

If the IGE principals' leadership behaviors are not different than other principals, why did they choose to go into IGE? Were they encouraged strongly by their Boards of Education? Are these cautious principals who need the framework for innovation which IGE provides? Or, were the principals in the control schools just as forward-looking as the IGE principals?

Even though differences were not significant, it is interesting to consider the differences perceived by teachers and principals in one of the subscales of the LBDQ-XII. Both IGE and non-IGE teachers considered the principal's role to be more clearly defined than did the principals. The advent of negotiations could be one possible explanation to this dilemma.

Principals' perceptions of their changing power potential and their relationships with staff members could be contributing to concerns about the principal's role. Elementary principals are usually former teachers. Are their attitudes for that reason closely allied with teachers? Should

they fulfill the expectations of chief school officers and school boards, thus supporting only faculty goals that coincide with those of management?

Changing relationships with superiors and subordinates are only one aspect of changes principals feel in their present role. Society itself is redefining the role, expecting the position to fulfill societies' demands. Even in the courts, where in the past principals could take comfort in the fact that school authorities were generally upheld, such comfort is no longer assured. If, in fact, teachers, superintendents and boards of education held a set of expectations for principals, principals will now find it more difficult to identify those changing expectations for their role.

Why would the mean score for the LBDQ-XII subscale of tolerance of freedom (albeit an important leadership quality for a principal to attain) be the only subscale mean that stood above Stogdill's studies of leaders in the military, industry, and government? First, it probably should not be considered good leadership to score high on each of the twelve dimensions. Some of the subscales tend to lean toward an autocratic style of leadership. Other subscales lean toward a more personal or democratic leadership style.

Is one type of leader behavior better than another? The response to this question would vary from teacher to teacher, from building to building and from problem to problem. A key to good principal and staff relationships would be to attempt the development of congruence between the "real" leadership behaviors exhibited to the principal and the "ideal"

behaviors teachers would like the principal to possess.

Are there principal leadership qualities which would facilitate the IGE program? It would appear that certain leadership qualities would be desired based on IGE needs for more teacher involvement in instructional decisions and positive interpersonal relationships on the part of team members. Qualities such as demand reconciliation (being able to reconcile conflicting demands) and tolerance of uncertainty (being able to tolerate uncertainty without anxiety or upset) would be important possessions of a principal involved in the uncertainties of the change process. Tolerance of freedom and consideration would also seem to be important leadership qualities for an IGE principal. These behaviors would indicate the principal had the ability to allow for staff decisions while considering the comfort, well-being and status of teachers.

Predictive accuracy as a quality exhibited by a principal would indicate foresight and the ability to predict outcomes. The integration leader behavior deals with resolving intermember conflicts. Actually, each of these leadership behaviors would be desirable qualities for any principal to possess.

Limitations

1. Schools involved in this study were not randomly selected but were chosen on the basis of their membership in the Central Iowa League of IGE schools.
2. The study was limited to only four Iowa public school districts.
3. Implementation of IGE had involved students only 25 to 50 percent of

their school day during the first year of the program.

4. IGE had been implemented in the experimental schools for a period of only one year.
5. This study made no attempt to determine the amount of "IGEness" in the schools prior to implementing IGE. Likewise, no monitoring was attempted to determine the amount of effort and/or degree to which IGE was being implemented.
6. It was assumed that each of the control schools within each school district was comparable to the IGE schools except for the absence of IGE; moreover, the control schools were intended to be reasonably representative samples of elementary schools in the district. Except for matching on the basis of advice from district administrators, differences among schools were not carefully regulated.
7. Noncognitive gains such as "interpersonal regard" are difficult to measure and in this case the use of Indicators of Quality also made it expensive.
8. The LBDQ-XII was used by teachers and principals to indicate their perceptions of the leader behavior of the school principal. When people rate their own effectiveness, as did principals in this study, it should be kept in mind some individuals may have an inflated view of their effectiveness as a leader while others may respond more modestly.
9. Conclusions in regard to the leadership area of the study were based on teachers' and principals' descriptions of only fifteen principals. Use of the LBDQ-XII was limited to elementary school principals and

teachers in IGE and non-IGE schools; therefore, it cannot be generalized to principals at the secondary level.

10. The application of the LBDQ-XII instrument was made ex post facto during the 1974-75 school year, two years after IGE had been implemented in the schools involved.

Recommendations

From the review of literature, the analysis of data, and the foregoing conclusions and discussion, recommendations for practice and additional research emerged.

Recommendations for practice

The data presented in this study would suggest continued evaluation of IGE on noncognitive variables such as creativity. Achievment of individualization at the expense of creativity might be too great a price to pay for improvement in only the cognitive areas.

School districts involved in this study could use Indicators of Quality data as baseline data. Some evaluative perspectives could be gained if a district used this information along with other data to determine where a district is and where it wants to go. Viewed as a criterion of excellence, Indicators of Quality could provide a benchmark to which such evaluation could be related.

Methods of evaluation which complement standardized testing and subjective judgment need to be explored by school systems. School districts may want to consider the value of a process measure such as Indicators of

Quality in a total evaluation scheme. Using Indicators of Quality as a device for formative evaluation would allow more immediate feedback on school programs designed to initiate and maintain areas of individualization, interpersonal regard, creativity, and group activity.

Schools implementing new programs and procedures need to remain cognizant of what's happening to both student and staff interpersonal relationships. Efforts directed toward individualizing instruction need to be evaluated for their total effect on students. Staff training in human relations and interpersonal group approaches may need to be initiated as an integral part of the IGE change program.

Administrators and teachers need to constantly monitor efforts toward implementing the IGE process. Checkpoints need to be provided in the implementation phase and beyond in order to maintain the effort and dedication needed to change a school program.

Principals need to be aware of their teachers' perception of their leader behaviors. Discussion should take place between principal and teacher regarding those behaviors that are creating dissatisfaction. The exposure and discussion of a behavior, even if an alteration in the behavior is not possible, will often prevent undesirable conflicts.

Principals could use the LBDQ-XII Self as a self-evaluation instrument. By completing the instrument and scoring it, one could gain a valuable leadership self-profile. Changes should be initiated for those areas of leadership which are of concern.

Superintendents or directors of elementary education may want to consider the use of the LBDQ-XII with teachers to help principals improve

their leadership skills. In cooperation with the principal, teachers could be asked to complete the instrument considering the principal's "actual" perceived behavior. Teachers could also complete the instrument considering "ideal" behaviors they would appreciate in their principal. Subsequent discussions with the principal's immediate supervisor regarding the results of the two instruments should be of value in helping the principal improve or adapt his leader behavior.

Leaders of districts attempting to implement such a sweeping and profound total systems change as IGE should give careful consideration to the need for increased financing to encourage and sustain the change. It appears from examination of the findings of this investigation that it takes a long time and much effort to thoroughly establish and "institutionalize" such a pervasive innovation.

Recommendations for research

The major portion of this study dealt with the effectiveness of IGE schools as measured by Indicators of Quality. Schools utilized in this study had implemented IGE for only one year. It is recommended that a similar study be conducted with schools that have had IGE implemented for at least two or three years. Future researchers could also replicate the present study including a broader sample of IGE and non-IGE schools.

This study utilized the Indicators of Quality mean difference scores (differences between the average of positive and negative signs in the classroom) of the total school for analysis. It may be interesting to compare the mean difference scores of schools by levels. Would results

be similar to this study if mean difference scores were analyzed on a primary (grades K-3) and intermediate (grades 4-6) level basis. Is IGE more effective at the primary level or intermediate level?

A similar study should be replicated with the addition of a method to determine the amount of "IGEness" in schools. The same method might also aid in monitoring and determining if schools were in fact working towards the implementation and improvement of the IGE process, a factor of considerable importance to the continued effectiveness of any innovation. Knowing the amount of "IGEness" in a school would enable researchers to more confidently draw conclusions based on assumptions that IGE was what made the school more effective.

One of the limitations of the LBDQ-XII research in this study was the small number of principals involved. It is recommended that a leader behavior study be conducted that would include a much larger number of IGE principals. Possibly all IGE principals in Iowa or the midwest could be included in the sample.

It is recommended that a leader behavior study be conducted that would compare the leadership qualities of IGE team leaders with other teachers in IGE and non-IGE schools. It may also be interesting to compare the leadership qualities of IGE team leaders to the leadership qualities of their principals.

Two subscales in the LBDQ, consideration and structure, have been used extensively in research and identified as being essential to the behavior of leaders. Experience indicated there may be other factors which determine a leader's behavior. As a result, the LBDQ-XII with

twelve subscales of leader behavior was developed. It is recommended that a leader behavior study be conducted utilizing both the LBDQ and the LBDQ-XII to determine if the measurements of consideration and initiating structure are the same for each instrument.

Do the perceived leadership qualities of a principal change after a school has implemented IGE? A study conducted utilizing the LBDQ-XII prior to and a year after implementation of IGE may indicate some change in the perceived role of the principal. Does the teacher's added involvement in decision-making as encouraged by the IGE model change the perceived leadership qualities of the principal?

The procedures of this study could be utilized to compare IGE principals involved in mandatory collective bargaining with IGE principals who are not involved in mandatory negotiating requirements. Would teachers perceive IGE principals as being similar in either situation? Would teachers perceive IGE principals any differently after mandatory negotiating requirements are implemented?

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ACKNOWLEDGMENTS

The writer wishes to express appreciation and gratitude to Dr. Richard P. Manatt for his time, support, and assistance which aided greatly in the completion of this study.

Appreciation is also extended to the Ames, Indianola, Marshalltown and Newton school districts and to their students, teachers, and administrators who provided the necessary data for this research.

To my secretary, Sharon Otto, appreciation is given for typing, proofreading and other duties necessary to the completion of this project.

Special appreciation is offered to my wife, Marilyn, and children, Monica, Todd, and Matthew. Not only did they put up with the writing of the dissertation, they also made sacrifices during the years of graduate study. Without their encouragement and support, the completion of this study would not have been possible.

Finally, a note of thanks to friends, coworkers and relatives who encouraged completion of the doctoral program.

APPENDIX A

Major Components of IGE

1. An organization for instruction and a related administrative organization at the building and central office level, collectively called the MUS-E. This organizational/administrative arrangement is designed to provide for educational and instructional decision making at appropriate levels; open communication among students, teachers, and administrators; and accountability by educational personnel at various levels.

2. A model of instructional programming for the individual student, and related guidance procedures, designed to provide for differences among students in their rates and styles of learning, level of motivation, and other characteristics and also to take into account all the educational objectives of the school.

3. Curriculum materials, related statements of instructional objectives, and criterion-referenced tests which can be adopted or adapted by the staff of individual schools to suit the characteristics of the students attending the particular school.

4. A model for developing measurement tools and evaluation procedures including preassessment of children's readiness, assessment of progress and final achievement with criterion-referenced tests, feedback to the teacher and child, and evaluation of the IGE design and its components.

5. A program of home-school communications that reinforces the school's efforts by generating the interest and encouragement of parents and other adults whose attitudes influence pupil motivation and learning.

6. Facilitative environments in school buildings, school system central offices, state education agencies, and teacher education institutions. Helpful in producing these environments are: (a) a staff development program which includes inservice and campus-based educational programs to prepare personnel for the new roles implied by the other components outlined above: (b) state networks comprised of the state education agency, local school systems, and teacher education institutions to demonstrate, install, and maintain IGE schools and components; and (c) within-state leagues or other networks of local school systems and support agencies to generate new ideas and secure consultant help.

7. Continuing research and development to generate knowledge and to produce tested materials and procedures. The primary elements here are development and development-based research to refine all the IGE components and research on learning and instruction to generate knowledge that will lead to improved second generation components or their replacements.*

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*Source: Herbert J. Klausmeier, Mary R. Quilling, and Juanita S. Sorenson, THE DEVELOPMENT AND EVALUATION OF THE MULTIUNIT ELEMENTARY SCHOOL, 1966-70, (Madison: Wisconsin Research and Development Center for Cognitive Learning, 1971), pp. 1, 3.

APPENDIX B

Thirty-five IGE Outcomes

Processes of the IGE program have been summarized in 35 outcomes to be achieved by various members of the IGE school personnel. The following are specific outcomes listed for the IGE program (38, pp. 13-15):

1. All staff members have had an opportunity to examine their own goals and the IGE outcomes before a decision is made to participate in the program.
2. The school district has approved the school staff's decision to implement the /I/D/E/A/ Change Program for IGE.
3. The entire school is organized into Learning Communities with each Learning Community composed of students, teachers, aides, and a Learning Community leader.
4. Each Learning Community is comprised of approximately equal numbers of two or more student age groups. (Applies to the elementary program for ages 5-11.)
5. Each Learning Community is comprised of approximately equal numbers of all student groups in the school. (Applies to the middle-junior and senior high school programs for ages 10-19.)
6. Each Learning Community contains a cross section of staff.
7. Each Learning Community is provided sufficient time for staff members to meet.
8. Each Learning Community selects broad educational goals to be emphasized by the Learning Community.
9. Each Learning Community practices role specialization and a

division of labor among teachers in planning, implementing, and assessing.

10. Each Learning Community makes decisions regarding the arrangements of time, facilities, materials, staff, and students within the Learning Community.
11. Each Learning Community has effective internal working relationships as evidenced by members responding to one another's needs, trusting one another's motives and abilities, and using techniques of open communication.
12. Each Learning Community maintains open communication with parents and the community at large.
13. Each Learning Community analyzes and improves its operation as a functioning group.
14. Teacher performance in the learning environment is observed and constructively critiqued by members of the Learning Community.
15. Personalized inservice programs are developed and implemented by each Learning Community staff as a whole as well as by individual teachers.
16. Each student's learning program is based on specified learning objectives.
17. A variety of learning activities using different media and modes are included in each learning program.
18. Students pursue their learning programs within their own Learning Communities except on those occasions when their unique learning needs can only be met in another setting using special human or

physical resources.

19. The staff and students include special resources from the local community in the learning programs.

20. A variety of data sources are used when learning is assessed by teachers and students, with students becoming increasingly more responsible for self-assessment.

21. Teachers and students have a systematic method of gathering and using information about each student which affects his or her learning.

22. Both student and teacher consider the following when a student's learning activities are selected:

    -- Peer relationships
    -- Achievement
    -- Learning styles
    -- Interest in subject areas
    -- Self-concept.

23. Each student has an advisor whom he or she views as a warm, supportive person concerned with enhancing the student's self-concept; the advisor shares accountability with the student for the student's learning program.

24. Each student plans and evaluates his or her own progress toward educational goals (individually, with other students, with staff members, and with his or her parents).

25. Each student accepts increasing responsibility for selecting his or her learning objectives.

26. Each student accepts increasing responsibility for selecting or developing learning activities for specific learning objectives.

27. Each student can state learning objectives for the learning activites in which she or he is engaged.
28. Each student demonstrates increasing responsibility for pursuing her or his learning program.
29. The Program Improvement Council analyzes and improves its operations as a functioning group.
30. The Program Improvement Council assures continuity of educational goals and learning objectives throughout the school and assures that they are consistent with the broad goals of the school system.
31. The Program Improvement Council formulates school-wide policies and operational procedures and resolves problems referred to it involving two or more Learning Communities.
32. The Program Improvement Council coordinates school-wide inservice programs for the total staff.
33. Students are involved in decision-making regarding school-wide activities and policies.
34. The school is a member of a League of schools implementing IGE processes and participating in an interchange of personnel to identify and alleviate problems within the League schools.
35. The school stimulates an interchange of solutions to a source of ideas for new development as a member of a League of IGE schools.

APPENDIX C

Key Concepts of Individualization

1. Knowledge of pupils. The teachers know each pupil. This concept is broader than merely knowing an I.Q. or a reading score. It includes knowing the habits, interests, hobbies, family relationships and other aspects of the pupil's life outside the classroom.

2. Physical facilities. A variety of resources is available and in use. This covers every type of resource for in-class or out-of-class use, including programmed materials, audio-visual aids, as well as books, newspapers, magazine and specimen objects.

3. Different tasks. Different pupils work on different tasks, selected at least in part by the pupils themselves. Teachers make a variety of assignments designed to individual requirements for both in-class and out-of-class work.

4. Participation. Learning activities are sufficiently varied that all pupils are seen participating in some learning activity.

5. Communication. Instead of sending out oral messages to "whom it may concern", the teacher communicates individually as may be needed with pupils singly or in small groups.

6. Modification of questioning. The teacher's questions vary in type and difficulty for different pupils, and in order to make sure each pupil understands.

7. Complementary teacher-pupil roles. The teacher adopts the role of a resource person and helper; the pupils contribute to the direction or content of the lesson and have the opportunity to lead and initiate change.

8. Time for growth. The time that pupils require to complete a given task or master a given concept or skill must, because of individual differences, vary greatly. The teacher therefore provides for both extra help and enrichment through planning or allowing the use of extra class time.

9. Individual evaluation. Instead of a fixed standard that all are expected to attain, or fall by the wayside, evaluation is judged as change or improvement at individual rates of growth and development.

Authorities consulted on Individualization of Instruction: David W. Beggs, Knute O. Broady, Edward G. Buffie, Theodore Clymer, Walter W. Cook, John Dewey, Edgar S. Farley, Miriam L. Goldberg, Robert Havighurst, Joseph Justman, Nolan C. Kearney, Alice V. Keliher, Nancy Larrick, May Lazar, Murray J. Lee, A. Harry Passow, James B. Pugh, E. A. Reed and Fred Weaver.

APPENDIX D

Key Concepts of Interpersonal Regard

10. Demeanor. The teacher is relaxed, good-natured, cheerful, courteous and, if using humor, always inoffensive, rather than yelling, shouting, frowning, glaring, insulting or sarcastic. Pupils reflect similar demeanor.

11. Patience. Both teacher and pupils take time to listen to and accept one another, rather than press, hurry, interrupt or give rigidly directive orders.

12. Pupil involvement. Pupils are eager, prompt, willing, show initiative or make voluntary contributions, instead of being apathetic, reluctant or slow to respond.

13. Physical movement is permissive, free, instead of submissive and dominated by the teacher.

14. Respect. There is mutually shared respect among pupils and teacher as evidenced by commending, accepting, helping, rather than rejecting or ignoring.

15. Error behavior. Pupils and teacher both openly and naturally accept and recognize errors of each other, rather than trying to cover up, losing face or showing guilt.

16. Pupil problems. Personal problems or handicaps are accepted with consideration, understanding and sympathy, rather than with ridicule or embarrassment.

17. Atmosphere of agreement. Pupils and teacher respect opinions of others and come to agreements without external coercion; conflict and hostility are not characteristic of problem solving.

18. Teacher-pupil identification. Teacher meets pupils on their level as one of them and is not withdrawn, aloof or superior.

19. Evaluation as encouragement. Positive, encouraging and supportive criticism, which pupils accept, is used rather than discouragement, disapproval, admonishment, blame or shame, which pupils ignore or reject.

Authorities consulted on Interpersonal Regard: Edmund J. Amidon, Paul S. Amidon, Harold H. Anderson, Norman D. Bowers, Helen M. Brewer, Joseph E. Brewer, David Cahoon, Morris Louis Cogan, Francis G. Cornell, David W. Darling, Ned Flanders, Ernest Hilgard, Earl C. Kelley, Kurt Lewin, Gordon P. Liddle, Carl M. Lindvall, Ronald Lippitt, Ardelle Llewellyn, Donald M. Medley, Harold E. Mitzel, Hugh Perkins, Mary F. Reed, Richard E. Ripple, Seymour Sarason, Joe F. Saupe, Pauline Sears, B. F. Skinner, Robert S. Soar, Charles E. Stewart, David E. Templeton, Herbert Thelen, Ralph K. White, Fred T. Wilhelms and John Withall.

APPENDIX E

Key Concepts of Creativity

20. Time for thinking. Time is allowed to think and discover, play with ideas, manipulate objects, experiment, without pressure to get "the answer" or get it "right".

21. Abundance of materials. Pupils have the stimulation of materials and other resources in great richness and variety.

22. Skills of thinking. A variety of skills used in creative thinking is practiced: inquiring, searching, manipulating, questioning, abstracting, analyzing, summarizing, outlining, generalizing, evaluating and the like.

23. Testing ideas. The examination, comparison and testing of divergent ideas are encouraged, as opposed to referring to authority.

24. Unusual ideas. Unusual ideas are entertained without anxiety or tension, and unusual questions are considered with respect.

25. Question and answer technique. The teacher uses open-ended questions rather than questions with a "right" answer, presents unsolved problems rather than a lecture with "correct" information filled in; pupils test and challenge rather than attempt to key in on the wanted correct answer, and are encouraged to consider questions for which they do not have the answer.

26. Self-initiated activity. Pupils take responsibility for self-initiated learning, extend the limits of the topic, and the teacher encourages and credits pupil efforts to go beyond the lesson plan, assignment or question.

27. Opportunity for speculation. There is much opportunity for guessing, supposing, hypothesizing, forecasting results, with and without evidence, without the fear that wrong answers will be penalized, as opposed to handing out the correct answers in order to save time.

28. Evaluation as motivation. Originality is rewarded with recognition, pupils' ideas are treated as having value, unusual questions and diverse contributions are recognized and praise rewards creative effort, while formal evaluation and marking are delayed.

Authorities consulted on Creativity: Harold H. Anderson, Prudence Bostwick, Peggy Brogan, Arthur W. Foshay, Jane Franseth, Jacob W. Getzels, Harrison C. Gough, Jay P. Guilford, Harold F. Harding, John Holt, Marie M. Hughes, Philip W. Jackson, Gordon P. Liddle, J. H. McPherson, Mary Lee Marksberry, Alice Miel, Alex F. Osborn, Gladys B. Otis, Sidney Parnes, Catherine Patrick, J. Ribot, Carl Rogers, Calvin Taylor, Ellis Paul Torrance, Normal E. Wallen, Richard W. Wilkie and Kenneth Wodtke.

APPENDIX F

Key Concepts of Group Activity

29. Physical arrangement. Seating facilitates interaction, as in face-to-face rather than audience situations.

30. Teacher purpose. The objectives and purposes of the teacher are to cultivate and facilitate social skills, cooperation, idea exchange and share problem solving, rather than require pupils to work in isolation.

31. Decision-making. The group shares in decision-making, rather than having decisions made by the teacher and the group told what to do.

32. Intercommunication. There is pupil-pupil communication as well as teacher-pupil communication, and pupils are free to seek assistance among their group mates.

33. Conflict resolution. Where conflict among group members occurs, the group itself resolves the conflict rather than requiring policing by the teacher.

34. Cooperation. All pupils are seen cooperating in the group activity.

35. Role distribution. Pupils share the leadership role with the teacher, and are free to disagree with teacher proposals.

36. Group goals. Goals of the group are accepted by all members of the group, instead of factionalism that divides the efforts and purposes of the group.

37. Group personality. Syntality, cohesiveness, or a feeling of internal interdependency characterizes the group personality.

38. Consensus. The rules or mechanisms for arriving at group decisions result in uncoerced consensus rather than the forcing of a leader's opinion or hostility of a minority.

39. Group evaluation. Evaluation of group attainments is a function of the group rather than the prerogative of the teacher.

40. Teacher's group role. The teacher's role is that of a member of the group rather than that of a director or superior who sets all goals and procedures.

Authorities consulted on Group Activity: Robert Bales, Mary Bany, Arno Bellack, Edith Becher Bennett, Edgar Borgatta, Lawrence Borosage, Leland P. Bradford, E. H. Brady, Dorwin Cartwright, Raymond B. Cattell, Stephen M. Corey, Morton Deutsch, Jack R. Gibb, Lorraine Gibb, Alvin Goldberg, Thomas Gordon, Franklyn S. Haiman, Paul A. Hare, Lois V. Johnson, Harold J. Leavitt, Gordon P. Liddle, Ronald Lippitt, Wiliam J. McEwen, Arnold Meadow, Ronald A. H. Mueller, Elliott G. Mishler, Michael S. Olmsted, J. T. Robinson, Herbert A. Simon, Bernard Steinzor, Frederick S. Stephen, Ralph M. Stodgill, Hilda Taba, George A. Talland, Edwin J. Thomas, James D. Thompson, Ralph White, John Withall and Alvin Zander.

APPENDIX G

Background Data - Principal

Please circle the appropriate number of the selection provided for items 1, 2, and 3.

1. Age

    1. 20-25
    2. 26-30
    3. 31-35
    4. 36-40
    5. 41-45
    6. 46-50
    7. 51-55
    8. 56-60
    9. 61 or over

2. Sex

    1. Female
    2. Male

3. Highest level of professional preparation:

    1. Less than Bachelor's Degree
    2. Bachelor's Degree
    3. Bachelor's + 15 semester hours (22.5 quarter hours)
    4. Master's Degree
    5. MA + 15 semester hours (22.5 quarter hours)
    6. MA + 30 semester hours (45 quarter hours)
    7. Ph.D. or Ed.D. Degree

Please list appropriate data in the blanks provided for items 3, 4, 5, 6, 7, and 8.

3. Size of school (Number of Professional Staff). _____

4. Size of school (Number of Students). _____

5. Number of years in present school. _____

6. Number of years in present position. _____

7. Total years of administrative or supervisory experience. _____

8. Total number of years in elementary education including teaching and administration. _____

APPENDIX H

Background Data - Teachers

Please circle the appropriate number of the selection provided for items 1, 2, and 3.

1. Age

    1. 20-25
    2. 26-30
    3. 31-35
    4. 36-40
    5. 41-45
    6. 46-50
    7. 51-55
    8. 56-60
    9. 61 or over

2. Sex

    1. Male
    2. Female

3. Highest level of professional preparation:

    1. Less than Bachelor's Degree
    2. Bachelor's Degree
    3. Bachelor's + 15 semester hours (22.5 quarter hours)
    4. Master's Degree
    5. MA + 15 semester hours (22.5 quarter hours)
    6. MA + 30 semester hours (45 quarter hours)
    7. Ph.D. or Ed.D. Degree

Please list personal data in the blanks provided for items 4, 5, and 6.

4. Number of years in your present position. _____

5. Number of years in present school system. _____

6. Total number of years in teaching. _____

APPENDIX I

Principal Survey - IGE Implementation

Please check the appropriate response.

1. Comparing your teacher allotments with the allotments of non-IGE schools in your district, your school was:

   _____ Given no special consideration because it is IGE.

   _____ Given no more than 5% increase in teacher allotment as a direct result of implementing IGE.

   _____ Given at least a 10% increase.

2. Comparing your allotments for full-time, paid teacher aides with non-IGE schools in the district, your school was:

   _____ Given no special allotment to support IGE implementation.

   _____ Allotted no more than two additional aides.

   _____ Allotted no more than four additional aides.

   _____ Allotted at least six additional aides.

3. Comparing your instructional budget with those of other schools in your school district not implementing IGE, your school:

   _____ Received no special instructional budget to support IGE implementation.

   _____ Received no more than 5% increase in budget for implementation purposes.

   _____ Received no more than 10% additional budget.

   _____ Received at least 15% higher budgets than non-IGE schools in the district.

4. As a direct result of implementing the IGE program, your total school budget was:

_____ No larger than the budgets of non-IGE schools.

_____ 1% - 2% larger than the budgets of non-IGE schools.

_____ 3% - 4% larger than the budgets of non-IGE schools.

_____ 5% - 6% larger than the budgets of non-IGE schools.

_____ 7% - 8% larger than the budgets of non-IGE schools.

APPENDIX J

Principal Instructions for Questionnaires

1. Attached you will find a paper requesting background data and a questionnaire. Instructions for the completion of each is included.

2. The questionnaire is the Leader Behavior Description Questionnaire-Self. Place your responses on the answer sheet provided.

3. Please answer all questions or statements.

4. Data will be held in confidence and no individual will be identified.

5. Complete both instruments as soon as possible and place them in the envelope provided.

6. Thank you for your participation.

APPENDIX K

Teacher Instructions for Questionnaires

1. Attached is a paper requesting background data and a blue questionnaire. Directions for the completion of each is included.

2. The blue questionnaire is the Leader Behavior Description Questionnaire. Place your responses on the answer sheet provided.

3. Please complete all questions or statements.

4. Information gathered will be held in confidence and no individual will be identified.

5. Complete both instruments as soon as possible and return them to your school principal in the envelope provided.

6. Thank you for your participation.

APPENDIX L

Leader Behavior Description Questionnaire - Form XII Self

Originated by staff members of
The Ohio State Leadership Studies
and revised by the
Bureau of Business Research

On the following pages is a list of items that may be used to describe how you behave as a leader. This is not a test of ability. It simply asks you to describe as accurately as you can, how you behave as a leader of the group that you supervise.

Note: The term, "group," as employed in the following items, refers to a department, division, unit, or collection of people that you supervise.

The term "members," refers to all the people in the unit that you supervise.

Published by

Bureau of Business Research
College of Commerce and Administration
The Ohio State University
Columbus, Ohio

DIRECTIONS:

a. READ each item carefully.

b. THINK about how frequently you engage in the behavior described by the item.

c. DECIDE whether you (A) Always, (B) Often, (C) Occasionally, (D) Seldom or (E) Never act as described by the item.

d. DRAW A CIRCLE around <u>one</u> of the five letters (A B C D E) following the item to show the answer you have selected.

A = Always
B = Often
C = Occasionally
D = Seldom
E = Never

e. MARK your answers as shown in the examples below.

Example:	I often act as described	A (B) C D E
Example:	I never act as described	A B C D (E)
Example:	I occasionally act as described	A B (C) D E

1.	I act as the spokesman of the group	A B C D E
2.	I wait patiently for the results of a decision	A B C D E
3.	I make pep talks to stimulate the group	A B C D E
4.	I let group members know what is expected of them	A B C D E
5.	I allow the members complete freedom in their work	A B C D E
6.	I am hesitant about taking initiative in the group	A B C D E
7.	I am friendly and approachable	A B C D E
8.	I encourage overtime work	A B C D E
9.	I make accurate decisions	A B C D E
10.	I get along well with the people above me	A B C D E

A = Always
B = Often
C = Occasionally
D = Seldom
E = Never

11.	I publicize the activities of the group	A B C D E
12.	I become anxious when I cannot find out what is coming next	A B C D E
13.	My arguments are convincing	A B C D E
14.	I encourage the use of uniform procedures	A B C D E
15.	I permit the members to use their own judgment in solving problems	A B C D E
16.	I fail to take necessary action	A B C D E
17.	I do little things to make it pleasant to be a member of the group	A B C D E
18.	I stress being ahead of competing groups	A B C D E
19.	I keep the group working together as a team	A B C D E
20.	I keep the group in good standing with higher authority	A B C D E
21.	I speak as the representative of the group	A B C D E
22.	I accept defeat in stride	A B C D E
23.	I argue persuasively for my point of view	A B C D E
24.	I try out my ideas in the group	A B C D E
25.	I encourage initiative in the group members	A B C D E
26.	I let other persons take away my leadership in the group	A B C D E
27.	I put suggestions made by the group into operation	A B C D E
28.	I needle members for greater effort	A B C D E
29.	I am able to predict what is coming next	A B C D E

A = Always
B = Often
C = Occasionally
D = Seldom
E = Never

30.	I am working hard for a promotion	A B C D E
31.	I speak for the group when visitors are present	A B C D E
32.	I accept delays without becoming upset	A B C D E
33.	I am a very persuasive talker	A B C D E
34.	I make my attitudes clear to the group	A B C D E
35.	I let the members do their work the way they think best	A B C D E
36.	I let some members take advantage of me	A B C D E
37.	I treat all group members as my equal	A B C D E
38.	I keep the work moving at a rapid pace	A B C D E
39.	I settle conflicts when they occur in the group	A B C D E
40.	My superiors act favorably on most of my suggestions	A B C D E
41.	I represent the group at outside meetings	A B C D E
42.	I become anxious when waiting for new developments	A B C D E
43.	I am very skillful in an argument	A B C D E
44.	I decide what shall be done and how it shall be done	A B C D E
45.	I assign a task, then let the members handle it	A B C D E
46.	I am the leader of the group in name only	A B C D E
47.	I give advance notice of changes	A B C D E
48.	I push for increased production	A B C D E
49.	Things usually turn out as I predict	A B C D E

A = Always
B = Often
C = Occasionally
D = Seldom
E = Never

50.	I enjoy the privileges of my position	A B C D E
51.	I handle complex problems efficiently	A B C D E
52.	I am able to tolerate postponement and uncertainty	A B C D E
53.	I am not a very convincing talker	A B C D E
54.	I assign group members to particular tasks	A B C D E
55.	I turn the members loose on a job, and let them go to it	A B C D E
56.	I back down when I ought to stand firm	A B C D E
57.	I keep to myself	A B C D E
58.	I ask the members to work harder	A B C D E
59.	I am accurate in predicting the trend of events	A B C D E
60.	I get my superiors to act for the welfare of the group members	A B C D E
61.	I get swamped by details	A B C D E
62.	I can wait just so long, then blow up	A B C D E
63.	I speak from a strong inner conviction	A B C D E
64.	I make sure that my part in the group is understood by the group members	A B C D E
65.	I am reluctant to allow the members any freedom of action	A B C D E
66.	I let some members have authority that I should keep	A B C D E
67.	I look out for the personal welfare of group members	A B C D E

A = Always
B = Often
C = Occasionally
D = Seldom
E = Never

68.	I permit the members to take it easy in their work	A B C D E
69.	I see to it that the work of the group is coordinated	A B C D E
70.	My word carries weight with my superiors	A B C D E
71.	I get things all tangled up	A B C D E
72.	I remain calm when uncertain about coming events	A B C D E
73.	I am an inspiring talker	A B C D E
74.	I schedule the work to be done	A B C D E
75.	I allow the group a high degree of initiative	A B C D E
76.	I take full charge when emergencies arise	A B C D E
77.	I am willing to make changes	A B C D E
78.	I drive hard when there is a job to be done	A B C D E
79.	I help group members settle their differences	A B C D E
80.	I get what I ask for from my superiors	A B C D E
81.	I can reduce a madhouse to system and order	A B C D E
82.	I am able to delay action until the proper time occurs	A B C D E
83.	I persuade others that my ideas are to their advantage	A B C D E
84.	I maintain definite standards of performance	A B C D E
85.	I trust the members to exercise good judgment	A B C D E
86.	I overcome attempts made to challenge my leadership	A B C D E

A = Always
B = Often
C = Occasionally
D = Seldom
E = Never

87.	I refuse to explain my actions	A B C D E
88.	I urge the group to beat its previous record	A B C D E
89.	I anticipate problems and plan for them	A B C D E
90.	I am working my way to the top	A B C D E
91.	I get confused when too many demands are made of me	A B C D E
92.	I worry about the outcome of any new procedure	A B C D E
93.	I can inspire enthusiasm for a project	A B C D E
94.	I ask that group members follow standard rules and regulations	A B C D E
95.	I permit the group to set its own pace	A B C D E
96.	I am easily recognized as the leader of the group	A B C D E
97.	I act without consulting the group	A B C D E
98.	I keep the group working up to capacity	A B C D E
99.	I maintain a closely knit group	A B C D E
100.	I maintain cordial relations with superiors	A B C D E

APPENDIX M

Leader Behavior Description Questionnaire-Form XII

Teacher Description of School Principal

Originated by staff members of
The Ohio State Leadership Studies
and revised by the
Bureau of Business Research

Purpose of the Questionnaire

On the following pages is a list of items that may be used to describe the behavior of your supervisor. Each item describes a specific kind of behavior, but does not ask you to judge whether the behavior is desirable or undesirable. Although some items may appear similar, they express differences that are important in the description of leadership. Each item should be considered as a separate description. This is not a test of ability or consistency in making answers. Its only purpose is to make it possible for you to describe, as accurately as you can, the behavior of your supervisor.

Note: The terms, "group," as employed in the following items, refers to a department, division, or other unit of organization that is supervised by the person being described.

The term "members," refers to all the people in the unit of organization that is supervised by the person being described.

Published by

Bureau of Business Research
College of Commerce and Administration
The Ohio State University
Columbus, Ohio

DIRECTIONS:

a. READ each item carefully.

b. CONSIDER how frequently your school principal engages in the behavior described by the item.

c. DECIDE whether he (A) always, (B) often, (C) occasionally, (D) seldom or (E) never acts as described by the item.

d. WHEN you have decided on an answer, blacken the corresponding space on the answer sheet with a No. 2 pencil. If you change your mind, erase your mark completely.

A = Always

B = Often

C = Occasionally

D = Seldom

E = Never

e. MARK your answers as shown in the examples below.

	A	B	C	D	E
Example: He often acts as described.....	—	■	—	—	—
Example: He never acts as described.....	—	—	—	—	■

---

1. He acts as the spokesman of the group.....	A	B	C	D	E
2. He waits patiently for the results of a decision.....	A	B	C	D	E
3. He makes pep talks to stimulate the group.....	A	B	C	D	E
4. He lets group members know what is expected of them.....	A	B	C	D	E
5. He allows the members complete freedom in their work.....	A	B	C	D	E
6. He is hesitant about taking initiative in the group.....	A	B	C	D	E

A = Always

B = Often

C = Occasionally

D = Seldom

E = Never

7.	He is friendly and approachable.....	A	B	C	D	E
8.	He encourages overtime work.....	A	B	C	D	E
9.	He makes accurate decisions.....	A	B	C	D	E
10.	He gets along well with the people above him.....	A	B	C	D	E
11.	He publicizes the activities of the group.....	A	B	C	D	E
12.	He becomes anxious when he cannot find out what is coming next.....	A	B	C	D	E
13.	His arguments are convincing.....	A	B	C	D	E
14.	He encourages the use of uniform procedures.....	A	B	C	D	E
15.	He permits the members to use their own judgment in solving problems.....	A	B	C	D	E
16.	He fails to take necessary action.....	A	B	C	D	E
17.	He does little things to make it pleasant to be a member of the group.....	A	B	C	D	E
18.	He stresses being ahead of competing groups.....	A	B	C	D	E
19.	He keeps the group working together as a team....	A	B	C	D	E
20.	He keeps the group in good standing with higher authority.....	A	B	C	D	E
21.	He speaks as the representative of the group.....	A	B	C	D	E
22.	He accepts defeat in stride.....	A	B	C	D	E
23.	He argues persuasively for his point of view.....	A	B	C	D	E
24.	He tries out his ideas in the group.....	A	B	C	D	E

A = Always

B = Often

C = Occasionally

D = Seldom

E = Never

25.	He encourages initiative in the group members.....	A	B	C	D	E
26.	He lets other persons take away his leadership in the group.....	A	B	C	D	E
27.	He puts suggestions made by the group into operation.....	A	B	C	D	E
28.	He needles members for greater effort.....	A	B	C	D	E
29.	He seems able to predict what is coming next.....	A	B	C	D	E
30.	He is working hard for a promotion.....	A	B	C	D	E
31.	He speaks for the group when visitors are present.....	A	B	C	D	E
32.	He accepts delays without becoming upset.....	A	B	C	D	E
33.	He is a very persuasive talker.....	A	B	C	D	E
34.	He makes his attitudes clear to the group.....	A	B	C	D	E
35.	He lets the members do their work the way they think best.....	A	B	C	D	E
36.	He lets some members take advantage of him.....	A	B	C	D	E
37.	He treats all group members as his equals.....	A	B	C	D	E
38.	He keeps the work moving at a rapid pace.....	A	B	C	D	E
39.	He settles conflicts when they occur in the group.....	A	B	C	D	E
40.	His superiors act favorably on most of his suggestions.....	A	B	C	D	E

A = Always

B = Often

C = Occasionally

D = Seldom

E = Never

41.	He represents the group at outside meetings.....	A	B	C	D	E
42.	He becomes anxious when waiting for new developments.....	A	B	C	D	E
43.	He is very skillful in an argument.....	A	B	C	D	E
44.	He decides what shall be done and how it shall be done.....	A	B	C	D	E
45.	He assigns a task, then lets the members handle it.....	A	B	C	D	E
46.	He is the leader of the group in name only.....		B	C	D	E
47.	He gives advance notice of changes.....	A	B	C	D	E
48.	He pushes for increased production.....	A	B	C	D	E
49.	Things usually turn out as he predicts.....	A	B	C	D	E
50.	He enjoys the privileges of his position.....	A	B	C	D	E
51.	He handles complex problems efficiently.....	A	B	C	D	E
52.	He is able to tolerate postponement and uncertainty.....	A	B	C	D	E
53.	He is not a very convincing talker.....	A	B	C	D	E
54.	He assigns group members to particular tasks.....	A	B	C	D	E
55.	He turns the members loose on a job, and lets them go to it.....	A	B	C	D	E
56.	He backs down when he ought to stand firm.....	A	B	C	D	E
57.	He keeps to himself.....	A	B	C	D	E

A = Always

B = Often

C = Occasionally

D = Seldom

E = Never

58.	He asks the members to work harder.....	A	B	C	D	E
59.	He is accurate in predicting the trend of events.....	A	B	C	D	E
60.	He gets his superiors to act for the welfare of the group members.....	A	B	C	D	E
61.	He gets swamped by details.....	A	B	C	D	E
62.	He can wait just so long, then blows up.....	A	B	C	D	E
63.	He speaks from a strong inner conviction.....	A	B	C	D	E
64.	He makes sure that his part in the group is understood by the group members.....	A	B	C	D	E
65.	He is reluctant to allow the members any freedom of action.....	A	B	C	D	E
66.	He lets some members have authority that he should keep.....	A	B	C	D	E
67.	He looks out for the personal welfare of group members.....	A	B	C	D	E
68.	He permits the members to take it easy in their work.....	A	B	C	D	E
69.	He sees to it that the work of the group is coordinated.....	A	B	C	D	E
70.	His word carries weight with his superiors.....	A	B	C	D	E
71.	He gets things all tangled up.....	A	B	C	D	E
72.	He remains calm when uncertain about coming events.....	A	B	C	D	E
73.	He is an inspiring talker.....	A	B	C	D	E

A = Always

B = Often

C = Occasionally

D = Seldom

E = Never

74.	He schedules the work to be done.....	A	B	C	D	E
75.	He allows the group a high degree of initiative..	A	B	C	D	E
76.	He takes full charge when emergencies arise.....	A	B	C	D	E
77.	He is willing to make changes.....	A	B	C	D	E
78.	He drives hard when there is a job to be done....	A	B	C	D	E
79.	He helps group members settle their differences..	A	B	C	D	E
80.	He gets what he asks for from his superiors.....	A	B	C	D	E
81.	He can reduce a madhouse to system and order.....	A	B	C	D	E
82.	He is able to delay action until the proper time occurs.....	A	B	C	D	E
83.	He persuades others that his ideas are to their advantage.....	A	B	C	D	E
84.	He maintains definite standards of performance...	A	B	C	D	E
85.	He trusts the members to exercise good judgment.....	A	B	C	D	E
86.	He overcomes attempts made to challenge his leadership.....	A	B	C	D	E
87.	He refuses to explain his actions.....	A	B	C	D	E
88.	He urges the group to beat its previous record.....	A	B	C	D	E
89.	He anticipates problems and plans for them.....	A	B	C	D	E
90.	He is working his way to the top.....	A	B	C	D	E

A = Always

B = Often

C = Occasionally

D = Seldom

E = Never

91.	He gets confused when too many demands are made of him.....	A	B	C	D	E
92.	He worries about the outcome of any new procedure.....	A	B	C	D	E
93.	He can inspire enthusiasm for a project.....	A	B	C	D	E
94.	He asks that group members follow standard rules and regulations.....	A	B	C	D	E
95.	He permits the group to set its own pace.....	A	B	C	D	E
96.	He is easily recognized as the leader of the group.....	A	B	C	D	E
97.	He acts without consulting the group.....	A	B	C	D	E
98.	He keeps the group working up to capacity.....	A	B	C	D	E
99.	He maintains a closely knit group.....	A	B	C	D	E
100.	He maintains cordial relations with superiors....	A	B	C	D	E

APPENDIX N. NONSIGNIFICANT RESULTS FOR *INDICATORS OF QUALITY* AND *LBDQ-XII*

Table N.1. Comparison of means and standard deviations of the 1972 application of Indicators of Quality for IGE and non-IGE schools

Indicator subscales	IGE schools (N=5) Mean	S.D.	Non-IGE schools (N=10) Mean	S.D.	t-values
1. Composite	7.26	1.93	6.50	2.19	0.55
2. Individualization	2.29	0.95	1.86	0.91	0.70
3. Interpersonal regard	2.98	0.94	3.50	1.13	-0.81
4. Creativity	1.67	0.88	0.81	0.61	2.06
5. Group activity	2.42	0.52	2.37	0.90	0.04
6. Teacher signs	2.81	1.19	2.70	0.76	0.18
7. Pupil signs	2.27	0.32	1.68	0.93	1.16
8. Teacher-pupil signs	2.19	0.59	2.11	0.81	0.08

Table N.2. Comparison of means and standard deviations of the 1973 application of Indicators of Quality for IGE and non-IGE schools

Indicator subscales	IGE schools (N=5) Mean	S.D.	Non-IGE schools (N=10) Mean	S.D.	t-values
1. Composite	7.61	2.30	5.05	2.49	1.92
2. Interpersonal regard	3.04	0.82	2.41	0.90	1.32
3. Creativity	1.03	0.68	0.52	0.78	0.99
4. Teacher signs	3.12	0.54	2.16	1.03	2.02
5. Pupil signs	2.22	1.00	1.24	0.92	1.89
6. Teacher-pupil signs	2.27	1.02	1.65	0.81	1.28

Table N.3. Results of analysis of covariance on Indicators of Quality subscale means

Indicator subscale	Source	D.F.	Mean square	F value
1. Composite				
	School types	2	0.2341	0.0533
	Residual	12	4.3872	
2. Individualization				
	School types	2	0.0061	0.0078
	Residual	12	0.7886	
3. Interpersonal regard				
	School types	2	0.6021	0.4697
	Residual	12	0.1281	
4. Creativity				
	School types	2	1.8591	3.7394
	Residual	12	0.4971	
5. Group activity				
	School types	2	0.0181	0.0280
	Residual	12	0.6470	
6. Teacher signs				
	School types	2	0.0229	0.0255
	Residual	12	0.8990	
7. Pupil signs				
	School types	2	1.0838	1.7938
	Residual	12	0.6041	
8. Teacher-pupil signs				
	School types	2	0.0245	0.0450
	Residual	12	0.5454	

Table N.4. Data from regression analysis of Indicators of Quality subscales

Indicator subscales	$R^2_{y \cdot 123}$	$R^2_{y \cdot 14}$	D.F.[a]	F value
1. Composite	0.1812	0.1477	1/26	1.1834
2. Individualization	0.2186	0.1796	1/26	1.333
3. Interpersonal regard	0.1917	0.1209	1/26	2.2436
4. Creativity	0.2250	0.2149	1/26	0.6670
5. Group activity	0.2307	0.1345	1/26	3.3784
6. Teacher signs	0.1596	0.1078	1/26	0.5486
7. Pupil signs	0.2123	0.2013	1/26	0.3289
8. Teacher-pupil signs	0.0990	0.0736	1/26	0.8671

[a]Where 1 is defined as degrees of freedom for the numerator and 26 is defined as degrees of freedom for the denominator in Formula I.

Table N.5. Comparison of means and standard deviations of the LBDQ-XII for IGE and non-IGE principals as perceived by principals

Leader behavior subscales	IGE principals (N=5) Mean	S.D.	Non-IGE principals (N=10) Mean	S.D.	t-values
1. Representation	20.00	2.00	19.80	2.34	0.16
2. Demand reconciliation	18.40	1.14	18.00	2.53	0.33
3. Tolerance of uncertainty	33.20	1.92	35.40	2.17	-1.91
4. Persuasiveness	37.60	3.05	34.70	4.29	1.34
5. Initiation of structure	34.00	4.30	36.50	4.50	-1.03
6. Tolerance of freedom	41.40	4.45	40.60	2.98	0.42
7. Role assumption	37.00	3.31	37.60	3.16	-0.34
8. Consideration	39.00	1.00	41.60	3.74	-1.50
9. Production emphasis	30.20	4.86	30.10	5.38	0.03
10. Predictive accuracy	18.40	1.81	19.00	2.10	-0.54
11. Integration	19.20	1.64	19.30	2.26	-0.09
12. Superior orientation	34.60	3.64	35.00	2.16	-0.27

Table N.6. Comparisons of means and standard deviations of the LBDQ-XII for IGE and non-IGE principals as perceived by teachers

Leader behavior subscales	IGE principals (N=5) Mean	S.D.	Non-IGE principals (N=10) Mean	S.D.	t-values
1. Representation	20.28	1.33	19.67	1.19	0.89
2. Demand reconciliation	18.94	1.88	19.15	2.02	-0.20
3. Tolerance of uncertainty	35.34	1.68	36.18	3.69	-0.48
4. Persuasiveness	38.54	3.30	35.85	3.08	1.55
5. Initiation of structure	37.95	2.23	37.85	2.87	0.07
6. Tolerance of freedom	41.08	1.65	40.21	2.87	0.62
7. Role assumption	38.52	2.17	37.90	3.26	0.38
8. Consideration	40.72	1.39	38.81	3.35	1.20
9. Production emphasis	31.77	3.15	30.30	2.55	0.98
10. Predictive accuracy	18.72	1.29	18.46	1.63	0.31
11. Integration	18.63	1.17	18.14	1.66	0.58
12. Superior orientation	38.55	2.95	36.11	2.13	1.84

Table N.7. Comparisons of means and standard deviations of the LBDQ-XII for IGE principals as perceived by principals and teachers

Leader behavior subscales	IGE principals (N=5) Mean	S.D.	IGE teachers (N=5) Mean	S.D.	t-values
1. Representation	20.00	2.00	20.28	1.33	-0.26
2. Demand reconciliation	18.40	1.14	18.94	1.88	-0.55
3. Tolerance of uncertainty	33.20	1.92	35.34	1.68	-1.87
4. Persuasiveness	37.60	3.05	38.54	3.30	-0.47
5. Initiation of structure	34.00	4.30	37.95	2.23	-1.82
6. Tolerance of freedom	41.40	4.45	41.08	1.65	0.15
7. Role assumption	37.00	3.31	38.52	2.17	-0.86
8. Consideration	39.00	1.00	40.72	1.39	-2.24
9. Production emphasis	30.20	4.86	31.77	3.15	-0.61
10. Predictive accuracy	18.40	1.81	18.72	1.29	-0.33
11. Integration	19.20	1.64	18.63	1.17	0.62
12. Superior orientation	34.60	3.64	38.55	2.95	-1.88

Table N.8. Comparison of means and standard deviations of the LBDQ-XII for non-IGE principals as perceived by principals and teachers

Leader behavior subscales	Non-IGE principals (N=10) Mean	S.D.	Non-IGE teachers (N=10) Mean	S.D.	t-values
1. Representation	19.80	2.34	19.67	1.19	0.15
2. Demand reconciliation	18.00	2.53	19.15	2.02	-1.13
3. Tolerance of uncertainty	35.40	2.17	36.18	3.69	-0.58
4. Persuasiveness	34.70	4.29	35.85	3.08	-0.69
5. Initiation of structure	36.50	4.50	37.85	2.87	-0.80
6. Tolerance of freedom	40.60	2.98	40.21	2.87	0.30
7. Role assumption	37.60	3.16	37.90	3.26	-0.21
8. Consideration	41.60	3.74	38.81	3.35	1.75
9. Production emphasis	30.10	5.38	30.30	2.55	-0.11
10. Predictive accuracy	19.00	2.10	18.46	1.63	0.63
11. Integration	19.30	2.26	18.14	1.66	1.29
12. Superior orientation	35.00	2.16	36.11	2.13	-1.16

APPENDIX O. SAMPLE X-MATRIX FOR REGRESSION ANALYSIS

Table O.1. Data from Indicators of Quality applications, (composite score) laid out in an X matrix for regression analysis[a]

Treatment	Y	X_0	X_1	X_2	X_3	X_4
	8.83	1	1	1	0	1
	8.77	1	1	1	0	1
	8.33	1	1	1	0	1
	5.71	1	1	1	0	1
IGE	4.67	1	1	1	0	1
	6.85	1	1	2	0	2
	7.36	1	1	2	0	2
	11.27	1	1	2	0	2
	7.64	1	1	2	0	2
	4.92	1	1	2	0	2
	3.33	1	-1	0	1	1
	3.79	1	-1	0	1	1
	5.72	1	-1	0	1	1
	4.82	1	-1	0	1	1
	8.57	1	-1	0	1	1
	7.06	1	-1	0	1	1
	7.35	1	-1	0	1	1
	7.25	1	-1	0	1	1
	7.00	1	-1	0	1	1
Non-IGE	10.13	1	-1	0	1	1
	5.94	1	-1	0	2	2
	2.12	1	-1	0	2	2
	1.69	1	-1	0	2	2
	8.69	1	-1	0	2	2
	4.40	1	-1	0	2	2
	3.81	1	-1	0	2	2
	4.00	1	-1	0	2	2
	4.36	1	-1	0	2	2
	9.19	1	-1	0	2	2
	6.25	1	-1	0	2	2

[a] Y = scores for IGE and non-IGE schools on composite subscale of Indicators of Quality; X_0 = coded intercept value; X_1 = coded value for type of school; X_2 = coded value for IGE time 1 and 2; X_3 = coded value for non-IGE time 1 and 2; X_4 = coded value for linear composite of X_2 and X_3.

APPENDIX P. PLOTS OF INDICATORS OF QUALITY SCORES ACROSS TIME

Figure P.1. Plot 1 of IGE vs. non-IGE Indicators of Quality scores across time for all 51. · = IGE, * = non-IGE

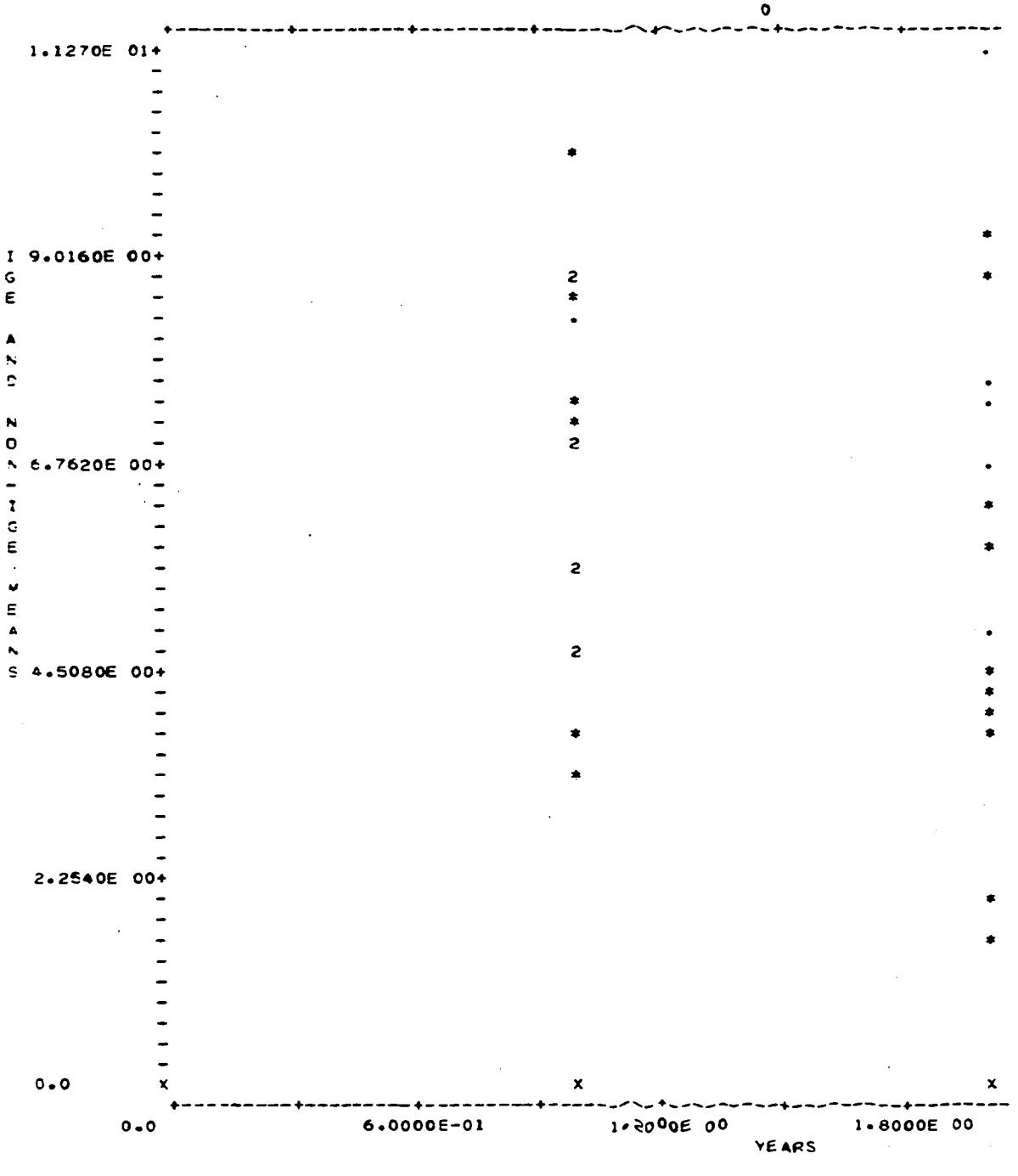

0
1.1270E 01
9.0160E 00
6.7620E 00
4.5080E 00
2.2540E 00
0.0
INGE ANDO NON-IGE MEANS
0.0
6.0000E-01
1.2000E 00
1.8000E 00
YEARS

Figure P.2. Plot 2 of IGE vs. non-IGE Indicators of Quality scores across time for individualization. · = IGE, * = non-IGE

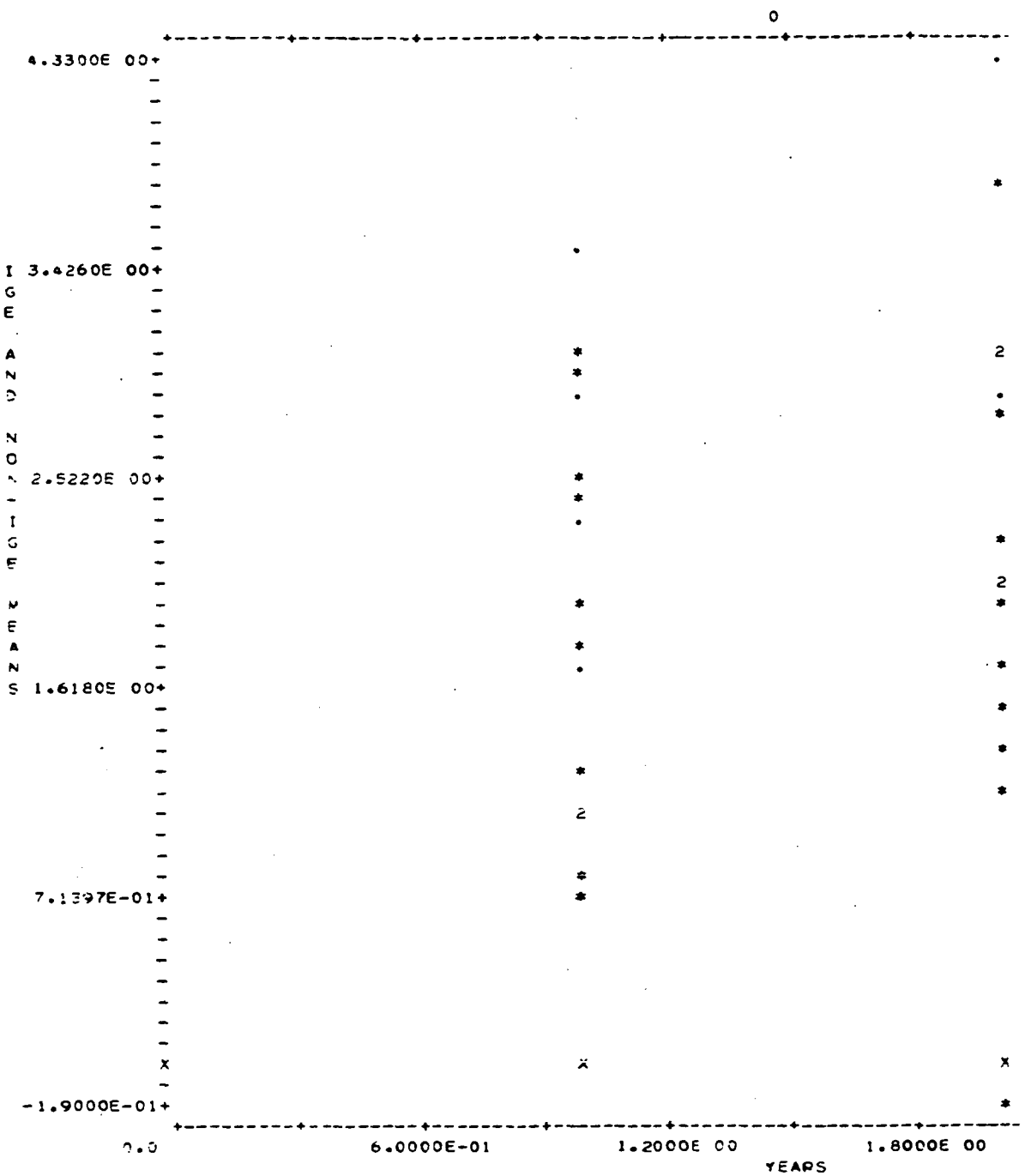

0
4.3300E 00
3.4260E 00
2.5220E 00
1.6180E 00
7.1397E-01
-1.9000E-01
I G E A N D N O I S E M E A N S
0.0
6.0000E-01
1.2000E 00
1.8000E 00
YEARS

Figure P.3. Plot 3 of IGE vs. non-IGE Indicators of Quality scores across time for interpersonal regard. · = IGE, * = non-IGE

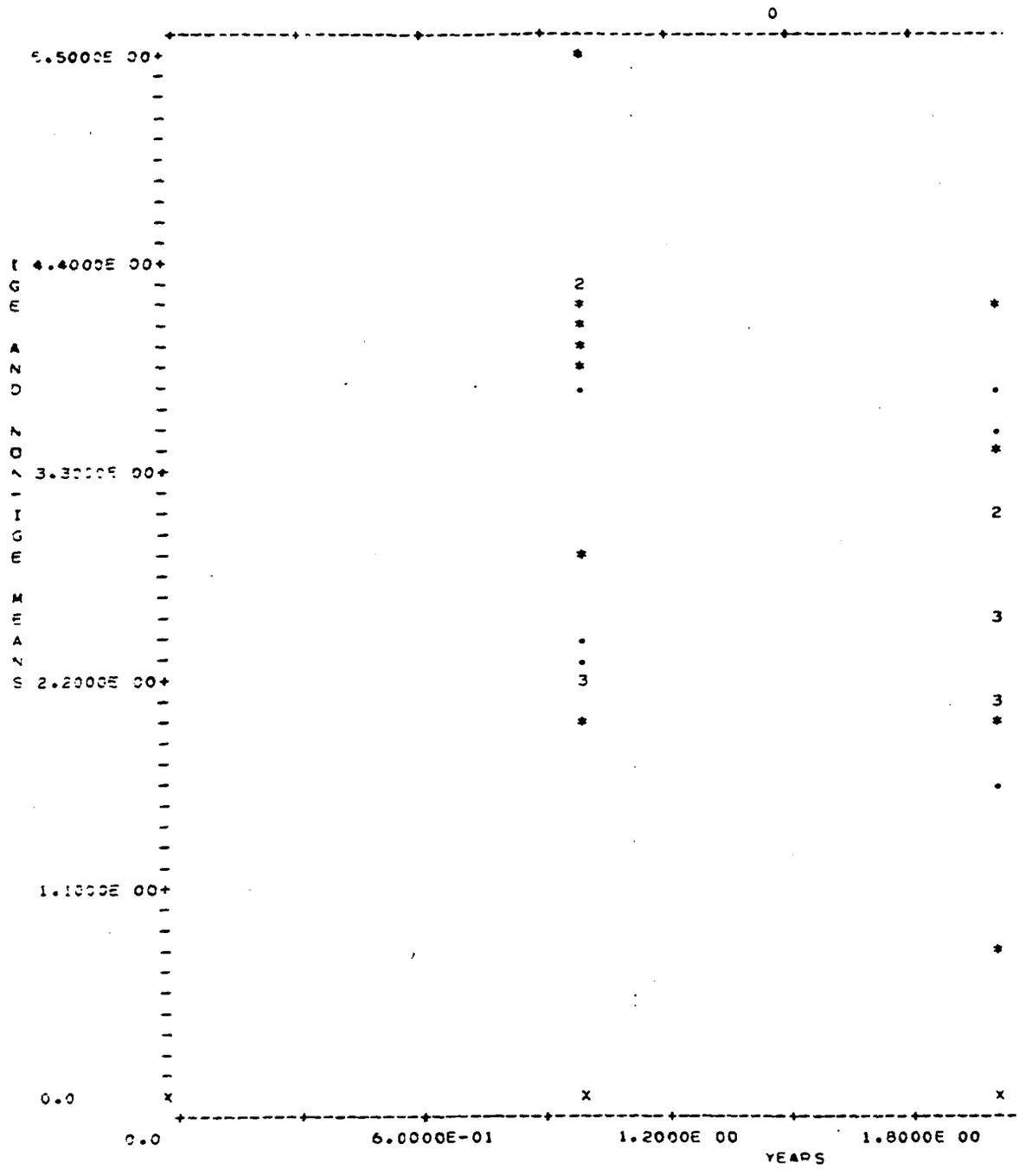

0
5.5000E 00+
4.4000E 00+
3.3000E 00+
2.2000E 00+
1.1000E 00+
0.0
0.0
6.0000E-01
1.2000E 00
1.8000E 00
YEARS
ANGE AND MEANS

Figure P.4. Plot 4 of IGE vs. non-IGE Indicators of Quality scores across time for creativity. · = IGE, * = non-IGE

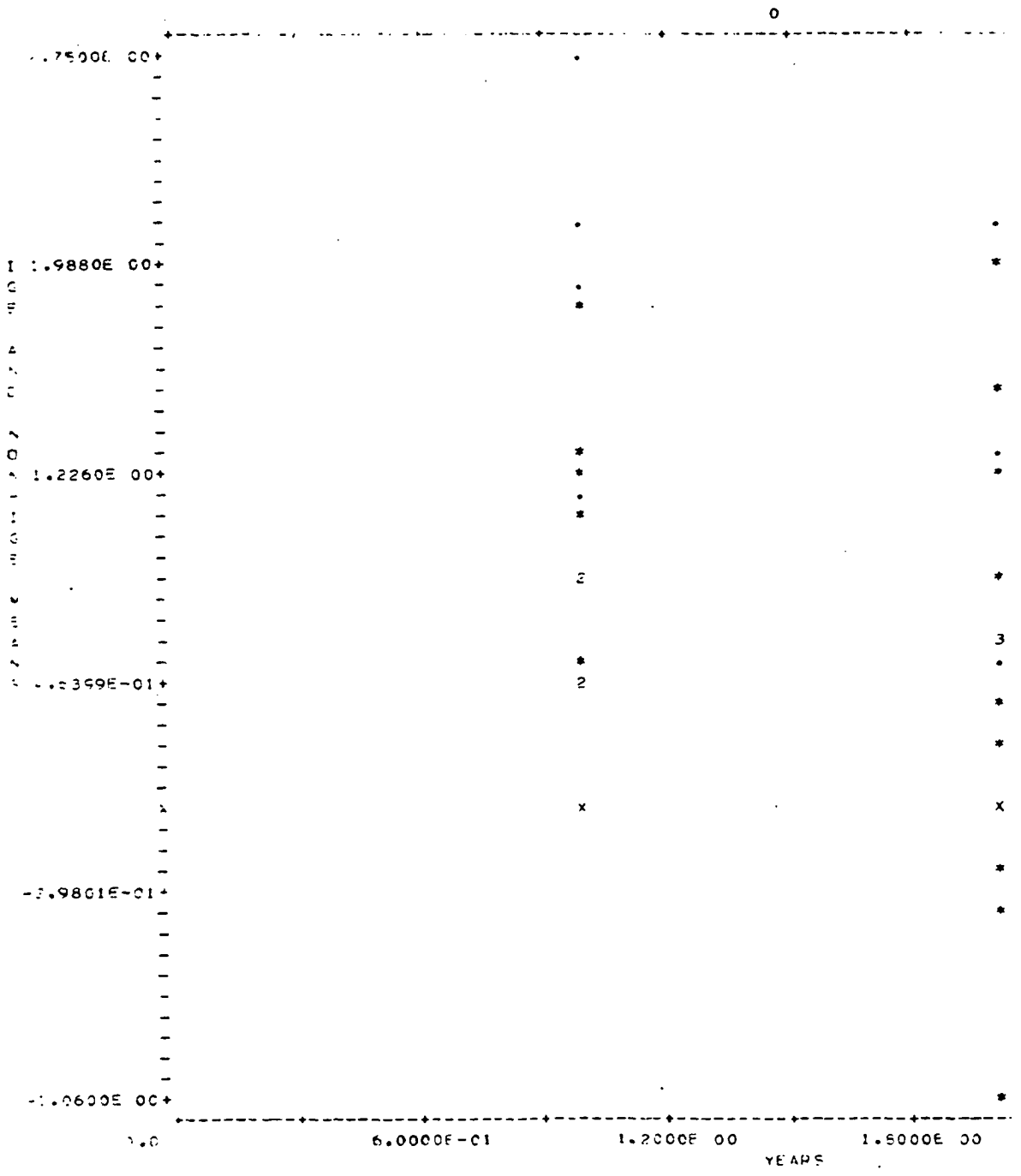

0
1.9880E 00
1.2260E 00
-3.9801E-01
6.0000E-01
1.2000E 00
1.8000E 00
YEARS

Figure P.5. Plot 5 of IGE vs. non-IGE Indicators of Quality scores across time for group activity. · = IGE, * = non-IGE.

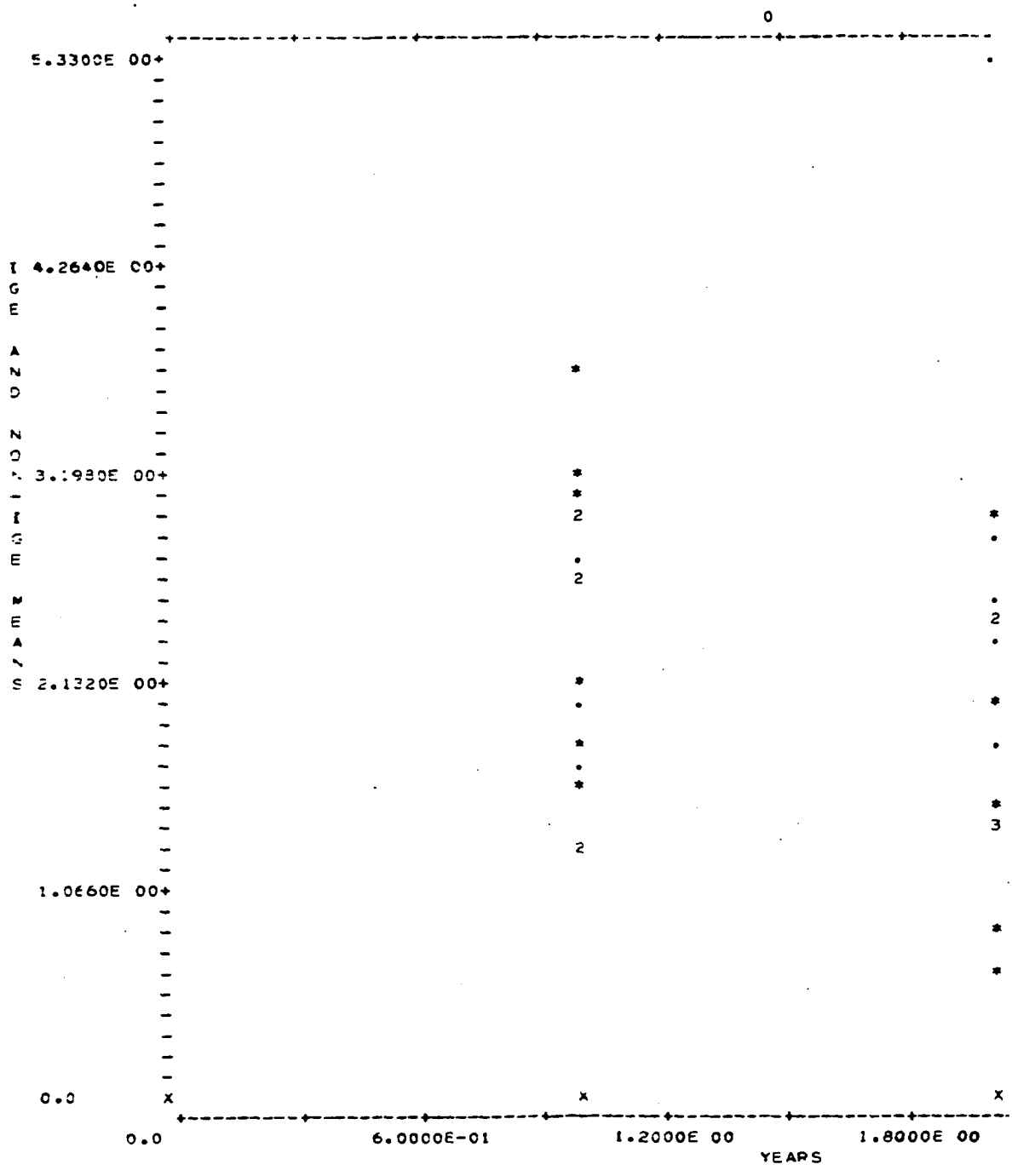

0
5.3300E 00+
4.2640E 00+
3.1980E 00+
2.1320E 00+
1.0660E 00+
0.0
I G E AND NOISE MEAS
0.0
6.0000E-01
1.2000E 00
1.8000E 00
YEARS

Figure P.6. Plot 6 of IGE vs. non-IGE Indicators of Quality scores across time for teacher signs. · = IGE, * = non-IGE

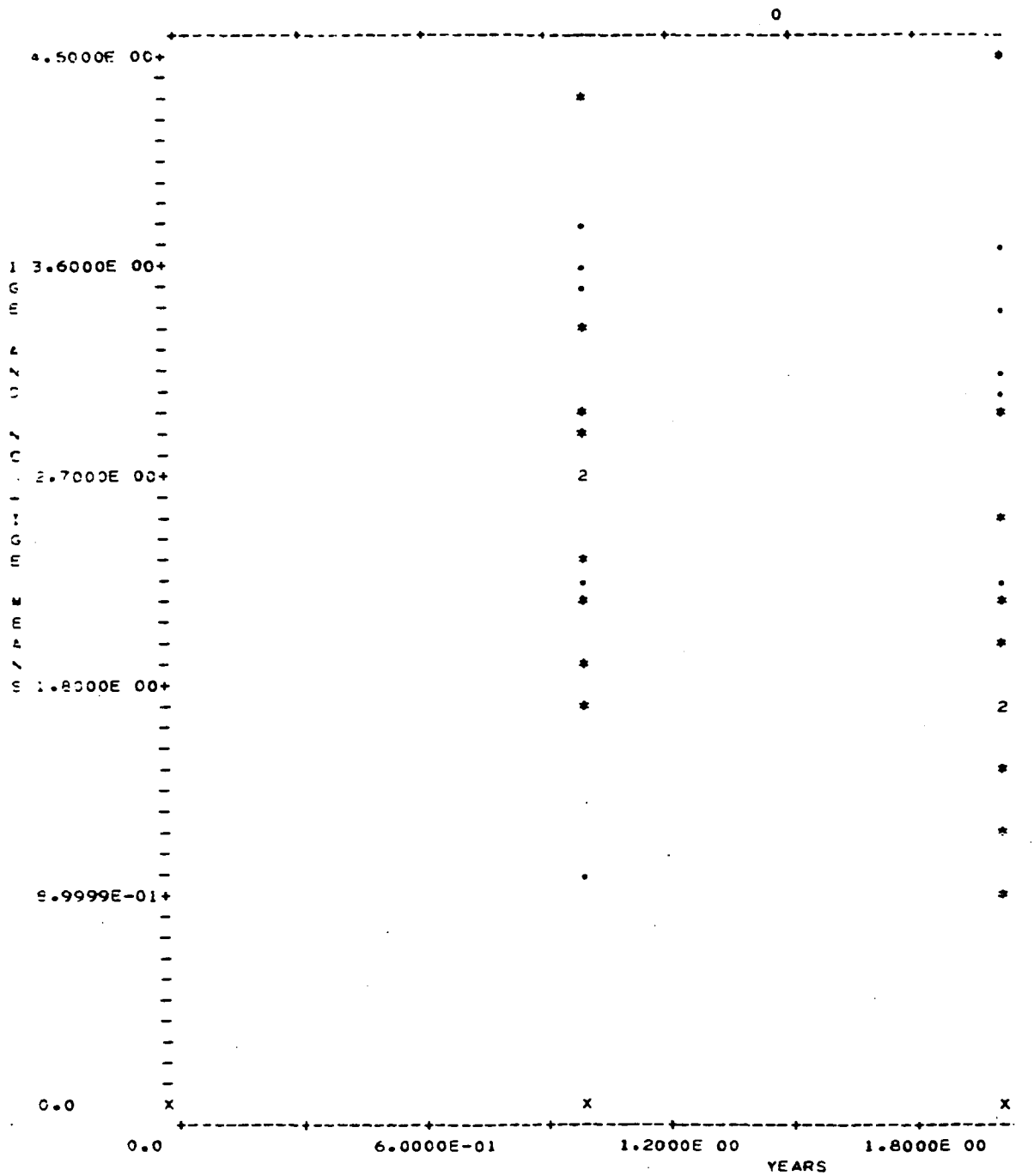

0
4.5000E 00+
3.6000E 00+
2.7000E 00+
1.8000E 00+
9.9999E-01+
0.0
0.0
6.0000E-01
1.2000E 00
1.8000E 00
YEARS

Figure P.7. Plot 7 of IGE vs. non-IGE Indicators of Quality scores across time for pupil signs. · = IGE, * = non-IGE

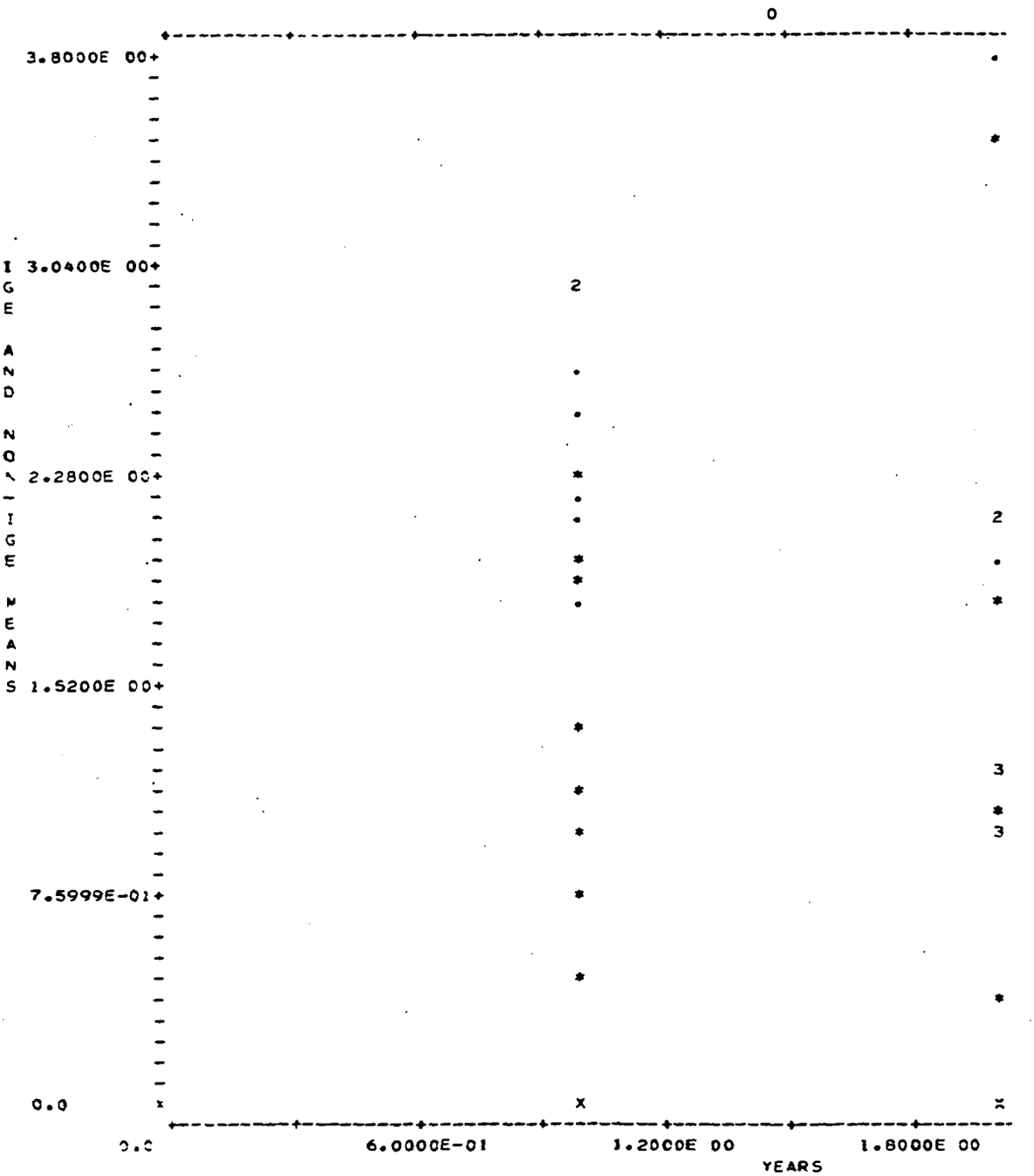
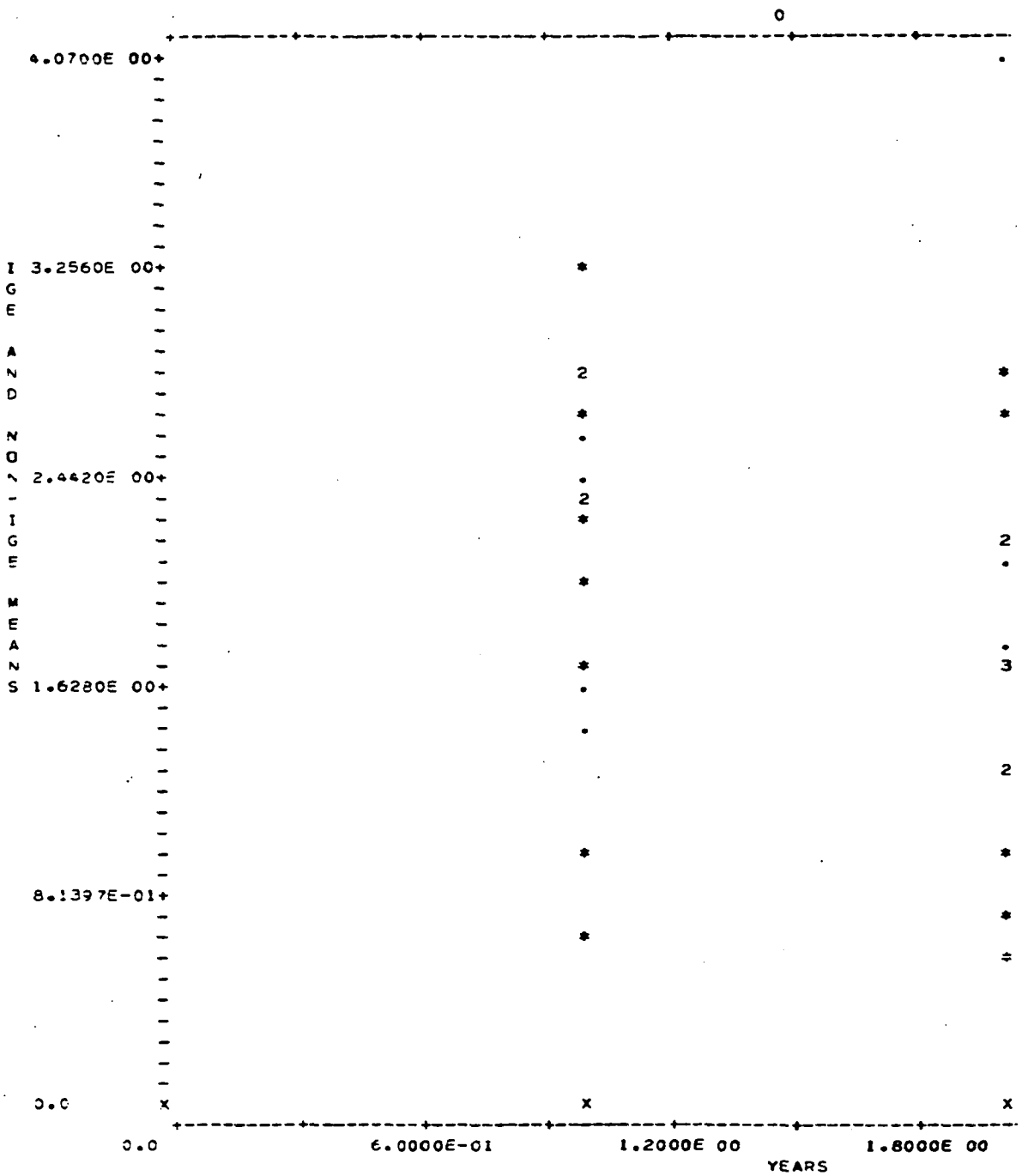

0
3.8000E 00+
3.0400E 00+
2.2800E 00+
1.5200E 00+
7.5999E-01+
0.0
IGE AND NON-IGE MEANS
0.0
6.0000E-01
1.2000E 00
1.8000E 00
YEARS

Figure P.8. Plot 8 of IGE vs. non-IGE Indicators of Quality scores across time for teacher/pupil signs. · = IGE, * = non-IGE


0
4.0700E 00+
3.2560E 00+
2.4420E 00+
1.6280E 00+
8.1397E-01+
0.0
IGE AND NON-IGE MEANS
0.0
6.0000E-01
1.2000E 00
1.8000E 00
YEARS