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A CRITICAL APPRAISAL OF INDICATORS OF  
QUALITY AND A SURVEY OF EFFECTIVE  
SCHOOL PROCESSES.

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A critical appraisal of Indicators of Quality  
and A Survey of Effective School Processes

by

Shirley Bates Stow

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## CHAPTER I. STATEMENT OF THE PROBLEM AND REVIEW OF LITERATURE

## Introduction

Considered broadly, evaluation is the discovery of the nature and worth of something. In relation to education we may evaluate students, teachers, curriculum, administrators, systems, and nations. The purposes of our evaluation may be many, but always, evaluation attempts to describe something and to indicate its perceived merits and shortcomings.

Evaluation is not a search for cause and effect, an inventory of present status, or a prediction of future success. It is something of all of these but only as they contribute to understanding substance, function, and worth. (78)

Legislative mandates, public dissatisfaction with schools, and the influence of capable educators have brought forth the need for educational evaluation. No longer, according to Merwin (57), can educators merely praise their programs of instruction and offer a personal opinion as their reason for satisfaction. In the introduction of Evaluation in Education edited by W. James Popham, it is stated that "many people are beginning to believe that the conscientious application of evaluative procedures will actually enhance the quality of American schooling. And all of this sometimes furious activity has taken place in less than a decade" (65).

The infant technology of program evaluation has produced several approaches to the assessment of elementary school programs. Two of the more recently developed systems, Indicators of Quality and A Survey of Effective School Processes are the focus of this investigation.

### Indicators of Quality

William Vincent, formerly the Director of the Institute of Administrative Research at Teachers College, Columbia University, has guided the research and dissemination of the instrument which attempts to specify the meaning of school quality. Three years were spent working with a large number of concepts relative to school quality. The initial group of concepts was reduced to four categories that have to do with the teaching-learning procedure. These categories have been defined as follows:

1. INDIVIDUALIZATION: procedures that reflect an attempt to deal with individual differences among pupils according to rate of growth, capacities, background, goals, requirements, and the like.
2. INTERPERSONAL REGARD: behavior that reflects warmth and respect among pupils and between pupils and teachers.
3. CREATIVITY: opportunity for the expression of intelligence in many different ways, for the realization of varieties of talent, and the encouragement of intellectual pioneering.
4. GROUP ACTIVITY: group interaction and interpersonal facilitation as instruments to aid learning and the accomplishment of social goals. (90)

Accordingly, a process evaluation instrument evolved which involves forty key concepts that are viewed by the authorities as being central to school quality. Many areas of research on the teaching-learning procedure relate to one of these four characteristics.

### A Survey of Effective School Processes

Since the 1972-73 school year the Institute for the Development of Educational Activities, Inc. (/I/D/E/A/) Change Program for Individually Guided Education (IGE), an educational affiliate of the Charles F. Kettering Foundation, has been engaged in efforts to develop an instrument

to evaluate educational processes. In a doctoral dissertation (August 1974) Halvorsen developed an instrument to measure the degree of IGE processes in elementary schools. Its purpose was ". . . to measure implementation levels so that the strategies and desired outcomes can be evaluated in relation to the actual practices employed" (35).

Thereafter, in the early part of 1975, Professor Halvorsen entered into contract with the Kettering Foundation to revise his dissertation instrument because it seemed to the /I/D/E/A/ staff to be a technique which held great promise for evaluation of educational processes. The revised form is used by interviewers/observers to determine the perceptions of the central office personnel, teachers, students, parents, and the principal of the implementation of the thirty-five outcomes as follows (see Appendix A) (12):

1. Institutional Commitment--Outcomes 2, 1
2. Organizational Structure--Outcomes 3, 33, 10, 4, 6, 22, 28, 23, 34, 25, 24
3. Teacher Behavior--Outcomes 13, 5, 16, 15, 21, 17, 27, 11, 19, 7, 26, 12, 14, 8, 35, 9
4. Learning Activities--Outcomes 20, 18, 32, 29, 30, 31  
(Student role)

The revised form was field-tested in February 1976. The name was changed from An Objective Measure of Educational Practices to A Survey of Effective School Processes.

## Statement of the Problem

Evaluation in education has been viewed as the things we do to determine whether or not we are reaching the goals of schooling. The Center for the Study of Evaluation, UCLA, contends that an evaluation model should be comprised of five steps: 1) needs assessment, 2) program development, 3) program implementation evaluation, 4) formative (or on-going) evaluation, and 5) summative (or seal-of-approval) evaluation.

The problem of this study was to appraise two systems of implementation evaluation: Indicators of Quality and A Survey of Effective School Processes. The data were gathered by observing and/or interviewing teachers, students, principals, central office personnel, and parents.

An efficient, effective, and relatively inexpensive means of determining the degree of program implementation is needed. Through the appraisal of these two instruments a recommendation will be made as to their possible uses.

An attempt was made to answer the following questions:

1. Will the data that are gathered by the observers/interviewers show significant differences?
2. Will the role of the teacher as identified by the two instruments be different?
3. Will the amount of time required to use either instrument be significantly different?
4. Will there be any significant differences revealed by the instruments for a school labeled IGE and one labeled non-IGE?

5. Will the degree of individualized instruction show any significant difference as measured by the two instruments?
6. Will there be any significant differences in costs of applying the two instruments?

#### Delimitations

The scope of this study was delimited to eleven public elementary schools: four in Ames, four in Indianola, and three in Marshalltown. The sample included 22 learning communities (LC) and 154 teachers.

These schools had been involved in ongoing research with Indicators of Quality--November 1972, December 1973, and November 1975. Those teachers who were observed during the November 1975 observations were asked to take part in an interview/observation session for A Survey of Effective School Processes field test in February 1976.

#### Definitions of Abbreviations and Terms

All abbreviations are used with the complete term the first time they appear. Thereafter, only the abbreviation is used. Following is a list of abbreviations and terms that are used in this dissertation:

1. A Survey of Effective School Processes--an instrument designed to measure the implementation of the 35 outcomes of quality education.
2. Decision Alternatives--a set of optional responses to a specific question.
3. Elementary and Secondary Education Act (ESEA)--an act of

federal legislation passed in 1965 which has financed many educational projects.

4. Formative Evaluation--evaluation during development, intended to provide feedback as a basis for persisting or modifying practices.
5. Individually Guided Education (IGE)--an educational process including multiage grouping, teaming, differentiated staffing, continuous progress learning, and other innovations.
6. Institute for the Development of Educational Activities, Inc., (/I/D/E/A/)--an educational affiliate of the Charles F. Kettering Foundation.
7. Indicators of Quality--an instrument with four categories designed to measure the teaching-learning procedure.
8. League--Group of schools which cooperatively support each others' efforts to implement IGE.
9. Learning Community (LC)--the instructional unit of a school which includes a unit leader, teachers, associates, and a multiage group of students.
10. Process--a continuing and cyclical activity using many methods and involving a number of steps or operations.
11. Summative Evaluation--evaluation at any time when the program is not subject to modification.
12. Model--a set of interrelated factors or variables which together comprise elements which are symbols of a social system.

## Review of Literature

The rationale used for reviewing the literature was that educational evaluation is crucial to the improvement of the teaching-learning process. This process determines the degree to which changes take place and is fundamental in educational decision-making.

According to Flanagan (22) the Phi Delta Kappa National Study Commission on Evaluation took an important step forward in increasing an educator's understanding and ability to conduct effective educational evaluation. This group identified that educational evaluation lacked specification of types of evaluation instruments, appropriate instruments, and good systems for organizing, processing, and reporting the results. Educators did not seem to know if the goals of a program were being achieved or the extent to which any problems still existed.

To do a thorough job for this study it was necessary to limit this review of literature to two main topics. The topics related to a) evaluation--definitions, models, and considerations in planning a study and b) evaluation of Individually Guided Education (IGE).

### Definitions of evaluation

Evaluation can be an exciting, meaningful process. It involves many factors which must be described so that they are comprehensible. The definitions of evaluation available at this point in time were numerous and varied but few definitions have stood the test of time. The real thrust of performing evaluation procedures began with the enactment of the Elementary and Secondary Education Act (ESEA) in 1965

and the manner in which it is defined has a direct impact on the kinds of activities that are conducted.

Many authorities have come to the forefront in recent years in educational evaluation. Some of the more widely-used approaches deal with decision-making, discrepancy, goal-referenced instruction, national assessment programs, systems approach to goal setting, and countenance of evaluation. Each researcher or writer has his own definition, e.g.,

Scriven (1967) writes of evaluation as,

concern with determining whether education is actually producing the results that it sets out to achieve as indicated by the statement of objectives. (As cited in Steele, 79, p. 192)

Scriven's work elaborates on the many roles that evaluation can take (such as accountability studies or curriculum development) but that it has only one functional goal--to determine the worth of something. What one needs to know is whether one program is better than another which is accomplished by a systematic comparison.

Stake (1967) defines evaluation as,

data that can be categorized as being either descriptive (intents and observations) or judgmental. Both are gathered about antecedents (conditions existing before the teaching that may effect the outcomes), transactions (succession of engagements that make up the process of education), and outcomes (consequences of education). (As cited in Steele, 79, p. 120)

He believes that an important part of evaluation is examining the contingencies and congruencies. One could ask, is what was observed congruent with what was intended?

Provus (1969) describes evaluation as,



the process of (a) defining program standards, (b) determining whether a discrepancy exists between some aspect of the program and the standards governing that aspect of the program, and (c) using discrepancy information to identify the weaknesses of the program. (As cited in Worthen and Sanders, 99, p. 207)

This definition provides the information which is necessary for improvement, maintenance, or termination of a program. He stresses that with the mandate in the ESEA of 1965 curriculum evaluation should have come into its own. However, as his research points out, there is little connection between program evaluation in the public schools and the kind of theory that is discussed at the university.

Stufflebeam et al. (1971) writes that evaluation is,

the process of delineating, obtaining, and providing useful information for judging decision alternatives.  
(84, p. 40)

His definition was developed with input from others serving on the Phi Delta Kappa National Study Commission on Evaluation. It became the basis for the Context-Input-Process-Product (CIPP) model which Worthen and Sanders (99) believe is the most popular one in recent years.

Other authors and researchers offer the following definitions.

Tyler (1942) writes that evaluation is ". . . concerned with determining whether education is actually producing the results that it sets out to achieve as indicated by the statement of objectives" (As cited in Steele, 79, p. 154). This type of evaluation is recurring where feedback is used to reformulate or define objectives. To Cronbach (1967) evaluation is ". . . the collection and use of information to make decisions about an educational program" (As cited in Worthen and Sanders,

99, p. 44) while Alkin (1967) offers the definition of evaluation as ". . . the process of ascertaining the decision areas of concern, selecting appropriate information, collecting and analyzing information in order to report summary data useful to decision-makers in selecting among alternatives" (3). Popham (1972) states that evaluation is ". . . the act of assessing merit by judgmentally comparing (1) the observed result (performance data) of some educational enterprise with (2) a desired standard or criterion of acceptability (preference data) (As cited in Steele, 79, p. 166). Popham suggests that two major roles are involved for this evaluation: educational needs assessment (determining the desired ends) and treatment adequacy assessment (judging the worth of educational means).

Evaluation may be defined as a multifaceted process. Basic to this process are criteria, objectives, a relationship to decision-making, and limitations. These definitions are according to the methodology of the author which includes four functions: collection, organization, analysis, and the reporting of the information.

### Evaluation models

The concept of evaluation is not new. It was evident in China as early as 2000 B.C. Greek teachers, such as Socrates, utilized evaluation techniques when speaking about the learning process. In the early 1900s Robert Thorndike, the father of educational testing, attempted to convince educators of the value in measuring human changes (As cited in Worthen and Sanders, 99).

In the 1930s two events gave impetus to evaluation--the Eight-Year Study which was designed by Tyler and Smith and the accreditation movement. By 1947 the Educational Testing Service had been formed at Princeton and subsequently had a major influence on evaluation. Descriptive studies of the 50s and 60s, such as Flanagan's Project TALENT (22), provided background for large-scale evaluations.

The implications of change that had taken place in education during the twentieth century were evident. Not much had been systematically done, however, up to this point to check the progress that was being made toward desired outcomes.

New approaches in education, especially those financed by the ESEA of 1965, were required to have evaluation built into their programs. Due to this law public officials became aware that there were few, if any, guidelines that could be used to identify educational progress (58).

Following this act by the United States Congress many researchers began to formulate plans, approaches, or models of evaluation. Today, according to Steele (79), more than 50 approaches appear in the literature.

Strevell defines a model as,

any logical flow of information that is designed to provide decision-makers with a better perspective of the data. (81)

Weiss believes that a model is,

the way to measure the effect of a program against the goals it sets out to accomplish as a means of contributing to subsequent decision-making about the program and improving future programming. (96, p. 4)

The model becomes the frame of reference, the blueprint, to be used among the persons discussing the plan. Whichever model one chooses to use, the design must match that which is to be evaluated. Similarities exist among the models but each has at least one unique idea (81).

A model should be chosen according to the importance of the decisions it will serve. Questions need to be identified and then one can be eclectic and choose the parts of a model that will deliver the answers. One must be careful not to distort the value of the original model.

#### Context, Input, Process, Product (CIPP) model

The CIPP model fathered by Stufflebeam contains the following components: 1) context evaluation is used for planning decisions, 2) input evaluation for programming decisions, 3) process evaluation for implementing decisions, and 4) product evaluation for recycling decisions. These types may be used independently or in combinations to provide formative evaluation information or summative evaluation.

Consideration must be given to the criteria and limitations of a plan. The criteria which this model must satisfy are: internal and external validity; reliability; relevance; scope; timeliness; efficiency; importance; credibility.

The contributions, with an emphasis on decision-making, are that it supplies data for decision-makers, is sensitive to feedback, allows for evaluation to take place at any stage of the program, and is wholistic. Some limitations of CIPP seem to be that there is little emphasis on value concerns, methodology is not defined, and it may be costly if

used in its entirety.

The general reasoning of CIPP is shown in Figure 1 (See Appendix B for graphics of the evaluation models). In this cyclic approach, feedback is being provided continuously. Activities are evaluated to influence decisions, which influence activities, and this goes on indefinitely (99).

CIPP is particularly useful in viewing a total program over time, developing new programs, and understanding the decision dynamics within programs. This approach provides a comprehensive plan for planning and implementing Title III (ESEA) evaluations. The Tennessee State Department of Education and the bureau of Educational Personnel Development in the United States Office of Education have used CIPP for evaluating their overall structure (84).

#### Discrepancy model

The Provus model compares performance against standards. The ultimate purpose is to determine whether to improve, maintain, or terminate a program. It gives continuous feedback, provides relevant information for decision-making, provides cost-benefit analysis, and involves evaluation procedures during program development.

Criteria for the model by Provus are well-defined. They are team involvement, periodic feedback, and the performance is compared to the standards.

Critically reviewing this approach reveals that it demands a great amount of time, it may be expensive, and it is designed for complete, not partial, evaluation.

Continuous communication through feedback loops, program improvement at any stage, and an explicit statement of standards are contributions of this model. These contributions can be used to check out a pilot program.

The evaluator is in a position of knowing whether the steps are being carried out. Also by involving the program staff better rapport could lead to the collection of more relevant data. Figure 2 (Appendix B) presents the components of the evaluation process which are used in reaching the goals (As cited in Worthen and Sanders, 99).

Provus directs an evaluation unit in the Pittsburgh Public Schools department of research. The evaluation unit has five categories of staff: administrator, evaluator, editor, secretary, and data-handler. The evaluator is responsible for coordination. This model is a good example of how a local district's research department can provide for evaluation process (As cited in Stufflebeam et al., 84).

#### Formative versus summative evaluation

The purpose of Scriven's plan is to establish and justify merit and worth. Evaluation looks at goals to determine whether or not they are being met. The evaluator will be judging the benefit(s) of an educational practice for those who are developing the program (formative evaluation) and for those who will be purchasing it (summative evaluation).

The formative role is the ongoing type which is carried out while the program is being developed and provides feedback to the developer(s). Figure 3 (see Appendix B) illustrates how this type operates.

Summative evaluation is taking a look at the completed product

(the program). For this to be done most successfully a disinterested professional evaluator should be brought in so that the consumer will be able to read an unbiased report. Figure 4 (see Appendix B) explains the summative role.

It is readily noticeable that the differences between the two roles are in the stage of development with which it relates. The evaluator asks different questions and involves different standards to distinguish between the two roles.

Contributions of this model are to focus on direct assessment of worth, to apply in various settings of evaluation, and to evaluate objectives. Scriven's concern for the evaluation of objectives is apparent throughout his writing (As cited in Worthen and Sanders, 99).

Thought needs to be given to the criteria and the limitations of this approach. Some criteria for judging this plan are the following: it must be based on goals, it must indicate worth, it should have construct validity, and it should be a complete program evaluation. Summative evaluation can be criticized for lacking methodology for assessing validity of judgments, having several overlapping concepts, and equating the performance on the criteria.

#### Countenance of evaluation

This approach by Robert Stake has a broad base for data collection and is used to improve the understanding of a program. His model identifies the parts of a program and focuses on those aspects that will produce the most program improvement.

His purpose is to describe and judge educational programs

based on a formal inquiry process with the emphasis on the collection of descriptive and judgmental data from various audiences. In this process there is the identification of areas of failures and successes.

Two types of evaluation are included in this model--formal and informal. According to Stake formal evaluation is objective and informal evaluation procedures are subjective. The subjective type needs to be given up by educators if rational judgments are to be made.

Formal evaluation, as shown in Figure 5, (see Appendix B) is an organizational framework. It suggests that the two main activities of this evaluation are descriptive and judgmental. Looking at the contingencies and congruencies are two methods which can be used to analyze the data which are collected. By comparing descriptive data with the standards one can make a recommendation concerning the future for the program.

Criteria for Stake's model includes taking a complete survey of the program, using both descriptive and judgmental data, providing immediate relative answers for decision-making, and being objective, scientific, and reliable. By meeting these standards one can select the most crucial data for a particular purpose.

Providing a systematic method for arranging descriptive and judgmental data, considering both the absolute and relative judgment, and requiring clearly expressed standards are some of the contributions of this model. It is particularly helpful in understanding the strengths of a program.

Using this plan one may encounter some value conflicts, inadequate



methodology for obtaining information on the key conditions, and some distinctions which are not clear. These limitations may be found in both the descriptive and judgmental data (As cited in Steele, 79).

Michael Scriven and Robert Stake are noteworthy among the ever-expanding group of scholars who are engaged in evaluative research. Scriven's work has been done at the University of California but not in an education context. Stake has been based in the College of Education at the University of Illinois. Their contributions are ideas which provide the operational basis for evaluation (As cited in Stufflebeam et al., 84).

To obtain the maximum benefits of any of these models of evaluation one must consider the complexity of our educational system. It appears that many of the devices that have been used to evaluate the "new innovative" programs are the ones that have been used repeatedly over the years. Perhaps with the newer programs the technology needs to change. Tyler suggests that our greatest needs are for ". . . more valid techniques for assessing instructional materials and instruction, procedures for establishing meaningful and useful standards with sound and helpful synthesis of evaluation data" (89).

#### Considerations in planning evaluation studies

One of the largest investments in the United States educational system today is in developing new programs. Many decision alternatives face the evaluator. Some attention needs to be given to the criteria for judging a study, the aspect of what formal evaluation can do for a program, the strengths and weaknesses of the methods of data collection,

and the kinds of decisions that are to be made.

Deliberate methods should be aimed at obtaining valid and reliable results. When these two factors are evident and the information necessary for judgment is available and clearly communicated to the decision-makers, then the information speaks for itself. Many evaluators work towards "*Res ipsa loquitor*."

Many educators fail to perceive what formal evaluation can do for them. The recent concern, no doubt, comes from the many evaluation activities that have been conducted over the past decade with little advantage. Unfortunately there were few guidelines available for the interpretation of the data. The main emphasis was on presumed expertise and this had failed to produce quality results.

Data produced by the subject are another planning consideration. These data can be categorized as self-reports and personal products. Strengths of these methods are that educators can (1) obtain data that would otherwise be too costly, (2) get students' feelings and thoughts, (3) gather and score the information quickly, (4) be self-administered, or (5) be in essay, short-response or problem-solving form. Shortcomings are also fairly obvious, viz., that the information depends on honesty and/or security of the student, the information may be difficult to analyze, the criteria used in making the choices may be vague, and there may be a lack of objectivity in interpretation.

The kinds of decisions to be made should also be considered when choosing an evaluation approach. Most of the time summary data help the decision-makers select among alternatives, find out whether the program

is effectively achieving its expressed objectives, and determine the extent to which a learning activity is being realized.

Saylor and Alexander contend that ". . . a well-conceived, well-executed evaluation program provides significant information to educators, taxpayers, parents, and students and can contribute to the development of better programs of schooling" (71).

### Evaluation of Individually Guided Education (IGE)

Individually Guided Education (IGE), which began in 1964 at the Wisconsin Research and Development Center and in 1965 it was established by the Kettering Foundation, is a change program that encourages practices like team teaching, multiage grouping of students, and a variety of modes of instruction. Nationwide research comparing IGE to conventional schools has been done. Sixty-two studies favored IGE, nongraded schools, or team teaching. Twenty-two studies reported no significant differences. One study favored conventional schools. A summary of selected research of IGE versus conventional schools is found in Appendix C (59b).

James Halvorsen developed an instrument to measure the degree of implementation of IGE processes in elementary school in his study, "Development and Testing of an Instrument to Measure the Degree of Implementation of Individually Guided Education Processes" (1974). Halvorsen's instrument was based on the 35 outcomes of education as identified by /I/D/E/A/ (see Appendix A).

His instrument was field tested in sixteen central Iowa schools. In using analysis of variance the IGE schools rated significantly higher on these subscales: 1) amount of teaming, 2) use of auxiliary personnel, 3) amount of instructional improvement activities, 4) amount of school-

to-school interaction, and 5) the use of teacher advisors. The other subscales were not significant. Halvorsen also found that the degree of implementation of IGE processes increased between the second and third years in the IGE schools (35).

"IGE versus Conventional Schools: Pupil Self-Concept" was studied by Arnold Lindaman (1975). His sample was 795 eight- and ten-year-olds who responded to the Self-Esteem Inventory (SEI) by Coopersmith and their teachers who completed Purkey, Cage, and Groves, Pupil Florida Key (FK). The Iowa Tests of Basic Skills (1971) or the Stanford Achievement Test (1964) was used to measure academic achievement (46).

Findings from this study showed that the composite scores of SEI were not significant. However, the subscales revealed that non-IGE students had a slightly more positive self-concept than IGE students. Non-IGE male high achievers had significantly higher scores on the home-parent subscales than IGE males. Non-IGE teachers estimated their students' self-concepts significantly more positive on FK subscales. Only the interaction between IGE and age showed a significant effect on the FK composite scores. Eight-year-old IGE students received a higher mean rating than ten-year-olds while ten-year-old non-IGE students received a higher teacher-inferred mean score (46).

"Effectiveness of Individually Guided Education Schools as Measured by Indicators of Quality " was done by Richard Doyle (1976). Teams of trained observers were used in fifteen schools to assess the four categories of school quality as defined by Indicators of Quality: individualization; interpersonal regard; creativity; group activity.

Doyle, testing by using the pooled t-test, found that IGE schools were significantly different on the subscales of individualization and group activity. The total score and all other subscale scores were not significant (19).

In the study done by Gary Olney, "Opinions and Goals of IGE and non-IGE teachers" (1976) The Perception of Education Trends (PET), a Test of Current Instructional Principles and Practices, and an opinionnaire were administered to 83 teachers.

PET evaluated teachers' opinions on forty educational trends. No significant differences were found on the composite score of teachers from IGE and non-IGE schools. The subscale scores revealed that IGE teachers rated significantly higher in: (1) individualized curriculum, (2) team teaching, and (3) use of paraprofessionals. A significant difference was found favoring teachers from non-IGE schools in (1) the amount of structure and (2) the concern for subject matter.

IGE teachers rated significantly higher on three items of Test of Current Instructional Principles and Practices which measures teacher knowledge about instructional principles and practices. These items were continuous progress learning, use of small groups, and use of individualized assessment.

From the opinionnaire the findings showed teachers differ significantly in favor of a multiunit organization regarding interaction, division of labor, and decision-making. No significant difference was found between teachers of IGE and non-IGE schools regarding objectives of teachers. The activities of teachers differed significantly in favor of IGE schools.

Many practioners and theoreticians are contributing ideas to IGE.

Continued research on learning and instruction in these school settings is needed to improve this design. Individual researchers, university-based agencies, and local school systems can contribute (41).

### Summary

Educational procedures today have great potential for advancement. Substantial progress will be achieved when a rigorous evaluation approach has been applied to the procedures. The two instruments used for this study have been developed to identify progress.

Indicators of Quality is a process evaluation instrument which incorporates forty key concepts that relate to the teaching-learning procedure. The instrument has four categories: creativity, individualization, interpersonal regard, and group activity.

Objective Measure of Educational Practices was developed to measure the implementation level of IGE processes. The instrument was developed by James Halvorsen to be used as a survey device. Later Halvorsen entered into contract with the Change Program of /I/D/E/A/ to revise the instrument. The revised form is used by interviewers/observers to determine perceptions held by teachers, students, parents, and administrators of the implementation of performance expectations. The instrument is now called A Survey of Effective School Processes.

While reviewing the literature it was evident that the various definitions which authors use for evaluation contain many basic elements: collection, organization, analysis, and reporting of the information. It is by using these elements that a model is developed.

The most recent impact on evaluation came with the enactment of

ESEA in 1965. This legislation required educators to be accountable for the use of federal monies which the school district received. Guidelines for doing an evaluation were few. Now an abundance of models is available.

Each model has its own uniqueness yet can be adapted to numerous situations. A model should satisfy certain criteria, has its limitations, and makes particular contributions. Four models--CIPP by Stufflebeam et al., Discrepancy Evaluation by Provus, Formative versus Summative Evaluation by Scriven, and Countenance of Evaluation by Stake--were discussed in this chapter.

The review of literature about methods of evaluating IGE schools revealed that several systems have been used to study the effect of implementing IGE processes. The search indicated that an instrument was developed to measure the degree of implementation of IGE processes, self-concept of pupils was studied to see if there were differences between those in IGE and non-IGE schools, effectiveness of IGE was measured, and teachers opinions and goals in IGE and non-IGE schools were surveyed. All four writers expressed concern about the labeling of IGE versus non-IGE schools. All of the schools in the sample were at different levels of IGE implementation. This must be considered when assessing the effectiveness of a program.

Judging from the investigations that have dealt with IGE, attitudes are generally positive. Research has dealt with decision-making in multiunit schools, changes that relate to institutionalizing IGE, administrator perceptions of IGE staff development and the impact of

implementing the ICE model on teachers.

Francis Caro writes that ". . . the adequate assessment of existing and innovative programs can be a vital force in directing social change and improving the lives and the environments of community members" (9). This must continue to be a driving force in our educational systems if the needs of the students are to be met.



## CHAPTER II. METHODS, PROCEDURES, AND FINDINGS

This appraisal of two instruments used to evaluate programs of instruction was made possible by the implementation of IGE in central Iowa schools. A joint intermediate agency, authorized by /I/D/E/A/ to implement IGE in selected Iowa schools, was formed in January 1972 with George Hohl, Iowa State University (ISU), and John Martin, Department of Public Instruction (DPI), serving as facilitators. The facilitators were asked to see that the /I/D/E/A/ policies were followed and to work with the league membership. The schools chosen for the Central Iowa League were from Ames, Indianola, Marshalltown, and Newton.

To make IGE function, selected principals and unit leaders were trained at ISU in a four-day session under the direction of the facilitators in May 1972. The IGE programs were begun in these schools during September 1972 (19).

## Selection of the Sample

The data for this investigation were gathered from eleven schools. Earlier studies which dealt with portions of this longitudinal research included sixteen schools. However, by the fall of 1975, one school in Ames had been closed, one Ames school chose not to be part of the study, and the three schools in Newton withdrew from the league.

From 1972 to 1975 schools in this sample changed from non-IGE to IGE. Since Indicators of Quality was applied each time in the early part of the school year, comparisons were based on whether the sample had implemented the IGE processes for the entire previous school year. Changes in classification of sample schools from 1972-1975 are noted in Table 1.

Table 1. Classification of sample schools over time

1972 and 1973			1975		
School	IGE	non-IGE	School	IGE	non-IGE
Ames	1	3	Ames	1	3
Indianola	1	3	Indianola	3	1
Marshalltown	1	2	Marshalltown	2	1

### Description of the Instruments

Two instruments were used to gather the data for this study. Indicators of Quality is an observation document which measures the quality of teaching and learning that goes on in an educational setting. It is a process evaluation instrument designed to measure individualization, interpersonal regard, creativity, and group activity. A Survey of Effective School Processes is a prototypic instrument which was developed to measure the degree of implementation of the thirty-five outcomes of the IGE processes. The data are gathered by interviews and observations.

#### Indicators of Quality

Indicators of Quality, written by William Vincent, is a process evaluation instrument. It measures school quality in four categories: individualization, interpersonal regard, creativity, and group activity. The scores indicate a quantification of quality (90).

In 1963 three groups of educators at Teachers College, Columbia University started a search to identify characteristics of school quality. These groups were the Basic Research Committee of the Metropolitan School Study Council, a special committee of administrators and supervisors, and a seminar of professors and students at Columbia. All participants were experienced educators.

Authorities were consulted, the literature was searched, results

from open-ended questionnaires were pooled, and discussions were conducted on what constitutes school quality. The ideas were brought together and the four indicators were identified (19).

The Indicators of Quality instrument was developed and applied in nearly 20,000 classrooms in 112 school districts located in 11 metropolitan regions across the United States. The instrument was developed, field tested, and refined over a period of seven years (91).

Trained observers use this instrument which has fifty-one items: seventeen are observable in teacher behavior, seventeen in pupil behavior, and seventeen in interaction of teacher and pupil. Each item is presented in both its positive and negative extreme. Thus each of the forty key concepts consists of two signs. The polarized characteristics represent the extremes and actions that are not sufficiently positive or negative are not scored.

Observers, whose schedules have been constructed by the Vincent and Olson School Evaluation Services computer, gather data by using an optical-scan score sheet. The instrument obtains a series of time samples of standard length and structure with precise instructions for timing. Segments of five minutes each are allotted for teacher signs, pupils signs, and teacher/pupil interaction signs. The unit sample is the time period not the teacher (90).

Three types of score distributions are provided on a computer printout: 1) all fifty-one items on the instruments; 2) items which pertain to the categories: individualization, interpersonal regard, creativity, and group activity; 3) items which pertain to the three timed segments of focused observation of teacher behavior, pupil behavior, and interactions between teacher and pupils (61).

Reliability of this instrument was calculated by the split-half technique. A difference score was used as a criterion and on the mean difference scores a correlation coefficient of .84 was obtained. The Spearman-Brown formula was used to establish a reliability coefficient of .91 for the total instrument (90).

#### A Survey of Effective School Processes

An Objective Measure of Educational Practices was developed by James Halvorsen (1974) when he was a doctoral candidate at Iowa State University. The instrument was designed to measure the degree to which IGE recommended educational practices were being implemented by having participants respond to a one (seldom/never) to three (always/often/usually) scale composed of 102 items. These items measured the educational practices in a school as the raters viewed them (35).

The instrument was initially field tested in seven IGE and seven non-IGE schools. Corrections were made as suggested by the respondents. Next the instrument was field tested by 307 teachers, principals, and auxiliary personnel in twelve IGE and four non-IGE schools.

Hypotheses for interrater reliability, subscale differences, and discrimination between IGE and non-IGE schools were tested. Examination of the Spearman rank-order correlations and the analysis of variance among teachers' responses within schools, indicated a lack of rater reliability in all schools because none of the mean correlations was significantly different from zero. Differences existed in the degree of implementation in both IGE and non-IGE on the eleven subscales: home-school communication, goals and objectives, learning activities,

auxiliary personnel, teaming, decision-making, instructional improvement, school-to-school interaction, student grouping, teacher-advisor, and inservice (35).

During 1975 Halvorsen worked with the /I/D/E/A/ staff to revise his original instrument. This staff had been searching for a technique that would identify the degree of implementation of educational processes. The revised form was to be used by interviewers/observers to obtain the perceptions of the central office personnel, teachers, students, parents, and principals of the degree of institutional commitment, organizational structure, teacher's role, and learning activities (student's role) outcomes as had been grouped by the /I/D/E/A/ staff based on a study done by Charters (12). Charters' work concerned characteristics of programs of instruction but did not relate specifically to IGE. However, his four groupings were used by the /I/D/E/A/ staff to group the thirty-five IGE outcomes (see Appendix A). The decision for the placement of each outcome was based on experiences of the /I/D/E/A/ staff. Therefore, it should be noted that the outcomes have been grouped arbitrarily, based on their best judgment. The revised instrument was named A Survey of Effective School Processes.

#### Collection of Data

The present investigation was launched to determine if there is change over time in schools that have been labeled IGE as measured by Indicators of Quality, to group the schools by rating them in high, medium, and low implementation of IGE processes as measured by A Survey

of Effective School Processes and then comparing these groupings on Indicators of Quality scores across all three years, and to determine if LCs by label differ on any of the four categories as measured by A Survey of Effective School Processes.

#### Indicators of Quality

In the fall of 1972 sixteen schools from four districts were asked to be a part of a study using the Indicators of Quality instrument. Fifteen persons were trained to be observers to apply the instrument: representatives from the school districts, some members of the College of Education at ISU, and personnel from what is now Heartland Area Educational Agency 11. The sessions were held in Grinnell and conducted by Martin Olson, coowner of Vincent and Olson School Evaluation Services.

Throughout the second week of November 1972 these trained observers conducted observations in the four school districts. The school districts contributed approximately \$2,000 to this project by releasing observers. Fifty-six man days were spent observing. Add to this the thirty-five days for workshop training and the total becomes ninety-one days that were needed to complete the 1972 application.

Consultant services plus computer processing were done by Vincent and Olson School Evaluation Services. Four thousand dollars were provided by the DPI to make computer time and consultant services available.

In November 1973 a one-day retraining session, under the direction of Martin Olson, was held for the same observers in order to maintain a high degree of observer reliability. During the week of December 5, 1973 twelve observers conducted classroom observations in the same elementary schools used in 1972. Funds for this application, which totaled about \$4,500, were provided by the ISU College of Education, the DPI, and the Ames, Indianola, and Marshalltown school districts (19).

In October 1975 a second one-day retraining session was held in Des Moines with Mike Martin serving as consultant for Vincent and Olson. Sixteen trained observers were present. This time three persons from the Des Moines Public School Central Office and two ISU students were included. These five persons had been trained in earlier three-day sessions.

The week of November 5, 1975 found fifteen observers applying Indicators of Quality in eleven schools to gather data for this study. Funds to cover the expenses of this application, which totaled \$2,600, were provided by /I/D/E/A/. The expenses of personnel from the College of Education at ISU, Des Moines Public School, Heartland Agency, Ames, Indianola, and Marshalltown were taken care of by their respective employers.

Field test: A Survey of Effective School Processes

Three school districts that had been part of the 1975 application of Indicators of Quality agreed to field test Halvorsen's revised instrument. In late February 1976 six /I/D/E/A/ staff members plus

Halvorsen, five researchers<sup>1</sup> and four IGE facilitators<sup>2</sup> formed teams of two (one /I/D/E/A/ staff member or Halvorsen and either a researcher or facilitator) to do the interviews and observations in five Ames schools (only four of these schools were used in this study), four Indianola schools, and three schools in Marshalltown. On Monday of the field test week a training session was held in Des Moines to acquaint the interviewers with the instrument. Tuesday through Friday the teams spent two days in each of the eleven schools.

The administrator of each building scheduled blocks of time for interviews and observations with the central office personnel, the Learning Community (LC) professional staff, the Program Improvement Committee (PIC), students, and themselves. Parents were asked to complete a brief questionnaire and return it to school. A systematically selected sample of ten percent of the parents of the attendance center was used.

The second day a team was in a building they met with the total staff the last hour of the day for a wrap-up session. This time was spent discussing the positive aspects that were noted and suggesting changes that might be implemented.

Funds for the field test were provided by the Kettering Foundation and the Ames, Indianola, and Marshalltown school districts and employers of the facilitators. The researchers volunteered their time. The

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<sup>1</sup> Rick Kohler - University of Cincinnati, Paul Soumakil - University of Missouri, Mike Szymczuk - Iowa State University, David Price - Washington University (St. Louis), and Shirley Stow - Iowa State University.

<sup>2</sup> Marie Cardamone - Des Moines Public Schools, Bill Mericle - University of Northern Iowa, Jack Sims - A.E.A. 11, Lee Wolf - DPI.



amount spent for this endeavor was approximately \$7,500. This total indicates the commitment that the staff from /I/D/E/A/ has concerning the need for a new type of instrument to evaluate programs of instruction.

### Treatment of the Data

Data from A Survey of Effective School Processes were coded and punched for computer analysis at the Iowa State University Computer Center. Computer analysis for Indicators of Quality was performed by Vincent and Olson School Evaluation Services. Statistical treatment of the data for this study was performed using regression procedures and one-way analysis of variance contained in the Statistical Package for the Social Sciences (SPSS) (59a). All hypotheses were written in null form and tested at the .05 level.

### Findings

A summary of the observations made for the three applications of Indicators of Quality is presented in Table 2. In 1972 and 1973 there were three type one (IGE) schools and eight type two (non-IGE) schools, while in 1975 there were six type one and five type two schools. The total observations were 186 in 1972, 166 in 1973, and 154 in 1975.

A Survey of Effective School Processes was being field tested for this study. Table 3 summarizes the interviews/observations that were made during the field test. Data were gathered from the same eleven schools and the school is identified as the same type of school as used

Table 2. Observations made in schools for Indicators of Quality  
(1972, 1973, 1975)

District	School	1972 Observ.	Type <sup>a</sup>	1973 Observ.	Type <sup>a</sup>	1975 Observ.	Type <sup>a</sup>
1	A	18	2	15	2	23	2
	B	21	1	20	1	14	1
	C	18	2	16	2	18	2
	D	22	2	13	2	19	2
		<u>79</u>		<u>64</u>		<u>74</u>	
2	A	12	1	13	1	13	1
	B	15	2	16	2	9	1
	C	19	2	17	2	11	2
	D	18	2	16	2	12	1
		<u>64</u>		<u>62</u>		<u>45</u>	
3	A	14	2	14	2	13	2
	B	12	1	12	1	10	1
	C	17	2	14	2	12	1
		<u>43</u>		<u>40</u>		<u>35</u>	
Total		186		166		154	

<sup>a</sup>Type 1 = IGE; Type 2 = Non-IGE.

Table 3. Interview/observations made in schools for field test of A Survey of Effective School Processes - February 1976

District	School	Type <sup>a</sup>	Days	Interviews/observations			
				Principal	Teachers	Students <sup>b</sup>	Parents <sup>c</sup>
1 (Central office interview- Dir. Elem. Ed.)	A	2	2	1	23	48	48
	B	1	2	1	14	23	23
	C	2	2	1	18	32	32
	D	2	2	1	19	31	31
2 (Central office interview- Superin- tendent of Schools)	A	1	2	$\frac{1}{2}$ time	13	30	30
	B	1	2	$\frac{1}{2}$ time	9	26	26
	C	2	2	$\frac{1}{2}$ time	11	30	30
	D	1	2	$\frac{1}{2}$ time	12	30	30
3 (Central office interview- Dir. Elem. Ed.)	A	2	2	1	13	12	12
	B	1	2	1	10	19	19
	C	1	2	1	12	19	19

<sup>a</sup>Type 1 = IGE; Type 2 = Non-IGE.

<sup>b</sup>Student number established as 10% of number enrolled.

<sup>c</sup>Parents - 10% random sample of number enrolled in attendance center.

for the 1975 application of Indicators of Quality. Interviews/observations were held with one central office staff member (superintendent or director of elementary education), building principal, teachers, students, and parents. Ten percent of the enrollment of the attendance center was used as a sample of students and parents.

An adjusted mean score (those values which would be expected if all Y values had the mean X value) was established for each building, each LC 1 (grades 1 and 2) and LC 2 (grades 3 and 4) for the categories used by A Survey of Effective School Processes: institutional commitment, organizational structure, teacher's role, and learning activities (student's role). Summaries of these data are shown in Tables 4 and 5. The closer the score is to 100 the lower the degree of implementation of a category of outcomes. Similarly, the farther from 100 that a score moves, the higher the degree of implementation of a category of outcomes.

#### Hypotheses Tested

Initially this study tested 24 hypotheses to determine if there were differences among IGE and non-IGE schools over time on the eight subscales of Indicators of Quality. The overall building, LC 1, and LC 2 scores were tested for significance.

The schools were grouped by rating them in high, medium, and low implementation of IGE processes as measured by A Survey of Effective School Processes and then the writer compared these groupings on Indicators of Quality scores across all three years. Another set of

Table 4. Adjusted mean scores from (field test) data building score and learning community 1

District	School	Type <sup>a</sup>	Bldg. score	Score LC 1	Institu- tional commitment	Organ. struc.	Teach. role	Learning act. (stud. role)
1	A	2	86	82	100	91	79	72
	B	1	90	76	67	80	81	71
	C	2	94	95	100	91	99	89
	D	2	95	82	80	97	68	81
2	A	1	83	79	54	83	80	76
	B	1	68	67	58	60	64	72
	C	2	84	85	61	91	88	80
	D	1	92	91	54	95	91	94
3	A	2	60	53	38	68	46	47
	B	1	85	79	78	90	80	69
	C	1	96	96	79	98	97	97

<sup>a</sup>Type 1 = IGE; Type 2 - Non-IGE.

Table 5. Adjusted mean scores from (field test) data building score and learning community 2

District	School	Type	Bldg. score	Score LC 2	Institu- tional commitment	Organ. struc.	Teach. role	Learning act. (stud. role)
1	A	2	86	90	100	96	87	86
	B	1	90	83	67	82	92	78
	C	2	94	94	100	100	90	93
	D	2	95	88	80	98	88	80
2	A	1	83	87	54	88	89	90
	B	1	68	70	58	63	72	72
	C	2	84	83	61	87	82	82
	D	1	92	93	54	95	94	98
3	A	2	60	67	40	76	70	62
	B	1	85	91	78	95	92	89
	C	1	96	97	79	100	98	96

24 hypotheses was tested to determine this.

Eight hypotheses were tested to determine if the LCs by label (IGE or non-IGE) differ on any of the four categories as measured by A Survey of Effective School Processes.

#### Hypotheses concerning Indicators of Quality

Hypotheses one through twenty-four were written to test the change over time on the subscales of Indicators of Quality. The subscales are composite, individualization, interpersonal regard, creativity, group activity, teacher signs, pupil signs, and teacher/pupil interactions signs.

- H<sub>1</sub>: There will be no significant difference in the change of the composite score as measured by the three applications of Indicators of Quality in the overall score of a building labeled IGE vs. non-IGE.
- H<sub>2</sub>: There will be no significant difference in the change of the individualization score as measured by the three applications of Indicators of Quality in the overall score of a building labeled IGE vs. non-IGE.
- H<sub>3</sub>: There will be no significant difference in the change of the interpersonal regard score as measured by the three applications of Indicators of Quality in the overall score of a building labeled IGE vs. non-IGE.
- H<sub>4</sub>: There will be no significant difference in the change of the creativity score as measured by the three applications of Indicators of Quality in the overall score of a building labeled IGE vs. non-IGE.
- H<sub>5</sub>: There will be no significant difference in the change of the group activity score as measured by the three applications of Indicators of Quality in the overall score of a building labeled IGE vs. non-IGE.
- H<sub>6</sub>: There will be no significant difference in the change of the teacher signs score as measured by the three applications of Indicators of Quality in the overall score of a building labeled IGE vs. non-IGE.

- H<sub>7</sub>: There will be no significant difference in the change of the pupil signs score as measured in the three applications of Indicators of Quality in the overall score of a building labeled IGE vs. non-IGE.
- H<sub>8</sub>: There will be no significant difference in the change of the teacher/pupil interaction signs score as measured by the three applications of Indicators of Quality in the overall score of a building labeled IGE vs. non-IGE.
- H<sub>9</sub>: There will be no significant difference in the change of the composite score as measured by the three applications of Indicators of Quality in the scores of the LC 1 labeled IGE vs. non-IGE.
- H<sub>10</sub>: There will be no significant difference in the change of the individualization score as measured by the three applications of Indicators of Quality in the scores of the LC 1 labeled IGE vs. non-IGE.
- H<sub>11</sub>: There will be no significant difference in the change of the interpersonal regard score as measured by the three applications of Indicators of Quality in the scores of the LC 1 labeled IGE vs. non-IGE.
- H<sub>12</sub>: There will be no significant difference in the change of the creativity score as measured by the three applications of Indicators of Quality in the scores of the LC 1 labeled IGE vs. non-IGE.
- H<sub>13</sub>: There will be no significant difference in the change of the group activity score as measured by the three applications of Indicators of Quality in the scores of the LC 1 labeled IGE vs. non-IGE.
- H<sub>14</sub>: There will be no significant difference in the change of the teacher signs score as measured by the three applications of Indicators of Quality in the scores of the LC 1 labeled IGE vs. non-IGE.
- H<sub>15</sub>: There will be no significant difference in the change of the pupil signs score as measured by the three applications of Indicators of Quality in the scores of the LC 1 labeled IGE vs. non-IGE.
- H<sub>16</sub>: There will be no significant difference in the change of the teacher/pupil interaction signs score as measured by the three applications of Indicators of Quality in the scores of the LC 1 labeled IGE vs. non-IGE.



- H<sub>17</sub>: There will be no significant difference in the change of the composite score as measured by the three applications of Indicators of Quality in the scores of the LC 2 labeled IGE vs. non-IGE.
- H<sub>18</sub>: There will be no significant difference in the change of the individualization score as measured by the three applications of Indicators of Quality in the scores of LC 2 labeled IGE vs. non-IGE.
- H<sub>19</sub>: There will be no significant difference in the change of the interpersonal regard score as measured by the three applications of Indicators of Quality in the scores of the LC 2 labeled IGE vs. non-IGE.
- H<sub>20</sub>: There will be no significant difference in the change of the creativity score as measured by the three applications of Indicators of Quality in the scores of the LC 2 labeled IGE vs. non-IGE.
- H<sub>21</sub>: There will be no significant difference in the change of the group activity score as measured by the three applications of Indicators of Quality in the scores of the LC 2 labeled IGE vs. non-IGE.
- H<sub>22</sub>: There will be no significant difference in the change of the teacher signs score as measured by the three applications of Indicators of Quality in the scores of the LC 2 labeled IGE vs. non-IGE.
- H<sub>23</sub>: There will be no significant difference in the change of the pupil signs score as measured by the three applications of Indicators of Quality in the scores of the LC 2 labeled IGE vs. non-IGE.
- H<sub>24</sub>: There will be no significant difference in the change of the teacher/pupil interaction signs score as measured by the three applications of Indicators of Quality in the scores of the LC 2 labeled IGE vs. non-IGE.

These 24 hypotheses were examined for differences between slopes. The regression technique was used. School type, whether the school is IGE or non-IGE, was studied for changes which might have occurred from the first application in 1972 to the third time in 1975.

The models used were:

$$Y_1 = \beta_0 X_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$$

$$Y_2 = \beta_0 X_0 + \beta_1 X_1 + \beta_4 X_4$$

An X-matrix for each subscale was constructed. (An example - Appendix D.) The slopes for IGE and non-IGE school data on each subscale were compared for amount of change over the three applications. To test for slope differences for the subscales, this hypothesis was used:

$$H_0: \beta_{IGE} = \beta_{non-IGE}$$

$$H_A: \beta_{IGE} \neq \beta_{non-IGE}$$

A procedure as outlined by Kerlinger and Pedhazur (40, p. 237) was used to test for slope differences:

$$F = \frac{(R^2_{y.0123} - R^2_{y.014}) / (df_{Reg_{y.0123}} - df_{Reg_{y.014}})}{(1 - R^2_{y.0123}) / df_{(N-k-1)}}$$

where F = F value

$R^2_{y.0123}$  = proportion of variance accounted for the model

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \quad (\text{Model I})$$

$R^2_{y.014}$  = proportion of variance accounted for in the model

$$Y = \beta_0 + \beta_1 X_1 + \beta_4 X_4 \quad (\text{Model II})$$

$1 - R^2_{y.123}$  = proportion of variance not accounted for in Model I

N = total number of observations

k = number of groups

The mean difference scores from the IGE schools obtained from the three applications of Indicators of Quality are found in Table 6.

Table 6. Significant subscale scores from the three applications obtained from Indicators of Quality for IGE schools

District	School	Year	Mean difference scores from five Indicators of Quality subscales				
			Overall inter-personal regard	LC 1 inter-personal regard	LC 2 inter-personal regard	LC 1 group activity	LC 1 pupil signs
1	B	1972	2.85	0.00	2.85	0.00	0.00
	B	1973	3.72	6.00	2.85	4.00	2.00
	B	1975	3.00	3.20	2.91	3.20	3.40
2	A	1972	2.63	0.00	2.63	0.00	0.00
	A	1973	2.17	1.25	2.63	2.00	1.75
	A	1975	2.67	2.80	2.50	2.60	1.80
	B	1975	3.77	3.83	3.71	2.67	2.33
	D	1975	6.45	6.29	6.75	5.00	3.29
3	B	1972	2.13	0.00	2.13	0.00	0.00
	B	1973	2.36	2.67	2.13	2.33	2.67
	B	1975	5.00	6.14	3.86	4.43	3.71
	C	1975	3.27	3.40	3.17	1.60	0.80

When the hypotheses were tested, the results showed that significant differences did occur over time on five subscales.

Using the regression technique, the slope values indicated that IGE schools over time showed evidence of more interpersonal regard for the total building, LC 1 and LC 2 scores and for group activity and pupil behavior in the LC 1 classes. (See Appendix E for the plots and tables which show the scores relative to the plots.) The differences were measured by Indicators of Quality. Therefore, hypotheses 3 (interpersonal regard for the overall score of the building), 11 (interpersonal regard for LC 1), 13 (group activity for LC 1), 15 (pupil signs for LC 1), and 19 (interpersonal regard for LC 2) were rejected. The other null hypotheses in this set remain tenable.

The significant data are presented in Table 7. The variables that showed significant differences for IGE schools over time were the scores for the overall building, for LC 1, and LC 2 for interpersonal regard and in LC 1 the scores for group activity and pupil signs.

Table 7. Indicators of Quality subscales scores which showed differences for IGE schools

Source of score	Variable	df	F
Overall building	Interpersonal regard	1/28	14.00**
LC 1	Interpersonal regard	1/22	7.76**
LC 2	Interpersonal regard	1/28	4.89*
LC 1	Group activity	1/22	6.82*
LC 1	Pupil signs	1/22	5.31*

\*\*  $P < .01$ .

\* $P < .05$ .

Hypotheses Comparing Ratings from A Survey of Effective  
School Processes with Indicators of Quality Scores

The schools were grouped by rating them in high, medium, low implementation of IGE processes as measured by A Survey of Effective School Processes and then comparing these groupings on Indicators of Quality scores across three years. Regression techniques were used.

- H<sub>25</sub>: There will be no significant difference in the change of the composite score as measured by the three applications of Indicators of Quality in the overall score of a building that perceives itself to be a high, medium, or low implementer of IGE processes.
- H<sub>26</sub>: There will be no significant difference in the change of the individualization score as measured by the three applications of Indicators of Quality in the overall score of a building that perceives itself to be a high, medium, or low implementer of IGE processes.
- H<sub>27</sub>: There will be no significant difference in the change of the interpersonal regard score as measured by the three applications of Indicators of Quality in the overall score of a building that perceives itself to be a high, medium, or low implementer of IGE processes.
- H<sub>28</sub>: There will be no significant difference in the change of the creativity score as measured by the three applications of Indicators of Quality in the overall score of a building that perceives itself to be a high, medium, or low implementer of IGE processes.
- H<sub>29</sub>: There will be no significant difference in the change of the group activity score as measured by the three applications of Indicators of Quality in the overall score of a building that perceives itself to be a high, medium, or low implementer of IGE processes.
- H<sub>30</sub>: There will be no significant difference in the change of the teacher signs score as measured by the three applications of Indicators of Quality in the overall score of a building that perceives itself to be a high, medium, or low implementer of IGE processes.

- H<sub>31</sub>: There will be no significant difference in the change of the group activity score as measured by the three applications of Indicators of Quality in the overall score of a building that perceives itself to be a high, medium, or low implementer of IGE processes.
- H<sub>32</sub>: There will be no significant difference in the change of the teacher/pupil interaction signs score as measured by the three applications of Indicators of Quality in the overall score of a building that perceives itself to be a high, medium, or low implementer of IGE processes.
- H<sub>33</sub>: There will be no significant difference in the change of the composite score as measured by the three applications of Indicators of Quality in the score of LC 1 that perceives to be a high, medium, or low implementer of IGE processes.
- H<sub>34</sub>: There will be no significant difference in the change of the individualization score as measured by the three applications of Indicators of Quality in the score of LC 1 that perceives to be a high, medium, or low implementer of IGE processes.
- H<sub>35</sub>: There will be no significant difference in the change of the interpersonal regard score as measured by the three applications of Indicators of Quality in the score of LC 1 that perceives to be a high, medium, or low implementer of IGE processes.
- H<sub>36</sub>: There will be no significant difference in the change of the creativity score as measured by the three applications of Indicators of Quality in the score of LC 1 that perceives to be a high, medium, or low implementer of IGE processes.
- H<sub>37</sub>: There will be no significant difference in the change of the group activity score as measured by the three applications of Indicators of Quality in the score of LC 1 that perceives to be a high, medium, or low implementer of IGE processes.
- H<sub>38</sub>: There will be no significant difference in the change of the teacher signs score as measured by the three applications of Indicators of Quality in the score of LC 1 that perceives to be a high, medium, or low implementer of IGE processes.

- H<sub>39</sub>: There will be no significant difference in the change of the pupil signs score as measured by the three applications of Indicators of Quality in the score of LC 1 that perceives to be a high, medium, or low implementer of IGE processes.
- H<sub>40</sub>: There will be no significant difference in the change of the teacher/pupil interaction signs score as measured by the three applications of Indicators of Quality in the score of LC 1 that perceives to be a high, medium, or low implementer of IGE processes.
- H<sub>41</sub>: There will be no significant difference in the change of the composite score as measured by the three applications of Indicators of Quality in the score of LC 2 that perceives to be a high, medium, or low implementer of IGE processes.
- H<sub>42</sub>: There will be no significant difference in the change of the individualization score as measured by the three applications of Indicators of Quality in the score of LC 2 that perceives to be a high, medium, or low implementer of IGE processes.
- H<sub>43</sub>: There will be no significant difference in the change of the interpersonal regard score as measured by the three applications of Indicators of Quality in the score of LC 2 that perceives to be a high, medium, or low implementer of IGE processes.
- H<sub>44</sub>: There will be no significant difference in the change of the creativity score as measured by the three applications of Indicators of Quality in the score of LC 2 that perceives to be a high, medium, or low implementer of IGE processes.
- H<sub>45</sub>: There will be no significant difference in the change of the group activity score as measured by the three applications of Indicators of Quality in the score of LC 2 that perceives to be a high, medium, or low implementer of IGE processes.
- H<sub>46</sub>: There will be no significant difference in the change of the teacher signs score as measured by the three applications of Indicators of Quality in the score of LC 2 that perceives to be a high, medium, or low implementer of IGE processes.
- H<sub>47</sub>: There will be no significant difference in the change of the pupil signs score as measured by the three applications of Indicators of Quality in the score of LC 2 that perceives to be a high, medium, or low implementer of IGE processes.

Table 8. Comparison of Indicators of Quality subscale score for "pupil signs" with the rating obtained from A Survey of Effective School Processes

District	School	Year	School <sup>a</sup> type	Rating <sup>b</sup>	Mean difference score for <u>Indicators of Quality</u> for <u>pupil signs in LC 1</u>
1	A	1975	2	2	1.56
	B	1975	1	3	3.40
	C	1975	2	1	1.67
	D	1975	2	2	1.75
2	A	1975	1	2	1.80
	B	1975	1	3	2.33
	C	1975	2	2	-0.33
	D	1975	1	1	3.29
3	A	1975	2	3	2.00
	B	1975	1	2	3.71
	C	1975	1	1	0.81

<sup>a</sup>Type 1 = IGE; Type 2 = non-IGE.

<sup>b</sup>Rating 1 = low degree implementation; 2 = medium degree implementation; 3 = high degree implementation.



H<sub>48</sub>: There will be no significant difference in the change of the teacher/pupil interaction signs score as measured by the three applications of Indicators of Quality in the score of LC 2 that perceives to be a high, medium, or low implementer of IGE processes.

Hypotheses 25-48 were tested by using regression procedures. Only number 39, pupil signs for LC 1, was rejected.

Table 8 is a comparison of Indicators of Quality subscale scores for pupil signs with the rating obtained from A Survey of Effective School Processes. The rating information, assigned as a result of the field test, is contained in this table and was matched with the 1975 application of Indicators of Quality.

In Table 9 the significant test results for the variable of Pupil Signs from Indicators of Quality scores across all three years for LC 1 are shown. The F-ratio is 5.8 which is significant at the .05 level.

Table 9. A subscale from Indicators of Quality as compared with the rating obtained from A Survey of Effective School Processes<sup>a</sup>

Source of score	Variable	df	F
LC 1	Pupil signs	2/21	5.8*

<sup>a</sup>This plot is shown in Appendix F, Figure 1.

\*P < .05.

Table 10 is a comparison of Indicators of Quality scores to the rating given to a school as a result of A Survey of Effective School Processes. The school type (IGE or non-IGE), the rating, and the mean

Table 10. Significant subscale scores from Indicators of Quality for labeled schools compared with rating obtained from A Survey of Effective School Processes

District	School	Year	School <sup>a</sup> type	Rating <sup>b</sup>	Mean difference scores from five <u>Indicators of Quality</u> subscale				
					Overall inter- personal regard	LC 1 inter- personal regard	LC 1 group activity	LC 1 pupil signs	LC 2 inter- personal regard
1	A	1972	2	--	3.81	0.00	0.00	0.00	3.81
	A	1973	2	--	3.95	4.40	3.20	2.80	3.81
	A	1975	2	2	2.65	3.00	1.67	1.56	2.43
	B	1972	1	--	2.85	0.00	0.00	0.00	2.85
	B	1973	1	--	3.72	6.00	4.00	2.00	2.85
	B	1975	1	3	3.00	3.20	3.20	3.40	2.91
	C	1972	2	--	3.83	5.29	4.86	3.43	2.91
	C	1973	2	--	3.83	5.29	4.86	3.43	2.91
	C	1975	2	1	2.50	2.00	2.17	1.67	2.56
	D	1972	2	--	2.86	4.67	2.44	1.78	1.62
	D	1973	2	--	2.86	4.67	2.44	1.78	1.62
	D	1975	2	2	2.20	2.50	1.88	1.75	2.21
2	A	1972	1	--	2.63	0.00	0.00	0.00	2.63
	A	1973	1	--	2.17	1.25	2.00	1.75	2.63
	A	1975	1	2	2.67	2.80	2.60	1.80	2.50

	B	1972	2	--	1.60	0.00	0.00	0.00	0.00
	B	1973	2	--	2.20	3.40	1.20	0.80	1.60
	B	1975	1	3	3.77	3.83	2.67	2.33	3.71
	C	1972	2	--	1.95	2.00	2.00	1.75	1.91
	C	1973	2	--	1.95	2.00	2.00	1.75	1.91
	C	1975	2	2	2.10	2.67	0.50	-0.33	1.25
	D	1972	2	--	4.28	7.00	3.43	2.00	2.55
	D	1973	2	--	4.28	7.00	3.43	2.00	2.55
	D	1975	1	1	6.45	6.29	5.00	3.29	6.75
3	A	1972	2	--	0.00	0.00	0.00	0.00	0.00
	A	1973	2	--	4.17	3.50	2.67	1.50	4.83
	A	1975	2	3	4.15	2.50	1.25	2.00	4.89
	B	1972	1	--	2.13	0.00	0.00	0.00	2.13
	B	1973	1	--	2.36	2.67	2.33	2.67	2.13
	B	1975	1	2	5.00	6.14	4.43	3.71	3.86
	C	1972	2	--	4.27	0.00	0.00	0.00	4.27
	C	1973	2	--	4.12	3.83	1.50	1.83	4.27
	C	1975	1	1	3.27	3.40	1.60	0.80	3.17

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<sup>a</sup>Type 1 = IGE school; Type 2 = non-IGE school.

<sup>b</sup>Rating 1 = low degree implementation; 2 = medium degree implementation; 3 = high degree implementation.

difference (MN D) score for five significant subscales are shown. The MN D is the difference between the average positive and negative signs observed in the classroom.

### Hypotheses About the Categories of

#### A Survey of Effective School Processes

Hypotheses 49-56 were written to test the adjusted mean score of each LC 1 and LC 2 as to the degree of implementation of the IGE processes as measured by A Survey of Effective School Processes.

- H<sub>49</sub>: There will be no significant difference in the adjusted mean of LC 1 of the implementation of the institutional commitment related outcome scores of IGE processes as measured by A Survey of Effective School Processes between a school labeled IGE and one labeled non-IGE.
- H<sub>50</sub>: There will be no significant difference in the adjusted mean of LC 2 of the implementation of the institutional commitment related outcome scores of IGE processes as measured by A Survey of Effective School Processes between a school labeled IGE and one labeled non-IGE.
- H<sub>51</sub>: There will be no significant difference in the adjusted mean of LC 1 of the implementation of the organizational structure related outcome scores of IGE processes as measured by A Survey of Effective School Processes between a school labeled IGE and one labeled non-IGE.
- H<sub>52</sub>: There will be no significant difference in the adjusted mean of LC 2 of the implementation of the organizational structure related outcome scores of IGE processes as measured by A Survey of Effective School Processes between a school labeled IGE and one labeled non-IGE.
- H<sub>53</sub>: There will be no significant difference in the adjusted mean of LC 1 of the implementation of the teachers' role related outcome scores of IGE processes as measured by A Survey of Effective School Processes between a school labeled IGE and one labeled non-IGE.

- H<sub>54</sub>: There will be no significant difference in the adjusted mean of LC 2 of the implementation of the teachers' role related outcome scores of IGE processes as measured by A Survey of Effective School Processes between a school labeled IGE and one labeled non-IGE.
- H<sub>55</sub>: There will be no significant difference in the adjusted mean of LC 1 of the implementation of the learning activities (student's role) related outcome scores of IGE processes as measured by A Survey of Effective School Processes between a school labeled IGE and one labeled non-IGE.
- H<sub>56</sub>: There will be no significant difference in the adjusted mean of LC 2 of the implementation of the learning activities (student's role) related outcome scores of IGE processes as measured by A Survey of Effective School Processes between a school labeled IGE and one labeled non-IGE.

One-way analysis of variance was computed to test the F-ratio for these hypotheses. The results showed significant differences in both LC 1 and LC 2 in IGE schools for the implementation of organization structure related outcome scores. Therefore, hypotheses 51 (organizational structure related outcome scores in LC 1) and 52 (organizational structure related outcome scores in LC 2) were rejected. The rest of the null hypotheses in this set remain tenable.

In Tables 11 and 12 are the results concerning organizational structure related outcome scores when A Survey of Effective School Processes was applied. The rating was established by putting the adjusted mean scores in rank order in each LC and dividing the group of scores approximately into thirds. (It was the decision of this researcher to group the scores into thirds in order to assign the degrees of implementation of the outcomes - high, medium, or low.) Those schools ranked 1 show a low degree of implementation, 2 a medium degree, and

Table 11. Display of field test results showing organizational structure outcome scores in LC 1 for IGE schools

District	Building	Rating <sup>a</sup>	Organizational structure
1	B	3	80
2	A	3	83
	B	3	60
	D	1	95
3	B	2	90
	C	1	98

<sup>a</sup>Rating 1 = low degree implementation; 2 = medium degree implementation; 3 - high degree implementation.

Table 12. Display of field test results showing organizational structure outcome scores in LC 2 for IGE schools

District	Building	Rating <sup>a</sup>	Organizational structure
1	B	3	82
2	A	2	88
	B	3	63
	D	2	95
3	B	2	95
	C	1	100

<sup>a</sup>Rating 1 = low degree implementation; 2 = medium degree implementation; 3 = high degree implementation.

3 a high degree. The closer the score is to 100 the lower the degree of implementation. The farther the score moves from 100 the higher the degree of implementation.

The significant means for the organizational structure related outcomes scores for LC 1 and LC 2 are exhibited in Table 13. The source of the mean score and the type of school (IGE or non-IGE) are shown. In both LCs the lower means belong to IGE, which indicates the higher degree of implementation of organizational structure related outcomes.

Table 13. Significant means of organizational structure related outcome scores<sup>a</sup>

Source of score	Type of school	
	IGE	non-IGE
LC 1	74.33	90.12
LC 2	77.67	93.37

<sup>a</sup>The lower scores indicate a higher degree of implementation of the outcomes.

The summary of the test results for the organizational structure for LC 1 and LC 2 is shown in Tables 14 and 15. (See Appendix G for nonsignificant data for the other categories.) The total degrees of freedom were ten. The degrees of freedom for between groups was one and within groups was nine. The F-ratio for these data was 5.223 for LC 1 and 6.022 for LC 2. In other words, those schools labeled IGE have implemented significantly more of the organizational related outcome scores (see Appendix A) than a non-IGE school.

Table 14. Analysis of variance for the organizational structure for LC 1

Source	df	Mean square	F
Between groups	1	544.1250	5.223*
Within groups	9	104.1736	
Total	10		

\*P &lt; .05.

Table 15. Analysis of variance for the organizational structure for LC 2

Source	df	Mean square	F
Between groups	1	538.3750	6.022*
Within groups	9	89.3958	
Total	10		

\*F &lt; .05.

Since this instrument was being field tested, a number of deficiencies must be noted. Those deficits which were most apparent during the field test for A Survey of Effective School Processes were that a limited number of team members had prior acquaintance with the format of the instrument and/or the techniques with which it was to be applied, a one-day training session as presently constituted may not have been sufficient preparation, those persons who use the instrument must be very familiar with the outcomes of IGE, the scoring procedures were not always possible to carry out because of the time schedule, the meaning



of the data that is collected needs more explicit explanation, some of the interview questions should be reworded, and a more precise interview guide needs to be developed.

#### Findings Concerning Nonhypothesized Questions

Will the role of the teacher as identified by the two instruments be different? The designs of the two instruments do not identify the same kinds of items as the teacher's role. Consequently, this question cannot be answered.

Will the amount of time required to use either instrument be significantly different? No, the total amount of time does not differ that much but the time structure is very different, i.e., in a building of twenty-three staff members four persons were assigned to observe for Indicators of Quality and when A Survey of Effective School Processes was applied a team of two persons worked with the staff for two days. Each observer using Indicators of Quality averages 5.6 classroom observations a day. This instrument is applied by observers who use well-defined time parameters of five minutes for each of three categories: teacher signs, pupil signs, and teacher/pupil interaction signs. A Survey of Effective School Processes was scheduled according to an administrative decision based on the schedules of the learning communities. A two-day block of time was designated for each attendance center where the team of two people conducted the interviews/observations, did the scoring, and held a wrap-up session with the staff regardless of the number of professional personnel in the building.

Will the degree of individualized instruction show any significant difference as measured by the two instruments? Individualization is a category that relates to many of the fifty-one items on Indicators of Quality while A Survey of Effective School Processes has a category of learning activities (student's role). These sections do not have corresponding items. Therefore, it would be nonproductive to compare the degree of individualized instruction as measured by these two instruments.

Will there be any significant differences in costs of applying the two instruments? Yes, an itemized cost for the sample of eleven schools (154 teachers) is presented in Table 16. It shows a breakdown of the amount spent for the application of the 1975 application of Indicators of Quality as compared with the amount to field test A Survey of Effective School Processes.

For the 1975 application of Indicators of Quality approximately \$2,600 was paid to Vincent and Olson School Evaluation Services. A breakdown of the total would be for observer retraining session: materials, personnel; computer services: schedules, scoring, reporting, auditing; special ICE and non-ICE score breakdowns. (This cost is about \$1,000 less than their standard price for such services.) The expenses of personnel from Iowa State University, Des Moines Public Schools, Heartland A.E.A. 11, Ames, Indianola, and Marshalltown Public Schools would add about \$1,875. Therefore, the 1975 application of Indicators of Quality cost about \$4,475 for eleven schools in three school districts.

Table 16. Itemized cost for the sample of eleven schools (154 teachers)

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I. The 1975 application of <u>Indicators of Quality</u>	
A. Observer retraining session: (materials, personnel)	\$1,000.00
B. Computer services: (schedules, scoring, reporting, auditing)	1,200.00
C. Special IGE and non-IGE score breakdown:	400.00
D. Substitutes for observers	1,575.00
E. Travel	150.00
F. ISU observers (travel and meals)	<u>150.00</u>
	<u>\$4,475.00</u>
II. Field test of <u>A Survey of Effective School Processes</u> - February 1976	
A. One-day training session (materials, personnel, lunch)	\$1,340.00
B. Salaries for /I/D/E/A/ staff plus facilitators	4,516.00
C. Travel for /I/D/E/A/ staff	780.00
D. Meals for /I/D/E/A/ staff for five days	450.00
E. Lodging for /I/D/E/A/ staff for five nights	<u>450.00</u>
	<u>\$7,536.00</u>

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The field test for A Survey of Effective School Processes cost approximately \$7,536 including round-trip air fare from Dayton to Des Moines, travel in Iowa, meals, and lodging for the six /I/D/E/A/ staff members. Based on the per diem salaries for the /I/D/E/A/ personnel and the facilitators, \$4,516 of the total was spent for salaries.

The amount spent for applying A Survey of Effective School Processes would not be the same under circumstances other than the field test situation. When this instrument is available for distribution, /I/D/E/A/ proposes that it will cost \$20.00 per school for the instrument. Additional costs would include training a facilitator in a two-day session to use the instrument, purchasing score sheets, and processing the data.

## CHAPTER III. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This study was the appraisal of two instruments used to evaluate programs of instruction. The implementation of IGE in several central Iowa schools and the decision to use Indicators of Quality to study the implementation process over time made this investigation possible.

This research attempted to determine if there is change over time in schools that have been labeled IGE as measured by Indicators of Quality, to group the schools by rating them in high, medium, and low implementation of IGE processes as measured by A Survey of Effective School Processes and then comparing these groupings on Indicators of Quality scores across all three years, and to determine if LCs by label differ on any of the four categories as measured by A Survey of Effective School Processes. Eleven elementary schools with 154 teachers in three Iowa school districts participated in this study.

The two instruments used to gather the data were: Indicators of Quality (Indicators) and A Survey of Effective School Processes (A Survey). Indicators was used for three applications: November 1972, December 1973, and November 1975. A Survey was field tested for this study in February 1976.

The data for Indicators were processed by the Vincent and Olson School Evaluation Services while data from A Survey were key punched and processed at the Iowa State University Computer Center. Statistical treatment of the data was also done at Iowa State University.

At the beginning of this longitudinal study, there were sixteen

schools in the sample. However, as time progressed five schools were no longer a part of the group: Three schools withdrew from the Central Iowa League, one chose not to be involved in the study, and one closed due to declining enrollment.

The two instruments were used in the 1975-76 school year in six IGE schools and five non-IGE schools. The data were used in computing regression procedures, in one-way analysis of variance, and in explaining nonhypothesized questions.

### Conclusions

The following conclusions have been made as a result of this study:

1. The costs of applying these two instruments for this study are markedly different. The 1975 application of Indicators cost about \$4,475 for eleven schools in three school districts or \$29.00 for each teacher involved. The field test for A Survey cost about \$7,536 or \$49.00 for each of the 154 teachers.
2. The total amount of time to apply either instrument does not differ much, but the time structure is very different. In other words, a building of twenty-three staff members required four persons to observe one day for Indicators and when A Survey was applied a team of two persons worked with the building staff for a two-day block of time.
3. Indicators has a specific subscale which identifies individualization through observation on eight items. A Survey identifies individualization through perceptions obtained from interviews/

observations. Inasmuch as the instruments do not gather the data in a like manner, they cannot be compared as to the degree of individualization that is measured.

4. It is nonproductive to compare the teacher's role items on the two instruments because they are not parallel instruments.
5. There are many differences in the items on the instruments. To identify these differences and compare the two devices as to what they measure has not been productive.
6. There is a difference over the three applications of Indicators subscale of interpersonal regard for the total building, for LC 1 and for LC 2 scores. For instance, in those schools labeled ICE the classroom climate is more desirable.
7. On the subscale of scores for group activity, the LC 1 classes of ICE schools have more group interaction that aids learning and determines the climate of sharing in problem solving.
8. Pupil behavior scores in LC 1 in ICE schools showed that students are more active participants in the classroom and greatly influence what goes on there.
9. The findings did not show that the longer a school belonged to ICE the greater the degree of implementation of outcomes. In fact, in two instances, the highest ratings were assigned to schools that have had the least experience in an ICE setting.
10. Pupil signs in LC 1 was the only subscale of Indicators across all three years that showed a significant difference for ICE

schools when compared with the degree of implementation of outcomes as measured by A Survey. In other words, items such as responses to teachers questions, respect for opinions, and group cohesiveness occurred more often in an IGE school than in a non-IGE school.

11. IGE schools differ from non-IGE schools on organizational structure in both LC 1 and LC 2. More often in IGE schools than in non-IGE schools educational practices, such as, a variety of learning activities is provided when building learning programs, a systematic method of gathering and using information about a student is used, and staff members are more responsive to one another's needs, are evidenced.
12. No significant differences were found between IGE and non-IGE schools on three groupings: institutional commitment, teacher's role, and learning activities (student's role). This is to say that whether the staff has examined their own goals and IGE outcomes before they participated in the program, whether students have an assigned advisor who is a supportive person, or whether each student can state the learning objectives for the activity in which he/she is engaged were not apparently different among the schools in this sample.



## Discussion

The two instruments used for this study can be related to two models of evaluation which appear frequently in the literature today. Indicators has a likeness to Stufflebeam's CIPP model (83) where the activities are evaluated and then the decisions are made. CIPP is useful in viewing a total program over time. A Survey could be defined as similar to the Provus model (66) where program developers define the program standards, observe for a discrepancy, and give feedback information about the discrepancy to the developers.

This research, which tested the change over time in IGE, the comparison of the rating given to a school according to the degree of IGE implementation with the Indicators scores over all three years, and the LCs by label to determine if there were differences on any of the four categories as measured by A Survey, found more significant changes that related to IGE schools than the earlier studies by Halvorsen (35), Olney (59b), Lindaman (46) and Doyle (19).

The IGE processes have been categorized into thirty-five outcomes or expectations to be achieved by those who are involved in the program. When schools that are labeled IGE do not match up to these expectations as measured by Indicators or A Survey how can it be explained? Perhaps the IGE model has not been implemented correctly. This often happens because without continuous and supportive inservice of the staff a change of programs will not be effective.

Does a staff function differently depending on how long it has been an IGE school? For the most part it is not how long a school has been

in IGE but the kind of working relationship that exists among the staff.

Does a change in key persons, i.e., the unit leader, make a difference in the functioning of the LC? Yes, because each time the unit leader changes the LC professional staff must become familiar with the leadership style of the newly appointed person. Therefore, it does not seem wise to rotate unit leaders on a yearly basis as is done in some schools.

Would a change in building administrators have an effect? An obvious answer is that if the present administrator is effective as a change agent and the next one to come into the position shows different leader behavior, then differences will arise. The most noticeable effect would occur when a change is made from a leader who manages the building by very structured procedures to one who is laissez faire.

Was one day of training on how to use A Survey enough? No, because only a few team members had any previous knowledge about the instrument. It is an instrument that needs to be thoroughly studied before it is applied.

Was the scheduling which was done by the building administrator for A Survey the most practical? It is not believed that it was the most workable. This item is receiving consideration by the /I/D/E/A/ staff as they review the total procedures for using A Survey. There should be more guidelines given to a building administrator if he/she is to do the scheduling.

Would different results have been obtained if this were not a field test for A Survey? Yes, the next time this instrument is used

significant changes will have been made in the format of it. Also the type of score sheet, the plan for a two-day session in a school, the length of a training session, and the interview guide will be changed. One of the researchers involved with the field test, Paul Soumakil, has been trained more thoroughly in the use of the instrument and will be working with the Center for Educational Improvement to train facilitators how to use A Survey.

### Implications of the study

Indicators subscale scores and the ratings from A Survey are desirable to use for evaluating programs of instruction. After careful study of the data gathered during this investigation, it appears that Indicators is an instrument which is used to determine the quality of a program in terms of group activity, creativity, interpersonal regard, and individualization. A Survey affords the staff the opportunity of having immediate feedback after the interviews and observations. This supportive type inservice is highly prized by a professional staff. Both instruments are needed as one cannot replace the other.

The changes over time in subscale scores of Indicators with the three applications, the rating given to a school by applying A Survey and then comparing the rating with the Indicators across all three years, and the difference, if any, that a label (IGE or non-IGE) of an LC makes on the categories measured by A Survey were the thrusts of this study. Significant differences were found which relate to IGE schools for interpersonal regard for the total building, LC 1 and LC 2, for

group activity and pupil signs for LC 1, for pupil signs in LC 1 from Indicators across three years when compared to the rating from A Survey, and for organizational structure related outcomes for LC 1 and LC 2.

It was apparent that many of the educational practices were being carried out satisfactorily in the total sample, but the observers and/or interviewers were able to detect differences which related to IGE schools. The personnel of a school needs to advocate the underlying philosophy measured by the instrument if the scores are to have meaning for them. When the scores of a school do not match the intended goals, it may be necessary to take a close look at the program of instruction and make any changes that are needed to improve it.

#### Limitations

Research studies have certain limitations that need to be acknowledged before the results can be considered appropriate. The limitations of this study were:

1. The sample had been chosen for two previous applications of Indicators from the Central Iowa League of IGE schools and was not a random selection.
2. By the time of this study only eleven out of the original sixteen schools remained in the sample. Three elementary schools withdrew from the league, one school chose not to be a part of the study, and one school had been closed due to declining enrollment.
3. Two years had passed since most of the observers had applied

the Indicators instrument. Even after one day of retraining, the observers' skills may not have been as keen as they originally had been.

4. The cost analysis for this study was not fair. Under circumstances other than a field test, A Survey would be much less expensive to apply.
5. Halvorsen's (35) original instrument was being revised when this study was first initiated. The revision, A Survey, was not available until early February 1976. Consequently comparisons were made more difficult because A Survey items kept changing.
6. A limited number of team members for A Survey had any acquaintance with the instrument before the training day for the field test.
7. The one-day training period for those persons who used A Survey was not long enough.
8. Scoring was not always done on A Survey immediately following an interview. This was due to scheduling but could have had an effect on the results because it meant that more than one interview may have been held before any scoring was done.
9. Grade-level groupings used in the schools for the two instruments did not always encompass the same grade-level groups. An arbitrary adjustment was made for those schools where this applied.
10. The classification of schools changed from non-IGE to IGE from

1972 to 1975. (See Table 1, chapter 2.)

11. It is assumed that the rating of A Survey is constant or nearly constant over the three applications of Indicators.
12. An observation done for Indicators was like a "photograph" because no interaction occurred between those persons involved but when A Survey was applied most of the data was gathered by interactions.

### Recommendations

In light of the findings of this investigation, several recommendations seem appropriate.

#### Recommendations for practice

A supportive inservice program seems to be necessary. Each building has put forth the effort to familiarize its staff with IGE concepts. However, often this is done prior to its implementation and then never done again. The inservice should prepare the staff and support it over time.

If schools are going to continue to use Indicators of Quality as the tool for measuring progress, more meaningful feedback needs to be given to the staff members who are involved. It was found that teachers had little idea as to the interpretation of the data gathered by the instrument even though it had been applied three times in the building.

Each school, IGE or non-IGE, needs to have a common, agreed upon direction for its educational program. This could be accomplished by

becoming involved in sessions where building goals and objectives are planned.

The LC professional members need to have a two- or three-year plan for their LC. Within this plan should be some check points showing where they expect to be and when they expect to be there.

More parents need to be involved in change. Whenever they are involved it has been evident that they are more supportive of the plan.

A Survey of Effective School Processes could serve a district as an excellent inservice tool with immediate feedback. A trained facilitator could point out the contributions it has to offer to education and make them applicable to the district being served.

#### Recommendations for research

By reviewing these results a continued evaluation of the implementation of the IGE processes is suggested. Since there are more differences in this study than in earlier ones, it would seem advisable to do another study to determine any further changes.

Schools in this sample were at various points of implementation of IGE processes. It is recommended that a similar study be conducted, using only one of the instruments, with schools throughout the state that have been in IGE the same amount of time.

One limitation of this longitudinal study was the attrition in the sample. A researcher expects changes like this to occur but it makes it more difficult to draw conclusions. It is recommended that a well-established sample of IGE schools be chosen for further study.

Use the instrument, A Survey of Effective School Processes, with a larger sample. The instrument has the potential for identifying the degree of implementation of the thirty-five outcomes. When applied by more thoroughly trained persons, it would offer direction to a staff.



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## APPENDIX A. IGE OUTCOMES

The thirty-five IGE outcomes as used in A Survey of Effective School Processes were grouped by the /I/D/E/A/ staff based on a study done by Charters (12). The decision for placement of each outcome was based on the experiences of the /I/D/E/A/ staff.

The four groupings show how the outcomes are prioritized, high to low, according to the best judgment of the /I/D/E/A/ team. Hence, the numbering was not done consecutively, but the list was numbered as they are found in an original list of the IGE outcomes (72).

IGE Outcomes

## Institutional Commitment:

2. The school district has approved the schools staff's decision to implement the /I/D/E/A/ Change Program for Individually Guided Education.
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.

## Organizational Structure:

3. The entire school is organized into Learning Communities (L.C.) with each L.C. composed of students, teachers, aides, and a leader.
33. Teacher performance in the learning environment is constructively critiqued by members of the L.C. using both formal and informal methods.
10. A variety of learning activities using different media and modes are used when building learning programs.
4. Each L.C. is comprised of approximately equal numbers of two or more student age groups (ages 5-11).

6. Sufficient time is provided for L.C. staff members to meet.
22. There is a systematic method of gathering and using all information about a student which affects his or her learning.
28. The Program Improvement Council (PIC) formulates school-wide policies and operational procedures and resolves problems referred to it involving two or more L.C.
23. The school is a member of a League of schools implementing processes and participating in an interchange of personnel to identify and alleviate problems within the League schools.
34. Decisions regarding the planning of learning programs for the L.C., in general, and for individual students are constructively critiqued by members of the L.C.
25. Staff members are responsive to one another's needs, trust one another's motives and abilities, and have developed the techniques of open communication, thereby leading to an effective working relationship.
24. The school as a member of a league of IGE schools stimulates an interchange of solutions to existing educational problems and serves as a source of ideas for new development.

#### Teacher's Role:

13. Learning Community members make decisions regarding the arrangements of time, facilities, materials, staff, and students within the L.C.
5. Each L.C. contains a cross section of staff.
16. 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.
15. The following are considered when students are matched to learning activities: peer relationships; achievement; interest in subject areas; self-concept.
21. Each student demonstrates increasing responsibility for pursuing her or his learning program.
17. Each student (individually, with other students, with staff members, and with his/her parents) plans and evaluates his or her own progress toward educational goals.

- 27. The PIC 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.
- 11. Student learning takes place with L.C. members except when special resources are required.
- 19. Each student accepts increasing responsibility for the selection or development of learning activities for specific learning objectives.
- 7. Learning Community members select broad educational goals to be emphasized by the L.C.
- 26. The PIC analyzes and improves its operations as a functioning group.
- 12. The staff and students use special resources from the community in learning programs.
- 14. Students and teachers are involved in continuous assessment of learning programs using a variety of techniques.
- 8. Role specialization and a division of labor among teachers are characteristics of the L.C. activities of planning, implementing, and assessing.
- 35. A personalized inservice program is developed and implemented for each L.C. staff member.
- 9. Each student's learning program is based on specified learning objectives.

#### Learning Activities (Student's Role):

- 20. Each student can state learning objectives for the learning activities in which she or he is engaged.
- 18. Each student accepts increasing responsibility for selection of his or her learning objectives.
- 32. The L.C. analyzes and improves its operations as a functioning group.
- 29. Students are involved in decision-making regarding school-wide activities and policies.
- 30. The PIC coordinates school-wide inservice programs for the total staff.
- 31. Open communication exists between parents, students, staff, and the community.

APPENDIX B.   GRAPHICS OF THE EVALUATION MODELS  
                 WHICH ARE DISCUSSED IN CHAPTER I.

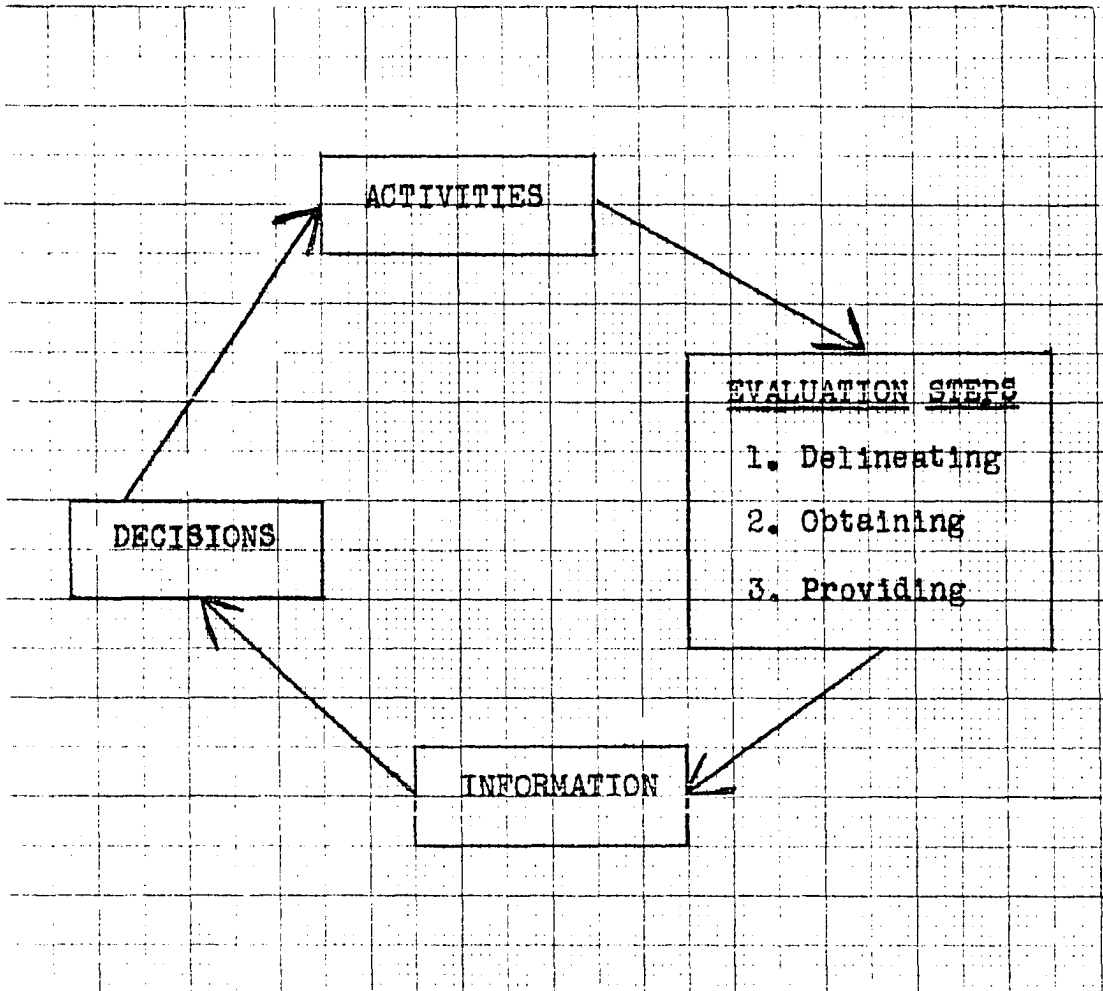


Figure B.1. The relation of evaluation to decision-making

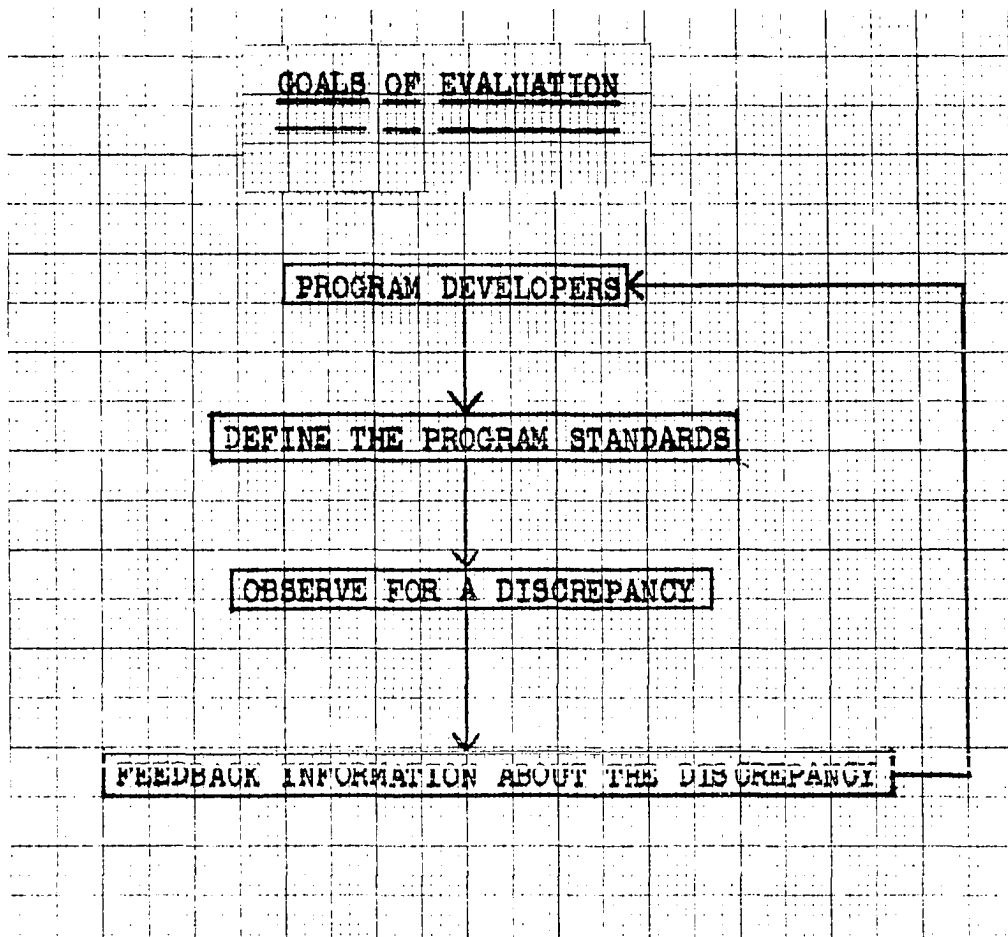


Figure B.2. Steps in reaching Provus' goals of evaluation  
(66)

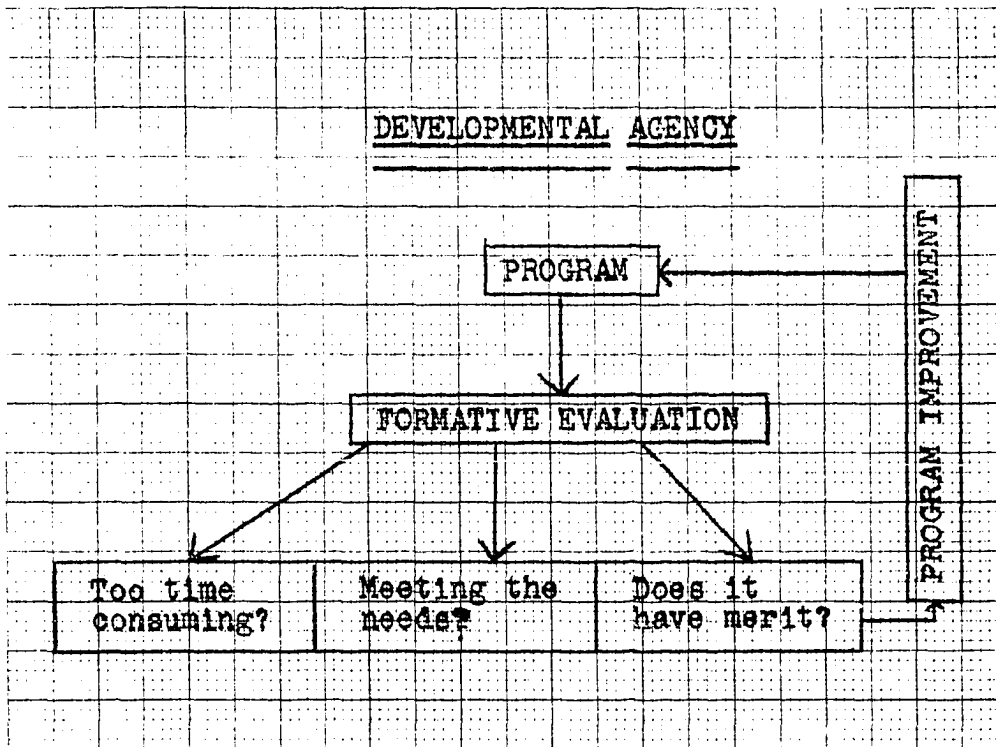


Figure B.3. Formative evaluation: Ongoing improvement



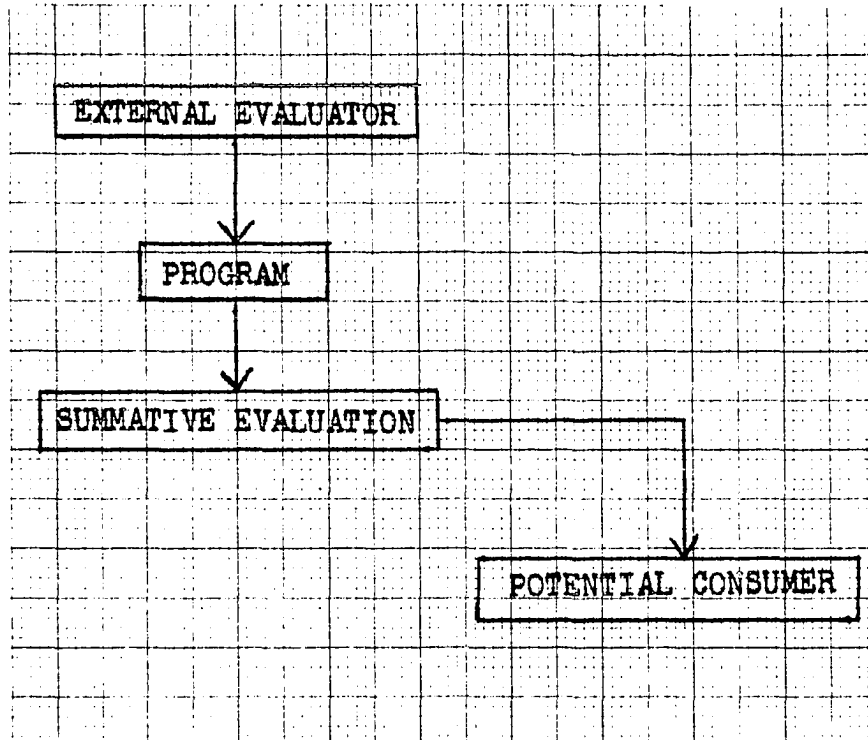


Figure B.4. Summative evaluation: Final judgment

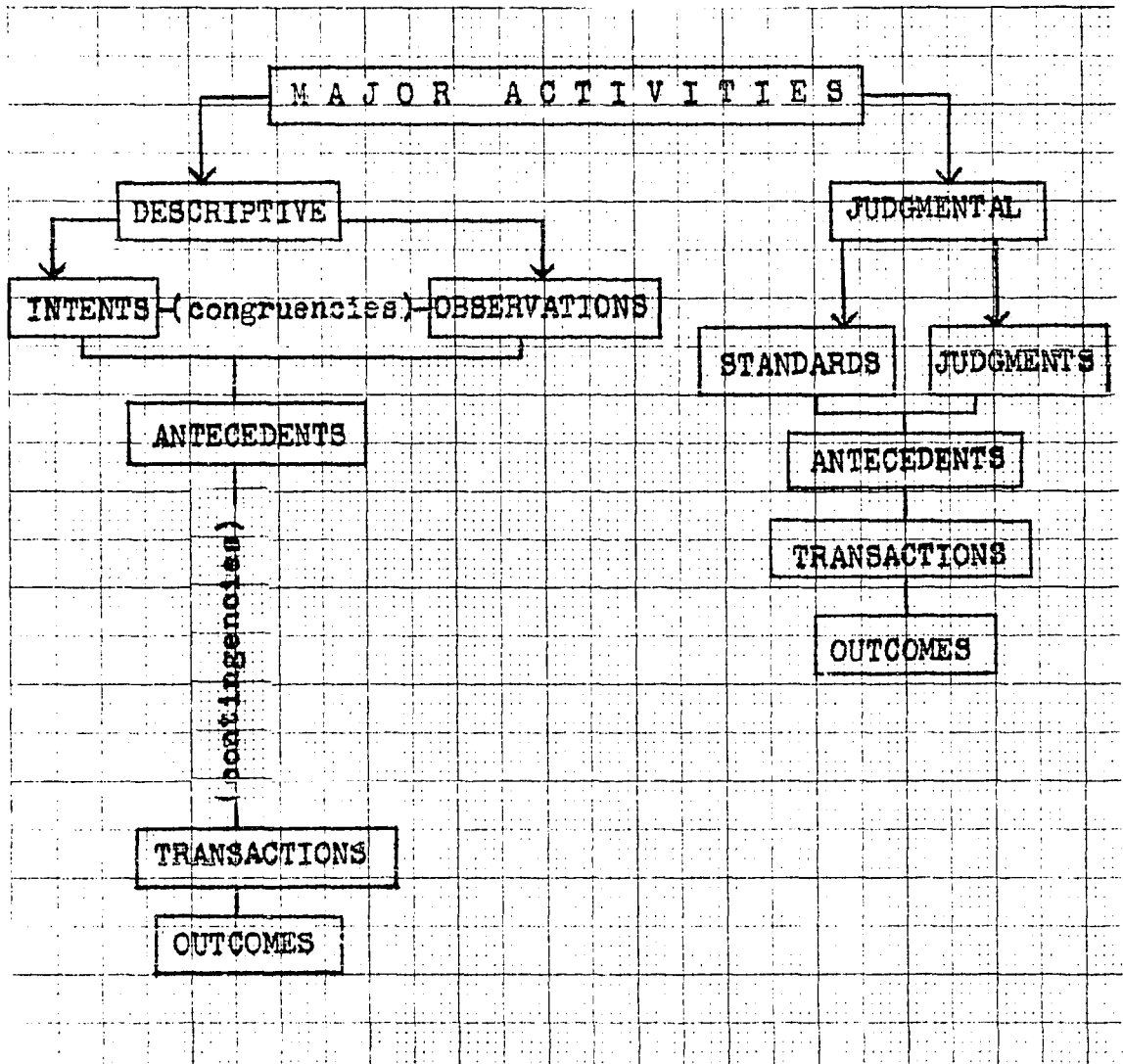


Figure B.5. Formal evaluation: Objective

APPENDIX C. SELECTED RESEARCH IGE VS. CONVENTIONAL SCHOOLS<sup>a</sup>

	Significant Differences Favoring IGE Schools	No Significant Differences Between IGE and Conventional Schools	Significant Differences Favoring Conventional Schools
Achievement (IGE and Nongraded)	24	6	
Achievement (Team Teaching)		5	
Organizational Structure	2	1	
Principal's Role	4	1	
Implementation Degree	11	1	
Student Attitudes and Self-Concept	14	3	1
School Learning Climate	3	1	
Parental Attitudes	4	1	
Costs		3	

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<sup>a</sup>Used by permission of the researcher, Gary Olney (59b).

APPENDIX D. SAMPLE X-MATRIX FOR REGRESSION ANALYSES OF LABELED IGE VS.  
NON-IGE DATA<sup>a</sup>

X <sub>0</sub>	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>
1	1	72	0	72
1	1	73	0	73
1	1	75	0	75
1	1	72	0	72
1	1	73	0	73
1	1	75	0	75
1	1	75	0	75
1	1	75	0	75
1	1	72	0	72
1	1	73	0	73
1	1	75	0	75
1	2	0	72	72
1	2	0	73	73
1	2	0	75	75
1	2	0	72	72
1	2	0	73	73
1	2	0	75	75
1	2	0	72	72
1	2	0	73	73
1	2	0	75	75
1	2	0	72	72
1	2	0	73	73
1	2	0	72	72
1	2	0	73	73
1	2	0	75	75
1	2	0	72	72
1	2	0	73	73
1	2	0	72	72
1	2	0	73	73
1	2	0	75	75
1	2	0	72	72
1	2	0	73	73
1	2	0	75	75

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<sup>a</sup>X<sub>0</sub> = overall mean value.

X<sub>1</sub> = label identification (1 = IGE, 2 = non-IGE).

X<sub>2</sub> = Indicators years in program associated with IGE.

X<sub>3</sub> = Indicators years in program not associated with IGE.

X<sub>4</sub> = years associated with both IGE and non-IGE.

APPENDIX E. PLOTS AND TABLES WHICH SHOW THE SCORES  
RELATIVE TO THE PLOTS

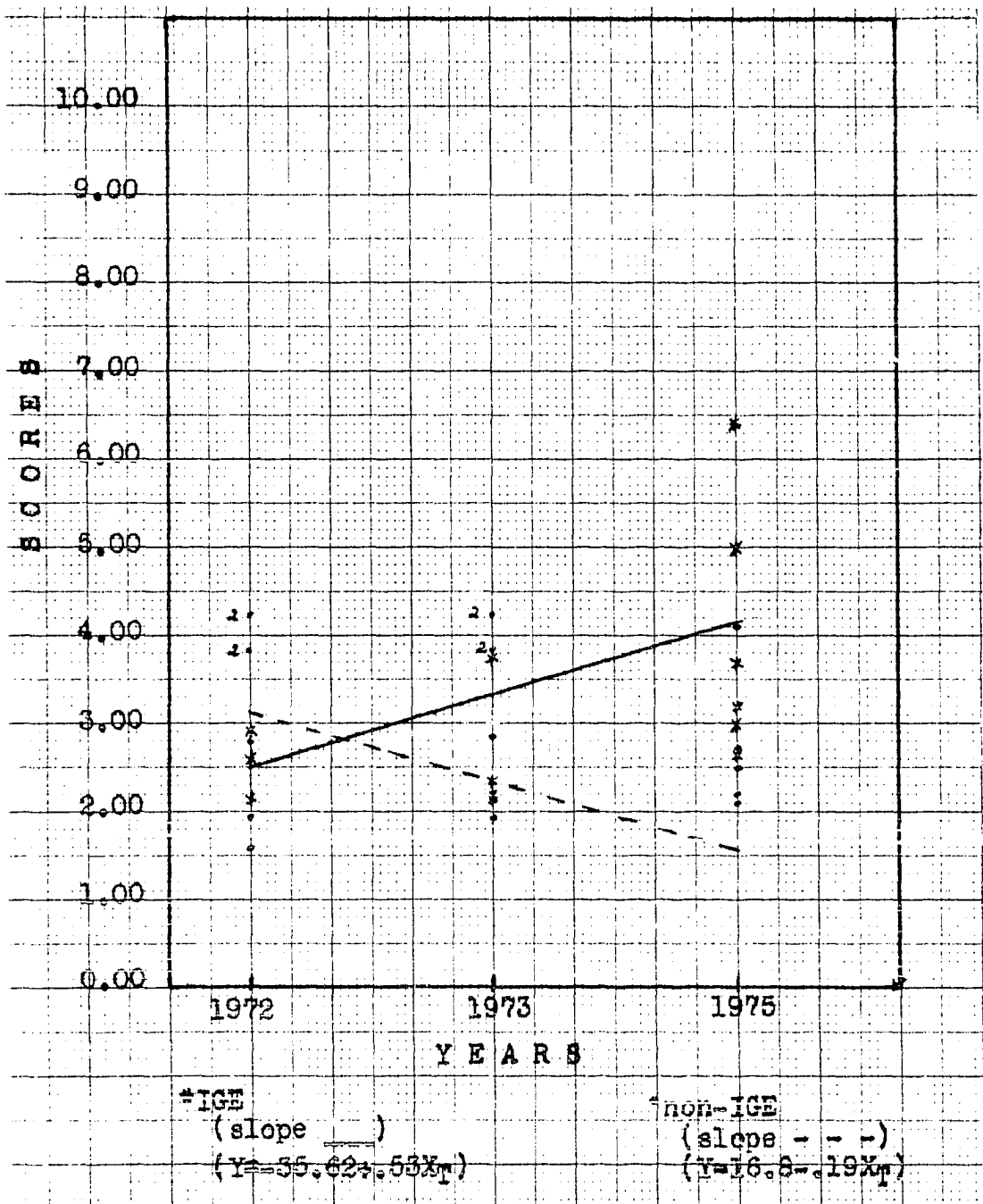


Figure E.1. The scores are the mean difference score for interpersonal regard for overall building from Indicators of Quality observations for 1972, 1973, and 1975

Table E.1. Score values relative to slope for overall building score for interpersonal regard from Indicators of Quality

District	Building	School <sup>a</sup> type	Year	Overall building score for inter- personal regard
1	A	2	1972	3.81
	A	2	1973	3.81
	A	2	1975	2.65
	B	1	1972	2.85
	B	1	1973	3.72
	B	1	1975	3.00
	C	2	1972	3.83
	C	2	1973	3.83
	C	2	1975	2.50
	D	2	1972	2.86
	D	2	1973	2.86
	D	2	1975	2.20
2	A	1	1972	2.63
	A	1	1973	2.17
	A	1	1975	2.67
	B	2	1972	1.60
	B	2	1973	2.20
	B	1	1975	3.77
	C	2	1972	1.95
	C	2	1973	1.95
	C	2	1975	2.10
	D	2	1972	4.28
	D	2	1973	4.28
	D	1	1975	6.45
3	A	2	1972	0.00
	A	2	1973	4.17
	A	2	1975	4.15
	B	1	1972	2.13
	B	1	1973	2.36
	B	1	1975	5.00
	C	2	1972	4.27
	C	2	1973	4.12
	C	1	1975	3.27

<sup>a</sup>Type 1 = IGE; Type 2 = non-IGE.

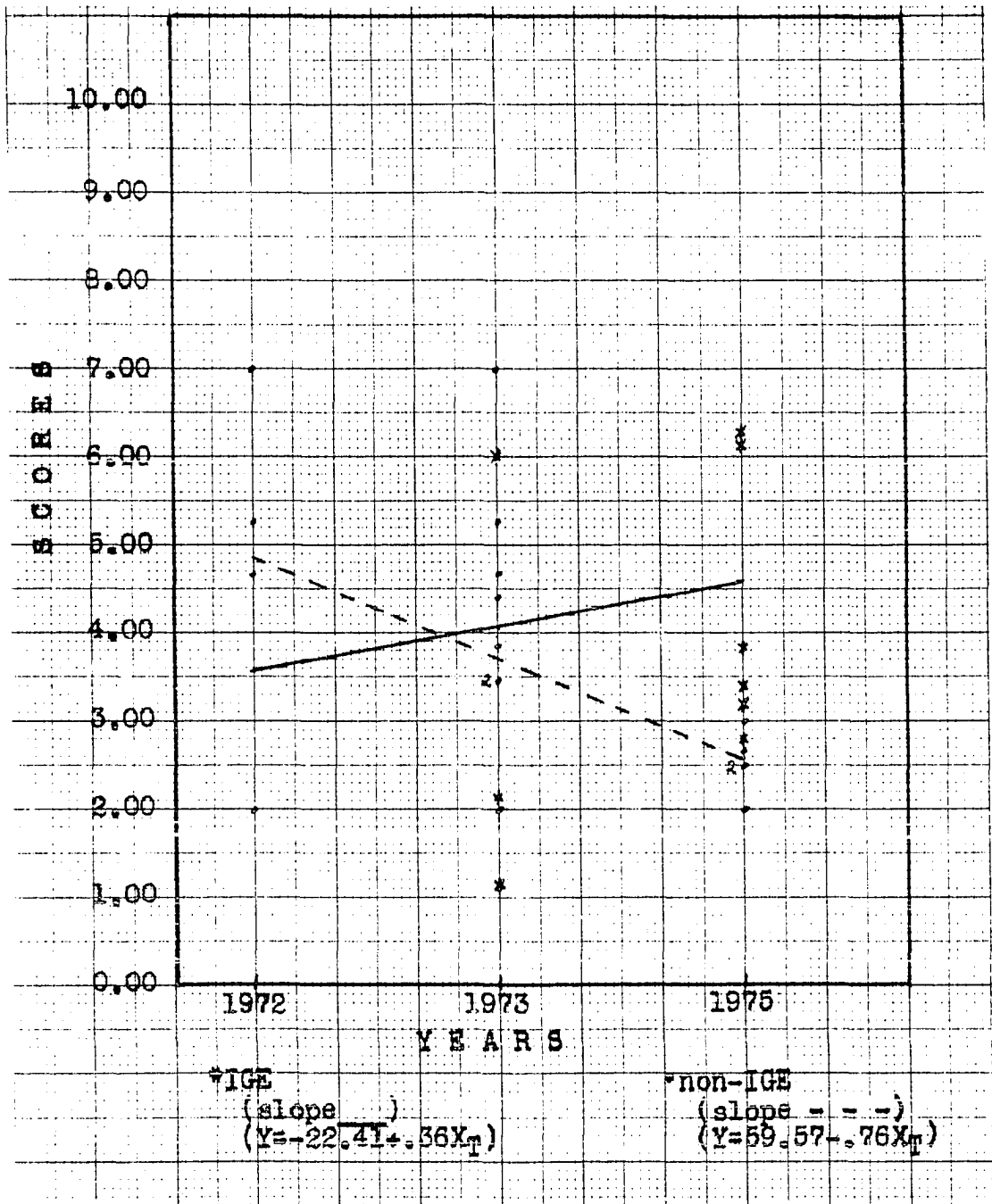


Figure E.2. The scores are the mean difference score for interpersonal regard for LC 1 from Indicators of Quality observations for 1972, 1973, and 1975



Table E.2. Score values relative to slope for LC 1 for interpersonal regard from Indicators of Quality

District	Building	School <sup>a</sup> type	Year	LC 1 score for interpersonal regard
1	A	2	1972	--
	A	2	1973	4.40
	A	2	1975	3.00
	B	1	1972	--
	B	1	1973	6.00
	B	1	1975	3.20
	C	2	1972	5.29
	C	2	1973	5.29
	C	2	1975	2.00
	D	2	1972	4.67
	D	2	1973	4.67
	D	2	1975	2.50
2	A	1	1972	--
	A	1	1973	1.25
	A	1	1975	2.80
	B	2	1972	--
	B	2	1973	1.60
	B	1	1975	3.83
	C	2	1972	2.00
	C	2	1973	2.00
	C	2	1975	2.67
	D	2	1972	7.00
	D	2	1973	7.00
	D	1	1975	6.29
3	A	2	1972	--
	A	2	1973	3.50
	A	2	1975	2.50
	B	1	1972	--
	B	1	1973	2.67
	B	1	1975	6.14
	C	2	1972	--
	C	2	1973	3.83
	C	1	1975	3.40

<sup>a</sup>Type 1 = IGE; Type 2 = non-IGE.

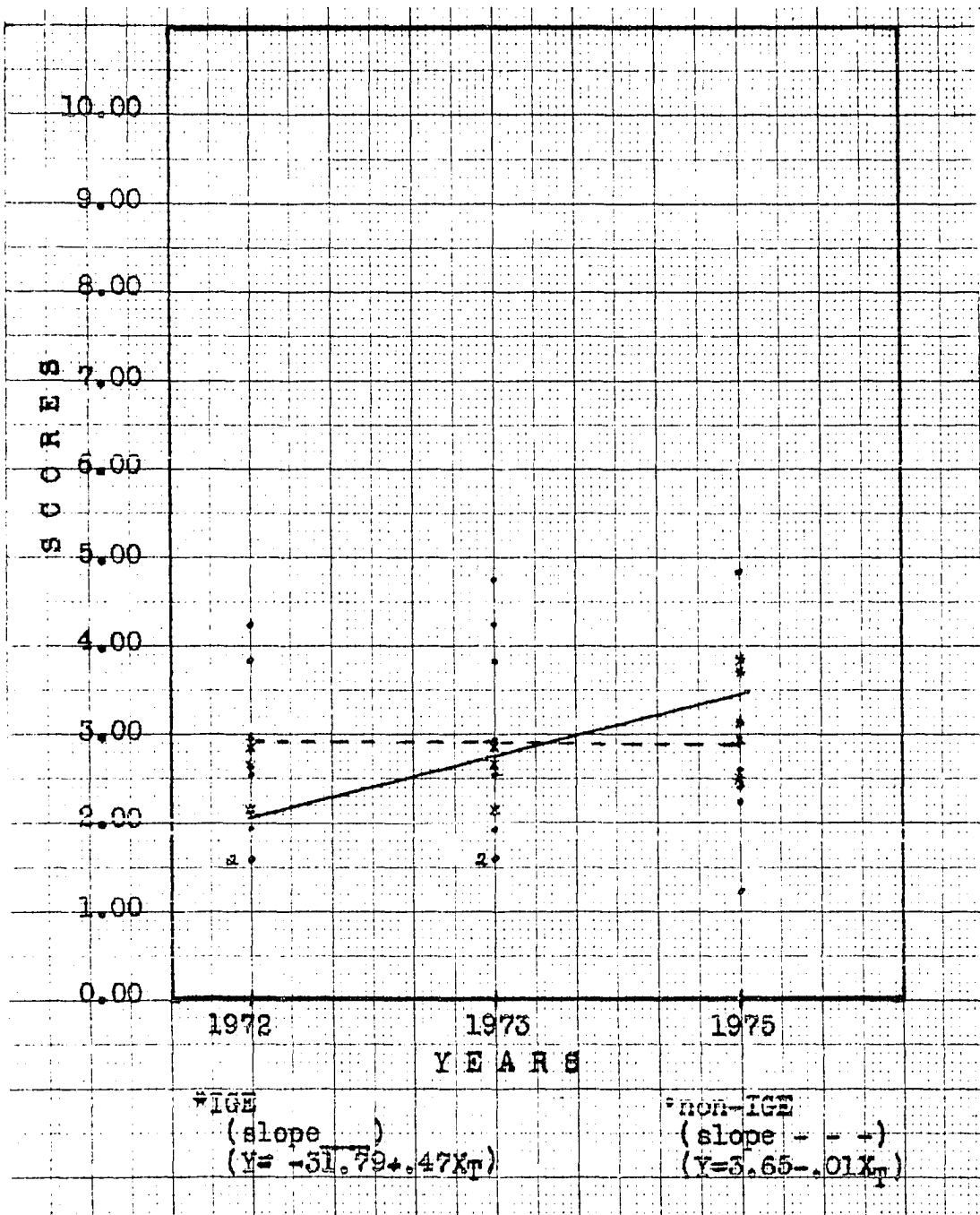


Figure E.3. The scores are the mean difference score for interpersonal regard for LC 2 from Indicators of Quality observations for 1972, 1973, and 1975

Table E.3. Score values relative to slope for LC 2 for interpersonal regard from Indicators of Quality

District	Building	School <sup>a</sup> type	Year	LC 2 score for interpersonal regard
1	A	2	1972	3.81
	A	2	1973	3.81
	A	2	1975	2.43
	B	1	1972	2.85
	B	1	1973	2.85
	B	1	1975	2.91
	C	2	1972	2.91
	C	2	1973	2.91
	C	2	1975	2.56
	D	2	1972	1.62
	D	2	1973	1.62
	D	2	1975	2.21
2	A	1	1972	2.63
	A	1	1973	2.63
	A	1	1975	2.50
	B	2	1972	1.60
	B	2	1973	1.60
	B	1	1975	3.71
	C	2	1972	1.91
	C	2	1973	1.91
	C	2	1975	1.25
	D	2	1972	2.55
	D	2	1973	2.55
	D	1	1975	6.75
3	A	2	1972	--
	A	2	1973	4.83
	A	2	1975	4.89
	B	1	1972	2.13
	B	1	1973	2.13
	B	1	1975	3.86
	C	2	1972	4.27
	C	2	1973	4.27
	C	1	1975	3.17

<sup>a</sup>Type 1 = IGE; Type 2 = non-IGE.

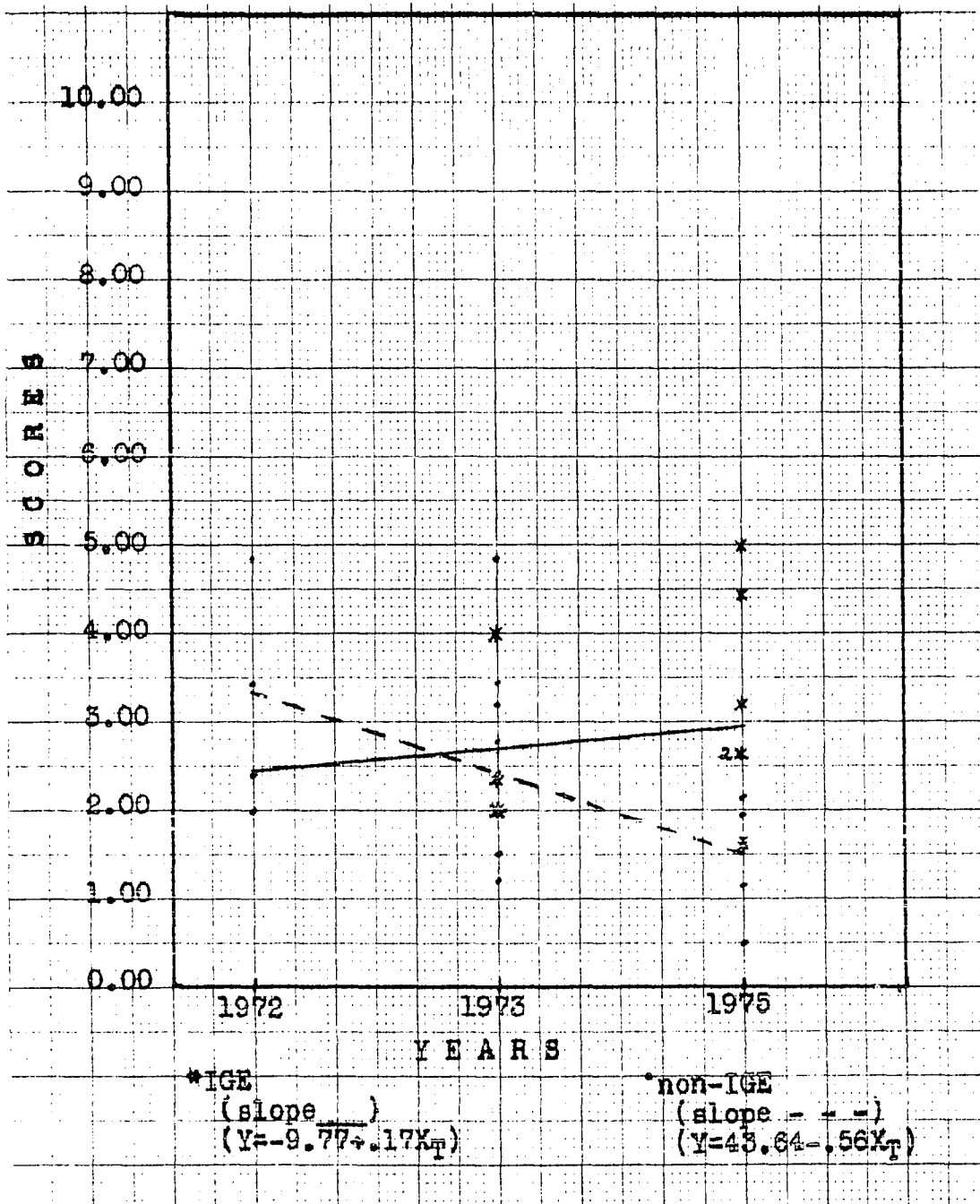


Figure E.4. The scores are the mean difference score for group activity for LC 1 from Indicators of Quality observations for 1972, 1973, and 1975

Table E.4. Score values relative to slope for LC 1 for group activity from Indicators of Quality

District	Building	School <sup>a</sup> type	Year	LC 1 score for group activity
1	A	2	1972	--
	A	2	1973	3.20
	A	2	1975	1.67
	B	1	1972	--
	B	1	1973	4.00
	B	1	1975	3.20
	C	2	1972	4.86
	C	2	1973	4.86
	C	2	1975	2.17
	D	2	1972	2.44
	D	2	1973	2.44
	D	2	1975	1.88
2	A	1	1972	--
	A	1	1973	2.00
	A	1	1975	2.60
	B	2	1972	--
	B	2	1973	1.20
	B	1	1975	2.67
	C	2	1972	2.00
	C	2	1973	2.00
	C	2	1975	0.50
	D	2	1972	3.43
	D	2	1973	3.43
	D	1	1975	5.00
3	A	2	1972	--
	A	2	1973	2.67
	A	2	1975	1.25
	B	1	1972	--
	B	1	1973	2.33
	B	1	1975	4.43
	C	2	1972	--
	C	2	1973	1.50
	C	1	1975	1.60

<sup>a</sup>Type 1 = IGE; Type 2 = non-IGE.

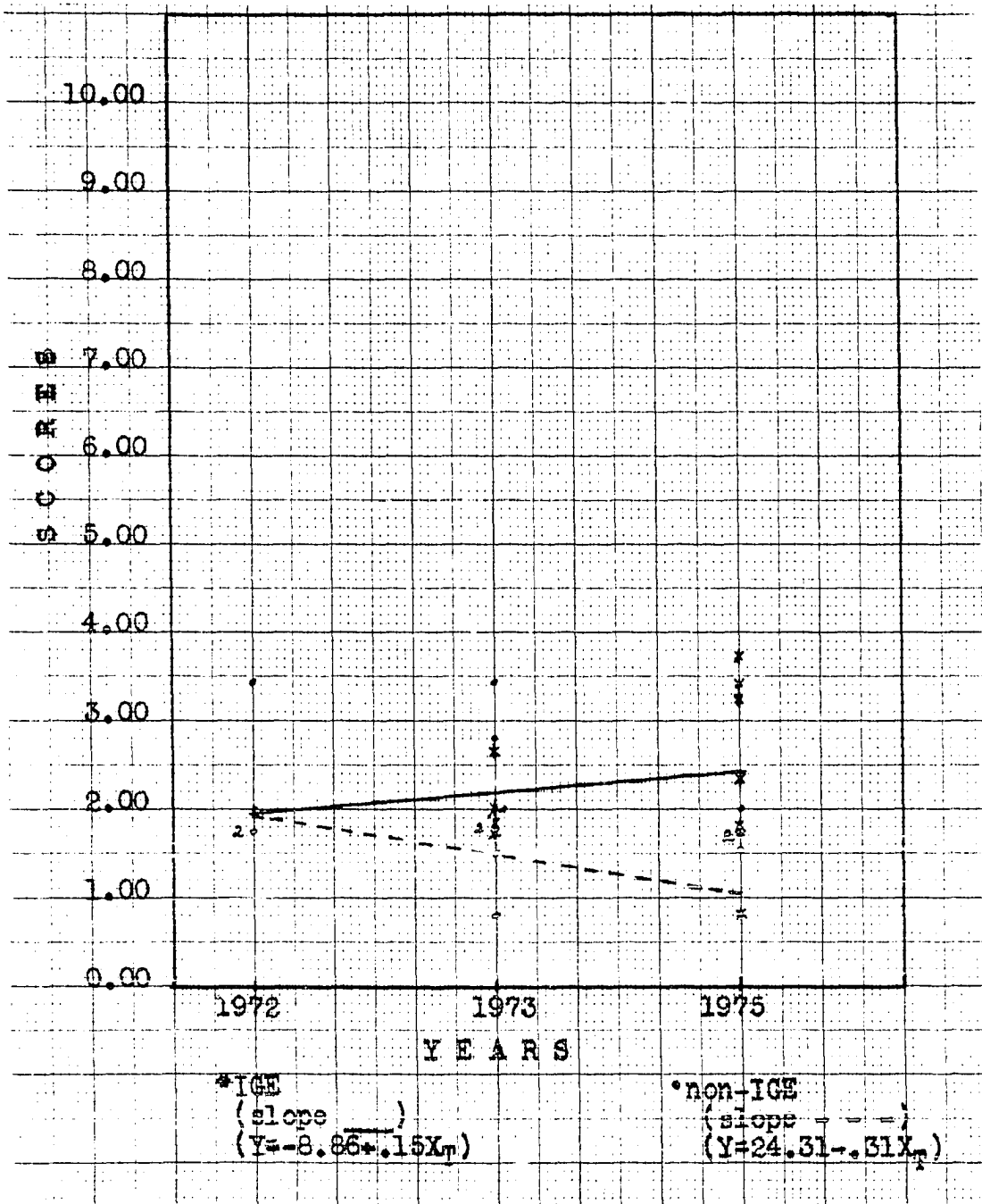


Figure E.5. The scores are the mean difference score for pupil signs for LC 1 from Indicators of Quality observations for 1972, 1973, and 1975

Table E.5. Score values relative to slope for LC 1 for pupil signs  
from Indicators of Quality

District	Building	School <sup>a</sup> type	Year	LC 1 score for pupil signs
1	A	2	1972	--
	A	2	1973	2.80
	A	2	1975	1.56
	B	1	1972	--
	B	1	1973	2.00
	B	1	1975	3.40
	C	2	1972	3.43
	C	2	1973	3.43
	C	2	1975	1.67
	D	2	1972	1.78
	D	2	1973	1.78
	D	2	1975	1.75
2	A	1	1972	--
	A	1	1973	1.75
	A	1	1975	1.80
	B	2	1972	--
	B	2	1973	0.80
	B	1	1975	2.33
	C	2	1972	1.75
	C	2	1973	1.75
	C	2	1975	-0.33
	D	2	1972	2.00
	D	2	1973	2.00
	D	1	1975	3.29
3	A	2	1972	--
	A	2	1973	1.50
	A	2	1972	--
	B	1	1972	--
	B	1	1973	2.67
	B	1	1975	3.71
	C	2	1972	--
	C	2	1973	1.83
	C	1	1975	0.80

<sup>a</sup>Type 1 = IGE; Type 2 = non-IGE.

APPENDIX F. PUPIL SIGNS LC 1 VS. RATING



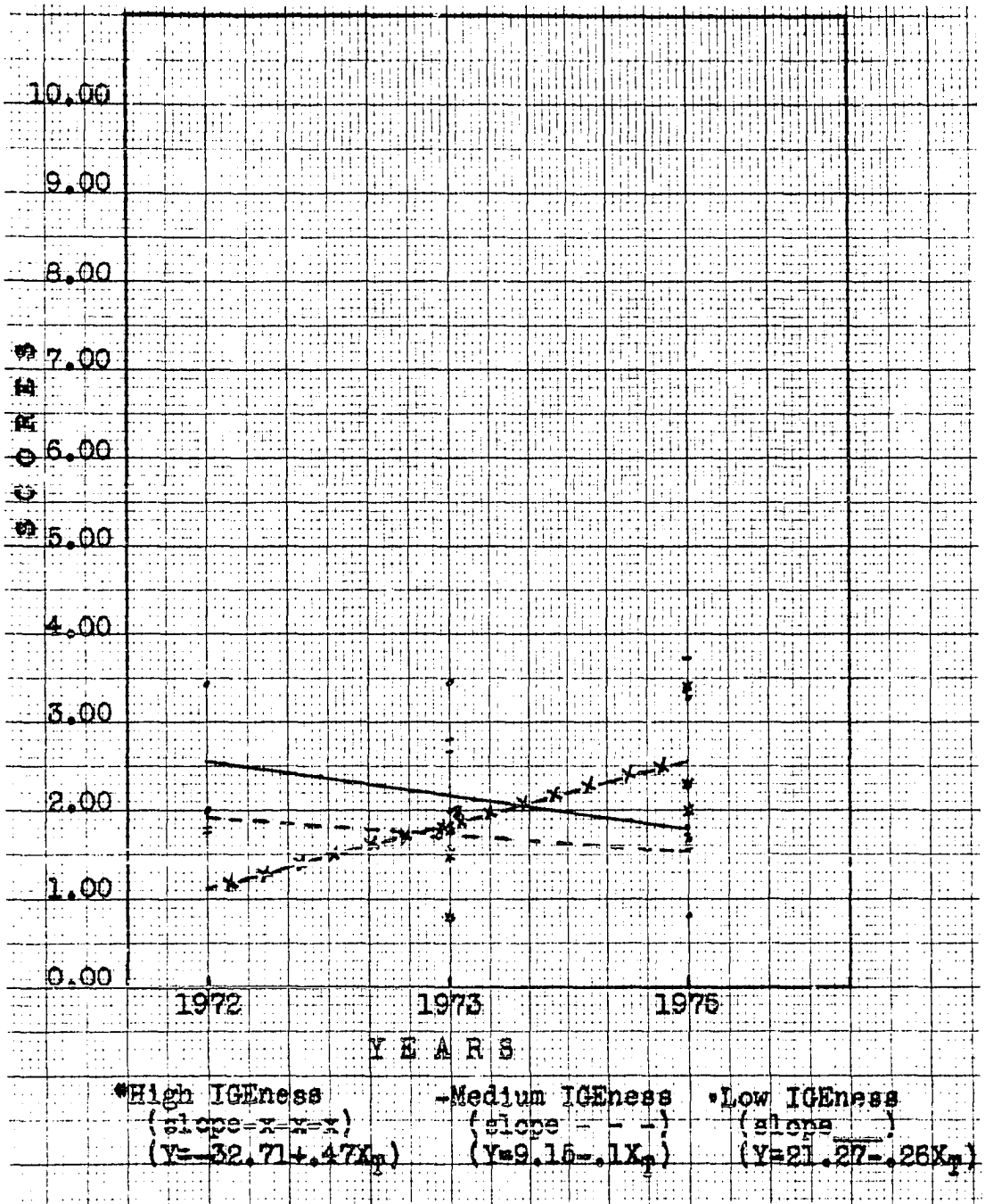


Figure F.1. The scores are the mean difference score for pupil signs for LC 1 comparing the rating from A Survey of Effective School Processes with Indicators of Quality for 1972, 1973, and 1975.

Table F.1. Score values relative to pupil signs vs. ratings of IGE-ness

District	Building	Year	Score from pupil signs
High IGEness			
1	B	1973	2.00
	B	1975	3.40
2	B	1973	0.80
	B	1975	3.33
3	A	1973	1.50
	A	1975	2.00
Medium IGEness			
1	A	1973	2.80
	A	1975	1.56
	D	1972	1.78
	D	1973	1.78
	D	1975	1.75
2	A	1973	1.75
	A	1975	1.80
	C	1972	1.75
	C	1973	1.75
3	B	1973	2.67
	B	1975	3.71
Low IGEness			
1	C	1972	3.43
	C	1973	3.43
	C	1975	1.67
2	D	1972	2.00
	D	1973	2.00
	D	1975	3.29
3	C	1973	1.83
	C	1975	0.80

APPENDIX G. DISPLAY OF NONSIGNIFICANT F-TESTS ON CATEGORIES FROM  
A SURVEY OF EFFECTIVE SCHOOL PROCESSES

Table G.1. Display of nonsignificant F-tests on categories from  
A Survey of Effective School Processes

Item	Source of score	F
Institutional commitment	LC 1	1.152
	LC 2	1.244
Teacher's role	LC 1	0.306
	LC 2	0.265
Learning activities (student's role)	LC 1	0.578
	LC 2	0.619