A Federally Supported Educational Reform Program
Individually Guided Education

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Introduction

For over a century and a half, Americans have sought to reform the public schools as a way of improving not just education but society. They have translated their cultural anxieties and hopes into dramatic demands for educational reform. Individually Guided Education (IGE) was one of these educational reform efforts which extended over a period of fifteen years, beginning in 1964. "IGE is conceptualized as a comprehensive alternative system of schooling designed to produce higher educational achievements by providing effectively for differences among students in rate of learning, learning style, and other characteristics" (Klausmeier, 1972, p. 48). IGE, combining progressive ideas with newly developed technologies in the1960s, was built up of carefully researched and tested components, including a tested dissemination strategy that led to state-wide adoptions and implementation in many states by the late 1970s. The program was widely acclaimed and used, until Federal support for professional development and technical support activities was withdrawn (Marshall & John, 1992, p. 8).

The nation's drive toward educational reform in the 1990s is characterized as standards-based education movement. The press for standards was evidenced by the efforts of federal and state legislators, presidential and gubernatorial candidates, teacher and subject-matter specialists, councils, governmental agencies, and private foundations (Glaser & Linn, 1993, p. xiii). Advocates for standards education point out the need for the common curriculum, the variation in current grading practices, the lack of attention to educational outputs, and the example of other countries (Marzano & Kendall, 1999). By contrast, some critics (Brandt, 1995; Diegmueller, 1995; Eisner, 1995) raised such issues as resources, educational apartheid, standards as new attempts at previous failed reforms, content, and volume of material. A critical review of this standards education movement reveals that the movement is in many respects similar to IGE in that the movement attempts to integrate standards, assessment, and accountability as recommended, for example, by the Pennsylvania Governor's Advisory Commission.[1] This paper examines the development, implementation, and evaluation of IGE in the 1960s-1970s and provides some historical insights relevant to the standards-based education movement.

In the following I will first trace the historical forerunners of IGE and origins from which IGE was developed. Then I will describe the development and diffusion of IGE and present a brief description of seven components of IGE. Following this, I will examine the results of an evaluation study which was conducted by the researchers at the Wisconsin Research and Development Center. Finally, I will discuss IGE from a broader historical perspective and draw some conclusions about what can be learned from the IGE reform experience.

Educational Origins of IGE

The idea of individualized instruction, a major theme of IGE, was supported by the developmentalists in the early 20th century, who contended that somewhere in the child lay the key to a revitalized curriculum, and that the curriculum ought to meet the common and individual needs of children and youth (Kliebard, 1995, p. 188). A strong believer in hereditary determinism, G. Stanley Hall advocated differentiated instruction based on native endowment and even separate schools for "dullards" in the elementary grades (Hall, 1911, p. 605). The founder of the Progressive Education Association, Marietta Johnson, experimented with developmentalist principles in the Organic School in Fairhope, Alabama. Similarly, the Dalton plan and Winnetka plan were initiated by school systems eager to depart from conventional curricular practices. Under the Dalton plan, each student was issued an individual monthly card with assignments for the month. Students maintained their own records of their progress, and upon completing the assigned work, could elect to be examined on the subject matter (Kliebard, 1995, p. 180). "The Dalton plan gave teachers optional strategies that they could adapt to classrooms organized in traditional ways.... Self-paced materials, contracts, flexibility in the amount of time student take to complete their work, periodic checks to determine whether content and skills have been mastered, and the use of teachers as coaches-these practices are common in such programs" (Tyack & Cuban, 1995, p. 97). Similarly, the Winnetka plan was individualized in the sense of children working individually on assigned material (Kliebard, 1995, p. 181).

Also, given that IGE searched for more efficient management procedures in education, its origin dates back to the social efficiency educators such as Bobbit and Charters (Popkewitz et al., 1982, p. 39). The social efficiency educators tried to eliminate waste in the curriculum through the application of the kind of scientific management techniques that presumably had been so successful in industry. They used a scientific procedure called "activity analysis" to create the list of specific activities or traits. Then, they converted those activities or traits into curricular objectives (Kliebard, 1995, pp. 20, 103).

Further, IGE is also based on behaviorism reflected in the Tyler Rationale. Tyler (Smith & Tyler, 1942) held that the behavior patterns of human beings and the kind of changes in behavior patterns which the school seeks to bring about are its educational objectives. Objectives, Tyler maintained, should be stated in terms that would describe how the student would behave after a period of study. Moreover, the success of the program would be determined by the extent to which the behaviors embodied in the objectives would be achieved (Kliebard, 1995, p. 188). As Kliebard (1979) indicated, the idea of individualized instruction has been around for some time in various concepts

about school organization and curriculum (Wiersma, 1986, p. 2).

In addition, before IGE was developed in the mid-1960s, there were two groups of educational critics that are believed to have influenced IGE. The first group of educational critics during the 1950s argued that schools were psychologically alienating. Spokesmen for low-income and minority groups, for example, pointed to a pattern in the lack of achievement of school children (Romberg, 1985a, p. 8). One of the critics argued that "on almost any measure, the schools are still failing to provide the kind of education Negroes, Indians, Puerto Ricans, Mexican Americans, Appalachian whites-indeed, the poor of every color, race, and ethnic background-need, and deserve" (Silberman, 1970, p. 62). Based on this concern about "equality of opportunity," an array of federal policies and programs was developed, one of which was IGE.

The second group was concerned not so much with a criticism of schools as with a prescription of how to produce a better system. A number of psychologists reacted to the educational problems at that time. For example, Lee Cronbach (1957), one of the leading figures in Psychology, argued that the historic separation of experimental psychology from the study of individual differences impeded psychological research. While psychologists tried to bring revolution to the curriculum, three major themes gradually emerged: emphasis on cognitive processes, systems analysis founded on behaviorist ideas, and individual differences among students (Romberg, 1985a, pp. 9-11).

The ideas of all these historical forerunners, that is, those of progressive education movements, especially the developmentalists and the social efficiency educators, the Dalton plan and Winnetka plan, behaviorism in the Tyler Rationale, concerns for equality of opportunity, and a group of psychologists' effort to bring revolution to the curriculum in the 1960s, were integrated into IGE as a comprehensive alternative system of schooling.

Development and Diffusion of IGE

IGE started in embryonic form when a project, called Maximizing Opportunities for Development and Experimentation in Learning in the Schools (Project MODELS), was begun at the Wisconsin Research and Development Center for Cognitive Learning (Klausmeier et al., 1966, p. iii). As a first practical result of this project, four school districts started the first 13 nongraded Instruction and Research Units (I & R Units)[2] as replacements for age-graded classes in elementary schools of Madison, Janesville, Milwaukee, and Racine, Wisconsin, in the second semester of the 1965-66 school year (Klausmeier et al., 1967, pp. 15-6). In 1966-67, the number of functioning I & R Units increased to 19. In 1967-68, seven elementary schools were for the first time completely organized into I & R Units (Klausmeier et al., 1968, p. xi).

The Wisconsin Department of Public Instruction selected the multiunit school concept, also referred to as Individually Guided Education, for statewide demonstration and implementation during the 1968-69 school year. Since then, many agencies became involved as implementers were educated regarding IGE and as materials and programs were developed to assist local schools in changing to IGE, and the number of IGE multiunit schools increased rapidly: 50 in 1969-70, 500 in 1971-72, approximately 700 in 1973-74, and between 2000 and 3000 in 1974-75 (Klausmeier et al., 1977, p. 4).

In 1969, an agreement was entered into between the Wisconsin R & D Center and the Institute for Development of Educational Activities (I/D/E/A), providing for /I/D/E/A/ to use the prototype materials in producing a more sophisticated set of new inservice materials (Ibid., p. 5).

Early in 1971, the multiunit organization component of IGE was selected by the United States Office of Education for nationwide implementation, and the Wisconsin R & D Center started its first large-scale implementation effort (Ibid., p. 5).

Late in 1972, the Sears Roebuck Foundation funded the IGE Teacher Education Project at the University of Wisconsin, which resulted in a major publication effort of printed and audiovisual instructional materials. These materials were designed for both undergraduate and inservice programs in preparing teachers for IGE schools. In the Summer of 1973, the Association for Individually Guided Education was formed by the IGE coordinators of 12 states, and held its first meeting in November of 1973 (Ibid., p. 6). Toward the late 1970s, however, IGE lost its momentum as the federal government withdrew its support for IGE.

The Reform Plan of IGE

In the mid-1960s, the developers of IGE shared the belief that the conditions of education in the United States called for an alternative form of education. The conditions were:

* Students are required to adjust to uniform educational programs, and provisions for differences in rate of learning, style of learning, and other characteristics are inadequate.

* Students are placed in age-grade classes and are expected to attain the same instructional objectives by studying the same graded basic textbooks and supplementary materials.

* Students are frequently evaluated using norm-referenced tests of intellectual ability and educational achievement, and such tests are often used for categorizing and grading students, not for improving their instruction.

* Teachers are treated as if they are equally competent in all subject fields and in all media and methods of instruction and appropriate provisions are seldom made for differences among teachers in interests, knowledge, experience, and expertise.

* Teachers spend nearly all their time throughout the school day with children, leaving little time for planning and evaluating instructional activities.

* The principal tends to be a building manager rather than an educational leader; the teacher is an independent ruler of a classroom rather than a cooperative team member, and administrative arrangements discourage cooperative planning and decision making.

* The staff spends most of its energy in keeping school going, and little effort is devoted to research and development activities that are essential to continuous improvement of educational practice.

* The staff of each school functions in relative isolation from other schools, and communication networks for sharing creative ideas, materials, and instructional approaches function only sporadically, causing great loss in educational effectiveness.

* The typical school building is not well adapted to effective instruction; access to library, audiovisual, and other instructional materials and aids is circumscribed; and space configurations impede varied types of grouping and learning activities.

* Parent contact with the schools is largely negative; it is concerned primarily with problems of school finance or student discipline, and the primary means for communication between the school and the home is by report cards or parent-teacher conferences, supplemented occasionally by a school newsletter.

(Klausmeier et al., 1977, p. 3)

In order to eliminate the unfavorable conditions, the planners of IGE incorporated their viewpoints regarding quality education into IGE as a total system and more specifically into the seven components of IGE and their relationships. They viewed quality education as one that yields high student achievement, develops the abilities underlying these achievements, and contributes to healthy personality development (Ibid., pp. 7,10). Provided below is a brief account of the seven components of IGE.

1. The Instructional Programming Model

In order to adapt instruction to the needs of the individual, a model of instructional programming was conceptualized to facilitate each student's development (Klausmeier et al., 1977, p. 15). The purpose of this model was to portray each individual student in terms of an initial level of performance, rate of progress, style of learning, motivational level, and other characteristics, and to situate this portrayal of each student in the context of the educational program of the school. Thus, the information base for interaction began with knowing a lot about each individual student. Then, this knowledge was to be used in light of the school's goals to teach a predetermined set of cognitive skills. The model was used with explicitly stated instructional objectives and related criteria of attainment which indicate that every student should attain mastery of certain objectives (Romberg, 1985b, p. 21).

It was intended by the planners that instructional programming for the individual student should not be interpreted to mean that all students engage in the same number or kinds of activities, or reach an identical level of achievement, interest, or motivation. It does imply, developers maintained, that objective-referenced instruction may proceed differently for different kinds of objectives within the same curricular area and also across curricular areas. It also implies that, while instructional programming is done for each individual student, instruction (step 5, see Figure 1, page 28) is provided for groups of students with common learning needs. In practice, such grouping of students usually led to instruction on a content unit for two to three weeks, followed by post-assessment, some regrouping of students, and instruction on another content unit (Ibid., pp. 21-3).

2. Multiunit School (MUS)

The multiunit school organizational structure emerged from the effort to deal with how to group and regroup students with common learning needs for effective and efficient instruction. The MUS is described by Klausmeier and Pellegrin as an invention of organizational arrangements that have emerged from a synthesis of theory and practice regarding instructional programming for the individual student, horizontal and vertical organization for instruction, role differentiation, shared decision making by groups, open communication among school personnel, and administrative and instructional accountability (Klausmeier, 1975, p. 49).

Figure 2 (page 29) shows the prototype organization of the multiunit organization at the elementary school level (MUS-E). Variations from the prototype are made in terms of the number of students enrolled in the building, the availability of noncertified personnel, the size of the school district, and the like. The organizational hierarchy consists of interrelated groups at three distinct levels of operation: the I & R Unit at the classroom level; the IIC (see endnote 2 for acronyms) at the building level; and the SPC or a similar administrative arrangement at the school district level. The building principal and the unit leaders, who serve at each of two levels as noted in Figure 2, provide the communication links among the three groups (Ibid., p. 49).

The I & R Unit replaces the self-contained classroom organization for instruction. A Unit is comprised of a group of teachers who plan and carry out the steps of instructional programming for each student and provide instruction to groups of students with common learning needs. The IIC, composed of the principal and the Unit leaders, replaces the principal as the sole educational decision maker at the building level. The main functions for which the IIC takes primary initiative are formulating the general educational objectives for the entire school building, interpreting and implementing systemwide and statewide policies that affect the educational program of the building, coordinating the activities of the I & R Units to achieve continuity in all curricular areas, and arranging for the use of the time, facilities, and resources that are not managed independently by the Units. The SPC is a new organizational arrangement at the school district level. Its decision-making responsibilities are identifying the functions to be performed in each IGE school of the district, providing for the recruiting of personnel for each IGE school and for their inservice education, providing the essential physical resources and instructional materials, planning an effective program of home-school-community relations for the district, and providing for the transition of students from the IGE elementary school to middle school or junior high school (Romberg, 1985b, pp. 23-4).

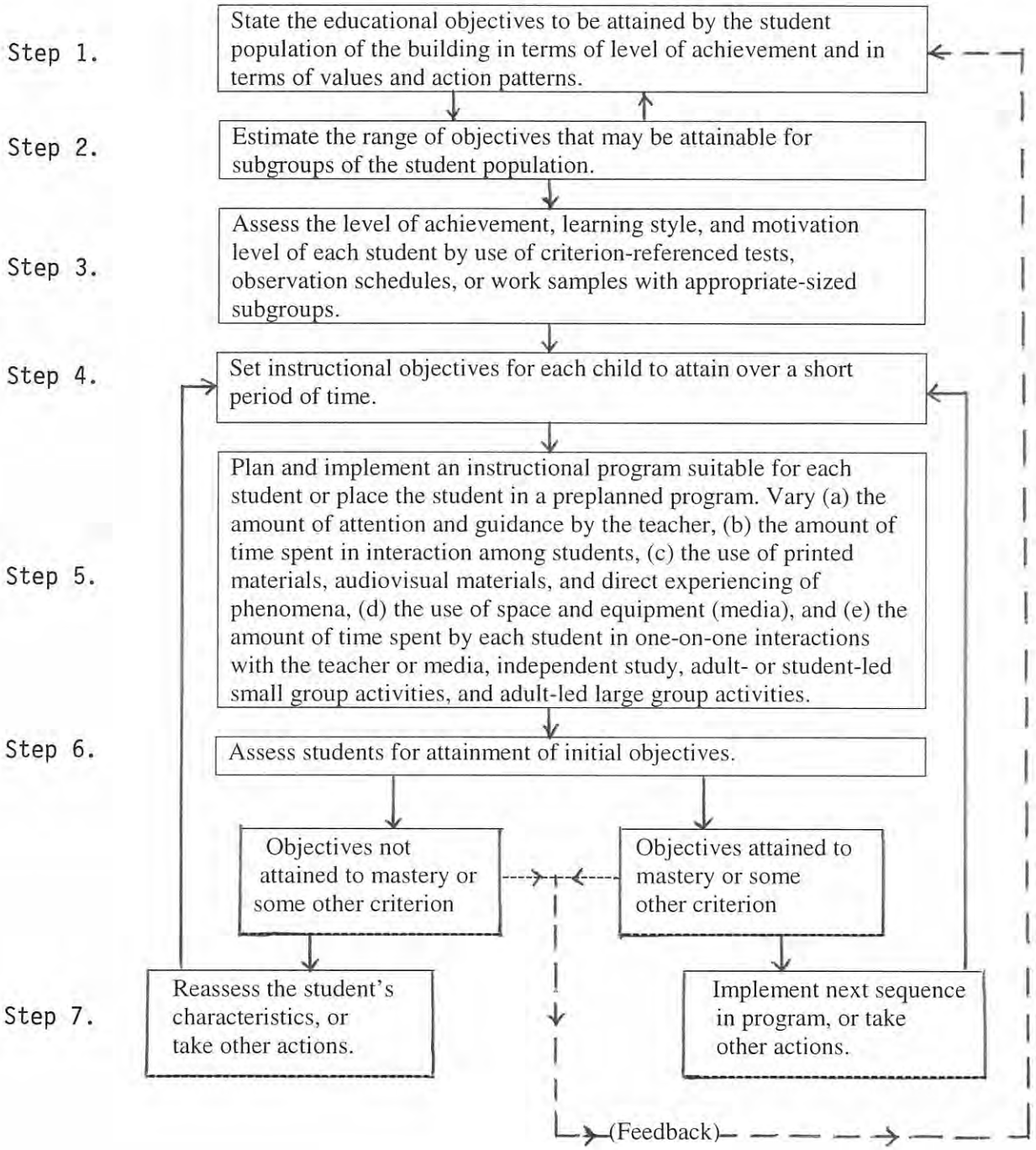
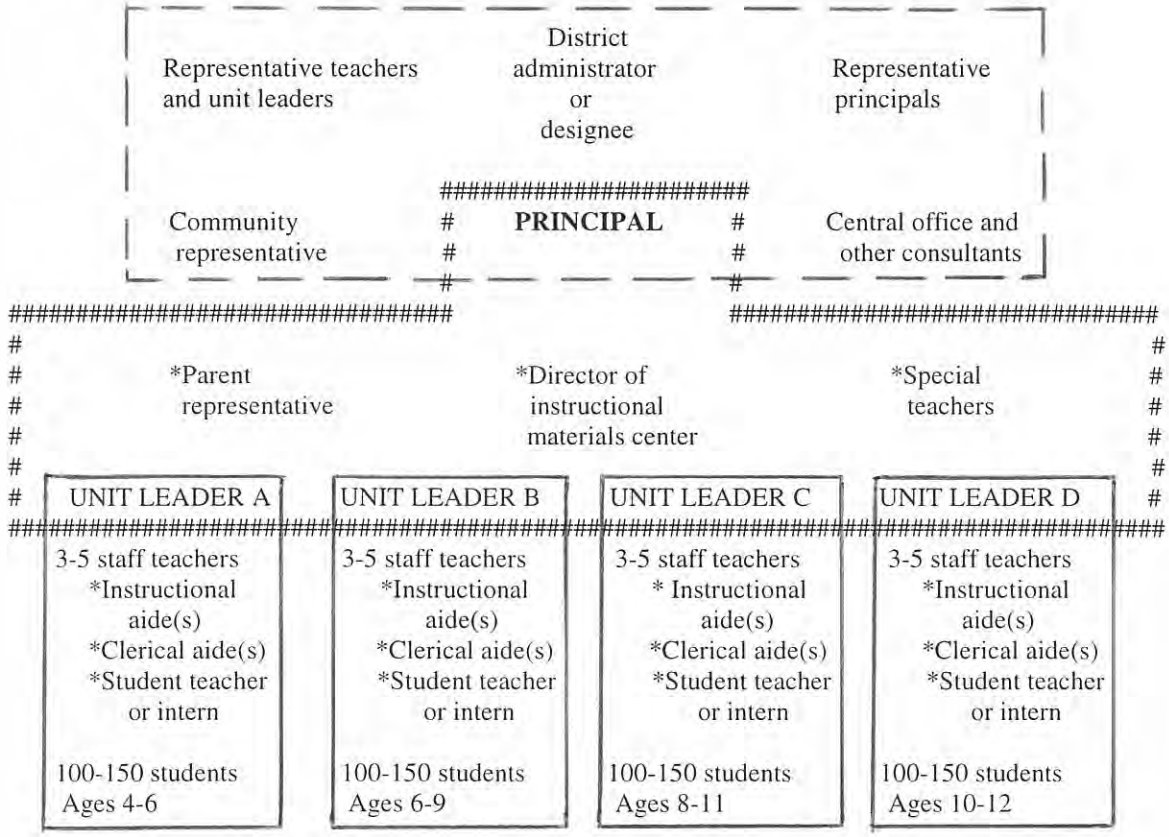


Figure 1. Instructional Programming Model in IGE (from Klausmeier, Rossmiller, Saily, eds., 1977, p. 16).



——— Instruction and Research Unit;
Instructional Improvement Committee;
--------- Systemwide Program Committee.
*Inclusion of these persons will vary according to particular school settings.

Figure 2. The Multiunit Organization (from Klausmeier, Rossmiller, and Saily, eds., 1977, 12).

3. Evaluation for Decision Making

In IGE, the evaluation of the student's learning characteristics and achievements is aimed at providing information at three times: prior to being grouped for a unit of instruction, during the instructional sequence, and at the end of a unit of instruction. The IIC, interacting with the staffs of the I & R Units, is responsible for formulating objectives and criteria at the building level, and the I & R Unit staff is responsible for gathering the information about students. Three aspects of evaluation evolved for this component. The first is a set of criterion-referenced tests related to the instructional objective, used to identify needs and determine instructional groups. The second is a set of motivational procedures called Individually Guided Motivation (IGM) (Klausmeier et al., 1975), used to determine the motivational level of each child and to encourage each student to reach agreed upon objectives. The third is judgment by teachers about how students were best able to learn, so that efficient groups could be formed. The evaluation procedures are planned by the same groups, and most measuring is done by the individual teachers. Individual teachers are involved in relating measurements of particular students to the criteria that have been set. Teachers make judgments and act upon them in the daily instruction of children; the staff of the I & R Unit do so for the children of the unit; and the IIC for the child population of the school (Romberg, 1985b, pp. 24-5).

4. Compatible Curriculum Materials

It is at steps 4, 5, and 6 of the IPM that decisions are made about grouping children for instruction. It was evident that the availability of curriculum materials that help professional staffs carry out these three steps of instructional programming makes the real difference in whether or not IGE works.

The three principal curriculum projects of the Center produced the Wisconsin Design for Reading Skill Development (WDRSD) (Otto & Askov,1974), the Pre-Reading Skills Program (PRS) (Venezky et al., 1974), and Developing Mathematical Processes (DMP) (Romberg et al., 1974, 1975, 1976). WDRSD is an objective-based system designed to manage the development of reading skills for children in grades kindergarten through six. DMP is a complete instructional program for elementary mathematics, grades kindergarten through six. DMP was developed from a modeling-process approach to mathematics, using measurement as the basis of modeling. PRS is designed to provide instruction in five basic pre-reading skills at the kindergarten level. In the activities developed for both PRS and DMP, sensing, manipulating, and self-directed participation are emphasized. These include games, manipulatives, experiments, and materials for learning stations. Both PRS and DMP are complete instructional programs which are packaged in kits for convenient use by teachers.

The organization of materials in all three programs, WDRSD, PRS, and DMP, encourages teachers to recognize and meet the needs of each child. The teacher's materials emphasize flexibility in grouping children, sequencing instruction, and varying instruction for individual children. The assessment procedures enable teachers to determine each child's progress and plan appropriate instructional activities.

In addition to the Wisconsin Center, other centers, regional educational laboratories, and nonprofit and profit-making organizations produced a wide variety of high quality curricular materials (Romberg, 1985b, pp. 26-7).

5. Home-School-Community Relations

The success of any school program depends in large measure on relations with the community it serves. In IGE schools, there should be three general aims of a home-school-community relations program: first, that the staff be aware of available resources and be responsive to the educational expectations of the community, parents, and students; second, that the community, parents, and students be aware of and responsive to the requirements for implementing IGE; and third, that both staff and community be involved in the changeover and refinement of IGE (Klausmeier et al., 1977, p.19).

6. Facilitative Environments

A system of supportive and facilitative environments is required to maintain and strengthen each IGE school so that each school becomes increasingly self-renewing. Facilitative environments, consisting of human and material resources, are both intra-organizational and extra-organizational. The intra-organizational environment is represented in the multiunit organizational structure, and the focus is on providing the physical and material resources needed for learning and instruction. Extra-organizational facilitative environments are represented in the state education agency, intermediate educational agencies, teacher education institutions, and other groups such as teachers' associations and parents' organizations (Klausmeier et al., 1977, p. 20).

7. Continuing Research and Development

The seventh and final component of IGE, a program of continuing research and development, ensures the continuous improvement of IGE. Without this component, IGE, like any other form of schooling, will become sterile, unresponsive to the changing nature of society, and incapable of adapting to the needs of individual students (Romberg, 1985b, p. 29).

The Effects of Planned Change

The Center's IGE evaluation staff conducted five operational phases of evaluation as well as a preliminary examination. The preliminary examination showed that while responses to an IGE implementation questionnaire were received from over 900 schools, in many of those schools IGE was never truly adopted. Nearly 60% of the sample could at best be called "nominal" adopters of IGE, and only about 20% could be called true implementers. Described below are major results of five phases of IGE evaluation.[3]

The Results of Phase I Evaluation

Phase I focused on the use and effectiveness of the three primary curricular projects, the WDRSD, DMP, and the PRS. From the studies carried out in the 1978-79 school year, three primary conclusions were drawn (Romberg et al., 1985, pp.172, 186-7).

1. The demography of the school, the way in which it is organized, the degree of implementation of various components of IGE, whether or not IGE-compatible materials are used, the way in which time is used in classrooms, the way in which instruction is actually carried out, and the level of achievement on different objectives present little common picture about each learning environment.
2. Schools not using the IGE label have characteristics that one would expect in an IGE school. Similarly, there are "nominal" IGE schools which differ little from traditional schools.
3. Whether schools use IGE-compatible materials (PRS, WDRSD, or DMP) is important if the content of those materials differs from traditional materials. If the content of programs differs, then time is spent differently and achievement differs. This appears to be the case for both PRS and DMP. However, for WDRSD, which is basically a skills management system, the differences between WDRSD users and WDRSD nonusers were not generally apparent.

In addition to these general conclusions, other findings need to be noted: (1) If time is reasonably allocated to objectives, then students' performance does improve; (2) Totally individualized instruction with children working independently on worksheets is detrimental (e.g., grade 5 mathematics); and (3) Some interactions of children with other children or with teachers are needed. Again, in grade 5 mathematics, there are almost no interactions, and the children's performance is disappointing (Ibid., pp. 187-8).

The evaluation staff also said that one thing they learned about evaluation design is that a standardized test score is not sensitive to variations in need and instruction. Similarly, objective-referenced tests, while more sensitive to instruction, would only capture group growth if there was considerable common instruction within groups. It became clear to them that scores from norm-referenced and objective-referenced tests, no matter how they were adjusted or aggregated, were inadequate (Romberg, 1985c, p. 217).

The Results of Phase II Evaluation

Using the structural equations model, Phase II simultaneously examined relationships among the network of variables believed to influence means of instruction, staff outcomes, and pupil outcomes. Data for this phase were gathered from staff and students in over 150 schools in Fall 1977. From the study, the following results were shown (Price and Romberg, 1985, pp. 97-100).

1. The instructional practice of collecting information about individual differences between students in content areas (reading and mathematics) was, as expected, correlated with a measure of the extent to which teachers in a school believe that individual differences are important to consider when making instructional decisions.
2. The practice of individualizing instructional decisions does seem to be facilitated by certain schoolwide organizational features.
3. The extent to which IPM had been implemented by the school in general was positively correlated with the degree to which the specific I & R Units engaged in the individualization of instructional decisions.
4. An expected connection between the interorganizational relations of a school and the utilization of IPM-compatible curriculum materials by I & R units in that school was not found. The expected connections between schoolwide implementation of the IPM and utilization of IPM-compatible materials by I & R Units, collection of information about individual differences, and the I & R Units' management of grouping and instructional continuity also were not found.
5. In no instance was there a statistically significant correlation between a measure of instructional practices and a measure of student achievement. Also, expected correlations between organizational features and student achievement were not found.
6. Three school-wide organizational features have positive correlations with the school-wide measure of teacher job satisfaction. Those three features are : (1) the intra-organizational relations of the school, (2) the existence of procedures fostering coordination and improvement of the school program, and (3) general, school-wide implementation of the IPM.

The Results of Phase III Evaluation

Phase III was designed to verify the self-report data gathered in Phase II as well as to extend data collection to include more fully the range of variables that determines the processes of schooling. As a verification activity, this phase was subcontracted to Research Triangle Institute (RTI). In Spring 1978, RTI staff contacted and visited 30 schools that had participated in Phase II. The results are as follows (Ironside and Conaway, 1985, pp. 125-130):

1. A significant number of schools no longer appear to be IGE schools or are IGE only partially and the historical patterns that emerge in the Phase III sample suggest a decline in implementation energy, availability and use of outside resources, and adherence to basic IGE concepts.
2. There was considerable evidence in Phase III of "partial IPM-ing," of variations within and across units, of employment of the full IPM for some students but not others, and of emphasis on some steps in one curriculum but not another. Frequently this somewhat inconsistent approach resulted in an emphasis on and a valuing of some form of individualization but not necessarily the whole IPM sequence. The Multiunit Organization appears much better understood and implemented than the IPM. The implementation of the multiunit organization is so varied with respect to subjects, schedules, multiaging, grouping strategies, planning,

grades, use of the IPM in part or full, or any combination of these.

3. Curricular Programs and Facilitative Environments (more as a set of helpful circumstances than as integrated components of a larger system) are tied to the schools' overall concept of IGE. Home-School-Community activities are also widely engaged in and valued, but in many schools these are not viewed as aspects of a component per se. Research & Development seems to be understood and implemented at the lowest level evaluation of those operations.
4. Particular facets of a well-planned installation period (such as staff commitment, curricular objectives, parent approval) appear to auger well for later strong IGE status or at least a smooth operation. On the other end, schools recognized that unilateral decisions to go IGE or insufficient training at the outset appear to relate to later decline or stagnation of the IGE effort.
5. IGE is more recognizable as a form of the multiunit organization along with facilitative environments than as an implementation of the IPM. However, what may be described as IGE (or partial IGE) schools do appear to have something in common. This is an effort to accommodate individual students, to engage in some form of individualized instruction. In pursuit of individualization or personalization, these schools as a group have broken the lockstep of strictly graded self-contained classrooms and single-teacher instruction, although this is sometimes evident in only a portion of the school or in the work of a few dedicated teachers or for one hour a day four days a week. The full IGE model may never be attained and may not be attainable.

The Results of Phase IV Evaluation

Phase IV was a field study conducted in six schools which had been reported to be exemplary IGE schools by one or more IGE regional coordinators or researchers. Phase IV data gathering was carried out during the school year 1977-78. Given below is a summary of the results of the study by Popkewitz and his colleagues (Popkewitz et al., 1985, p. 152).

According to the developers, the researchers say, the aim of IGE is to provide a set of organizational and curricular procedures that if followed could be used in any community or social context (Ibid., p. 152). They find, however, that IGE neither creates a universal condition of schooling nor frees schooling from the constraints of different social conditions. Their data uncover configurations of schooling that respond as much to community and professional interests as they do to students' differing capabilities. In each of the three kinds of schooling (technical, constructive, and illusory) they have identified, the use of technologies is shaped by distinct assumptions about teaching, learning and schooling (Ibid., p. 153). Teachers in the six schools, the researchers continue, translated the slogan "individualization" in a way that responded to certain beliefs they already held about children and learning.

A second important factor in definition of schooling, the researchers contend, was the relationship between ideology and the professionals' perception of the pupils served by the school. Each of the three forms of schooling offered different perceptions of students. The problem, the researchers point out, is that a school staff defines its mandate in relation to the characteristics of the "good pupil" envisioned by the professionals, often ignoring the actual linguistic competencies, cognition, and reasoning patterns of the children who come to the school (Popkewitz et al., 1982, pp. 165-6). In considering the different pressures that interact to produce particular kinds of schooling, they urge us to also recognize that schooling gives form to certain social and community interests, and that it is not at all a neutral endeavor (Ibid., p. 168).

The Results of Phase V Evaluation

Phase V is a summary report of the preceding four phases (Romberg, 1985c).

About Schools and Reform

The primary problem IGE addressed was how to shift instructional planning from the group to the child. The key step was identifying the intellectual needs of the child; and instructional planning was to proceed from that point. In most IGE schools, there was neither understanding of nor agreement with this goal. The procedures were used for other ends. Very often the label was used symbolically to justify the maintenance of current practice, as in the nominal or illusory IGE schools. In other schools adopting IGE, the goal became to increase efficiency of current practices (as in the technical schools), or to have a different administrative organization, or to increase students' sense of community and cooperation (as in /I/D/E/A/ IGE schools). This leads to the conclusion that the impact of IGE was limited (Ibid., p. 220). Further, the age-graded, self-contained classroom was still the norm; grouping was done annually, often on general ability not need; motivational procedures were not followed; and shared decision-making about grouping and regrouping was rare (Ibid., pp. 220-1).

The IPM was to expect variations in what students were taught, having students compete against objectives rather than peers, evaluating students on objective-referenced tests, and stressing goal setting and other motivational procedures as the basis of group control. What became important was that all students master the same set of objectives, and variation in pace was assumed. Instruction based on variations in need, grouping and regrouping, motivation, and so on were replaced by independent-individual instruction, a
most inefficient instructional procedure (Ibid., p. 221).

About IGE and Its Implementation

The eclectic basis for the procedures meant that practitioners could select what they wanted from the components. Also, IGE lacked a strict ideological structure or one theory of learning. The management and administrative procedures are based on notions from systems analysis where knowledge to be acquired is fixed, yet instructional procedures remained flexible. The original notion of student needs thus was open to different interpretation (Romberg, 1985c, pp. 221-2).

The center-out implementation strategy adopted was inconsistent with the problem-solving history from which IGE had developed. In later dissemination materials the emphasis shifted to procedural rules and performance objectives. The learning child was hardly mentioned, discussion of motivational procedures and professional judgments was omitted (Ibid., p. 222).

About University-Based R & D Centers

The setting of universities is ideal for carrying out long-term research and development. The federal R&D center program and IGE are products of the post-Sputnik curriculum reform era when the intellectual growth of students was of prime concern. By the time initial elements of IGE were being produced in 1969-71, U.S. involvement in Vietnam, racial unrest, environmental awareness, and inequality of educational opportunity were the primary concerns (Ibid., p. 222).

Discussion

The results of Phase I, II, III, IV, and V evaluations, quite negative in general, are nevertheless largely in line with outcomes of other historians such as Tyack and Cuban (1995). Tyack and Cuban support Popkewitz's notion of the modification of original reform plan and the use of the reform program to legitimize established practices. They say that, what they call "the grammar of schooling" is the result of previous reforms that had, and continue to have, a strong foundation in the social expectations about schooling held both by educators and by the general public. Once established, they say, the grammar of schooling persists in part because it enables teachers to discharge their duties in a predictable fashion and to cope with the everyday tasks that school boards, principals, and parents expect them to perform: controlling student behavior, instructing heterogeneous pupil groups, and sorting people for future roles in school and later life (Tyack & Cuban, 1995, p. 86). Therefore, they continue, to bring about implementation at the heart of education-classroom instruction, shaped by that grammar-has proven to be the most difficult kind of reform (Ibid., p. 134).

Gibboney (1994) also supports the notion of inevitable transformation of original reform plans and says that IGE and, he believes, any reform, is reshaped and redesigned to fit the beliefs-the implicit theories-of the teachers and principal who "buy" into it. This amazing transformation of one entity into another, he holds, is a unique educational phenomenon. Therefore, he believes that fundamental reform must be seriously concerned with the ideas and values that all educators implicitly hold, and that reformers must make these beliefs explicit, open for discussion, so they can be retained or changed with knowledge and foresight and be more deliberately and intelligently used to achieve ends freely chosen (Gibboney, 1994, p. 175).

Cuban (1995) suggests that there is the potential for change in terms of teachers' changing knowledge, beliefs, and attitudes, based on his argument of situationally constrained choice. Over the past century, Cuban (1995) maintains, teachers were gatekeepers for any pedagogical reforms, choosing what they would do in their classrooms once they closed the door (p. 261). The margin of freedom that teachers enjoy within a context of situationally constrained choice, he continues, may be small, but it is significant, as the historical evidence has demonstrated. That margin can expand or shrink, depending on whether administrators and policymakers see as their task the cultivation or repression of teachers' capacities to lead both inside and outside the classroom (Ibid., p. 283). Another of Cuban's implications for teachers is that teacher action at the school and district levels to lighten or remove organizational constraints can expand their autonomy within the classroom, creating even more opportunities for change (Ibid., p. 284).

Snyder, Bolin, and Zumwalt (1992) maintain that successful implementation of school reform efforts demands the understanding and acceptance of the subjective realities of the players undergoing the change process, because change is not merely observable alterations in behavior, but rather a personal development process both for the teacher and student. For example, the Denver Curriculum Project, they contend, suggests that when the outside influences are perceived and used as attempts to provide teachers with tools to collaboratively develop their skills, knowledge, and attitudes in context-specific environments, they have positive effects for teacher development, enriched curricular experiences, and student outcomes (Snyder et al., 1992, p. 427).

Cuban takes an example of New York administrator Joseph Loftus's generous estimate in 1941 that 25% of the system's teachers had initiated activity methods "in some degree." Loftus hinted that he was proud of that percentage. In fact, Cuban explains, Loftus acknowledged that it was hard to make teachers alter their daily practices, but asserted that many teachers had indeed moved toward student-centeredness. In view of the powerful social, political, organizational, and cultural constraints on teacher behavior and the difficulty in capturing teachers' attention, change among 25 % may well be viewed as a victory. Such figures certainly would be a victory in other highly competitive arenas. If a textbook publisher gains a 25% share of the school market, it has scored a coup (Cuban, 1995, pp. 281-2). In this regard, the fact that about 20% of 900 IGE schools could be called true implementers may be viewed as a victory. In these schools, educators tried to accommodate individual students and to engage in some form of individualized instruction. In pursuit of individualization or personalization, these schools as a group had broken the lockstep of strictly graded self-contained classrooms and single-teacher instruction (Ironside and Conaway, 1985, p. 129).

In addition, surveys have indicated that one of the things IGE teachers liked best about their job was their relationship with other teachers. This is found in the results of Phase II research: three schoolwide organizational features have positive correlations with the schoolwide measure of teacher job satisfaction (Price and Romberg, 1985). Cooperation between teachers is one of the important factors for both teachers and students not only in IGE schools but also in non-IGE schools. Wiersma (1986) viewed team teaching, shared decision-making, and programming instruction as the three strongest surviving characteristics of IGE. Moreover, one of the six schools studied by Popkewitz et al., called Kennedy School, showed an example of progressive schooling. Here, teachers believed that children

had a right to enjoy life in school; that enjoyable activities elicit a strong and positive intellectual and social response from children that ripples out through the classroom and school to engage children intellectually and emotionally in their studies; and that enjoyable and worthwhile activities create more situations that students may engage intellectually and socially (Gibboney, 1994, pp. 170-1).

Conclusion

Educational reform is rarely implemented as it was intended. As the Popkewitz et al. (1982)'s study shows, professional interests, social and cultural orientations, and the wider transformations that take place in society at large do not allow for curriculum implementation as planned. In Cuban's terms, cultural beliefs about the nature of knowledge, the mechanism to socialize and sort students into varied socioeconomic positions, the role of policymakers, the organizational structure of the district, school and classroom within which individual teacher's knowledge and beliefs are shaped, and the cultures of teaching, itself, all combine in shaping a durable, practical pedagogy. Tyack and Cuban described this as the grammar of schooling that is established institutional patterns. The hold of traditional practices on teachers and students is strong, often with good reason, and the public tends to share traditional cultural beliefs about what constitutes a "real school." This institutional culture probably has more influence on the implementation of policy than policy has on institutional practices (Tyack & Cuban, 1995, p. 134).

The age-graded, self-contained classroom that the IGE developers wanted to replace with multi-aged classroom was the result of previous reforms led by those who were impressed with the division of labor and hierarchical supervision common in factories, prominent among them city and state superintendents and school board leaders. In addition to its claims of pedagogical efficiency, the graded school had the virtue of being easily reproduced as the population of children mushroomed in cities, no small consideration in the chronically overcrowded urban systems. It mirrored as well the hierarchical, differentiated organizations in which urban dwellers increasingly conducted their business, both public and private. Despite criticisms both inside and outside the educational profession and several experimentations with alternatives to the year-by-year system of grading, the graded school became firmly ensconced as part of the grammar of schooling, for it seemed to solve key organizational problems (Tyack & Cuban, 1995, pp. 89-91).

The second conclusion, derived from the first, is that reformers need to expect that any original plan will be interpreted, modified, and used in accordance with the professional cultures and ideologies which are present within and asserted through institutions, as well as in response to local conditions outside of institutions. In this regard, advocates of the current nation-wide standards-based curriculum reform movement need to expect a variety of hybrids reflecting different local circumstances. Reformers must expect not only a hybridizing of their models of curricular reform, they must also give due weight to teachers' first-hand perspectives on schools and their responsibilities for carrying out official policies. Educational change will likely come from internal changes created by the knowledge and expertise or ideas and values of teachers (Snyder et al., 1992, p. 429). While teachers may use externally designed curriculum and benefit from the stimulation of an "outsider," it is they and their students who create the enacted curriculum and give meaning to it. They are primarily creators rather than receivers of curriculum knowledge (Ibid., p. 429). At the same time, because most curricular reforms make increased demands upon the teacher's limited time and energy, help from outside the classroom is essential in implementing any alteration in basic classroom practices (Cuban, 1995, p. 281).

Third, those who try to individualize instruction at the elementary level must not allow for totally individualized instruction with children working independently on worksheets, a most inefficient procedure. As the IGE Phase I evaluation suggests, some interaction of children with other children or with teachers is needed. Also, it is advised not to assume that individual differences exist apart from the social setting of schooling, nor that such differences can be treated in a logical administrative fashion. This matter is related to the current social-psychologies which seek to understand a socially mediated subjectivity. Recent theories of situated cognition are challenging the view that the social and the cognitive can be studied independently, arguing that the social context in which cognitive activity takes place is an integral part of that activity, not just the surrounding context for it (Leont'ev, 1981; Brown, Collins, & Duguid, 1989; Resnick, 1991). The social invisibly pervades even situations that appear to consist of individuals engaged in private cognitive activity (Resnick, 1991, p. 7). In the same vein, language not only functions to shape and constrain world views, but it also embodies tools for coordinating multiple cognitions during direct social interaction (Levinson, 1983). Given these notions, educators need to promote cooperative learning as appropriate and to help students engage in "situated learning" and grapple with authentic tasks.

Finally, the advocates of the current standards-based education reform movements must pay attention to the likely limitations found in the efforts to integrate standards, assessment, and accountability. Just as today's standards-based system is subject to accountability, so was IGE while being funded by the federal government. Within IGE schools, the evaluation of the students' achievements was based on a set of criterion-referenced tests. The central component of IGE, the instructional programming model seen as one of the three strongest surviving characteristics of IGE by Wiersma (1986), was based on behaviorism reflected in the Tyler Rationale requiring IGE teachers to set observable, behavioral objectives for children as well as based on the ideas of social efficiency educators in the 1920s-30s. Contrary to the expectations of the developers of IGE, in most of IGE schools, this instructional programming model did not lend itself to a curricular area where instruction was focused on broad areas, and increasingly higher levels of achievement were expected throughout elementary school. Describing the objectives and expected level of achievement as common for all students states the minimal expectations but does not reflect the variety of additional learning experiences carried out by many students (e.g., extensive independent reading or

research on a specific topic) (Melvin, 1976). Moreover, team teaching and shared decision-making viewed as the other two strongest surviving characteristics of IGE by Wiersma (1986) were limited to instructional management aimed at providing for the differences among students in rate of progress, having pupils go through the same prepackaged instructional materials, falling short of providing for the differences in learning style, motivational level, and other characteristics. Further, team teaching and shared decision-making in the area of curriculum development which could have been a key to the successful implementation of IGE were missing from the efforts of implementing IGE.

With regard to standards-based tests, standards established in advance are often arbitrary, and while it may be possible to determine a level below which the ability to function at the next level of instruction would be impaired, there are few cases where standards based on experiential evidence have actually been developed (Scannell & Tracy, 1974). Further, the evaluation staff of IGE reported that a standardized test score is not sensitive to variations in need and instruction. Similarly, objective-referenced tests, while more sensitive to instruction, would only capture group growth if there was considerable common instruction within groups. It became clear to them that scores from norm-referenced and objective-referenced tests, no matter how they were adjusted or aggregated, were inadequate (Romberg, 1985c, p. 217). As one expert notes, in assessment for instruction, assessment and instruction support one another; in assessment for accountability, assessment and instruction are at odds with one another (Suen, in press). In conclusion, it is necessary that today's standards-based education advocates not only pay attention to the grammar of schooling while being seriously concerned with the ideas and values that all educators implicitly hold, but develop models that overcome the disadvantages clearly documented in the story of IGE.

Notes

[1] Website: http://www.cas.psu.edu/docs/pde/standart/report.htm

[2] List of IGE Acronyms

IGE Organizational and Instructional Acronyms

I&R	Instruction and Research Unit (classroom level)
IIC	Instructional Improvement Committee (school building level)
IPM	Instructional Programming Model
MUS	Multiunit School Organization
SPC	Systemwide Policy Committee (school district level)

IGE Curriculum Acronyms

DMP	Developing Mathematical Processes
IGM	Individually Guided Motivation
PRS	Pre-Reading Skills Program
WDRSD	Wisconsin Design for Reading Skill Development

[3] For the sake of explanation, I changed the original order of phases as follows:

Order in this paper: Phase I, II, III ,IV, V

Original order: Phase IV, I, II, III, V

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