What It Is and How To Use It . . .

The Individualized Learning System

THE demand for qualified individuals to serve in business, industry, government, and academic institutions increases, so the need for educating and training these people becomes greater and greater. In recent years, numerous attempts have been made to develop methods and techniques and to prepare new materials which will meet this need. But the methods, techniques, and materials have been incorporated into existing educational and training systems, and, because the systems themselves are now inadequate, this incorporation has not been successful. And a consideration of the problems which this situation presents brings us to a consideration of individualized learning.

Each Learner an Individual

The major problem has not been due to the inappropriateness of any particular method or technique, or to the poor quality of any particular materials. Rather, the difficulty has lain with the failure of the existing systems to deal with the differing abilities and requirements of today's students.

A learner is an individual, and must be taught accordingly. Innovations such as small group work, audio- and video-tape lectures and demonstrations, and teaching machines and programmed instruction materials have all helped, to a degree, to improve education and training. Yet what is needed is a system which permits the selection of

GAIL L. BAKER * ISADORE GOLDBERG

both the curriculum and the manner in which it will be presented for each individual learner. Individualized learning systems have been developed to accomplish just this.

What Is Individualized Instruction?

Before individualized instruction is described and discussed, it should first be defined. An individualized learning system is a highly flexible system of multiple materials and procedures, in which the student is given substantial responsibility for planning and carrying out his own organized program of studies, with the assistance of his teachers, and in which his progress is determined solely in terms of those plans.

The individualized system is a total educational program incorporating all useful concepts known to enhance the learning process. Its success depends upon an optimal balance between the student's own self-appraisal and the teacher's counsel—the student does not progress autonomously in his learning program.

In planning an individualized learning

^o Gail L. Baker, Program Specialist, National Clearinghouse for Mental Health Information, Chevy Chase, Maryland, formerly Education and Training Analyst, Computer Applications Incorporated, Silver Spring, Maryland; and Isadore Goldberg, Director, Education and Training Departments, Computer Applications Incorporated, Silver Spring, Maryland system the distinction between individualized learning and independent study must be remembered. The two terms are not synonymous. Individualized learning is a more structured program than independent study. while at the same time remaining very flexible. To individualize instruction in a subject area, the student and his teacher select from a variety of materials and media and determine the sequence of study that appears most effective in terms of the student's abilities and needs. A student may choose to work independently in an individualized learning program, but merely working by himself does not mean that a student is participating in an individualized learning program.

In Educational Leadership just two years ago, Frazier 1 discussed individualized instruction in general terms and presented a rationale for curriculum redevelopment incorporating the concepts of individualization. It is important now to understand just what these concepts are specifically, since the development of an individualized system of instruction involves the consideration of a number of variables. These include student features, teacher features, behavioral objectives, multiple activities, study requirements, and student evaluation. Any system of instruction is individualized only to the extent that certain criteria for these variables are experienced and demonstrated by the students and by their teachers.2

Student features. To as great an extent as possible, the abilities and requirements of each student must be considered in planning his overall program of instruction and each of its component parts. These abilities and requirements must be specified in terms of entry level behaviors, with regard to the student's weaknesses and strengths. The char-

¹ Alexander Frazier. "Individualized Instruction." *Educational Leadership* 25 (7): 616-24; April 1968.

² The following description of identifying criteria expands substantially the guidelines given on the "Identification Card for Individualized Instruction" issued at the National Laboratory for the Advancement of Education sponsored by the Aerospace Education Foundation in Washington, D.C., November 18-20, 1968. acteristics of each student play a major role in the selection of objectives, the sequence of study, and the choice of materials and procedures. It should be emphasized, however, that, regardless of the importance of the student in the individualized learning system, the teacher is no less important.

Teacher features. Teachers serve in varied roles—as members of the systems analysis curriculum development and evaluation team, as diagnosticians and evaluators, and as counselors. The individualized learning system provides for a significant amount of teacher-student interaction. Among other approaches, the teacher spends more time answering questions of individuals and small groups than lecturing to an entire class. In general, the teacher is concerned with reinforcing the behaviors appropriate for each of the individual students.

Behavioral objectives. Well-defined sequences of progressive objectives in various subject areas are established as guidelines for setting up an individual student's program of study. Each of the objectives is specified in terms of observable competence—either a particular behavior, or a particular product of the behavior. The student has available, in writing, the objectives toward which he is working which define what he is to learn. All of the students work toward a variety of objectives, and this is encouraged by the teacher.

Multiple activities. To enable the students to better achieve their objectives, the teacher encourages students to help determine the materials they work with and the procedures they follow. Each student uses a variety of materials and procedures. He moves freely about from place to place and talks freely with others, doing, with the teacher's approval, whatever is necessary to achieve the objectives. A student pursues his objectives individually, with small groups of classmates, or with his teachers, depending upon the requirements of each objective.

Study requirements. Each student proceeds through his program at his own pace. The time he spends in a given subject area is

Educational Leadership

776

determined by his performance, rather than by an arbitrary time allotment. This flexibility permits the slower student additional time for review, and the faster student opportunity either to pursue his regular course work in greater depth or to explore new areas of interest. Individualization does not, however, completely eliminate working together in groups, where such effort would be mutually advantageous to the several students involved.

Student evaluation. The progress of each student is continuously measured by comparing his performance with his own specific objectives, rather than with the performance or the objectives of other students. Testing and evaluation milestones, with adequate methods and instruments for assessing the student's abilities and accomplishments, are an integral part of the individualized program. A diagnostic placement test is given each student in any subject matter area to determine that point in the program at which he is qualified to begin. Pretests and posttests accompany each segment of an individualized learning system, and frequent selfevaluation tests are given to provide the student both reinforcement and knowledge of his own progress.

Implementing Individualized Instruction

Only recently have concepts and procedures for implementing such a truly schoolwide individualized learning system evolved. The supervisor of curriculum development can initiate such a program throughout the entire school system, or he can begin with one model school or experimental demonstration center. In any case, there are a number of points which must be considered in the implementation of an individualized learning system.

Subject areas. A school need not individualize instruction in all subject areas at the beginning. There are other alternatives which can also be effective, such as individualization by a few subject areas, or by a single department. In fact, it is often preferable to start with one or two subject areas which would have the greatest impact on improving the school's entire program. These might be core subjects, or more advanced subjects, or certain specialized subjects. Regardless of the subject areas chosen, however, there must be long-range commitment on the part of the staff which would be involved in the individualized program decided upon, so that curriculum development, staff training, and program management plans can be made.

Teaching-learning vehicle. One of the first requirements for the implementation of an individualized learning system is that a basic instructional vehicle be chosen for the presentation of the individualized program. The vehicle simply refers to the basic methodological format which will be used by the teachers and other staff members in providing learning assignments to guide the students in planning and pursuing their own individual programs.

Materials and media. Perhaps the most important requirement for individualization is the availability of a wide variety of instructional materials and media from which to select. An individualized learning system must include alternative modes, or learning procedures, by which any particular objective can be reached. Because of the flexibility of the system, new developments in media and materials can be incorporated easily and quickly.

This is one of the distinct advantages of the systems approach—it allows adoption of the best features of new curricula and techniques as they are developed. That sufficient funds must be made available for design and development and purchase of the necessary materials and media required by the individualized program cannot be overemphasized. If all of the diverse components are not provided for the students to select and use, the very concepts of variety and flexibility on which individualization depends are undermined.

Learning centers. Learning centers are a desirable feature of individualized learning systems. These centers vary from centralized facilities associated with library—audio-visual departments, to decentralized facilities associated with teaching departments, to specialized facilities such as science laboratories. Individualized learning is fostered through adequate staffing and up-to-date materials and equipment in these learning centers.

Research and evaluation. Research and evaluation continually improve the quality of the instructional system. Unlike the practice in more traditional systems, the burden for learning is placed on the individualized system rather than on the student—if the student does not learn, the curriculum, and perhaps also the teacher's and the student's roles, must be revised.

For example, an alternate choice of materials and media, or perhaps a different sequence of study, could be tried by the student. Another option might be to give the student more, or possibly less, freedom in deciding upon his own program. In addition to the evaluation of the system which is provided by such information as these observations, some individualized programs also undertake basic research in the learning process and in the development of specific uses of particular media, materials, and methods.

Differentiated staffing. In an individualized learning system, there must be trained personnel at more than one level of teaching. Included are regular teachers, teacher aides, master teachers, and possibly some specialized staff members. Preservice or in-service programs, or a combination of both, can provide the training necessary for the school personnel to perform adequately at different levels within the system. Each staff member must be given sufficient time to accomplish the tasks required to organize instruction for individualized learning, as contrasted with total class management of learning.

System management. The critical requirement for individualized instruction is the establishment of school situations adaptable to individual differences. The conventional boundaries of grade levels and arbitrary time units for subject matter coverage need to be redesigned, to permit each student to work at his actual level of accomplishment in any subject matter area, and to permit him to move ahead as soon as he masters the prerequisites for the next level of advancement.

Computer assistance. Individualized learning systems are usually supported by computer-based flexible scheduling programs. Individualized instruction requires more record keeping than other methods of instruction, and provisions must be made for handling this requirement on a daily basis. Computerization of the schedule reduces the inordinate clerical load otherwise encountered by the school staff in assigning students and teachers to classrooms and other facilities. Computer-based instructional management systems show great promise for handling functions like testing, diagnosing student deficiencies, maintaining continuous and detailed records of student progress, and providing individual schedules and study assignments.

Examples of Individualized Learning Systems

In specific individualized learning systems, broad curriculum priorities and decisions must be delineated and related to the individual students in the general target population. Systems analysis techniques are used for planning and development, and for evaluation and improvement of the individualized program.

There are a number of demonstrations of individualized education which can be seen throughout the country. One is Individually Prescribed Instruction, begun in a suburb of Pittsburgh, Pennsylvania.³ A second is the Milton Project in Central Pennsylvania.⁴ A third is the Duluth, Minnesota, Chester Park Project.⁵ A fourth is the Wisconsin Research

³ Individually Prescribed Instruction: Education U.S.A. Special Report. Washington, D.C.: National Education Association, 1968.

⁴ Hugh F. McKeegan. "What Individualizing Instruction Means to the Curriculum Director." Audiovisual Instruction 13: 232-37; March 1968.

⁵ Thomas J. Ogston. "Individualizing Instruction: Changing the Role of the Teacher." Audiovisual Instruction 13: 243-48; March 1968.

Educational Leadership

and Development Center for Cognitive Learning's Individually Guided Education in the Multiunit Elementary School.⁶ A fifth is the Project PLAN teaching-learning units, or TLUs, developed by the American Institutes for Research in Palo Alto, California.7 A sixth is teacher-written UNIPACs, developed by the Kettering Foundation Project /I/D/E/A/.8 A seventh is Learning Activity Packages, called LAPs, developed initially at the Nova Schools in Fort Lauderdale, Florida.9 All of these approaches to individualized learning programs, in addition to some less structured approaches,¹⁰ are discussed at length in a publication prepared by Computer Applications Incorporated.11 An annotated bibliography of selected publications on individualized instruction has been issued by ERIC at Stanford.12

Let us now consider a specific organizing model for an individualized learning system. We might call this hypothetical model the

⁶ Herbert J. Klausmeier, Richard Morrow, and James E. Walter. Individually Guided Education in the Multiunit Elementary School: Guidelines for Implementation. Madison, Wisconsin: Wisconsin Research and Development Center for Cognitive Learning, 1968.

⁷ Robert A. Weisgerber and Harold F. Rahmlow. "Individually Managed Learning." *Audiovisual Instruction* 13: 835-39; October 1968.

⁸ What Is a UNIPAC? South Laguna, California: Institute for Development of Educational Activities Materials Center, 1968.

⁹ Richard V. Jones, Jr. "Learning Activity Packages: An Approach to Individualized Instruction." Journal of Secondary Education 43: 178-83; April 1968.

¹⁰ Dwight W. Allen. "How You Can Individualize Instruction—Right Now." *Nation's Schools* 81: 43ff.; April 1968.

¹¹ Isadore Goldberg, Norman J. Murray, Ronald E. Dozier, Gail L. Baker, Julie Kisielewski, C. Glenn Davis, Jane Bottorff, Thomas P. Ryan, et al. Final Report: Model Secondary School for the Deaf—A Study of Instructional Methodologies. Prepared for Gallaudet College and the Program Design Subcommittee of the Model Secondary School for the Deaf Coordinating Committee, National Advisory Committee on Education of the Deaf. Silver Spring, Maryland: Computer Applications Incorporated, Education and Training Division, 1968.

¹² Serena E. Wade. Individualized Instruction: An Annotated Bibliography. Stanford, California: ERIC Clearinghouse on Educational Media and Technology at the Institute for Communication Research, Stanford University, 1968. Module for Individualized Education. Of course, you should keep in mind that the adoption of a particular individualized learning system will depend almost completely on the particular student population which will use it. But from this brief description you will have some idea of how the system might operate.

Each Module for Individualized Education-a MInE-is designed to strengthen the student's understanding of a single major concept or principle. To establish firmly the primary idea, each module includes secondary ideas. A complete structuring of ideas for each subject area results in a congruent sequence from preschool through college. The module is a map of the student's pathway through the system. At certain crossroads, the student meets with small groups for conceptualizations, or confers with the teacher on a one-to-one basis to decide on the activities he should undertake. The student participates in all decisions that affect him, assesses his own progress, and helps design quest activities, which range from supplementary research, to work in industry, to creative experiences.

Components of MInEs. Each module includes eight basic components. The rationale is a statement justifying the inclusion of the subject matter, and integrating it with related topics in the total program. The statement of the primary and secondary behavioral objectives includes the skill or concept to be learned, the conditions under which the learning must be demonstrated, and the criteria for and means of evaluating the learning. The pretest may cover either the entire module or individual objectives, depending upon the nature of the material or the length of the total module.

The list of activities provides options, with regard to media and mode, based on the results of the pretest, on learning styles, and on preference. Self-testing devices measure the learner's achievement of the objectives, and they help him decide on subsequent steps to follow. Teacher-made post-tests take several different forms and come in different batteries. Recycling activities are provided for those students who need or want additional practice. Depth study opportunities are provided for those students who wish to pursue the subject matter in detail.

Additional components, such as special situations and contingencies, are included by standard inserts and special handouts.

Levels of MInEs. The modules are prepared with variations to accommodate various levels of learning. The objectives are organized into larger units or courses, or into a curriculum scope and sequence. The type of learning desired is frequently specified for an entire unit or sequence of units, from the most basic skills to the most advanced.

Media in MInEs. Since the major functional requirement of an individualized system is a wide variety of instructional materials, the role of media in providing this variety is extremely important. The media of instruction best suited to presenting a set of objectives are identified. Differentiated learning materials and media provide alternative



Figure 1. Interrelationship of Concepts and Procedures in an Individualized Learning System

learning paths to common objectives. Modules use oral communication, printed material, video tapes, audio tapes, slide programs, filmstrips, and films. Since much material is presented in more than one medium, a basic goal is accommodation of a broad range of learning styles and preferences, and several alternatives of instructional media are included in each module.

Modes in MInEs. The five basic instructional modes which make up a laboratory environment are large group, small group, tutorial, directed independent study, and independent self-study. The large group mode, or lecture, is most useful at the beginning because commonalities of need and progress exist at this time. General interest and the introduction of new material are the uses for this mode as the student continues in his program. The small group mode is useful in certain aspects of the program from the beginning, such as discussions and project activities. The small group mode becomes a scheduling tool as commonalities arise during the course of a program. The tutorial mode, or one-to-one teaching, plays perhaps the largest role in an individualized program. This mode is built into the modules as a critical process. Directed independent and independent self-study procedures are dictated by modules on a systematic basis, and form important structural components of the program.

The interrelationship of the concepts required of an individualized learning system and the procedures required for implementing it can be thought of diagrammatically, as shown in Figure 1.

In summary, an individualized learning system is developed and implemented; then it is carefully observed, evaluated, and improved. The evaluation-revision cycle, the basis for the internal self-improvement of the total system, may occur a number of times over a period of years. The system never ceases to adapt to the ever-changing abilities and needs of the students, and it is this quality that makes individualized learning an absolute necessity in our schools of today and tomorrow.

Educational Leadership

Copyright © 1970 by the Association for Supervision and Curriculum Development. All rights reserved.