DOCUMENT RESUME

ED 179 538 SE 015 193

AUTHOR Scanlon, Robert G.
TITLE Diagnostic-Prescriptive Teaching Progress and Problems.
INSTITUTION Research for Better Schools, Inc., Philadelphia, Pa.
PUB DATE Feb 78
NOTE 14p.: Paper presented at the Annual Meeting of the American Association of Colleges for Teacher Education (30th, Chicago, IL, February 1978)
AVAILABLE FROM Research for Better Schools, Inc., 444 N. 3rd Street, Philadelphia, PA 19123 ($1.00)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Behavior Patterns; *Diagnostic Teaching; Elementary Secondary Education; Family Background; *Individual Differences; *Individualized Instruction; *Learning Processes; Peer Influence; Physical Health; Psychological Needs; Self Concept; Student Attitudes; Student Motivation
IDENTIFIERS Individually Prescribed Instruction

ABSTRACT

A brief history of the philosophy and development of diagnostic-prescriptive teaching for the child with learning problems is presented. Individual differences in children are identified in the following six major areas: (1) pattern of growth, maturity level, health and energy, physical handicaps and limitations; (2) love relationships with family and friends; (3) cultural and social background; (4) relationships with peers; (5) emotional behavior and reactions; and (6) self-concept. These factors must be considered to successfully diagnose problems and prescribe individual instruction. (JD)

DIAGNOSTIC-PRESCRIPTIVE TEACHING

PROGRESS AND PROBLEMS

Presented at

AACTE 30TH ANNUAL MEETING

CHICAGO, ILLINOIS

by

Robert G. Scanlon
Executive Director
Research for Better Schools, Inc.
1700 Market Street, Suite 1700
Philadelphia, Pennsylvania 19103

February 22, 1978

DIAGNOSTIC-PRESCRIPTIVE TEACHING
PROGRESS AND PROBLEMS

That "The child is the starting point, the center, and the end" of the educational process is far from a new notion in American education. That very sentiment was expressed by John Dewey in the early 1900's and followed up by educators from Dewey's time on. We have such notable scholars as Benjamin Bloom, Ralph Tyler, and Bob Glaser driving us on in our attempts to accommodate the individual child's needs, interests, abilities, talents, styles of learning and of living. Their work has enabled us to make strong inroads in our ability to respond to deep social concerns about equality of educational opportunity and the need to adjust to cultural differences. Recent research and development results have brought us programmed instruction, mastery learning, open education and compensatory education. Because of them, we have begun a redesign and reorganization of curriculum for individualized instruction.

Why then, with all of these reforms, are we still faced with countless discrepancies in learning outcomes? Why, with all our years of accumulated knowledge and experience, doesn't equality of educational opportunity equal equality of learning? Moreover, we want to go beyond the "why" to the "what." What can we do? What is the direction we should take? There is no doubt that diagnostic-prescriptive instruction holds much of the answer. It is well recognized that schools can no longer serve a weeding out function. We can't afford to carelessly weed out and discard thousands of students, by some estimates a third of the student population who, because of cultural disadvantages or physical handicaps, can't be molded to preconceived notions of what makes a

"good" student. The function of schooling has to be to help all students overcome their learning difficulties and to develop to their educational fullest.

In 1949, Ralph Tyler, in his book, Basic Principles of Curriculum and Instruction, now in its thirty-second printing, defined education as "a process of changing the behavior patterns of people." Learning, he noted, takes place through the active behavior of the student. It is what the student does, not what the teacher does. The teacher's role is to set up an environment and to structure a situation in order to evoke a desireable behavior.

This brings a different dimension to the responsibility of the classroom teacher. Setting up and structuring a learning environment presupposes that the teacher is familiar enough with the student's interests and background to make a reasonable judgment about the student's strengths and weaknesses as well as the method to best lead the child's natural curiosity to additional learnings. The identification and correction of years of learning flaws and vacuums, some of which undoubtedly are rooted in school, while others are attributable to the home, the community or to society as a whole, is by no means an easy task. That's why diagnostic-prescriptive instruction is a logical place to begin. Through a rational analysis of available information on each student, it lets the teacher pinpoint the nature and cause of the learning deficiency and gives strong clues about learning experiences that will correct the deficiency.

Although there are many different approaches to diagnostic-prescriptive instruction, they all follow a basic model that involves:

- specifications of educational objectives
- organization of methods and materials to attain these objectives
- determination of each pupil's present competence in a given subject
- individual daily evaluation and guidance
- provision of frequent monitoring of student performance in order to inform both the pupil and the teacher of progress toward an objective
- continual evaluation and strengthening of the curriculum and instructional procedures

Let's take a moment to review a couple of the more significant research projects that led to the development of this model. Systematic plans for providing individualized instruction date back as far as 1888 with the work of Preston Search. In 1919 we had what has become known as the Winnetka Plan, built on the philosophy of Frederick Burk at San Francisco State Normal School and carried out under the superintendency of Carleton Washburne. The two most essential features of the Winnetka idea were that the (1) learning of "the common essential" was ordered around learning by goals and (2) that provisions for variation of students' interests existed. Self-instruction, self-correction, goal record system, and progression by pupils at their own rate all played a central role in the day to day operations of the Winnetka schools.

The Winnetka experimenters were out to test the hypothesis that when provisions are made for individual differences, classroom instruction can be more effective. Among their findings were (1) that children may excel

in one subject and do poorly in another, while children of identical I.Q. may differ widely in progress; (2) that individualized instruction and progress in the skill subjects leave large amounts of time for social and self-expressive activities; (3) that individual work and progress eliminates "failures" and "repeaters;" and (4) that individual instruction increases efficiency in basic skills.

The full impact of these findings lies in the numerous contemporary practices influenced by the spirit of the Winnetka experiment. For instance, the recognition of the wide range of individual differences among children; the development of material which pioneered programmed instruction; individualized instruction; psychological and psychiatric services for the schools; incorporation of nursery schools into the public school system; and the full involvement of teachers in planning curriculum, preparing textbooks, and carrying out research all stem from the Winnetka work.

A second major move toward the development of a viable system of diagnostic-prescriptive teaching was ushered in by Bob Glaser, and his colleagues at the Learning Research and Development Center of the University of Pittsburgh. Their results led to an experimental project at the Oakleaf School. In 1961 they began a series of small-scale studies to test preliminary notions about individualized instruction in single classrooms.

As work proceeded, it became apparent that individualized instruction could not be achieved unless the organization of the intact classroom permitted a more flexible learning progression among students.

As a result, a second set of studies was instituted, using programmed instruction and other materials in a more flexible context. Out of this experience grew Individually Prescribed Instruction - IPI - an instructional system based on a set of behavioral objectives correlated with diagnostic instruments, curriculum materials, and teaching techniques.

Early objectives of IPI were (1) to enable each pupil to work at his own rate through units of study in a learning sequence; (2) to develop in each pupil a demonstrable degree of mastery; (3) to develop self-initiation and self-direction of learning; (4) to foster the development of problem-solving thought processes; and (5) to encourage self-evaluation and motivation for learning.

Diagnosis was made possible through a battery of test instruments--placement tests, pretests, posttests, and curriculum embedded tests. A written daily prescription guided each pupil's work.

When Research for Better Schools took over responsibility for field testing and disseminating IPI, Bob Glaser carried his own work forward to the study of adaptive learning environments. In his latest publication, Adaptive Education: Individual Diversity and Learning he points the way to practical application of his research by outlining specific practices for creating more flexible educational programs. The keys to flexibility, he says, lie in learning environments where:

- -- time is used to accommodate different learning styles
- -- grade level boundaries are relaxed
- modular curriculum materials with varied points of entry, several means of access, and having a direct relationship to the student's needs and interests provide options for extending and exploring content areas off the main track

-- decisions about matching children and instruction are made jointly by teacher and student on the basis of tests and teacher observations

-- children, insofar as their age and experience allow, are encouraged to use self-management skills in preparing for, organizing, and carrying out their learning tasks

-- and finally, teachers have developed the skills of relating to, working with, and guiding individual students.

Other researchers have focused on specific variables or conditions under which students learn. Benjamin Bloom, for instance, examined three variables which he hypothesized account for a major portion of school learning: (1) the extent to which the student has the necessary prerequisites, (2) the extent to which the student is, or can be motivated to learn, and (3) the extent to which instruction is appropriate to the learner. He called these variables,(1) cognitive entry behaviors, (2) affective entry behaviors, and (3) quality of instruction. His research challenged the generally accepted view that some students have an aptitude to learn certain subjects and others do not by claiming that if given enough time and if the school environment is altered to accommodate these variables, 90 percent or more of students would do as well as would the top 10 percent under normal conditions.

Even though these examples of on-going research clearly direct our attention to the critical importance of diagnostic-prescriptive instruction, the bottom line rests with the day-to-day activities going on in the nation's classrooms.

The truth is that in spite of years of evidence in its favor, diagnostic-prescriptive instruction hasn't taken hold to a degree anywhere near

compatible with its potential. Teachers are either not familiar with the process or they are afraid to use it. Those that are using it, more often than not, are limiting their diagnostic decisions to what they see in the classroom on on test scores. Seldom do they ask why.

I'd like to reintroduce another side to analyzing, understanding, and guiding learning and behavior. I believe this side is a significant step toward answering "why."

> (Learning) factors do not operate independently but... interact to give rise to a steady flow of motivations and feelings and gradually shape the developing self.

These words should be engraved in every classroom, every school district office, every educational research organization, and every school of education. They serve us as a reminder that all our elaborate learning materials and intricate instructional methods are absolutely worthless unless we are prepared to analyze and constructively deal with the forces and perplexities that make children what they are.

The words aren't my own. They were penned by Daniel Prescott more than twenty years ago. Daniel Prescott, Director of the Institute for Child Study at the University of Maryland, was a man dedicated to children as he was to his art. Unhappily his teachings have been relegated to dusty, little used stacks of university libraries. I think it's time we dusted off these teachings in the child in the education process and paid careful heed to what they have to say about understanding individual differences and their implications for the kinds of information teachers need in order to make instructional decisions.

Prescott's dynamics of learning depend on a complex set of forces that, if perhaps we have not overlooked, we've been too timid to tackle. The listing is broken down into six major areas: organic factors, love relationships, socialization and cultural factors, peer-group factors, self-developmental factors, and self-adjustive factors. Let's take each in turn.

The first, organic factors, includes the child's rate and pattern of growth, maturity level, rate of energy output, current health as well as health history and habits, physical handicaps and limitations, skill in managing the body, and physical appearance and grooming. Consequently, the teacher needs information on each of these factors in order to understand the way pupils perceive themselves, the goals they envision for themselves, and their interests.

Love relationships encompass the child's place in the family, the love climate in the family, including the love between the child and individual family members as well as the love between other members of the family, the love between the child and special friends, the child and pets, and of course, the child and the teacher. The teacher needs information on each of these factors in order to understand the student's approach to learning tasks, the ways in which the student relates to the teacher and to other children.

Under socialization and cultural factors we have the different subcultures our society carries for males and females, for rural and urban cultures, social class and caste, along with factors dealing with mobility, mobility patterns, the child's participation in social institutions, and the

interaction between the child and the teacher beyond the classroom. The teacher needs information on each of these factors in order to help different children understand political happenings, social events, national ideals, and sound citizen attitudes.

Peer group factors comprise characteristic activities of the peer-group, the peer group's customs and codes and the child's adherence or non-adherence to them, role relationships in peer group activities. The teacher needs information on each of these factors in order to understand adjustment problems, to evaluate individual strengths and weaknesses, to decide how to help the child achieve a better balanced development, to facilitate communication, and to give the child a sense of being valued.

Sixth, self-adjustive factors, include situations and experience that evoke pleasant or unpleasant emotional behavior in the child, the child's behavior pattern while experiencing emotions, the child's adjustment patterns, and the emotional adjustments the child finds difficult to make. The teacher needs information on each of these factors in order to understand how the child is faring in relation to his needs and the child's sense of emotional safety, trust, belongings, adequacy or frustration.

In 1969, I had the pleasure of working with Dan Prescott on a project Research for Better Schools was conducting. At the time we were grappling with the question of how does a teacher organize conditions for long-term prescription writing and employed Prescott as a consultant to our efforts. During the course of the project he shared

these six areas with us along with a seventh major area. He called this area "Self-organizing factors and concept of self." To the best of my knowledge, Prescott never published the factors in this final area. Yet, they are significant ones, particularly for those of us currently exploring issues in values education or in ethical and citizen education.

As Prescott explained it, self-organizing factors and concept of self addresses itself to questions like What are the child's standards of right and wrong? What is the child's concept of God and life after death? What is the child trying to put into and get out of life? Does the child know what he or she really believes? Renewed concern about teaching to all children right, respect, and responsibility make this seventh variable more important than ever.

Each of these now seven areas, I believe, profoundly demonstrate the complexity of making a sound judgment about a child's readiness to accomplish a particular learning task. They influence both the child's motivation and the meanings he or she derives from the learning experience. More important, they show the folly of making broad, all-encompassing generalizations about what goes on in the child's mind as he or she approaches a learning situation.

Today, in another project at Research for Better Schools we are again in the process of examining some of the variables enunciated by Prescott. Along with numerous other influences that effect learning outcomes. At last count, we've identified some 450 different variables that stem from classroom, school, school district, home, and

community conditions. It suffices to say that the implications for diagnostic-prescriptive instruction, and for teacher education, are enormous.

It's your responsibility as teacher educators to see to it that future teachers understand these factors and that they're able to diagnose the learning problems and then prescribe the appropriate remedies.

Such a sweeping assignment obviously dictates a re-examination of the requirements teachers must satisfy in order to function effectively in the diagnostic-prescriptive process.

Some fundamental competencies that all teachers should have, but especially those teachers using diagnostic-prescriptive instructional methods, are:

1. Specifying learning outcomes;
2. Assessing student achievement of learning outcomes;
3. Diagnosing students' learner characteristics;
4. Planning long-term and short-term learning programs for individual students;
5. Organizing a class for instruction and guiding students with learning tasks;
6. Controlling off-task student behaviors;
7. Employing teamwork with colleagues;
8. Improving one's own professional competencies.

Teachers can make a difference. A competent, knowledgeable, and understanding teacher remains the single-most important variable in student achievement.

One of the most frequent criticisms leveled at educational research and development is that few R&D outcomes are funneled down to the classroom teacher. Allow me to again quote Dan Prescott:

> The sciences that study human learning, behavior, and adjustment have now pushed their researches far enough to explain some of our current failures and so to make possible a considerable improvement in the educative process. But this can come about only if we school people acquaint ourselves with these findings, analyze the cause of our hitherto "unexplained perplexities," and then conscientiously experiment through time with new ways of working with children in the classroom.

You can help do this by making the latest research results part of your teacher education programs and by encouraging future teachers to continue to keep abreast of R&D outcomes after they leave the university for the classroom. It is only then that we'll begin to see the research that led to diagnostic-prescriptive instruction being used and making an impact in the classroom--the only place where, in the end, it really counts.