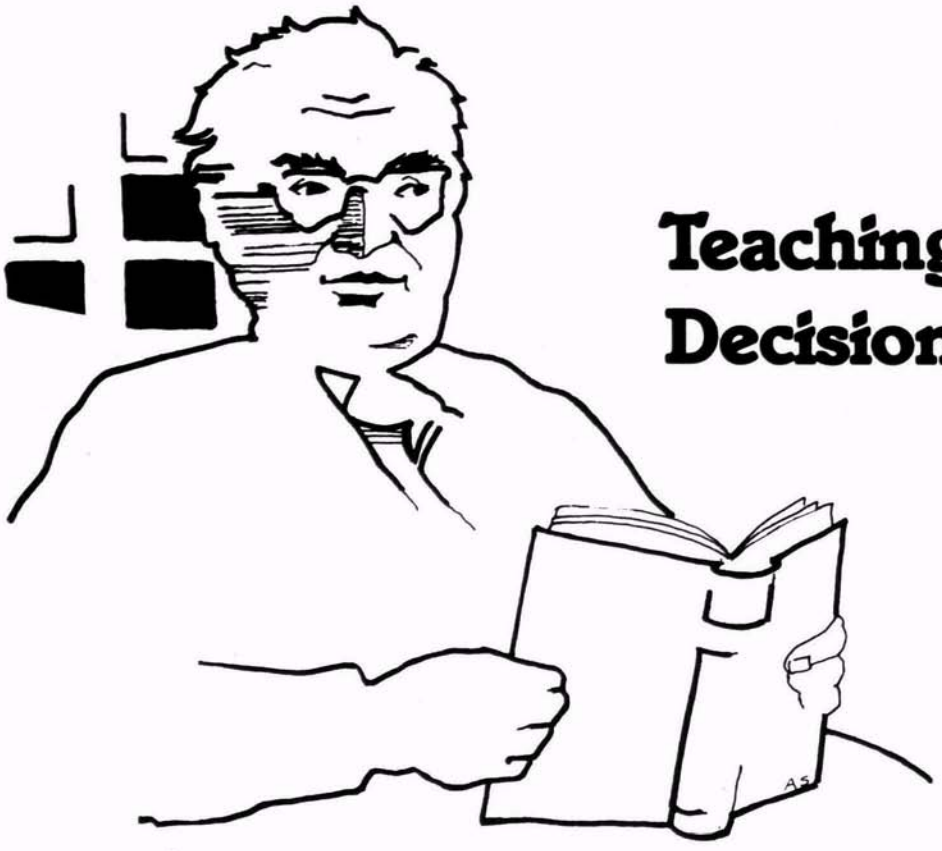


Teaching is Decision Making

Madeline Hunter

Four program components, designed at UCLA, help produce the astute, "on your feet" decision making necessary for professionals.

Do teachers make a difference? The research-based answer to that question is an unequivocal *yes*. What is it about teachers that makes the difference? Here the answer is not so clear, but studies are showing that it is not what a teacher is, or how a teacher feels, but what a teacher *does* that has the potential for affecting students' achievement.

Teaching is now defined as the process of making and implementing decisions, before, during, and after instruction, to increase the probability of learning. If what a teacher does is consonant with what is now known about cause-effect relationships in learning, and *if* that teacher's decisions and actions reflect awareness of the current state of the learner and the present environment, then learning will predictably increase.

These qualities in professional decision making are a far cry from the "dedicated and loves kids" product of many teacher education programs. Now, adequate professional preparation parallels that of medicine, for it requires the professional to learn, internalize, and implement the contributions of science to increased productive human functioning. Professionalism also mandates that those scientific principles always be interpreted in the light of, and be modified to accommodate the needs of, an individual in his/her particular life space.

Let's look at a common example of the interaction of *science* and *situation* in decision making. Johnny is just catching on to "invert-the-divisor-and-multiply." Research suggests that repeated practice (going over it several times) at this initial stage of understanding will result in faster and more durable learning. Therefore, Johnny should do two or three more problems before he leaves for recess. However, Johnny's team has a baseball game organized for recess and if he thinks he'll be late for the game he won't have his mind on what he's doing. His feelings of discomfort can become associated with fractions in particular and math in general. What to do? Would it be better to

keep him for a couple of minutes, to cement his understanding? Or would it be better to let him go today and be confused in math tomorrow while his classmates are confident? There is no predetermined correct answer. The teacher must make a decision on his/her feet. (Researchers get to make decisions on their seats!)

This synthesis of science and sensitivity to a situation explains why we can't supply pat answers to teachers. We can, however, equip them with research-based principles on which to base decisions while sensitizing them to the individuality of students and situations. This professional preparation requires instruction plus analytic observation of master teaching followed by *guided* practice in responding to the cues emitted by students in each situation.

To design a program that would produce a professional capable of effective, high-speed educational decision making, it was necessary for us, at UCLA, to translate into action four components:

1. Factor analysis of decisions made in teaching so necessary cause-effect information could be identified;

2. Preservice instruction designed to *model* those cause-effect relationships in transmission of information and skills to beginning teachers; (They needed to see us practice what we preached.)

3. Production of filmed and taped episodes demonstrating each category of decisions in effective teaching so prescribed instructional sequences would utilize the principles of modeling and observational learning;

4. Development of a diagnostic prescriptive observation instrument that would identify and label effective *performance* or *action pattern skills* used by the teacher (not what the teacher intended but what he/she did) and those skills which needed to be learned.

In this article it will be possible to give only a brief description of each of these four components.

Analysis of the Decisions Made in Teaching

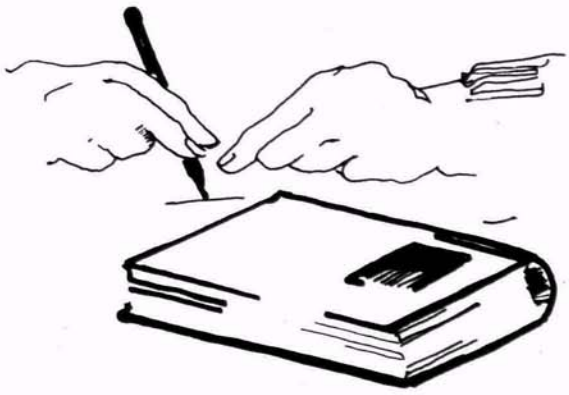
All teaching decisions clustered in three categories: content, style of the learner, and behavior of the teacher.

Content to be learned—While state mandates, curriculum guides, district policy, and textbooks may identify general goals and content, each day the teacher must determine the appropriate level of difficulty, and when to proceed to the next harder learning. It is important to emphasize that these decisions do not require elaborate and time-consuming diagnostic instruments but rather the understanding of the incremental nature of learning. In some learning sequences, teacher and student have no choice, because each learning is dependent on achievement of certain previous learnings. (The student can't multiply and divide if he/she doesn't understand addition and subtraction. A student can't think analytically when he/she has no information or doesn't understand the information.)

In other sequences, learnings are independent of each other and can be acquired in any order. (A student can learn to use descriptive words before or after learning topic sentences. A student can learn metric measurement before or after learning the four operations in math.) In an independent sequence, teacher and learner may choose the order of learning on the basis of interest, availability of materials, or convenience.

To make successful content decisions, the teacher must be able to discriminate between dependent and independent sequences, to task analyze a more complex learning into its simpler components, and to diagnose students in terms of the components already possessed and those which remain to be acquired.

To focus teacher and pupil energy and effort at the place where a student's knowledge leaves off and new learning needs to begin, the teacher, *while* teaching (Hunter, 1979), must utilize continuing informal and inferred diagnosis and make decisions as to whether to reteach, extend the learning with further practice, proceed to the next learning, or terminate the lesson because "now's not the time." Astute, "on your feet" decisions pay tremendous dividends in increased



learning gain from student time expended as well as in resultant student and teacher satisfaction.

After instruction, the teacher uses evidence of the effectiveness of instruction to build correction into subsequent content decisions. For example, evidence indicates that the majority of students still need prac-

tice with their number facts but they are getting bored. Should they be given a respite and work on some math that is not dependent on calculation *or* should a novel way of practicing be introduced to rekindle their interest and effort? Clearly, the most eminent learning theorist, removed from the situation, could not make this decision. Only the teacher on site has the information necessary to make a decision with high probability of satisfying consequences. (For the same reason, control was moved from the NASA scientists with their computers to the astronauts in the space capsule.)

"Now, adequate professional preparation parallels that of medicine, for it requires the professional to learn, internalize, and implement the contributions of science to increased productive human functioning."

Style of the learner—Research has begun to formalize what teachers always knew intuitively: that students learn in different ways. Teaching decisions in this category do not require formal diagnosis to identify the preferred learning modality of each student but should be based on the need for encouraging students' practice in many modalities so a repertoire of learning styles is developed.

In examining what students might do to achieve the learning already determined to be at the appropriate level of difficulty, a teacher needs to build into the instructional plan effective pairing of input behaviors. For example, students might "see and say," "diagram and describe," "hear and indicate," or "write and examine." At other times the teacher will deliberately limit the student to the use of one input modality for purposes of diagnosis and/or strengthening that modality.

As a result of informal and inferential diagnoses *while* teaching (Hunter, 1976), the teacher must decide when it is necessary to change or augment input. (Add modeling, diagraming, having each student do, observe, verbally direct, choose, select.) The success of a "multi" or "uni" modality approach must be validated by an affirmative answer to the question, "Are the students achieving?" If the answer is negative, modifications need to be made during instruction (another "on your feet" decision!).

After instruction, the teacher must examine evidence of students' achievement. This constitutes a change from "I *hope* they learned" to "I *know* they learned because they demonstrated they could ———." If the evidence of accomplishment is not perceivable, the teacher must design subsequent learning opportunities to validate students' achievement, and then determine whether remedial or next learnings should be planned.

Behavior of the teacher—The primary responsibility of every professional is not to do what the professional prefers, but to render the service needed by the client. Therefore, teaching behaviors are determined by student need, not teacher style. Before instruction, a teacher may anticipate the most enabling behavior. During teaching, behaviors change when they are perceived as not effective. For example, during teaching, a teacher must determine whether this student should be immediately accountable, or be given additional time before having to demonstrate achievement. Should a student proceed to the next learning after one demonstration of competence, or are several validations required for that student's retention of what has been learned? Should the teacher, at this moment, be supportive or demanding? Questions such as these can be answered only with information emerging from the immediate situation.

Answers remain based on validated principles which affect learning, but are implemented with modifications necessary for an individual student in a particular situation.

Inservice That Models Effective Teaching

When teachers experience professional development that models effective instructional decision making, they learn to make and implement decisions with artistry in each of the three areas: content at the correct level of difficulty; student behaviors which are enabling to learning and validate achievement; and teaching behaviors which increase the probability of each students' successful accomplishment. Inservice of this quality is very different from typical inservice which often violates the very principles it is designed to teach.

Films and videotapes make it possible for a teacher to see professional decision making implemented in a typical classroom. This facilitates learning the process of educational decision making and capitalizes on the power of observational learning. Recent brain research has validated the learning propulsion from integrating right and left hemispheric processing. Therefore, "showing what we mean" is one way of practicing what we preach.

Teaching Appraisal for Instructional Improvement Instrument (TAIII)

Effective teaching requires task analysis of a complex learning, then diagnosing to identify which

components a student has achieved and which remain to be accomplished. Task analyzing the complex process of successful teaching has resulted in the Teaching Appraisal for Instructional Improvement Instrument (TAIII) (Hunter, 1976), a diagnostic-prescriptive instrument of the process of teaching. Using that instrument, the trained observer can identify teaching behaviors which research and classroom evidence would support as increasing the probability of learning. Bringing these behaviors to the conscious awareness of the teacher and articulating why they are effective increases deliberate and appropriate use of those principles in the future. "Teacher burn out" behaviors which use time and energy but contribute nothing to students' learning can be identified and eliminated. The TAIII also will reveal teaching decisions and actions which, albeit unintentionally, interfere with or hinder students' successful accomplishment. Solving the mystery of "what went wrong" can return rationality to students' responses.

All four components necessary to professional development: (1) identification of the decisions a teacher must make, (2) inservice which enables the teacher to combine science and art in teaching, (3) films and tapes which provide opportunities to predictably "see" how it looks in the classroom, and (4) a diagnostic-prescriptive instrument which provides knowledge of results in professional performance, are now being used successfully in preservice and inservice professional education all over the world.

These components of effective teaching decisions and actions are not the *only* answer, but constitute one avenue to professional competence that has been demonstrated not only to increase students' learning but to increase teachers' sense of professionalism through knowing what they're doing, doing it on purpose, and finding that it makes a measurable difference in their own and students' satisfaction and achievement.

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