

Technology and Purpose in Teaching

*Whether medium or material,
the purpose it serves
is paramount.*

TEACHERS have long known that a student can learn by himself and must accept responsibility for his own learning. Sometimes, they have expressed in aphorisms their understandings of this phenomenon of the teaching-learning process and their role in it.

"You can lead a horse to water, but you can't make him drink."

"I can't learn for you, and I won't even try. But I'll help you any way I can."

In the fore of current efforts to change school practices are those who describe the advantages to accrue from widespread adoption of new electronic and mechanical devices. Television and automated instructional devices have been added to the familiar audio-visual media. These advocates of technology insist that by using modern instructional devices the learner will assume more responsibility for his learning, the learning will be quality controlled, and the role of the teacher will be redefined drastically.

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Less frequently now are economy of talent and of school dollars listed as primary outcomes of such use. The suggestions are implicit that only with the new devices can the objectives of quality learning for the realities of modern life be fully met and that the principal function of the teacher is presentation of material.

On His Own

It may well be that those proposing the massive use of instructional technology have overdrawn their case or have not been privileged to observe good teaching-learning situations. Yet teachers recognize the importance of a learner's assumption of responsibility for his learning and desire to structure opportunities for him to continue to learn with progressively less teacher supervision. At least, no responsible pedagogical theory suggests otherwise. Mrs. Jones' exchange with another first grade teacher illustrates teachers' awareness of these ideas. "John is on his own now. He knows a good basic vocabulary and can attack new words very well. He'll need help along, but, basically, he's on his own."

The first grader is not only learning to read. He is reading to learn. And the teacher has worked herself out of a job. And she is proud of it.

The young boy will need Mrs. Jones still. He won't need her for the same reasons, though. One day, with book in hand, he may ask, "Why is *good-bye* sometimes spelled *goodby*?" Or perhaps, "Last night on TV, I saw a war film about the Germans shooting American soldiers. Do we like the Germans now? I don't think I do."

The teacher's role is still the same as it was the day the little boy read "Dick": to assist him in developing meaning and understanding.

Next year, and the year after, and every year, the boy will learn on his own. He may be one of a small group attacking a problem, in a vast audience, or isolated physically from others. He will see the world and interpret it in his own way, perhaps quite differently from anyone else, selecting what is important and enhancing to him.

To be sure, he will have assists and he will encounter obstacles in his learning. His potential may be curtailed or it may be unleashed. He may use many stimulus sources or he may be stimulus-deprived. But if he learns, he will do it. The quality of his learning will be affected, in no small measure, by his perceptions, by how he sees the world, much less by how others see it.

Enthusiasts claim that television and teaching machines make unnecessary the constant mediation of a teacher in one's learning at school. They are right, of course, in their observation that students can learn and often do learn, without a teacher present. To be fair, in this analysis, one must indicate, at least, the possibility of learning in the presence of, even because of, the teacher. Also granted is their implication that students do not always need another person close at hand in order for learning to occur. Admitted, too, is the fact that interaction with

others is not necessary for every learning task.

To observe children and their behavior is to document the fact that they learn as a result of watching television. Recall the early days of commercial television. Even in that period, adults gave frenzied attention to the impact of television on children. Grim prophesies of a generation of passive children were dissipated as the novelty wore off and as children and parents decided which programs were worth viewing. Forecasts of a rapid decline in reading failed to materialize. One might even speculate on the increase in reading in the post-TV decade as caused by the stimulation of televised fare or a growing distaste for the medium's offerings.

The fact is profound that children learn much from viewing television. They bring to school ideas, questions, suggestions, concepts, attitudes and skills for which television may be given credit. Moreover, they learn many things earlier than some persons had thought possible. "Experiments" and demonstrations are unneeded to provide evidence that children can learn from television at school.

Children can also learn using programmed devices such as teaching machines and foreign language laboratories. The learner, using such materials, can proceed at his own rate, knowing at every step along the way his successes and errors. The learner need have only the program and work. Research evidence is impressive regarding the amount of material through which a learner can proceed using these devices.

With so much concern over newer instructional technology, some may forget that learning can result from the use of films, radio, and other audio-visual materials—and without the mediation of another person.

Likewise, people still learn effectively using books and other printed materials. Others need not be present when a book is read or studied, not even a teacher.

The writer recalls that hot Texas summer when he learned algebra using a single textbook and much chalk. Between plowing sessions, he proceeded through the book, page by page, at his own rate of speed, working every problem step by step. He knew immediately his success or lack of it (his book had answers at the back).

Programming

In effect, the algebra book served as a program. It probably was an unsophisticated program according to current standards. Yet an aura approaching mysticism is now being attached to the word *program*. Shatteringly sobering is the fact that almost all current programs for automated instructional devices were written with a book as their source. Too, many programs are published and used in book form. Most teaching machines use printed programs, while one high-priced device has been described as a machine that flips pages rapidly (even though the "pages" are filmed).

Books, rigidly programmed or artfully written, are important sources for and stimulators of learning. Fortunate it was that the printing press was invented. Since then, each person, for secular or religious purposes, could read without the interposition of another person. In the reading, he could interpret the message for himself without its being filtered through someone else.

Students also learn without learning schedules and need, on many occasions, to be in groups, to interact with others. They let their ideas romp and clash, make new associations, achieve new syntheses:

... Today, the clouds are different from those of yesterday . . . The baby cries and waves his arms when I start to give him a spoonful of food, then jerk it away . . . In the late afternoon, the doorknobs are shiny in your room; those on my door are dark. Of course, the sunlight comes in your room but not in mine . . . Wilson and I figured out the answers real quick. It's good to work with someone. Sometimes Wilson's idea was better; sometimes mine was. Together, we really did fine. . . .

The crucial factor in students' learning need not be the teacher or another person. A particular device or program is not the all-important ingredient. Yet they may be important conditions. Central to learning is the learner, his background, needs and motives, and the perceived requirements of the learning task.

Learners will use everything available to help them gain more precise meanings, more adequate understandings of themselves and their environment. They will use people and materials. They will experiment and test. They will, that is, if they have the opportunity. In school, teachers have the responsibility for structuring opportunities for each individual's learning.

Purpose in Use

The important questions about teaching and the use of materials, therefore, do not relate to particular methods or certain devices. Can TV teach? Shall we use TV or a book? Shall we use a machine-programmed course rather than a teacher and a library?

Such questions miss the point. To attempt an answer without knowing the purpose of the learning situation would be to choose between apples and onions without knowing the particular dish to be prepared.

Technology does not dictate the purposes of its use. Because television equipment is available is insufficient reason to insist that the medium can or should undertake the entire or a major portion of the schooling task. So it is, too, with programmed materials, films, books, lectures, demonstrations, small-group work, and other devices and methods, singly or in combination. The important questions about teaching relate to the purposes of schooling and the objectives of the curriculum.

The most effective teaching includes, but is not restricted to, the selection or suggestion of the appropriate materials to enhance each individual's learning with regard to those purposes and objectives. To prescribe the same television program for all eleventh graders studying American history differs only in kind, not degree, from assigning these same students to read the identical section in the same book. To criticize such a use of television in teaching as devoid of the human element is to indict the use of the textbook on a like charge. Such criticisms, while correct, may not be competent educationally. Exchanging charges obscures the real issues of method just as mass-television or mass-lecture or mass-small-group-activity or mass-read-the-same-book obscures the purposes of the activity. Prescription of method and materials outside the context of pupil and purpose resembles the stock joke of armed service life: no matter how you feel, the medic will give you aspirin.

Teaching can and must always implement the purposes of schooling. Now, using the gifts of modern technology, teachers have available a veritable pharmacy of possibilities to use in structuring learning opportunities. True, procedures and instruments for assessing individual learning needs and deficiencies still do

not exist with the quality and in the quantity desired. Too, additional methods, devices and materials can be anticipated, such as the "gaming" of educational problems, using advanced electronic data-processing computers. Teachers, even so, may select a material with the potency of cortisone on some occasions and, at another time, choose some older and more familiar learning material or medium of the variety of brewed bark-tea. The potency of the medium or material, educationally speaking, is determined by the purpose it is to serve at a particular time with a particular learner.

Effective Teaching

The availability of a *smörgåsbord* of media and materials is not suggested. Rather, teachers and pupils, sometimes separately, sometimes in common, must examine, with rigor, the learning task and its purpose, the appropriateness of the available materials and media, and the learner's background and learning needs. Then the medium or material selected is applied to the task at hand. The role of the teacher has been redefined only as it has been extended. As the physician's practice was made more precise by the development of the thermometer, the stethoscope, the X-ray machine, the electrocardiograph, so is teaching enhanced by the development of new, potentially powerful instructional technology.

Teachers should and will choose to use every device, every method. They will remain competent as they insist that the use of these devices and methods is consistent with curricular objectives. To allow the availability of technological hardware or the familiarity of comfortable methods to dictate their use will be to abdicate professional responsibility and to invite instructional anarchy.

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