William C. Kvaraceus

Need we preserve a humanizing element?

Future Classroom— An Educational Automat?

THE embodiment of the ethos of our age may best be found in the automation processes and gimmicks exemplified by the vending machines (gum, soft drinks, newspapers, or pocket combs), the washing machines (clothes, dishes, even automobiles), and, on a more grandiose scale, the IBM installations. All these automatic devices save time and labor—and, of course, money.

Perhaps it is inevitable with the inroads made by the projector, record player, tape and wire recorder, TV screen, and teaching machine that the classroom of the future will take on more and more the efficient and economical appearance of an educational automat. If so, what is likely to be gained and what is likely to be lost to the young learner through the fast-growing trend toward this type of self-teaching process?

Three personal incidents, in one way or another, have accentuated the "teaching machine" or automation issue for me in recent weeks.

Motoring from Boston to New York City recently, I drove down the new Connecticut Pike—a multi-laned highway studded with toll stations. As I approached the first toll gate the big decision "correct change this-a-way and all others that-a-way" was forced upon me. Armed with the "right change" I fed the automatic register and as my coins clinked in, a most impersonal sign blinked out a mechanical "Thank You." After two of these "Thank You's," I found myself driving through the stiles manned with humans rather than machines. Somehow I felt less lonely and more a part of a live universe hearing a human voice say, "Thank you"—even though in perfunctory fashion—and seeing a human hand take my change.

Walking across a well-known eastern university campus not long ago, I glanced in on a classroom (perhaps better described as a learning laboratory) and noted a number of students closeted in separate cubicles. They were all wearing earphones and were apparently listening to tapes. But there was no sign of a mentor around. If students are present, need there be a mentor nearby?

On returning home one evening, I was greeted by my daughter Jane, now in the fifth grade and in her second year

William C. Kvaraceus *is* ***Professor of Education and Chairman, Department of Special Education, Boston University, Massachusetts.***

of TV French: "Bon soir, Papa! Je m'appele Jeanne." "Merci," I answered, "mais tu parles comme une jeune fille Française." She had learned all her conversational French from a TV screen.

How depersonalized can the classroom be and what are the effects—immediate and long term, good and bad—of seeding the classroom with mechanical aids that enable or even insure effective self-instruction and learning? (The term "teaching machine" is much too controversial to be used in this discussion and makes too difficult a fair and objective consideration of this topic. Equating even a part of the teaching function to a mechanized gadget presents to many workers in the educational vineyard a threat to the worthwhileness of the human teacher and even to the teaching profession as a whole. In what kind of profession have we been engaged, if much or most of our function can be programmed more effectively on some mechanical gadget? Such a train of inquiry can interfere with a fair consideration of the real promise and the real problems inherent in auto-instructional devices.)

Devices and the Teacher

The answer to the major questions that have been raised will come only through a consideration of two subsidiary queries: (a) What part of the educational process and product can be effectively programmed for self-teaching devices? and (b) What is the unique role and function of the teacher in today's classrooms?

Before considering these two essential questions we must recognize that the modern mechanized aids can hardly be considered "recent innovations." They have had their counterparts (and their critics) in earlier times and in less technological cultures. The abacus, the hornbook, the tachistoscope and the more recent paperback workbook were all devised to assist the pupil to engage himself in worthwhile learning experiences and, at the same time, to release the teacher from the class as a whole enabling him to apportion his time and energy more effectively.

What Can Be Programmed?

Accepting the mounting evidence that auto-instructional aids can and do abet certain types of learnings in certain subject areas, the basic issue does not center around the question, "Shall we use them?" Rather the issue turns on the more discriminating query, "When and how shall we use these aids?"

What we need to do at the outset is to review and set down a concise statement of the ultimate purposes of the educational processes and to mark out those particular outcomes which can now be programmed for machined learning. There is already some consensus that the self-teaching devices can handle learning outcomes which constitute factual material that can be itemized. Such learning product must be clear, simple and categorical; what is to be learned must be cut up into small, discrete but interrelated elements. Such learning generally falls at the levels of recognition and recall.

Unfortunately few personal, social, economic or political problems that are met in everyday living tend to be clear, simple or categorical. Furthermore the more crucial and far-reaching outcomes of learning will always be found at the level of interpretation, application, appreciation and invention. These levels are still outside the reach of most self-learning devices and thereby place a low ceiling on what is to be mastered.

Let us take a hard and realistic look at the nature and levels of the learning product that now preoccupy the combined human-teacher and pupil effort in most classrooms today. The impartial observer, on the basis of such observation, would be forced to admit that the self-teaching devices could be used to replace at least 75 percent (a subjective but conservative estimate) of the teaching function as played out in the typical classroom and reflected in the time-honored and time-worn ritual of lesson assigning, lesson hearing and lesson marking. This in itself is a most serious indictment of teaching in the school agency.

If learning product and outcomes of the school operation are viewed (as they must be) in terms of desired changes and modifications in pupil (and ultimately adult) behavior or in terms of new and desirable adaptations or ways of behaving, the limitations of what learning outcomes can be programmed become readily apparent. To know, to recall and to verbalize represent important and initial objectives of education, but they are seldom the ultimate goals. Living out the objectives of the school in play, at work, on the job, in the home and in community endeavors represents the real test of the educated person. Homes, neighborhoods and nations of the world do not so much lack "educated" persons who can pass or have passed advanced tests and examinations in the hard subjects so easily programmed as persons who can and do aspire to the *Summum Bonum* in the Judaic-Christian tradition as seen in the victory of the selfless as promised in the Ten Commandments and in the Sermon on the Mount. There is all around us today ample and tragic evidence, in the product of schools, that the factual teachings of the classrooms are falling on barren ground and among tares. Too few learners have been inspired to selfless behavior.

As Goethe pointed out at the turn of the 19th century, "A teacher who can arouse a feeling for a single good action, for a single good poem, accomplishes more than he who fills our memory with row on row of natural objects, classified with name and form." The young learner is much more than a memory drum on a 650 computer. He is a living, growing, feeling person. How he *behaves* is as important as what he can memorize and verbalize. Having looked at the unique function of the self-teaching aids, what is the unique role and function of the mentor?

Role and Function of the Teacher

What is the tutorial teaching that is promised as a solution to large-size classes and to the perennial problems of individual differences via the self-pacing auto-instructional aids? Will such teaching enable some strategic shifts in teaching role and function?

As a director of the learning process and as a "mediator of culture," the teacher plays many different roles[1]: he is a botherer, motivator or stimulant; he is a person who knows; he is a guide in the selection of learning activities; he is an evaluator; he is one who maintans order; he is the creator of a "moral atmosphere"; he serves as parent surrogate and character model. Some of these roles will be more affected by self-teaching gadgets than will others.

As "a person who knows," the mentor will need to know more. He will need to be more informed in learning theory and the communication processes. He

[1] "Teacher's Role in American Society," *Fourteenth Yearbook of the John Dewey Society*. New York: Harper and Brothers, 1957, Chap. 6.

will need to discriminate between content and to supplement programmed learning. And he will need to know each student's readiness for the various steps and types of programmed and unprogrammed learning. Even with a full bin of programmed concepts in his subject matter field, it is highly doubtful if the teacher's need to know subject matter will in any way be diminished. (One can almost see the phantom image of the teacher, trained only in machine methods, getting all his subject matter from the programmed library. This specter should keep the methods-baiters — Barzun, Bestor, Rickover, etc.—in a dither during the next decade.)

Anonymity

More crucial are those questions of role as they affect interpersonal relationships in the class and the growing threat of anonymity and impersonality if machine-oriented teaching means restricting the occasion and incidence of teacher-pupil and pupil - teacher interaction. Programmed learning must insure and enable more and deeper relationships between teacher and learner by releasing the instructor from time-consuming routines. In fact the introduction of auto-instructional devices should be justified on this basis as well as on learning increment.

Many of the current experimental studies of the use of self-teaching tools and techniques report that students "enjoy the experience of learning with auto-instructional devices." The teaching personality must be pale indeed if students prefer to relate to a machine. Perhaps these devices do have something in their favor. Unlike some mentors, the machines are infinitely patient and always rewarding via "positive reinforcement." They will never "take it personally" or "take it out on the learner" if at first he does not succeed. Machines may have the psychological advantage of not getting psychically involved. Few learners will be afraid to admit to the mechanized teacher, "I don't understand" or "I don't know"—phrases that bounce harshly off the sensitive ears of many human teachers. And in those classrooms where the climate is hardly safe or sanitary from a mental hygiene point of view, introduction of self-teaching devices may even help to neutralize the atmosphere. But, again, who wants to relate to a machine, especially since it does not seem to care?

When the novelty of levers, lights, and pushbuttons wears off, auto-instructional devices may have difficulty in attracting, interesting, and especially exciting the student to greater effort. As Anatole France once pointed out, "The whole art of teaching is only the art of awakening the natural curiosity of young minds for the purpose of satisfying it afterwards." This is the "botherer" or "motivator" role of the teacher. In stimulating, if not inspiring, the reluctant and recalcitrant learners (the Number Two problem of the teacher, according to a recent NEA study of working conditions in the classroom) the auto-instructional machinery may fail because many nonlearners, who now refuse to open their books, may refuse to turn the gadgets on.

Identification

In anticipation of this problem, any requisition for these devices should include a sizeable order for the model that comes with built-in handcuffs and leg irons that will be needed to hold many pupils at their machine-desks. Of course this may eliminate the post of "truant officer"—currently a very busy function

ary in many neighborhoods in the larger urban-industrial centers. But that's the way it is with automation—it always means the elimination of some jobs!

Today through the intricate and intimate process of identification based upon a positive relationship between teacher and learner, many human mentors affect (and more could) the lives of children and youth and bring about significant changes or modifications in their behavior when they play out their role as parent surrogates and their role as creators of a moral atmosphere by presenting themselves as attractive and inspiring character models. If we assume that few learners will identify with the machine-instructor, we cannot at the same time assume that all learners will readily identify with their human mentors. But some youngsters do and more could and should identify with the teacher. It is the person (personality, if you must) of the teacher that is a paramount factor in improving the quality of the learning process. The teacher who has not himself achieved an emotional maturity and authenticity and who is hardly excited or interested in the teaching-learning drama in his field will not communicate to others the adventure, romance and battle-heat implicit on any learning frontier.

Instead of merely looking for a machine replacement, we should find for this instructor a better human replacement. The terrible reality that many youngsters face daily in the classroom confines them to close living with dull, listless and lukewarm personalities and the classroom becomes a place of boredom filled with never-ending and useless tasks that must be completed to keep the teacher happy or at least out of your hair. In contrast, perhaps the blinking and clinking machine looks exciting and contemporary to the bored learner. It is significant to note that after 12 years of association with teachers, very few high school graduates rush to fill in the ranks of the teaching profession and that such occupational selections generally represent second or third choices.

It has already been suggested that justification for using self-teaching equipment must stem from both learning increment and the fact that these devices can free teachers and enable them to play out their human relations function in a socialized classroom. Through this desk-side function it may be possible to make what is learned on the machine and elsewhere significant and meaningful in life situations. "Trees and fields tell me nothing," Plato once observed. "Men are my teachers."

Auto-learning devices are here to stay. They will not revolutionize the classroom nor will they eliminate or even minimize the job and function of the human teacher. (Note, however, the "remedial instructors" had better retool in view of the research claims of some experimenters that "Total mastery has been exhibited by most experimental students." Perhaps, however, even these jobs are "safe" in view of the difficulties and complexities in the psyche and the culture and subcultures which frequently interfere with learning.) Karl Marx once expressed his concern for "intellectual desolation artificially produced by converting immature human beings into mere machines." To paraphrase him in the present situation, we should be concerned with the threat of emotional desolation that may be artificially produced by crowding the teacher out of the classroom and learning laboratory, thereby converting immature human beings into mere intellectual machines. Our vision is *not* "machines for making more machines."

Copyright © 1961 by the Association for Supervision and Curriculum Development. All rights reserved.