The Importance of People

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What Happened to the Teaching Machine?

THE following scene takes place in a graduate class in history of American education at a leading American University. The year is 2070 A.D.

Student: "I wonder, Professor Brown, if you would mind taking a few minutes this evening for some remarks on the Teaching Machine. Over a long period of time, this approach to teaching appeared to be quite successful. Can you tell us why it was so suddenly abandoned about 25 years ago?"

Professor: "Well, yes, the topic of the Teaching Machine and its abrupt disappearance from the educational scene is appropriate for discussion tonight and is fraught with historical significance. You are correct in saying that the Teaching Machine was highly successful in achieving the results for which it was intended. You are in error, however, in assuming that the Teaching Machine was 'abandoned,' as you put it. In fact it was the very success of the Teaching Machine which brought about its demise."

The professor pauses for a moment to survey the class with a smile at the puzzlement his little scholarly conundrum has caused. He then continues:

"That is a somewhat enigmatic statement, isn't it? But really, it isn't so puzzling, if you'll give it a little thought. If you know any thing at all about the basic design of the Teaching Machine, you will realize that its fundamental operational principle was ultimately self-defeating. To this day, not a single psychologist or educator has been able to offer an adequate explanation as to why at the time, not one of the many authorities in the fields of learning theory and instructional method was able to detect the built-in fallacy of the Teaching Machine, obvious though it was. The silence of the educators of the time on this point remains one of the most intriguing mysteries in the history of education. I might add parenthetically that this problem would be a fruitful one for doctoral investigation.

Early Success

"Yes, indeed, you are quite right. The success of the Teaching Machine was beyond all reasonable expectation. High school students began knocking the tops off the standardized test norms of the time. Testmakers found themselves furiously engaged in a never-ending cycle of making revisions of their tests which in turn would scarcely be off the press before new revisions were necessary. Institutions of higher learning were flooded with students who had walked through

the most rigorous entrance examinations in a breeze. They were, of course, soon forced to up-grade their entrance requirements drastically, because they were well aware that not everybody could or should go to college. Almost all colleges and universities instituted professorial in-service training programs (many sent their professors back to high school for postgraduate work) so that the college teachers could keep academically abreast of their students.

"Why, then, did the Teaching Machine disappear?"

Again the professor pauses, apparently hoping for an answer to his rhetorical question.

"Well, I guess there is no point in keeping you in suspense any longer. You will recall that the Teaching Machine was a device designed to raise questions and pose problems and to reinforce correct answers given by the student. An amazing amount of ingenious planning went into the programming of the Machine, so that one minute question led directly into the next minute question in precise logical sequence. This, of course, meant that the people who programmed the Machine had to know what the questions were and how one question was related to other questions.

"Well, now, about the year 2055, it suddenly began to become apparent that Teaching Machine programmers were becoming practically extinct. You see, by that time the older generation had just about died off, and we had trained a whole new generation of people who knew all the answers. The trouble was, *no one any longer knew what the questions were.*

"Well, as you can readily imagine, this presented a rather perilous situation, not only for manufacturers and operators of Teaching Machines, but for education in general, and for the very security of the nation itself. We had begun to fall rapidly behind in the technological race with Russia, as well we might when you consider that in the year 2057, for example, not a single patent was issued by the U.S. Patent Office. We might say that this was the most crucial period in all American history. Our whole way of life tottered precariously in the balance, and but for one small human incident we almost certainly would have gone down the historical drain.

A Human Incident

"The incident had to do with the fact that on a certain sunny spring day a renowned professor of science education was cutting potatoes for planting in his garden. His young son stood by in silence, obviously somewhat puzzled by

his dad's curious activity. Finally the youngster said,

"'Daddy, where do potatoes come from?'

"The professor, of course, knew the answer and he proceeded with glib relish to point out the eyes of the potato and to explain their function. But he was interrupted by the boy who shook his head vigorously.

"'No, no, Daddy. No, that's not what I mean. I mean where did the *first* potato come from?'

"The father did not answer. He stared at the child as in a trance, the elation of great discovery flooding his chest. There *were* people left who knew the questions—the *children* who had not yet been exposed to the Teaching Machine. The educator had found his answer in the question of a child.

"The professor enlarged upon his amazing discovery in a series of lectures and publications. This was the origin of the Great Revolution in education with which you are all familiar.

"Any questions, class?"

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World of Many Cultures

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society. It is as young people are helped to face their own life situations, examine their predispositions to action and consider the varied solutions (alternatives) in the light of their consequences, that they make their own values explicit and can, with guidance, reconstruct them in the light of increasing awareness and sensitivity to human welfare.

Children can be helped to look at the demands they place upon each other for conformity and can be helped to value variability in group life. Role-playing of problem situations, reading literature for human understanding, discussing the human dilemmas involved in community policies, are all known methods for sensitizing young people to human welfare and teaching them to criticize their own values.

If we are to help children to escape what Vance Packard calls "a revolution of self-indulgence," [7] and guide them to a commitment to the solution of world-wide human problems, we shall have to design programs to help children analyze the values presented to them in the mass media. We must help them to build values that are a product of increased sensitivity to human feelings, not to brutality; to advertising that informs, not that misinforms; and to information and entertainment that cultivate imagination, idealism, human warmth and an interest in diversity rather than centering on materialism and a happiness cult.

Such values are not achieved in a curriculum that is focused primarily on cognitive, intellectual learning. Cross-cultural understanding for example can only be achieved by individuals who have experienced emotional as well as factual learning, whose study of culture has been internalized so that they truly understand and accept human variability.

There is an urgent need to place high on the priority list of tasks for public education the creation of a climate and a program that develop "open" persons. If we ignore this task, we shall, by default, contribute to the creation of technological robots rather than citizens of a humane society.

[7] Vance Packard. *Stanford Daily,* February 9, 1961.