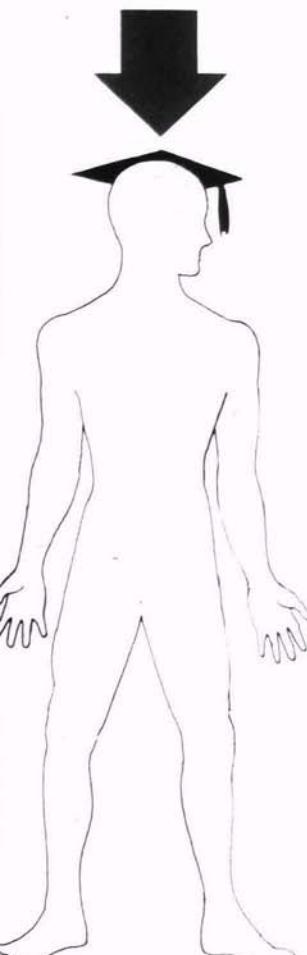


# The New Education and



**A** RECENT article in *Barron's* (November 18, 1968) by Ralph Kaplan related to the new learning industries. Its headline was, "Learning the Hard Way: In the Knowledge Industry, Most Corporate Freshmen Have Flunked." Not only is education in a crisis; the new knowledge industry (which I prefer to call the new learning industry) is also in a similar state of ferment. Only a few years ago, many looked with hope to the profit motive and aura of accountability which permeated industry for help in overhauling an archaic educational establishment.

There is an acute awareness that the crowded classrooms, the split shifts, and all the other undesirable yet expedient measures which were forced upon schools to meet today's needs will be *totally* unacceptable tomorrow. To continue the traditional system, in which individualized attention has become a rarity, could ultimately force us to limit educational opportunity to a "choice" segment of the population.

This prospect of deviation from a philosophy of free education for all the people is definitely untenable. Yet, we must continue to try to reach satisfactory solutions to the critical problems which prevent our achieving this goal.

The rapid accumulation of information in almost every discipline and endeavor has forced the field of education to search for new methods of acquiring, assembling, analyzing, and disseminating information. Such methods in our technological age must include audiovisual means in order to have any persuasive impact. Techniques and devices, such as educational television, teaching machines, audiovisual communication, and above all, the programmed instruction process, have been hailed as revolutionary and capable of solving problems associated with the knowledge explosion. Some educators have considered these devices and aids not to be revolutionary in themselves but in relation to the needs of education. This potential was unfortunately not as quickly realized as many persons had thought it would be.

However, in spite of the failures of the rather fragmented efforts by the new learning industry, and the inability to arrive at a rapprochement with education, the demand for dramatic change in approach is mounting. Recognition of the need for a marriage not only between technology and education, but between educational technology and industry, has become more acute rather than less so.

# the Learning Industry

GABRIEL D. OFIESH\*

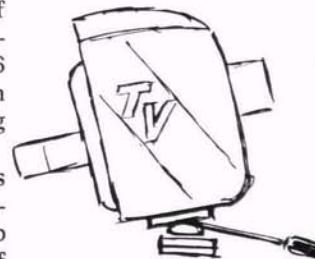
Many of the industrial giants who sought to take part in the emerging learning industry are withdrawing from the fray at a most inopportune time. Rather than critically analyzing the reasons for the failure of their efforts of the past few years, they are giving up without a struggle when a little more effort, properly directed, well might bring success. One of the mistakes such industries have made was the naive supposition that simply uniting the conventionally oriented publishers of the past with electronically oriented firms of today would somehow bring the systems approach into education. This of course was not a viable probe.

Conventionally minded publishers of print media did not understand the implications of the new technology and the need for materials that would be adaptive to individualized learning. Electronic firms, steeped in the systems approach which was borrowed from the weapons acquisition process, were unable to make the transfer to the problems posed by the demands for the new education. Consequently, little more than lip service was given to the development of individually adaptive learning systems. Yet, at a time when the demand for change is gaining momentum, there is no question that a new learning industry will survive, and that it will meet the needs that are being identified on a national scale.

The U.S. Office of Education recently established a national commission on instructional technology to look into the problem. Senator Ralph Yarborough has proposed a bill for \$475 million to establish an Office of Educational Technology. Further, there is a growing movement to individualize instruction through independent learning programs. Of 746 superintendents who responded to a recent survey, top choice was given to individualized instruction as the most promising development among 15 innovations.

What is needed now is a recognition, on the part of corporate heads of the new learning industry and on the part of educators, that the learning industry, in order to survive and make a significant contribution to the challenges of American education, must be based upon the best of educational engineering, which itself is based upon the best of educational technology. Yet there first must be an understanding of what educational technology is all about.

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The word technology is a derivative of "techne," meaning "art" or "craft," and the word "logos," indicating "a study of." Therefore, technology literally means "a study of art." To all appearances, it seems a harmless word. Yet, technology is a dangerous word; it gives the impression of being scientific while it is not. Technology is the systematic application of scientific knowledge to the solution of practical problems. Educational technology is therefore the application of scientific knowledge toward the solution of problems in education.

An immediate objective of education must be to communicate knowledge more efficiently and more effectively in order to increase learning. The traditional art of education is insufficient to create this result. Methods must be designed which will optimize approaches to developing and understanding the behavior of all the minds we are committed to educate. To accomplish this task, we must develop a science and technology of education. The validity of education as a science is still being probed, and a technology of education is emerging therefrom—one which allows education to become an applied science of learning.

Both the learning industry and educators must maintain the distinction between technical specialists and genuine technologists. The latter are specialists in the entire body of technological knowledge; and are responsible for the continued in-depth study of growing relationships between the "techne" and the contemporary problems surrounding themselves. Included in the rubric of educational technology are presently known technologies (and those *as yet* unfeasible), and their application to educational problems.

The overwhelming nature of developments in instrumentation may cause "hardware" concerns to dominate our thinking, in preference to the "software" concerns which should have primary interest at this stage in the development of educational systems. Two other technologies—biochemical and information—are at this time only tangential in their impact. The more we learn about mapping the human brain, about the structure and function of the central nervous system, the impact of drugs, and the heuristic and synergistic nature of the elements of information theory, the greater impact we can expect these elements to have on the rubric of educational technology itself.

Considering such future developments, educational technology should be "process," rather than "machine" or "hardware," oriented. Failing to recognize this principle, the learning industry expected exaggerated profits almost instantly, on the order and scale of print media. Another obstacle was the reluctance of educators and veteran publishers to constitute interdisciplinary teams.

## To Share Identity

Just as a single person must experience independence before he will voluntarily give up some of his freedom for the benefits derived from interdependence, so a professional group must feel secure before it is willing to share some of its identity. The medical world is managing to do this: most doctors now concede that a hospital can be run just as well by an administrator trained for management rather than for medicine;

and on research projects, doctors work with psychologists, biologists, and physiologists.

Yet educators seem to cling to each other. Is there a public elementary or secondary school in the United States which has hired a business administrator to run its school? Or a psychiatrist to head its guidance-counseling staff? Or an educational technologist to direct its learning program?

When such questions are asked, the reply comes back: "Education isn't a business, or a therapy center, or a science. Education is an art." The problem of unwillingness to communicate with scientific disciplines is one of long standing. Travers reports an early example of this attitude:

Joseph Mayer Rice was the first to discover that the results of research do not bring about educational change, however persuasive the results may be. The educational subculture is basically resistant to the efforts of an agent such as a research worker to produce change. . . . Rice was a physician by profession but he became interested in problems of education and made a two-year visit to Europe in the 1890's, where he studied pedagogy and psychology. His book which followed, *The Public School System of the United States* (1893) . . . summarized the observations he had made on 1200 teachers located in various schools from Boston to Philadelphia in the East to St. Louis and Minneapolis in the Middle West. Educators paid no attention to the opinions of a layman; legend relates that he was met with jeers when he attempted to present his findings to a meeting of the National Education Association . . . Rice's effort to produce educational reform had absolutely no effect on his contemporaries.<sup>1</sup>

Finally, a realistic understanding is required of what the systems approach to education fully entails. Engineers, or quasi-educational engineers, simply drawing flow charts, do not provide us either with an educational system or a learning system—and gathering a variety of media and tacking them together does not provide us with a multi-media learning system.

The "systems approach to education," in brief, involves the specification of behavioral objectives, the assessment of student repertoires, the development of instructional strategies, testing and revision of the instructional units (validation), and finally packaging and *administering a validated learning system*. This approach results in the development of learning experiences for students, which are adjusted to students' needs and learning modes. The learning experiences, however, are designed to produce the behaviors specified; in other words, the specified behavioral objectives are the constant in the system.

The task is a formidable one and we have yet to find a single industry that is tackling this task in a forceful manner. Until these models emerge, educators are going to ask the learning industry what is new about the product—or do they have to continue to accept the same old pedagogy packaged in new cartons?

It is strikingly clear, then, that if both industry and education recognize the nature of their convergence, and if the government commits itself to endow this marriage between educational technology and industry, the necessary revolution in American schools will almost inevitably occur. □

<sup>1</sup> Robert Travers. In: *Training Research and Education*. Robert Glaser, editor. New York: John Wiley & Sons, Inc., 1962.

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