EDUCATIONAL TECHNOLOGY AND TRENDS IN THE ROLE OF THE TEACHER *

Riorita E. Ceniza, Ph.D

Introduction

The word "technology" usually brings up the image of machines and electronics gadgetry performing magical wonders. Technology, of course, is more than hardware. Beard (Gross and Murphy, 1964) viewed it as consisting of the totality of existing laboratories, machines and processes already developed, mastered and in operation. Its origin and operation are linked with pure science. Even in its most remote philosophical speculations, Beard contends that technology has a philosophy of nature and method - an attitude toward materials and work - and hence is a subjective force of high tension. It embraces a great constellation of ideas, some explored to apparent limits and others in the form of posed problems and emergent issues dimly understood.

The scope of the operations of technology is vast and wide even in the educational field. The area of instructional technology, for example, includes the effective utilization of procedures, processes, resources, systems, forms of management and control mechanisms. It is viewed as a way of looking at problems and solutions in order to bring about desirable change.

Viewed in the above context, educational technology may be said to comprise the interadaptive network of forces between man and his environment.

Man generally applies the technology of learning in his efforts to maintain a manageable balance . He exercises a certain degree of flexibility and creativity in responding to all kinds of stimuli around him.

Objective

This paper attempts to show that innovations in educational technology result in corresponding changes in the roles of teachers and learners. We will recall briefly some glimpses of history where the teachers or mentors demonstrated concomitant role adjustments because of gradual or drastic changes in the environment.

---

* Paper delivered during the Division Conference of the Divisions of Negros Oriental and Siquijor on Educational Media in Dumaguete City, July 1976.

The term "role" used here denotes the expected behavior of an individual in society or his characteristic function or position as he interacts with the other members of a social milieu. In this paper, the teaching role refers to anticipated behaviors in formal or nonformal situations.

Pre-Hellenic to Medieval Ages

It is relevant to indicate briefly the kinds of roles teachers in the past had assumed and the technologies they worked in. By so doing, we could then make inferences as to what roles and conditions helped them to be effective teachers, assuming, of course, that the men they shaped also became socially effective.

From pre-Hellenic times to the Medieval Ages, outstanding personalities of history and literature were more often than not associated with great teachers. For example, during the Hellenic times, Plato's teacher was Socrates whose technology perhaps included the Socratic method of question and answer, the big open air and academic arena of the market place where people came and went as they pleased; Aristotle's was Plato, whose learning strategy included dialogues, Socrates's style, and the open air of the olive groves; Alexander the Great, son of Philip of Macedon, had Aristotle as his teacher whose academia included the courtrooms, courtyards, or his school, the Lyceum, Plato's style and methods.

With the rise of Christianity there was the very familiar figure of Jesus surrounded by his disciples whose technology encompassed the Torah in the synagogues, the open spaces, the hillsides, the seashore, the children, the lilies of the field, the sparrows, the parables, allegories and metaphors, plunging into situations where the action was, mixing with sinners and saints alike and at the same time transforming them into lessons of life and awareness of God. There was also the renowned lawyer, Paul, a student of Gamaliel, a very famous teacher during Paul's time. Then later as a missionary, Paul had Timothy as his ward. Paul and Gamaliel's academic setting must have been the Torah, too, the synagogue, Greek culture and ideals, the open air and the brick-stone homes where Paul must have sewed tents for a living.

The Middle Ages had St. Thomas Aquinas whose life and teachings were very much influenced by Albertus Magnus, referred to as the Universal Doctor, one of the greatest scholars of the Middle Ages. Their learning environment must have been the laboriously hand-copied versions of the Bible, the church halls, Aristotelian ideals and methods--Albertus being an avid follower of Aristotle.

All these people whose lives and works still influence our thinking today are said to have sat at their masters' feet, which means that they must have spent most of their time listening and absorbing their masters' teachings. The

master-teachers must have loved to teach in the real sense of the word taking advantage of any technology available. (In fact, the wife of Socrates is said to have been a notorious nagger who vented her ire on Socrates because he spent most of his time philosophizing in the market place and forgot about the needs of his family.) The learners were few. Only the rich and the monks could afford to spend time in acquiring knowledge. The rest had to slave away for their existence. The master and the disciple studied and learned wherever they went without ever bothering about administrative duties and constraints of grades and credits for graduation. Whatever merits the disciples earned invariably reflected the glory of the teachers. The relationship, then, between master and disciple was apostolic and diagonal in nature, which means that the teacher was always higher than the pupil in knowledge and position. Probably for logistical reasons, he was on a higher elevation, either on a stool, a stone, a hillside or the upper steps of a temple and the disciple was on a lower position looking up in respectable awe at his master who was full of authority and therefore, one who could not commit a mistake. Both had time for each other. Their curriculum ranged far and wide as the situation demanded. There were no written accounts and so the pupil had to follow his teacher literally.

This form of relationship persisted through the Middle Ages and vestiges of it were found even up to the seventeenth century--a familiar picture of the master, a person of authority imparting only the good and the noble, and the disciple, a figure of eager docility. Even the trade guilds and subsequently the few universities in the eleventh century reflected this kind of relationship. The trend, therefore, in educational technology was stable and this continued to hold true during the Rennaisance Period - the 15th Century.

Enlightenment and Rennaisance

The great change in roles came about with the discovery of the ancient Greek and Roman classical writings and the printing press. This eventually ushered in the periods of Enlightenment and Rennaisance. The master-disciple relationship had to undergo a readjustment. The rediscovery of ancient cultures and ideals--the touchstones of Western thought brought back the emphasis on democracy, egalitarianism, the development of the whole man, the adjustment to individual capacity and the emergence of independent thought. The added technology of the printing press provided the learner with information that could have been obtained only from a master teacher. The classical literature of Greece was translated and scholars delved deeper into the origin of things. Thus, a new day of research was born. The learner did not have to depend very much on master-teachers, so that from the sixteenth century onward we seldom come across names of brilliant minds associated with a living master-teacher but rather with Greek philosophers and their thoughts.

The great age of the Machine bolstered the new technology of the printing press. Books could then be produced cheaply. Consequently, books had to be stored in rooms where scholars could also spend their time "talking" with books. Teachers were needed only to clarify interpretations. Scholars exchanged thoughts with fellow scholars and teachers were present to stimulate thinking. The gripping hold of the teacher on the pupil was lost and displaced by the book.

A loss is usually displaced by a gain. The sole-authority role could no longer hold sway in a printed-matter technology. The disciple no longer followed him physically. The teacher lost his authority as a master who could command a pupil who was ready to perform his master's bidding. This was a great blow to the authoritarian sense of pride. The pupil could go to the library any time and learn from all the master-teachers at his command in one small space. So the master-teacher adjusted his role from a live master to a printed master of reinterpretations of Greek thought.

But somehow, this readjustment was not sufficient to regain the teacher's lost sense of security and authority. He needed to wield more power in the classroom. In order to do that, he applied the technology of discipline--the closed-door classroom, simple-recall testing, memory and reward technique. He demanded book facts from memory or else there would be no reward; instead there would only be punishment by the rod or by the out-the-door-you-go method. The pen-and-record book teacher thus became a terror in the classroom. He had recaptured his new sense of power over the student. He still maintained his role as a presenter of information but no longer with full authority. This situation was true in the seventeenth and eighteenth centuries when classes were then quite small.

Dewey's Influence

Again this situation could not remain long. A characteristic of a dynamic society, the technology of education changed. Long before John Dewey announced his philosophies on democratic education, there was already a shifting focus from the teacher to the learner in the early 17th century. But no one was sure. In spite of the emphasis on human dignity carried over from the Rennaisance, the teacher managed to make himself the infallible tyrant in the classroom. However, with Dewey's reign in educational philosophy, the learner became the focus of the teaching-learning process. The teacher then had to force a reorganization of roles. From being a hard-core disciplinarian who demanded facts, he became, in a sense, a guide who designed learning situations based on the characteristics of the learner; one who stimulated and redirected the interest of the learner to resources that enhanced learning.

Post World War II - Rapid Growth, Fixated Roles

For a time during the early part of the twentieth century, the teacher succeeded in maintaining the role of a progressive educator. The small size of the class enabled him to keep up with the logistics of progressive education. But with mass education as a law, the teacher could no longer meet the demands of Dewey's educational tenets. Classes grew bigger and bigger. Population expanded on a global scale. During the middle Forties, after World War II, he could no longer act as a guide and counselor to every student in the class. More teachers were hired, but there was a dire need for qualified ones. Besides, he had to cope with administrative duties. On top of it all, he had to engage in research in order to fulfill an administrative injunction of "Publish or Perish!". His roles had to be readjusted to fit the circumstances beyond his control.

Teaching after the war required the teacher to be a superman. That he could not be. He could only readjust his roles again. Although he reorganized his functions into those that worked comfortably with the demands of the times, he still retained those that maintained his sense of security,or as one colleague put it, maintained an aura of infallibility. This he did and is still doing in many instances for more than three decades now. Thus, it could be said that fixation in ineffective roles started at a period when the demands on the teacher's time became overwhelmingly impossible to cope with.

Furthermore, complications of society expanded in many directions. In a classroom of forty to sixty or more students where not much noise or movement is allowed, the teacher is constrained to impart information by the lecture method. In this respect, whether he is a good lecturer or not his students would take notes hopefully, and still hold him in respectable awe which is just healthy for his ego. As a result, the teacher probably goes to class with the same notes he used for twenty years. Axelrod and associates (1969) say that a teacher who is fond of the lecture method usually delivers the same dehydrated and irrelevant lecture. He is lazy to explore and look beyond because it is easier to pick up his notes and embellish them with a few contemporary events. As for independent study, he may provide for it by giving homework which he may not collect or discuss.

Knowing each student personally in our present-day large classes is an impossible task for the teacher. (In many big cities of the Philippines, many teachers handle as many as six to eight classes in two or three different schools weekly. A class may have forty-five to sixty students.) Hence, a student is known only as a number in the class. The notion of "guidance" is still unreal to many administrators, teachers and students alike.

The teacher is perennially busy. Besides the clerical functions, he has committee meetings to chair or attend. He also has to upgrade himself, so he either engages in research or just be haunted by it. Most likely, he will spend more time refining the boundaries of his specialized field. He neglects other fields. The result is that a teacher may be knowledgeable in his own discipline but an ignoramus in others. If he is engaged in research, his activity may take up so much of his time that in the end, he may have to give up his teaching job. The Chronicle of Higher Education (January 12, 1970) reports that most graduate students now seeking jobs have research Ph. D's and there are only a few openings. These new Ph. D graduates prefer to teach in departments of their own discipline. Of the 626 applicants for the English Department at the Pennsylvania State University, the chairman said that no one expressed a desire to teach freshmen.

Over and above the school functions, the educational system still demands that the teacher performs what Albarracin calls "poly-functions" in the community (INNOTECH Newsletter, October 1976).

Because of the above situations, the teacher cannot help but get stuck with roles that are not on a par with what he should be doing for the student. The only satisfaction he gets is the knowledge that he is at least trying his best. As demands on the teacher's time increase, so does alienation from his student. Like a pyramid, the many problems on the base mount up to a peak until the student takes it upon himself to remedy the situation by diplomacy or by violent means. It is no wonder then that the latter part of the Sixties and early Seventies was characterized by the rise and fall of university presidents. The president, the projected image of the university, was accused of losing sight of his goal--that of administering a student-centered institution. A survey (CHE, December 1969) of more than 1,200 U.S. colleges and universities revealed that student unrest was common in research-centered institutions. The faculty at protest-prone institutions was characterized by interest in research, lack of interest in teaching, lack of loyalty to the institution, and support of dissident students. Institutions did not seem to have avoided or eliminated protests by increasing involvement in the decision-making process.

A Reorganization of Roles

In this age when we do not know how long a scientific truth would stand, we should resign ourselves to the fact that reorganization will always be a continuing phenomenon. Reorganization will not be easy. What may be considered anachronistic today may be relevant tomorrow and vice versa. However, reorganization must take place.

With the advent of the reinterpretation of technology in the Seventies, the status quo of educational practices has been subjected to intensive evaluation. The Mark Hopkins analogy which presents a strict dichotomy

between teacher on one hand, and learner on the other, is no longer the issue. The issue revolves around the question: what variables in instruction should be arranged in order to meet effectively the needs of the learner?

The question that calls for the teacher to reorganize his roles while maintaining authority over a captive audience in an enclosed classroom with a lock-step schedule is not anymore considered important. It does not even matter whether a learner should function in an innovative or non-innovative program. What matters is that the teacher--- a significant component among other equally significant components in teaching - needs to revamp drastically his entire personality while performing his teaching functions.

Teachers all over are generally evaluating their own behaviors. They realize their own need to improve and to innovate. However, the force of old habits as well as the inertia of other variables are persistently strong that attempts at reorganization understandably remain only as attempts. Other factors in teaching such as administrative leadership community and support services need also to be reorganized. In fact, all components involved in learning including the learner should reorganize their attitudes and competencies toward a common end----that of facilitating effective change. According to Soriano (1954), it is vital for senior educators to be permissive, and educational engineers (teachers) should operate within their area of freedom.*

One overarching suggestion will be offered here whereby a teacher (this includes all others involved in the learning process) may reorganize his role without endangering his professional status, i.e. that the teacher should be open-minded to take advantage of the concepts of educational technology and that he should be willing to apply and experiment with its findings.

Tremendous breakthroughs in technology are happening at an astounding speed. Several of these are now being adapted gradually with positive results in the educational field. These breakthroughs come mainly from the behavioral sciences especially in the areas of communication and learning.

Current findings of researches in communications have improved immensely the mechanics of transmitting the message from the sender to the receiver. Present theorizing and studies in the psychology of learning which involve the study of the nature of the individual, the learning processes, and conditions of learning have brought into sharp focus the need to overhaul many

---

* Area of freedom, according to Dr. D. Soriano, means the area in which the educator has the final say after considering the laws of the land, the policy of the ministry or the school, and expert findings.

of the extant practices in teaching. These two areas in communications and learning have brought about revolutionary strides in electronics and hardware technology.

Teaching functions which are commonly dispensed by a human teacher can now be ably performed by a non-human teacher like the TV, radio, computer, programmed instruction materials, tapes, films, and the like. Teaching and learning which usually take place only within a four-walled classroom during a prescribed time can now happen anywhere and any time. Learning in usual groupings of forty to fifty can happen now in a variety of groupings. In fact, both teaching and learning can now be handled by the learner himself. All these modern trends in technology narrow the focus closer and closer to the target of teaching----the humanity of the learner.

Thus, the pendulum of humanism from the Renaissance Period is gradually coming back. Advocates of humanism like Maslov, Erickson, Rogers, and many others have revived the humanistic view as a countercheck of the problems associated with hardware technology.

On the other hand, technology does not seem to be of much help either. It appears to be an antithesis of technology itself. Its purported solutions seem to have created a multitudinous array of environmental ills and a lopsided picture of development. However, it is not technology that should be blamed. It should rather be the misinterpretation of its scope and function. Its interpretation has been more of theorizing or the extreme of it----the undue emphasis on hardware. What seems to be lacking is a balanced treatment of technology----its network of theoretical structures, objectives, processes, systems, media, conditions, and arrangement. A reorganization of all these is certainly in order.

What really matters is that a learner should operate within the technology of a learning continuum. This view constrains both teachers and learners to reorganize their attitudes, knowledge, abilities, and skills in order to bring about desirable change.

The trend of the educational sector is to utilize the current reinterpretation of technology from the concerns of which come the concepts of systems, systems analysis, and systems approach. Whatever innovations are introduced today are due to these concepts.

Such emerging and reemerging views in technology point to one reality for the person who claims to be a change agent----that of reorganization or readjustment of roles. His alternative course is only to have an open mind to current trends in educaton technology and to be willing to experiment them in

his teaching. Otherwise, if the teacher remains in his traditional roles, it wil be a common sight to see applied technology stashed away in a corner gatherin dust.

J. Lloyd Trump in his article "Innovations and Teacher Roles' suggested an investigation of three important educational goals in order that th teacher can reorganize his teaching roles, methods and arrangements of learn ing. These three are: individualizing student learning, professionalizin teaching, and refining curriculum content (Goulet, 1968, pp. 33-47).

Individualizing Student Learning

Innovation or none, a sophisticated learner is capable of learning b himself. But this may not be systematic. Learning can be made mor meaningful if the teacher provides for individualized learning.

The teacher should reconstruct his knowledge, attitudes, and method about individual learning. He should recall facts about individual difference and learning theories. He should bear in mind that a subject matter need no be covered according to schedule within the confines of the classroom. He needs, though, to assist in the stimulation of the student's thinking and to lead him to places and resources for productive independent study.

Furthermore, the teacher must provide for a continuing evaluation of the student's progress made during independent study; he should help develop skills needed in group dynamics so that later on he can function as a resource person, facilitator, and critic of effective discussions. He should also reorganize his schedule to provide for more individual discussions with the student.

Professionalizing Teaching

Trump pointed out the fact that higher salaries and smaller classes are the answer to effective teaching and learning. These factors do help, but not to a considerable degree that they should be set as goals to professionalize teaching. Trump (Goulet, ibid.) suggested rather the following points for consideration:

(1) The educational system as a whole must recognize the individual differences among teachers. The general role of master-teacher has long been deemphasized in educational circles. The teacher is just not talented to do everything. There should be a reappraisal of individual talents and interests. Team teaching should be utilized. The system should also make use of teacher aides and volunteers to take care of clerical and other routinary functions of the teacher inside or even outside the classroom.

(2) Educational technology is here to help the teacher and the learner, not to replace them. It is up to the teacher, therefore, to harness meaningfully the results of science. Basically, the teacher's tools are his voice and his body. He should not forget that his environment is rich with natural resources to amplify his basic tools. The materials need not be expensive and very modern. In fact, he can make the technical devices himself. He must also be dynamic and tactful in stimulating administrators toward improvement in teaching. A teacher, too, must strive to have his own working space where he can have conferences with his students and his colleagues. He should also spend time in a variety of professional activities where he may engage in research now, to the last point whereby a teacher can reorganize his roles.

Refining Curriculum Content

At this point, it is important to distinguish between basic curriculum content and those that are in the area of creativity and special interests. Teachers usually are given curriculum materials from a central office. It is the teacher's duty to adapt these materials to the learning characteristics of his students. He should be able to identify the required learnings. Beyond that, he should be able to motivate and prescribe enrichment materials that fit the learner's goals, capacities, and inclinations. This function is highly critical in the teacher's role for this requires a detailed knowledge about the learner's background which can only be acquired if the teacher has ample time to meet with his students.

For the present, educational facilities are a constraint that a teacher has to put up with. However, it should not discourage him from working gradually for changes in the physical plant of the school. In the Philippines, the teacher need not be constrained to stay in the classroom. The weather and the shades of big, spreading trees will allow him much freedom to vary his academic setting.

Above all, an innovative spirit is a necessary ingredient for improving teaching and it will express itself in full bloom if it thrives in a supportive atmosphere by school officials and other teachers. Nothing can be as stifling as an "I told you so" remark after a so-called failure or no significance in an experiment.

IMPLICATIONS

With the reorganization of the teacher's roles within the structure of current technology, teaching will be a pleasant and meaningful task. Learning will also be a joy. Students will no longer feel cheated especially if they have paid much to take a formal educaton. Teachers will not feel frustrated in their efforts because, as many teachers commonly observe, it is always a joy to see student learning or changing behavior and the teacher having a part in the process, however insignificant that part may be. Students may continue with their demonstrations, but this time for other reasons.

References

Axelrod, Joseph, *et. al. Search for Relevance.* San Francisco: Jossey-Bass Inc., Publishers, 1969.

The Chronicle of Higher Education. Vol. IV. No. 11, (December 8, 1969).

The Chronicle of Higher Education. Vol. 14, No. 14, (January 12, 1970).

Edling, Jack V. *et. al. The Cognitive Domain.* Gryphon House, 1972.

Gagne, Robert M. "Educational Technology and the Learning Process," *Educational Research,* (January 1974).

Gerlach, Vernon and Ely, D.P. *Teaching and Media.* A Systematic Approach. Englewood Cliffs, New Jersey: Prentice-Hall, Inc. 1971.

Goulet, Richard R. *Educational Change.* New York: Citation Press, 1968.

de Grazia, Alfred and David A. Sohn. *Revolution in Teaching, New Theory Technology, and Curricula.* New York: Bantam Books, 1964.

Gross, Ronald and Judith Murphy. eds. *The Revolution in the Schools.* New York: Harcourt, Brace and World, Inc., 1964.

INNOTECH Newsletter, (October 1976), Vol. V, No. 4.

James, Thomas H. *et al. The Schools and the Challenge of Innovation,* A Supplementary Paper Number 28, Committee for Economic Development 1969 (477 Madison Avenue, New York, N.Y. 10022.)

Rogers, Carl R. *Freedom to Learn.* Ohio: Charles E. Merrill Publishing Co., 1969.

Schools for the Sixties. A report of the Project on Instruction, National Education Association, New York: McGraw-Hill Book Company, 1963.

Sluckin, W. *Minds and Machines*. London and Tonbridge: The Whitefriars Press Ltd., 1960.

Soriano, Domingo. *School Engineering*. Manila: Bookman Inc., 1954.

Trow, William Clark. *Teacher and Technology*. New York: Appleton-Century-Crofts, 1963.