

Preservice Programs: The “What” and the “How” Technologically

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HOW do institutions preparing teachers best acquaint their students with the theory and application of what has come to be known as instructional or educational technology? Let us here concentrate on those aspects of technology which are *reasonably* available from a curricular standpoint and require little, if any, extra funding. Perhaps enough has been written about “what the future holds” whereas not enough attention has been paid to preparing teachers to realize the strengths and weaknesses inherent in the technological choices of today’s schools.

While considering the question of what should be incorporated in preservice programs to give prospective teachers a background in technology, it has been difficult for me to separate the *what* from the *how*. The very nature of instructional technology itself requires a planned development of an entire *process*, whereby people may choose to employ the vast technological potentials currently available in an effort to improve teaching and learning. Therefore you will find that I mention as much about *how* technology should be incorporated into preservice programs as *what* should be included. For to me the two concepts are very closely related.

Additionally, I shall not attempt to do,

in the course of this article, what experts in the field have already done in authoring *Basic Guidelines for Media and Technology in Teacher Education*. (See references.) These guidelines should be required reading for everyone seriously interested in this topic. So rather than summarize those agendas, I would instead like to offer my generalized interpretation of how the concept of instructional technology should fit into today’s preservice teacher training curriculum.

Shortly after DAVI (Department of Audiovisual Instruction) changed its name to AECT (Association for Educational Communications and Technology), Executive Secretary Howard B. Hitchens was interviewed for a plastic disc recording included in the March 1971 issue of *Audiovisual Instruction*. In the course of describing instructional (or educational) technology, Dr. Hitchens said it was composed of three basic elements: people, processes, and devices. He stated that to lose sight of any of these dimensions while pursuing too strenuously one or more of the others was to make a drastic mistake. I

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think Hitchens' trilogy is a very cogent way of keeping educational technology in proper perspective and I would like to use it here.

Let Us Start with Devices . . .

Let us start with devices. This is precisely where I have chosen to begin with any group because it is an area of immediate payoff, yet one of great fear and hesitancy for the uninformed. Yet this is the very kind of hang-up which must be quickly overcome so that the more important aspects of film utilization, such as selection and application, may be studied. Personally, I get my students involved with the equipment the first few days of classes. In this way they soon establish the self-confidence they need to go on and examine *why* they might choose to use an instructional film, rather than worrying about whether they can run a projector.

Although it is easy to blame a device which cannot talk back, it would probably be more appropriate to blame ourselves for not following the operating instructions. We often approach using audiovisual devices in the same manner as a father intuitively trying to put together children's Christmas toys. Present company included, we have all been contributors to a highly suspect, and, to my knowledge, undocumented axiom called Murphy's Law: If something bad can happen during an audiovisual presentation, it *will* happen (and usually does)! More realistically, I think we should espouse the view in preservice training that: Bad things will only happen during an audiovisual presentation if we let them happen!

Most preservice programs now have self-instructional laboratories focused upon helping students achieve equipment competencies. To strengthen their motivation, I think students should also be shown videotapes comparing good and bad examples of teachers using media in classrooms. Another recommendation is to alert students that as part of their student teaching experience, they must plan and apply appropriate mediated instructional segments for large group, interactive, and individualized learning situations. Data from a recent study suggest that a more

positive attitude toward media results when both preservice and in-service teachers are provided with experiences which allow them to manipulate devices as well as plan for the mediated application of lessons (Colton and Noble, 1974).

Another problem is how to overcome the poor examples of media application often exhibited by those professors teaching methods courses to prospective teachers. It is natural for beginning teachers to assume teaching styles patterned after their own teachers; therefore, it behooves all of us in contact with prospective teachers to continually try to exhibit those techniques which are efficient and effective.

To Teach About Process . . .

The "process" dimension of instructional technology is what people may recognize as "the systems approach." In the context of the "people, processes, devices" description of instructional technology, process really means acceptance of the rule "make your decisions relative to media selection and utilization on the basis of knowledge about (a) the learner, (b) the task, and (c) availability/feasibility of instructional alternatives." Compared to teaching students how to handle devices, teaching them process is a much more difficult task.

I believe that to teach about a process you must use the process yourself. If you do not use a process then you are in effect saying to your students: "Don't do as I do but do as I say!" What is also true is that to employ a genuine process approach to teaching any subject or course requires a tremendous commitment of time and energy on the part of the designer—and the designer usually turns out to be yourself! In my classes I try to impress my students with the importance of: (a) predetermining learner outcomes, (b) selecting appropriate instructional activities, and (c) determining the exact methods of measuring changes. To do this I employ a learning module format, basically patterned after some Teacher Corps work done at Buffalo and Syracuse Universities (Arends, Masla, and Weber, 1971).

In line with the process idea is another notion which I think is pertinent to the selection of appropriate tasks for prospective teachers to perform. I formulate objectives which require students to engage in activities resulting in either a *usable product*, their pursuance of a goal through a *process*, or both. For example, I have students locate an example of programmed instruction in the library (they engage in the process of using reference guides, card catalogs, etc.) and, after identifying important qualities of programs in general, they develop models for program selection. In this task they have engaged in several processes but also end up with a product which they can later use—in this case a model for selecting programmed materials.

Some of the other process-product ideas I have used are: audio-scripts which require learners to interact with other materials; lesson plans incorporating appropriate strategies for discussions and other activities desirable for use with particular instructional films; personalized checklists to help students familiarize themselves with equipment operation; and generalized strategies for planning and implementing displays, bulletin boards, graphics, transparencies, and other visual and aural displays. The learning modules I have designed for these tasks are continually restructured as a result of student feedback and discovery of better ways of making the modules more effective.

The People Part of Technology . . .

Finally, and most important, is the "people" part of instructional technology. We have become more sensitive to losing control over certain aspects of decision making. Yet, to become more efficient learners, most of us could use help in choosing the best and shortest way to achieve our goals. Properly programmed computers can tell us the choices but eventually it will be the interfaces between student and teacher or student and student that will make the difference. The secret of applying technology to education without the stigma of dehumanization lies in the assignment of appropriate roles. Why

should an understanding, compassionate, warm human being deliver the same four lectures to inordinately large classes when this person could have so much greater effect dealing personally with individuals or at least with small groups? If teachers and teachers of teachers could ever get over the notion that they must be performers and realize that they could better help their students by managing the variables of instruction, then we would be moving toward a truly humanized dimension of technology.

Today's technology can help teachers transcend some very inhumane deterrents to learning such as fixed time schedules, inadequate space, strict verbal dependence, and even fatigue and discipline. If, however, teachers assume that using technology automatically means a vacation from planning and that it will become a substitute for their personal relationship with students, then the technology will abuse its clients.

The "people" element must always remain the keystone of educational endeavor. In instructional technology it is still the human who makes the plans, makes the decisions, and, by doing this systematically, frees himself for the appropriate times when learners need that very special kind of personal attention.

References

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