

Media for Tomorrow's Schools

*Today's new medium
must become tomorrow's
creator of excitement
in what is to be learned.*

IT HAS been widely predicted that a "major technological breakthrough is imminent in education on a scale comparable with that of recent years in medicine, agriculture and industry." The validity of this prediction may be open to question, but one thing seems certain. During the next 25 years education will feel the impact of technological developments with nothing short of explosive force.

Some educators will shrug their shoulders and say blandly: "This, too, will pass. These things are of sound and fury, signifying nothing." Other educators, more alert to the possibilities inherent in scientific change, will keep abreast of new developments and thoughtfully appraise and assess each new power tool in order to explore fully its potential contributions to education. Some educational leaders will go even further. They will assume the initiative in supervising

the introduction of these new tools into education in ways consistent with the best that is known about learning and the ways in which learning takes place. These are the same leaders who will also take the initiative in pointing out to industry the kinds of tools most needed by our profession rather than be contented to accept and adapt those tools which industry has already invented!

Much creative leadership will be required during this next quarter century, if education is to make the best uses of technology to accomplish its goals. If educators assume this leadership role, what is likely to be the blueprint for media in tomorrow's schools? Our purposes should determine the kinds of tools we will need, rather than the other way around. We need, therefore, to look first at what kind of education we want most to have in 1985. Then we can chart a realistic program to reach this goal. As we deal with major problems such as staggering enrollments, shortage of teaching personnel and rising costs, we

Harold E. Wigren is director, Audio-Visual Education, Houston Independent School District, Houston, Texas.

must not lose sight of our long-range objectives, but continue to build constructively toward them. As is true in all other aspects of our life, our reach must exceed our grasp!

Education: 1985

What kind of education do we most want for boys and girls in tomorrow's schools?

In addition to mastery of basic skills and subject matter, we will want to make certain that our schools provide for other equally basic objectives.

Opportunities must be provided for learners—

- ... to develop their individual capabilities to the maximum

- ... to become independent in their learning—to learn on their own

- ... to gain information about their world, its scientific and social phenomena, and to learn to think critically about this information in applying it to their own life situations

- ... to develop intellectual curiosity and wonderment, a spirit of scientific investigation, and an ability to do research

- ... to become efficient in basic skills of communications and be able to use effectively materials, resources and media of all types as learning tools

- ... to understand the impact of mass media upon their lives and to distinguish fact from opinion in the analysis of propaganda

- ... to gain an appreciation of their cultural heritage, including the fine arts

- ... to understand themselves and others and to have respect for the need, integrity and potentialities of all members of the group

- ... to build inner convictions and values with which to meet life's problems and become increasingly mature in their own behavior.

In order to realize the above objectives, it is clear that the schools of tomorrow must give much more attention to two avenues of learning to which we now only give lip service in today's schools:

1. *Schools must provide increased opportunities for learners to work in group situations.* Some instructional materials require sharing whereas others do not. Some can build individual skill but others are needed as a stimulus to share and deepen human experience. Where sharing is required, small groups are needed to encourage full participation. The learner in tomorrow's schools will need many opportunities to work in group situations of various sizes and composition.

We must acknowledge that much of what students learn in school they learn from one another. They require support and reinforcement that results from contacts and experiences with others. This calls for many peer group situations for the learner.

No one way of working will reach all of these objectives; rather several methods will be imperative. Learners will be in large groups for some experiences, in small groups for others, and there will be groups within groups at times.

2. *Schools must provide increased opportunities for learners to become independent in their learning and to "learn on their own."* In a recent publication entitled, *Education Looks Ahead*,¹ William S. Gray underlines this need: "The goal is increased capacity on the part of children and youth to engage independently at a reflective, creative level in the pursuit of knowledge and in the solution of difficult problems. Achieve-

¹ William S. Gray. *Education Looks Ahead*. New York: Scott, Foresman & Co., 1960. p. 58.

ment of this goal in harmony with each child's potential will bring many distinct advantages: the greater stimulus to further effort that results from independent discovery and achievement; the broader possibilities for students to promote self-development both within and outside prescribed courses; and the sounder preparation of children and youth for engaging in continuous learning as a way of life."

It is conceivable that with the use of new technological aids opportunities may be provided for each learner to proceed as fast as he can in accordance with his own competencies. This will make individualized *use* of materials and media essential in another quarter century.

In order to facilitate these two avenues of learning, we will need to try, particularly in our secondary schools, many possible organizational patterns which require more self-selection by the student and more guidance by the staff. In the National Education Association's newest television publication, *Opportunities for Learning: Guidelines for Television*, Harold Drummond points out one way in which this might be accomplished:

For example, the following activities in United States history might be scheduled simultaneously and might be repeated at different hours: (a) a televised lecture; (b) a televised dramatic show; (c) a personal lecture-discussion; (d) a panel-type presentation; (e) a study-individual-help period; and (f) an individual contract plan. All these activities might focus attention on the same aspect of United States history at the same time. The student would be required to participate. Guidance and counsel from an interested teacher would aid him in defining goals for himself and choosing appropriate means for achieving his goals. Conceivably, some students might work

alone in the library for several days at a time, followed by seminar discussions with staff members. Others might spend most of their class time in discussion groups, doing reading and television-viewing outside school hours. Still others might view television fairly regularly at school. Each student would be helped to find himself and what is appropriate for him, with the school aiding and abetting the process by providing guidance and ample choices.

At first glance, it would seem unrealistic to suggest that the school of tomorrow give more attention to individuals and groups at a time when schools will be facing ever increasing enrollments coupled with a corresponding shortage of teaching personnel. One would more likely conclude that in view of these conditions the school of tomorrow will of necessity be forced into *mass instruction* in order to survive, despite the dangers of conformity and rigidity of instruction which mass teaching would foster.

But herein exists a paradox. As our schools more and more avail themselves of technological developments, they can more and more find themselves freed from the lockstep and conformity which mass teaching breeds. As more tools become available and as existing technological systems are modified and reshaped, these same tools that were seen only as "mass" media are suddenly transformed into media for individual and small group use. There is always a tendency to allow the original use of a tool to set the pattern for its future use, instead of encouraging the development of new uses in response to curriculum needs.

This is not to discard the frequent need to use the television medium for providing mass learning experiences. In fact, the school of tomorrow will find

ways of using resources of all types for *both* individual and mass use. Flexibility becomes the key to the problem—flexibility in programming for learning, flexibility in administrative organization for various sizes and types of group activities, flexibility in building space, and flexibility in the “hardware”—the tools for learning. The schools of tomorrow will be using Stratovision and programs from the Learning Resources Institute as *learning resources for individual learners* rather than as *teacher substitutes* for whole classes. In so doing, they will be providing a depth type of experience over and above anything the classroom teacher can offer. We then will be using television, teaching machines, video tape recorders, instantaneous photography, individual viewing and listening equipment as resources for learning which tend to free both teacher and learner for unlimited learning horizons.

In many ways the school of 1985 will be much unlike its counterpart of 1960. It will undoubtedly reflect many significant changes in curriculum, organization and administration, in equipment, materials, and in school building construction and design. But in at least one respect the school of 1985 will be *identical* with that of 1960. It will still affirm that the two most important ingredients in the learning situation are the learner and the teacher!

Automation is no doubt imminent in many aspects of the work of the school, including some elements in the instructional program itself. When automation comes, however, it will not make obsolete the teacher-learner transaction which will remain a warm, human relationship. Neither will it invalidate all the research which has been done through the years as to the nature of learning and the ways in which learning

best occurs. Automation will, however, add more knowledge to what we already know about learners and the learning process and will undoubtedly open up new horizons heretofore not contemplated. And so will it be when technology goes to school, as go it must.

Media in Tomorrow's Schools: One Blueprint

In forecasting what the schools of tomorrow will be like, media-wise, there are likely to be as many “versions” as there are crystal ball gazers! Thus, in order to stay on relatively safe ground and maintain a somewhat realistic and practical approach to the problem, as well as make allowances for the usual lag on the part of education in adapting new technological developments, I have chosen to confine “my version” to those developments which are already technically feasible and attainable at this moment but which are not likely to work their way into general use for another quarter century. In so doing, I have attempted to keep in mind what has been said in this article previously relative to the kinds of education we want most to have.

It is fairly evident that media in tomorrow's schools will need to be used in a flexible manner. I, therefore, foresee still another dimension of the total picture which will have, in my opinion, even greater impact and potential. This is closed-circuit two-way audio-video systems, which will bring a type of flexibility both in audio-visual and television use never before dreamed possible. The beginnings of such a system are already in operation in the Galveston, Texas, Public Schools² with its operation

² Galveston, Texas. See *Audio-Visual Instruction*, November 1959, p. 264-66.

of Phonoscope, still in the embryo-experimental stage. It is heartening to note here that this is one instance where education has not stood idly by and "waited to see what would happen." The Galveston schools have taken the initiative in exploring, both for education and for the industrial world, the potentialities of such a system.

I foresee schools of tomorrow being grouped administratively into large districts or regions and interconnected with one another by means of coaxial cable. This interconnection would make possible vast improvements in communication among classrooms and among schools. Within a given area schools would be connected with one another in much the same manner as classrooms in a given school are now connected by means of a central sound (two-way audio) system. In addition, the interconnection system would make possible two other features: (a) one-way video and two-way audio; and (b) two-way video and two-way audio. Thus, it would be possible to transmit a picture from one point to many other points and at the same time achieve instant audio feedback between these several points.

If a two-way audio-video instrument were used, it would then be possible for both sender and receiver to see and talk to each other, thus achieving the simultaneous transmission of picture and sound in *both* directions! Unlike conventional one-way closed-circuit systems with one originating point, wherein the larger the system grows the more rigid it becomes, the two-way audio-video system, with *many* originating points, actually becomes more flexible as the system grows larger!

Each classroom could then become both a receiving and a transmitting point, as desired. To accomplish this,

each classroom would necessarily have to be provided with a special wall outlet which would enable the teacher to connect a two-way audio-video instrument. In turn, all outlets would need to be connected with a central switchboard in the school system located at a Communications Center for the district. This switchboard would in turn make connections between various designated outlets so that two or more classrooms, or schools, could be in direct contact with one another at any particular time, on a selective or mass basis.

In small school districts, one Communications Center might well serve the entire system. But, in large school districts, regional Communications Centers would probably become necessary. These regional centers would in turn be interconnected and probably become part of a larger network within the community which, in time, would even be connected with other communities.

Specifically, the Communications Center in school systems of tomorrow will undoubtedly become part of the Audio-Visual Center (or Instructional Resource Center) for the school district. Such a center would include, in addition to all the present resources and facilities of the Audio-Visual Center, certain other essential features:

- ... a switchboard which would serve as an interconnecting point among all the originating outlets

- ... a battery of projection and/or video tape recording equipment

- ... access to a community resources center

- ... a library of films or video taped materials

- ... a central studio for production of programs, or demonstrations, which normally could not be accomplished in a regular classroom.

The Center would serve as the focal point for the transmission of all communications media within the school system when all classrooms are tied into the Center's switchboard. When a classroom teacher needs a given film, recording, slide set, or transparency (or even a field trip!), he has one of two alternatives. He can either supply the material himself and use it on his own classroom projector or recorder; or he can order it from the Center by means of a push-button or dialing system attached to his TV receiver. In turn, the Center would put the film, or resource, on the television chain for use by that one class just at the moment it is most needed. Because eventually it is likely that the whole community might be similarly wired, there will be many opportunities in which field trips could be taken by television.

Tomorrow's classroom will include many other features which should be mentioned in passing, some of which coordinate with the system described above and some of which have no connection whatsoever but are still feasible and likely:

1. Each classroom will most likely be equipped with an electroluminescence screen mounted on the front wall of the classroom so that both projected and televised pictures can be enlarged for large audience viewing. These screens would consist of electroluminescence materials one-fourth to two inches thick and would be approximately 3' x 5' to 5' x 7' in size.

2. For small group and individual viewing, each classroom will probably be equipped with several small booths, or alcoves, wherein students can view motion pictures and see televised programs to meet individual needs. These booths will be equipped with headphones, much as is now done with language laboratory equipment, with the possibility of several students' view-

ing and listening to the same program or resource, or for individual viewing.

3. Each classroom will be equipped with monitors for receiving both audio and video signals, and in addition, would have a special outlet into which a two-way audio-video instrument could be connected whenever resources in one classroom are to be shared with other classrooms, or schools. There would be occasions when a given classroom would serve as an originating point. These monitors would also be able to receive broadcast signals, as well as closed circuit, thus enabling schools to pick up programs from both educational and commercial stations.

4. Every classroom in tomorrow's schools will be equipped with maximum light and temperature control facilities, including air-conditioning as standard equipment. It will also be acoustically designed for adequate sound reproduction. In secondary schools, there will likely be a minimum of outside window fenestrations. We have already heard much of the windowless schools in the Southwest part of our nation and still other innovations will likely be forthcoming. While some of these ideas may seem fantastic they all have elements of value within an over-all concept which sooner or later might be explored to advantage.

5. Flexible space arrangements will be essential in tomorrow's school. Classroom walls, for example, might be sound-proof accordion type which could be opened up at will to provide for large groups, or closed to provide for small.

6. An ample supply of automated teaching devices for use in individual classroom booths is certain to be provided for individual and small group learning. A student needing drill-type techniques might have access to teaching machines available to use in conjunction with recorded lectures on television or film, or as supplement to his regular classroom work.

7. Data processing equipment will no doubt be installed in administration offices

to handle student records, census information, and for a myriad of other uses.

8. By 1985 the cost of video tape recorders may have dropped to a fraction of their present cost, to a point at which they are relatively only a little more costly than our present magnetic tape recorders. If this occurs, it is not beyond the realm of possibility that each classroom might have access to one video recorder placed in resources centers in various locations in the building.

9. In 1985, there must be an adequate supply of projectors (film, slide, filmstrip, transparency, micro) as well as recorders, available for every classroom. Whether they will be available within the classroom itself or at the central source will depend largely on the method of transmission.

10. Finally, it goes without saying that tomorrow's schools will not neglect books! Books will still be basic learning tools for self-improvement and growth. It will be just as necessary to provide an adequate supply of books for each school library as it is in 1960. In fact, the need will be greater in an individualized program for learning and research. We must continue to grow in all areas of the instructional materials and resources program if we are to provide a wide variety of learning resources for all students.

Programming

There can be little doubt that the new technology offers a tremendous challenge for education. We should not regard it as an "intrusion" or fear its development as eclipsing all that we hold dear in our educational value system. It can liberate as well as limit. The two paramount questions seem to be these:

1. Who will control the programming?
2. Shall our tools determine our purposes, or will our objectives determine the tools we use?

Once our objectives are clear, they will serve as compass points in deter-

mining the direction in which we move. Provision must always be made for the teacher, as guide and counselor, to help learners select those experiences which would have meaning to them in view of their own needs and purposes. In such a situation, the classroom teacher controls the programming, and learners will not be given the same diet, but rather will be encouraged to select from an increasing number of learning opportunities provided on film, tape, television, and in the community.

What are the uses I would like to see the school of tomorrow make of media? I would hope that the school of tomorrow would use each tool of instruction to do the things which that tool can do best. Each tool should be assessed in relation to all other tools in its ability to accomplish specific teaching objectives. For some tasks the film will do the best job; for other tasks, television; for still others, radio, individualized teaching machines, the overhead projector, a field trip, or a book will better serve. In some subjects, the book might be the basic tool; in others, the basic tool might be the tape recorder or a television series. We are already finding, for example, that the tape recorder is rapidly becoming a basic tool in foreign language instruction.

The classroom teacher and the learner would have at their disposal a wide variety of teaching-learning tools, and perhaps a wide variety of packaged programs, from which to choose. In some cases, there will be undoubtedly a trend toward "absorption"—that is, the tendency for one medium, such as television, to absorb several others. Particularly will this be true in packaged resources for learning. When the smoke has cleared, however, I think there will be more rea-

soned approach to the problem. All the media would form a symphony of tools wherein each can make an unlimited contribution to learning, rather than being forced into a prescribed predetermined "plate lunch" pattern of use.

Television, itself, will I hope, be used with more flexibility so that the medium can become more than a talking textbook and instead serve a variety of roles, such as stimulator of learning, opener of

doors, arouser of curiosity, promoter of critical thinking, and creator of wonderment and excitement in what is to be learned. This is a virgin territory for program development which needs serious attention as we become more and more mature in our uses of the television medium.

Who knows *for sure* that any of these things will come to pass, but it's interesting to dream!

Preparing Teachers

(Continued from page 494)

Among the outstanding features of the five-year integrated programs from which these teachers have graduated are these:

- ... individual planning with each prospective teacher, beginning with careful selection at the point of admission to the teacher education program, including cooperative analyses all along the way, and the development of an individual plan for continued professional and personal growth as each student leaves the college and undertakes a teaching assignment in the field

- ... rigorous demands on scholarship in all phases of the program

- ... opportunity for equivalency examinations so that students may use their time wisely in advancing from where they are rather than unnecessarily duplicating earlier experiences

- ... group and/or individual therapy as needed to ensure mental and emotional health

- ... cultivation of open-mindedness, curiosity, imagination, and habits of inquiry, coupled with development of skills and in-

formational background that enhance productive thinking through inquiry.

- ... specialization for every teacher, with variety in kind based upon student need, special interests, and professional goal

- ... special preparation in the meaning and responsibilities of membership in the teaching profession

- ... intensive work in educational theory, accompanied by clinical experience from beginning to end, including an internship, skillfully guided by cooperative efforts of school and college personnel

- ... qualifying examinations to assure students' background information in general education, subject matter specialization, and educational theory

- ... qualifying proficiency demonstration through the internship and the first year of responsible teaching

- ... college teaching in every area of the program that is exemplary and carried on by specifically prepared teachers, each of whom recognizes the contribution of his work with students to the total preparation of teachers

- ... constant planning and evaluation of the total program by all-college faculty-student teams, by groups with representation from all segments of the profession, and by special consultants at the request of the college or of the profession.

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