

Videodiscs Are Coming to Extension Work . . . But How and When?

Hank Drews

Yes, videodiscs are coming to Extension work, but when and how are still pertinent questions. I first became aware of this technology at the 1977 ACE meeting in Logan, Utah. I still remember thinking it couldn't replace videotape for the simple reason that you couldn't record your own at home. You still can't record as inexpensively as with videotape, but I've changed my mind about videodiscs. They are coming. I believe their success is inevitable in our field.

Look at the acceptance of home computers: millions are being sold. They seem to be gaining wide acceptance by the public. They could possibly gain the "necessity" status that we Americans give to the telephone and television. To my mind, videodiscs are assured of success because they marry well to both the television and home computer. Videodiscs are their natural complement because they provide quality pictures for the information far less expensively than computer graphics. As I describe some four potential Extension applications you'll see how even the telephone will play a role in the success of the technology for education.

In a speech last October, William Norris, chairman of the board for Control Data Corporation, made a case for computer-aided instruction in American schools. He said, "History tells us 200 years went by after the book was introduced before it was used by teachers." He meant we can't afford that kind of time lag in education today.

It has already been 6 years since I and other ACE members were introduced to the possibilities of videodisc by Cordell Hatch and Art Higbee. Yet to date the only

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agricultural programs on videodisc are a part of the Control Data PLATO software. Extension has done nothing with the medium except that a few Extension specialists appeared on-camera for some PLATO segments. Research shows that learning through the new technology is never *less* effective than traditional teaching methods—so that can't be an argument against it. Videodiscs are coming . . . but when?

When depends completely on you and other agricultural communicators. I hope that what I have to say will help the "when" to happen sooner for Extension's sake. You are presently communicating through a variety of existing media: press, slides, film, audio and video tape, etc. Most of those will continue to be important in their own way. But you must be aware of, and ready to use, videodisc for *that* share of educational programs that *it* does better than any other; for durable, high quality, interactive information programs that individuals will probably use more often than library encyclopedias in the near future.

Everybody seems only to see the high cost of doing videodiscs, compared to those other media. Joseph Lipson, director of the World Institute for Computer Assisted Training, thinks the all-mighty bottom line is in favor of videodisc now. He said in the March issue of *Channels* magazine, "The videodisc is so powerful that the cost-effectiveness argument can be made for it right now, but schools don't see it that way." American schools spent only 1½ percent of their budgets on instructional materials for the last 20 years. At least the trend is to put a smaller portion into textbooks and more into microcomputers and other materials.

Videodiscs *are* expensive to produce. The machinery is also costly. But they prove their cost effectiveness in other ways. Discs are replicated almost like LP record albums, so the more you press the less expensive each becomes. Popular movie discs sell for about \$25. Videodiscs are less expensive to produce than videotapes at about 130 replications. The imagery will not fade as it does on photographs, slides, and films, so it gains value in its longer life. The disc itself requires no maintenance as films do, and the machinery is extremely durable in comparison to slide and film projectors and even tape playback units. Finally, in terms of its purpose—in an extensive evaluation of some videodisc courseware which teaches developmental biology at the college level, comparisons of student achievement showed that *the videodiscs groups scored significantly higher in 30 percent less time* than traditional classroom groups.

Like Extension, videodiscs are suited to informal education rather than classroom groups. They are at their best in small groups or even individual instruction. But, courseware is only one of the uses we will have for the technology. Let me describe four ways that I think the coming of videodiscs with will work for Extension.

First, we could put to use its enormous capacity to store up to 54,000 images on each side. Imagine an indexed and organized slide file of more than 100,000 ag-related images on each disc. That capacity is equivalent to about 1,300 80-slide carrousel trays. With a selection like that, no county agent should ever want for visual support for a talk. Of course, the agent would have to give the talks in the county office, school, or library where the equipment is kept. It isn't as portable as a slide projector and screen. In some ways the agent's presentation would be easier to prepare because once the agent either checked the index list or scanned the file and found the images he wanted to use, he could simply input that series of frame numbers, in the correct order, into the computer interfaced to the videodisc player. (Some players already have a sufficiently powerful computer built inside). The agent could cue each successive slide by touching a computer key. For that matter, the computer's clock could control the showing at any pre-set interval. Random accessing of frames is very accurate. It is fast—averaging about 2 seconds between images.

If we make one of those videodiscs for just a fourth of all the counties in the nation the price would be about \$20 each. Do you think many offices would buy? They will, if other useful programs are available. Extension already possesses a wealth of slides and footage that can serve as the raw material for new programs. That saves a major portion of the production expense, should *you* decide to do a new, useful videodisc.

For the second potential application, let's imagine a program of information that experts would call a "level-one disc." This videodisc is meant to be watched like a movie. However, the viewer could use the other features of videodiscs such as scan, reverse, slow, or still. When played straight through it takes a half-hour per side. The sound track operates only in play mode, not when using the other features. However, that half-hour of sound per side can be either stereo or two separate tracks with different messages. So you could have one in English and the other in Spanish, for instance. You could write one script in simple terms for a youth audience and the other very technical for the advanced learner.

Assume the topic was forestry. You might have five segments that average 5 minutes each on such topics as woodlot management, propagation and transplanting, use of tools, pruning techniques, and forest products. Each of these segments could be followed by quizzes to allow viewers to check their mastery of the material. They would simply progress frame-by-frame through a sequence of questions and answers. Another 2 minutes of that side could be used for single-frame sequences such as picture identification of trees, definitions of terms, and identification of insects or diseases. Because the normal viewing rate of a videodisc is 30 frames per second, these single-frame sequences take very little space on a disc. This format would leave you three minutes for the necessities—title, introduction, instructional information, credits, and closing.

This application is really more like a video textbook than a movie. The viewer has the ability to scan ahead quickly, review the material carefully page by page, or skip to the section that is most interesting. I anticipate that this kind of subject-specialized information will be the most common use of videodiscs in future libraries.

The third application in Extension is quite similar to the one I just mentioned. It is for educational courseware. But, the videodisc would be controlled through a computer and much of the program information (particularly information that is likely to change, like market rates) would be stored on the computer's floppy disc. The possibilities for top-notch instructional design are myriad. With the combined flexibility and memory of the computer, the user could branch to whole new sequences of information as his instructional needs changed. The computer could be programmed to record user responses so that testing could occur during the instruction. Information could be overlaid on the video image by the computer to provide textual information such as labels, statistics, and explanations.

This type of disc program has added potential for use as a cable T.V. course offering. Telephone lines could carry the interactive signals for simulation programs teaching everything from negotiating skills and stress management to chemistry, medicine, and law.

The last application I'll mention isn't even visual, but it may be more important than any of the others, because we presently spend a lot of money on the storage of information in either printed form or on magnetic hard disks. Almost in-

cidentally, when they invented the videodisc, they invented the most compact storage device for digital information, too. A single videodisc can accommodate up to 13 gigabytes of digital information. That's up to 30 times what a high-capacity magnetic tape can hold or about 2½ times the capacity of the largest multisurface magnetic disk-pack on the market (which costs around \$1,000). On a \$20 disc you could fit the contents of the Encyclopedia Britannica.

The method for recording such dense memory discs is simple. They are reformatted from whatever magnetic media we are now using in the overall publications process—the word processor's tape cassette, for example.

All that is needed to access any "page" is a microcomputer hooked to the videodisc player. The words are generated on the screen not like a picture of a printed page but rather in the computer screen text we have become accustomed to seeing.

This may be the electronics publication method of tomorrow. At present it is primarily used for archival purposes. It is just another way that videodiscs are coming.

Some of us are writing proposals to make use of this new technology. In Minnesota we are awaiting approval on a proposal for 4-H. All of us in one way or another will have a say in how Extension will use it and when. I hope it will be soon.

The successful futurist, Alvin Toffler, provides my summary by saying, "We know that some astonishing things can be done with the disc . . . and major companies are using it for training. It can simulate reality in ways that are infinitely flexible and paced to the individual learner. It's an extremely powerful tool, my hunch is that disc will become extremely important . . . it will be hooked to a computer and used for a thousand things we never thought of."

Where to Get Further Information and Training

There are seminars and workshops at the University of Nebraska and at Utah State on a regular basis. 3M offers a packaged course on videodisc production techniques on videodisc for under \$500. Sony offers one (that is perhaps less complete) for \$50. Certain professional societies have shown a continuing interest in the technology and usually include it in their conference programs. Those societies include: SALT, Society for Applied Learning Technologies; AECT,

Association for Educational and Communications & Technology; ASTD, American Society for Training and Development; SMPTE, Society of Motion Picture and Television Engineers; AERA, American Educational Research Association; NAVA, National Audio Visual Association; NISSL, National Institute of Social Services Libraries; and ADCIS, Association for the Development of Computer Assisted Instructional Systems.

Magazines which are likely to carry articles about videodisc include:

- Videodisc News
- Optical Memory Newsletter
- Videodisc/Teletext
- Video Pro
- Video User
- Videography
- Educational TV
- Educational Technology
- Instructional Innovator
- Journal of Educational Technology Systems
- Science
- High Technology
- Byte
- School Library Journal
- Journal of the SMPTE