



Computer Center

Using Your Computer for Videodisc Applications

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You already know that videodiscs store video images which are read by lasers and displayed on video monitors. Their advantage over videotape or films is that the laser can access the images in any order according to your instructions. In addition, the quality of the images is excellent. Igelsrud's article on "Laserdisc" (49:115-119, Feb. '87) is a thorough primer on videodisc technology. It explains the technical differences of videodisc, videotape and compact discs and includes a discussion of the relative merits of each. He is very positive about the advantages of videodisc technology and urges his readers to begin using it in their classrooms. The purpose of this column is to suggest a way of getting started using videodisc technology.

Biologists have an enviable position among most sciences because their subject matter is inherently visual. Furthermore, in our laboratories the students can actually touch and examine organisms, see their structure with the naked eye or with microscopes, dissect specimens and experiment with a wide variety of plants, animals and microorganisms. Effective teachers learned long ago that the more visual and "hands-on" the course, the more their students will learn. The principle is widely accepted yet many biology instructors at all levels encounter difficulties in making their courses more visual. Because of those

difficulties many courses, especially at the post-secondary levels, are less visual than the ideal. Perhaps high school courses pass this test more frequently because they typically are taught in the laboratory setting where lecture and hands-on exercises are fully integrated. Colleges and universities by tradition and often by necessity (imposed by large enrollments) have separated the lecture and laboratory methods of instruction. As a consequence the lecture portion is often less visual.

In 1986 I returned to the classroom after nearly 20 years in university administration. The experience confirmed what I had been reading and hearing: Today's students expect information transmission that is highly visual. While my generation was awed by the "word pictures" painted by our professors, students today expect all of their senses to be bombarded in learning situations. They get their news on TV. They even prefer to see moving images while they listen to music! Thus, I knew that my neat printing on the chalkboard and even my excellent chalk drawings and diagrams would not suffice. Besides, there is much in today's biology curriculum, including the emphasis on molecular biology, that's hard to draw.

I won't bore you with details of how I came to the realization that videodisc could improve my teaching. One event, however, was crucial: seeing a demonstration. I urge you to see a demonstration of videodisc as soon as possible, preferably from a teacher who actually uses it and under circumstances that will allow you some

hands-on time with the equipment. The demonstration could be in almost any subject area. You'll immediately see how the technology would work well in biology. First, contact the A-V or computer coordinator in your institution to ask if they know of anyone in your system or another institution who is working with videodisc. If this gets no response, contact the Department of Instruction or Board of Regents (or the equivalent in your state). This is another area where college professors can learn from their biologist colleagues in the high schools and junior highs. Everyone I know who is working with videodisc is eager to demonstrate the technology.

Learning More

Once you've seen a demonstration you'll be hooked! You'll need to do some reading about the technology, enough to make you a wise consumer. Igelsrud's article is a good place to start. But don't read too much! After you get your hands on the equipment

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the reading will be more fun and more beneficial.

The literature will introduce you to many possibilities. Too many! You'll have a hard time sorting out the pros and cons. Which videodisc or videodisc player should I purchase? Should I control the videodisc player merely with the player's remote control or should I opt for controlling it with a computer? If a computer, which computer and which software? Again, you can save yourself a lot of time and grief if you seek the advice of those who are already working with videodisc. Don't rely solely on the advice of vendors but they are in a good position to know about improved technologies that may be coming on the market in the near future. After reading and seeking advice it will be time to take the plunge.

One of the best ways to begin is to borrow equipment. This will give you the hands-on experience without the financial risk of buying the wrong hardware and software for your application. If this can't be arranged through vendors or your own school system, contact the nearest college or university. Summer is an excellent time to borrow equipment because there is less demand from the resident faculty.

Decisions, Decisions

I sought the advice of experts in our Center for Teaching Excellence at Ohio State University. I told them that I wanted to use videodisc for enhancing lectures in the introductory botany course. (Another possibility would be to use videodisc in the laboratory or recitation sessions with interactive videodisc applications, but this was not my plan initially.) I wanted the technology to be relatively transparent to the student, i.e., I wanted them to focus on the visual images, not on the machines. I wanted to put the equipment through its paces without disrupting the flow of the lectures. The experts' advice to me has proved to be sound.

As the subject matter specialist, you will need to select a videodisc that has the images which will support your course content. Even a biologist in another institution can't help you much with this one. You need to find a biologist who has several discs you can preview or find a vendor (e.g., Wm. C. Brown Publishers, 2460 Kerper Blvd., Dubuque, IA 52001) who has a liberal preview policy. Igelsrud describes several videodiscs for biol-

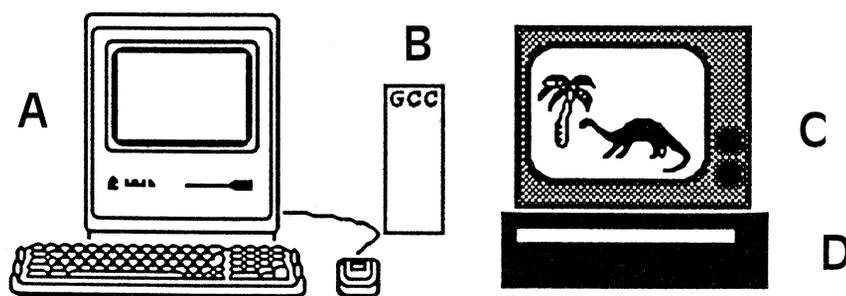


Figure 1. Author's equipment for videodisc applications: A. Macintosh Plus computer, B. GCC hard disc, C. Video monitor and D. Pioneer LD-Y4200 videodisc player.

ogy and I will be writing a future column which brings that information up to date. It's true that you need a videodisc player even to preview a videodisc but unless you can find a disc to suit your needs, there's no reason to buy the hardware. How's that for a chicken and egg problem?!

Next, you will need to consider the hardware requirements. The most commonly used videodisc players are made by Pioneer and Sony. Most models are available with remote controllers or computerized control. Some new models include laser pens capable of reading bar codes to select the images. I prefer the computerized control which allows you to preprogram the images you will use for your lecture and move from image to image very efficiently without having to enter a frame number into the remote controller. Furthermore, if you decide to design interactive videodisc lessons for your students (or use the commercially available ones), computer control is a necessity.

Computer control of videodisc applications can be achieved with Apple, Macintosh, IBM or Amiga computers or their compatible competitors. Each has its advantages and disadvantages. You may want to decide in favor of a computer already available to you to cut down costs. The computer, of course, needs some software which will allow the computer and videodisc player to communicate. Your selection of software depends on the computer you choose. Finally, you will need a video monitor to receive and display the video signal (Fig. 1).

1 Possibility

After previewing several videodiscs I chose Videodiscovery's *BioSci* videodisc because of the quality of its images and because their selection of images most closely matched my

course content. This is a place where you will need to compromise unless you have sufficient funds to purchase several discs. It is unlikely that you will find a disc that has all the images you want. The *BioSci* disc has 6,000 images and 10 minutes of motion pictures and I'm still not completely satisfied! Remember that I am teaching an introductory plant biology course and at least half of the images on the disc are of animals. Our course has a strong emphasis on morphology, anatomy and development and the *BioSci* disc has very few images of plant anatomy and fewer of various stages of the life cycles of moss, fern, gymnosperm and angiosperms. As noted above, a future column will discuss various videodiscs for biology. Be alert to the fact that textbook publishers are beginning to produce videodiscs to accompany their textbooks. These are often free to those who adopt the text and have the advantage of including many of the photos and diagrams from the text.

I was advised to purchase a middle-of-the-line videodisc player that would have a maximum response time of four seconds. This means that if I use an image on the outer track of the disc and next tell the player to display an image on the innermost track it will take the player no more than 4 seconds to search for and display the new image. Speed costs more money. Remember that a four-second search delay is rarely the case because videodiscs are usually designed so that related images are close to one another on the disc. I took the plunge with a Pioneer LD-V4200 videodisc player which has served my purposes very well.

I chose a Macintosh Plus to control the videodisc player. This decision was based on the fact that instructional designers at the Center for Teaching Excellence are using Macs

and are in a better position to help me if we are using the same computers and software. In addition to the computer I have a GCC FX/45 external hard disc. This is a relatively large amount of memory and would not be necessary for the majority of applications. I was advised to purchase this much memory, however, in anticipation that I would eventually want to develop some interactive videodisc programs. They were right! Furthermore, you will be using the computer for other applications and the extra memory is a definite plus.

I have used two kinds of software for the lecture enhancement project:

- 1) Apple's *HyperCard Videodisc Toolkit*,
- 2) Videodiscovery's *BioSci Stacks*.

Next month I'll tell you how these are used in the lecture environment.

Unless you are using an Amiga computer (or enhancements of other brands) the video image will be displayed on a monitor while the computer uses its own display screen. In the lecture situation, you will be seeing the computer screen while the students see only the video monitor. Luckily I did not need to purchase video monitors; I borrowed them from our AV department. For development work (in my office) I use a 13" Amdek Color-I monitor. I use one 27" RCA color monitor in the classroom which seats 40 students. This is adequate but a second monitor in the classroom would be better.

Total cost of the videodisc, videodisc player, computer, hard disc and computer software (everything but the monitors) was approximately \$4,300 (with education discount). There may be special opportunities for reducing these costs. For example, publishers offering videodiscs to those who adopt their textbook have often arranged with a vendor to make videodisc players available at very attractive prices. Keep in mind that the monitors, computer and hard disc can be used for many other applications.

Covering the Costs

If you're one of those privileged few from an affluent school district or university you can skip this section! Otherwise, this project calls for creative financing! If you haven't already checked into the possibility of borrowing equipment, it wouldn't be a bad first step. Once you have become familiar with the equipment your enthu-

siasm and obvious expertise will help you "sell" your idea to those who hold the purse strings. Demonstrating the technology will convince even the most cynical critic of the efficacy of videodisc. Explore alternative methods of funding. Luckily, Ohio State University annually awards a number of Learning Enhancement Grants for just this kind of project. The grants require matching money from the instructor's unit but most units are eager to support faculty who are trying to improve instruction. If your institution doesn't sponsor these grants, look to local foundations, service clubs, an academic boosters group, even student organizations. You might be more successful if you ask for a matching grant rather than the entire amount or if you approach several organizations and ask each to fund a portion of the project cost. Enlist the aid of your administrators in the fundraising project but be prepared to do much of the work yourself. It will be worth it. Don't hesitate to point out that the use of this technology will generate exciting feature stories in

your local media. All educational institutions are looking for stories that build a positive public image.

Let's Get Started

Assuming that you have borrowed or purchased the necessary equipment, where do you begin? Most videodiscs come with a directory. The *BioSci* disc has three directories: common names, scientific names and concepts. Use the directory to browse through the disc. Become familiar with the location and range of subjects on the disc. Learn how to use the controls (computer or remote controller) to search, step and play through the images. If you purchased the *BioSci Stack*, use its various directories to explore the disc. You will also want to test their lessons on frog life cycle and ecology and learn how to use their "slide show" and "notebook" features. Go ahead and practice these skills and watch for this column next month when I'll tell you how to use videodisc to enhance your lectures.



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