



The Media Center

DVD for School Libraries?

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. . . DVD is in its infancy and shows the same growing pains that CD-ROM technology did 10 years ago.

Should school libraries and media centers hop on the DVD bandwagon? DVD—Digital Video Disc now known as Digital Versatile Disc—is a high-capacity storage medium in optical disc technology. Be forewarned, however that DVD is in its infancy and shows the same growing pains that CD-ROM technology did 10 years ago. These growing pains have to do with three things: the limited choice of DVD titles currently available; hardware installation woes; and software incompatibility due to lack of complete support at the operating system level. For a bird's-eye view of DVD technology and its "family tree," see the sidebar on page 36.

DVD-VIDEO TECHNOLOGY

DVD-Video discs are for storing digitized movies and are meant for playback on DVD-Video drives attached to a television set and optionally to a stereo deck. In addition to playing back movies in a much better picture and sound quality than VCRs (and theoretically in somewhat better quality than laserdisc drives), they have additional features. Some features are the same as those offered by laserdiscs, such as the ability to move to specific scenes in a movie, or extra footage, but others are unique to the medium: eight audio tracks, interactivity, options for parental control, etc. More importantly, even single-layer, single-sided DVD-Video has twice the capacity (over two hours) as the more sophisticated CLV—constant linear velocity—variety of laserdiscs and four times that of the CAV laserdiscs, which use constant angular velocity.

In spite of the seemingly gigantic capacity, digital movies of full screen and full motion must be compressed. The video has to be MPEG-2; the audio portion must be Dolby Digital (earlier known as Dolby AC-3). For European implementations, both the video and the audio are compressed into MPEG-2 format. The components needed for decompression and playback come in a set-top box that looks like a VCR and sells for about \$500-\$600.

DVD-Video Titles

After the absurd situation in May 1997, when the first DVD-Video drives hit the shelves and there were practically no movies to play them, the marketplace has evolved. In early 1998, there are at least 200 popular movies on DVD-Video discs. The vast majority of these, however, are action flicks and feature films of little or no interest to schools.

There are now, however, a few educational movies that may be better on DVD-Video than on laserdisc, such as Lumivision's *Tropical Rainforest*, *Antarctica*, and a couple of other beautiful IMAX movies. No doubt, the fact that the DVD-Video version of the IMAX *Serengeti* film has voice-over in eight languages is useful for schools with many ESL students. It is also true that the DVD-Video versions cost about \$25, only about 60% of their laserdisc counterparts. However, in typical classrooms or school libraries, it is unlikely that students would have the IMAX "theatre experience." [Editor's note: readers interested in IMAX technology and its application to education may wish to review "The Really Big Show!" by Tim Olin and "Climbing Mt. Everest with IMAX Cinematographers" by Nancy P. Ferguson, two articles that appeared in the March / April 1997 MMS.]

DVD-Video Drives

DVD-Video drives cannot read analog laserdiscs, nor can they read CD-ROM or CD-R disks. They can only handle DVD-Video discs and CD-Audio disks. While there will be a potential improvement in the video and audio quality, schools need to consider if there is sufficient content available to justify spending \$600 on a set-top box. For example, even when Video Discovery releases a DVD version of its excellent *Critical Thinking and Visual Database* laserdisc series, these two titles plus those mentioned above would hardly justify the hardware investment.

DVD-ROM TECHNOLOGY

DVD-ROM discs are for storing computer-readable files, including text, graphics, audio, and video files. DVD-ROM discs need DVD-ROM drives, which are attached to the

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The DVD Family Tree

Compact Disc Digital Video (now known as Digital Versatile Disc) is a new format for digital disc playback. DVD is a high-capacity storage medium for video and audio data. After much arm-twisting and negotiation concerning physical specifications, the members of the DVD Consortium (now DVD Forum), it was determined that the DVD disc would have the same size as a CD-Audio or CD-ROM disc, but with a much larger capacity.

There are two main branches of the DVD-family: DVD-Video and DVD-ROM. DVD-Video is for motion video; DVD-ROM is like a "mega" CD-ROM disc that can store text, graphics, audio, and video. Within each family branch, there are two formats specified in terms of capacity:

- Single-sided, single layer 4.7 Gigabyte (GB)
- Double-sided, single layer 9.4 GB
- Single-sided, dual layer 8.5 GB
- Double-sided, dual layer 17 GB

These numbers are not precise, but they are the ones customarily used in industry, and in this case, a few hundred megabytes here and there do not really matter. Importantly, these specifications apply to the factory-recorded discs.

Recordable DVD discs, however, have lower capacities. DVD-Recordable (DVD-R) and DVD-Rewritable (DVD-RAM, not DVD-RW unfortunately . . .) discs are (or will be) laser-recordable and have lower capacities: 3.9 GB and 2.6 GB, respectively. These will be single-sided, single-layer discs. The technology needed for double-sided, dual-layer burning is likely to be deployed for the not-your-own-disc users. As of this writing, these latter two categories of the DVD family are in a limbo as several members of the original DVD Consortium announced intentions to work on a different format of higher capacity.

This little family history is included just to give you a sense for the range of formats that are here or are looming on the horizon.

computer and are controlled by the operating system and the application programs that accompany the data content. DVD-ROM drives will also read CD-Audio, CD-ROM, and, with an MPEG-2/Dolby decoder card, DVD-Video. The drives look like CD-ROM drives and usually—but not always—come in a kit along with an MPEG-2/Dolby decoder card that looks like a hard disk controller card. DVD-ROM kits sell for about \$400-\$500. As I write this in December 1997, there are no file format or compression specifications for DVD-Audio, but by the time this article appears in print (March 1997), specifications for DVD-Audio are expected, which means we will be hearing music recordings of higher quality than CD-Audio.

Entertainment Dominates—Once Again

The choice of DVD-ROM titles for K-12 schools is equally paltry. It is quite telling that with the exception of Xiphias' Encyclopedia Electronica I have not seen any other educational DVD-ROM titles bundled with DVD-ROM drives or kits. The Genius of Edison by the Learning Company may be bundled with some DVD-ROM drives

by the time this article is published, but action movies and DVD-Video demos dominate the bundles. The Blockbuster Entertainment Guide to Movies and Videos as well as the Billboard Music Guide of Creative Multimedia, for example, were planned to sell to OEMs (other equipment manufacturers) rather than to software resellers. These products are nice enhancements of their CD-ROM versions; kids would enjoy them, but they are not essential to a school library's collection. Neither is the first DVD-ROM title, PhoneDisc PowerFinder USA. This product offers on a single DVD-ROM disc what in its CD-ROM incarnation requires six discs! And, on DVD-ROM, it still has room for a couple of updates! Again, nice, impressive, but not essential to a school library collection.

As of this writing, there are only three DVD-ROM titles that are relevant for K-12 schools. These products come from Microsoft, DeLorme, and Sumeria.

Encarta Reference Suite. In early December 1997, Microsoft released its Encarta Reference Suite on DVD-ROM. This product accommodates the slightly enhanced versions of its excellent Encarta Encyclopedia,

Virtual Globe, and Bookshelf databases at a price (about \$100) that is less than the price of the three CD-ROM products if purchased individually. Titles such as these in DVD-ROM may prove to be "killer applications" for the home. While they are also outstanding reference sources for schools, in a school media center, it may be preferable to have these products accessible individually in multiple stand-alone CD-ROM workstations to allow simultaneous use. At home, the integration is convenient because you don't have to juggle the five discs on the shared family computer.

Map 'n' Go Deluxe. The second DVD-ROM title that is worth considering is DeLorme's Map 'n' Go Deluxe. This product combines the mapping detail of Street Atlas USA, the travel planning capabilities of AAA Map 'n' Go, and 75 minutes of high-quality video footage of national parks, historic sites, and other points of interest. It is well worth its approximate street price of \$55. The integration and enhancement of the two underlying products are advantageous even for the school library setting.

Vanishing Wonders of the Sea. The third currently available DVD-ROM title relevant for schools is Sumeria's Vanishing Wonders of the Sea. It has 30 minutes of linear video of a nature documentary on TV in addition to the database of textual information, videoclips, and brilliant photos of the undersea world.

DVD-ROM Drives

Even these three titles may be too few for a school to jump on the DVD-ROM bandwagon. However, DVD-ROM drives do read CD-Audio, CD-ROM . . . and if bought with an MPEG-2/Dolby decoder in a kit, DVD-Video discs. So, a DVD-ROM upgrade kit may be justified. In the case of DVD-Video titles, the video will not be as good as on a good TV, but they will be better than those postage stamp videos we now see on CD-ROM. DVD-ROM drives will be bundled with PCs and maybe also with Macs as regularly as CD-ROM drives are now, but currently only Compaq and Gateway offer such bundles in their mid- and high-range configurations.

Today, DVD-ROM is reminiscent of the early days of CD-ROM technology. . . .

HARDWARE INSTALLATION WOES

Should the dearth of educational DVD-ROM titles not be a deterrent and you are determined to ride the rising wave of optical technology, you may find that installing the DVD-ROM drive and the decoder board is likely to invoke your nightmares of five or six years ago when you installed your first "multimedia kit."

The DVD-ROM drive connects to an IDE drive, quite a straightforward step if your IDE controller can support one more drive and if you like tinkering with jumper settings. The drive is then connected with a pass-through cable to the MPEG-2/Dolby decoder board, which in turn is connected to the graphic adapter. This is when you may easily mess up your original graphic controller in such a way that you cannot even get Windows to run. If you do not mess up—or if you do but a smart kid from 4th grade bails you out—there is still one more hurdle: Your kit also needs to be connected to the sound board, and here the installation may become really ugly. There is a chance that the supplied audio cable will fit the audio jack on your sound board, especially if it is a Creative SoundBlaster board and you bought a Creative Encore PC-DVD drive. But there is an equally good chance that if the cable won't fit, you're "gonna quit" as Johnnie Cochran would put it. Even if you are lucky and everything works well, don't celebrate yet. Software problems may still spoil the party.

SOFTWARE INCOMPATIBILITIES

Neither Windows 95 nor Windows 3.1 supports DVD-ROM drives. This task was relegated to Memphis, whose release was postponed to 1998 (hence the moniker Windows 98). As far as I could judge from some Microsoft demos at Comdex last fall, DVD-ROMs should work well with Windows 98. Currently, however, DVD-ROM title developers

have to provide their own software drivers and use the Multimedia Control Interface (MCI) commands—defined five years ago when DVD-ROM was not even the subject of cocktail party chats.

Today, DVD-ROM is reminiscent of the early days of CD-ROM technology when the drive manufacturer provided operating system level "patches" to get the specific drive recognized as a valid device. Microsoft's extension for CD-ROMs (MSCDEX) came to the scene later and was not immediately available for end users. I vividly remember my trials and tribulations, and my only consolation was that my article "Singing the CD-ROM Installation Blues" won a Learned Information, Ltd. award. Even though it was not a refereed piece, it was a learned one. (Please forgive the pun and commercial!)

The "Test Fest"

Last summer, Intel and the Software Publishers Association (SPA) organized a DVD "test fest." Ten computer manufacturers and 10 DVD-ROM kit manufacturers tested 40 DVD-ROM titles on 25 DVD-ROM equipped systems. About two-thirds of these titles used MPEG-2/Dolby compressed files, mandatory for DVD-Video but not for DVD-ROM. Only 33 percent performed as expected. Of the others (those that did not use MPEG-2 Dolby compressed files), 95 percent worked well. The problem was not with the trivial MCI commands (start, pause, stop), but with the advanced DVD commands (parental control setting, language selection) that could not be communicated to the operating system in a standardized way. Tough luck for them and an omen for you.

IF I HAD MY DRUTHERS. . .

Writing this at the end of 1997, I do not recommend that schools jump on the DVD-Video bandwagon. As for DVD-ROM, I am more optimistic.

I would buy only a bare bones DVD-ROM drive without the MPEG-2/

Dolby decoder board. I say this both because of the likely installation blues and the Intel/SPA testing that indicated only one-third of the MPEG-2/Dolby titles worked as expected. This strategy not only cuts the cost in half, but saves the decoder board installation hassles by 99 percent.

DVD-ROM drives are affordable. As I write this, DVDCity (<http://www.dvdcity.com>) just announced the availability of a Panasonic DVD-ROM drive for \$199. I would replace an ailing 2X CD-ROM drive with this new DVD-ROM drive because in addition to reading DVD discs, it will work perfectly well as a CD-ROM drive at a much higher speed (8x) than the older unit. I would buy a few DVD-ROM titles that use MPEG-1 video (as Sumeria does), or even AVI video, or the magnificent MP3 audio (as an upcoming music encyclopedia will), all of which are happily supported by Windows 95 and/or time-honored utility programs.

Then, I would urge publishers whose school-targeted databases spill over to two or more CD-ROM disks to consider putting them on DVD-ROM and pass on to the schools part of the savings achieved by pressing, storing, handling, and shipping single DVD-ROMs instead of multiple-disc CD-ROM databases. Once Windows 98 with DVD (MPEG-2/Dolby) support is out, decoder card prices will go down and learn to behave, or they will be substituted by pure software DVD decoders. Then, I would upgrade my system for a song, and trade in my CD-ROM encyclopedias and other multimedia-heavy titles for a DVD-ROM version that proudly presents MPEG-2/Dolby video and audio.

I would then put a good DVD-Video flick into the DVD-ROM drive and relax and muse on how smart I was.

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