Managing multimedia as a learning tool: From computer graphics to Alice in Wonderland

The printed page has traditionally been one of the most widely used ways to record and communicate information. But reading a document isn't always the most effective way to learn new material. Many topics are better communicated by means of sound or video. Or by a combination of these and printed text.

Richard Phillips, staff member in Los Alamos National Laboratory's Computer Graphics Group, has developed an application on the NeXT Computer that combines digitized text with a variety of media to provide a powerful learning tool.

In developing the applicationÐcalled MediaViewÐPhillips's first project was to make it possible to interactively browse through the proceedings of a SIGGRAPH conference (an annual meeting that brings together top computer graphics professionals from around the world). This involved converting all of the papers from the proceedings into digital form, and then adding multimedia components. These components included:

- High-quality digital images that could be manipulated interactively
- VideotapesÐclips from videos shown during the original presentations
- SoundÐsuch as the question-and-answer sessions that followed the presentations
- A link to the program MathematicaÐto allow the user to manipulate mathematical expressions included in the papers
- Digital ªpaste-onº notesÐto make it easy for the user to add notes anywhere in the material
- ªDraw-itº notesÐto let the user add notes in graphical form

In the future, Phillips hopes to add one more component:

- Computer programs that were written to produce the things shown and discussed in the papersÐsuch as for generating realistic images and creating simulationsÐas well as large supporting databases

According to Phillips, the NeXT Computer was the only computer available that could handle the project. The system's sound capabilities, and the fact that they are integrated into the entire development environment, were especially important. And the development environment itself, with the Application Kit and Interface Builder, proved invaluable. Phillips began work in February 1989 on the proceedings from the previous summer, and had demonstrable results in time for the next SIGGRAPH conference, in July 1989. ªI can't imagine any other environment that would have let me get as much done in such a short

time,º he said.

Phillips chose to use SIGGRAPH proceedings as the basis for his first MediaView project because, as he said, ªas a body of literature it's very demanding. It probably has as many multimedia components as you would ever run in to. But the intent was never to limit it to those kinds of things. Rather, MediaView is intended to be a general `corpus manager,' where the corpus could be any body of literature. In fact, what I'm working on right now is Alice in Wonderland.

ªIn general, the best application of MediaView would be in situations where multimedia components would help to amplify the literature or make it more interesting. It could be used for training or teaching in almost any field. It would also be useful for fostering collaborative researchÐin medicine, physics, mathematics, engineering, or whateverÐbecause documents in digital form are so easy to annotate and exchange with other people.º As a tool for learning and communicating information, its possibilities appear to be endless.

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