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Psychologist: Simplicity Lacking from Educational Software

Much of today's multimedia educational software seems to operate on the assumption that more is better when it comes to using sophisticated graphics. However, the opposite is often closer to the truth, according to UC Santa Barbara psychology professor Richard E. Mayer.

"One of the biggest problems I see in educational software is that it overloads the learner. We know from studies that humans can focus on only a few things at any one time, so it's important to keep graphics simple and concise. Graphics should have a clear focus that directs viewers to an intended message," said Mayer, author of the newly published book "The Promise of Educational Psychology" (Prentice Hall, 1998).

Working with collaborators at UCLA and North Carolina State University, Mayer is developing multimedia design guidelines based on the latest research and cognitive theories relating to how people learn---a process he hopes will lead to improved educational software products.

"Presenting information via imagery, particularly in a multimedia environment, has a lot of potential as a teaching tool, but we need to understand how people learn from visuals. As it turns out, very little research has been done on the subject. However, this much we do know: Simply putting lots of graphics on the screen doesn't guarantee anything. That's why it's important to have input from psychologists who

study how people process visual and verbal information when developing educational software," said Mayer.

Preliminary research suggests that multimedia formats are especially well suited to teaching science, math, and other subjects for which instructors have traditionally used visual representations to help explain abstract concepts. Even in these subject areas, however, the use of graphics can be counterproductive, according to Mayer.

"We've done a lot of research on something known as the seductive details effect. By adding interesting effects and illustrations you can actually distract people so that they don't get the point of a given lesson. This would seem to indicate there are many ways to misuse the graphic power of computers," he said.

Mayer's research could have implications for traditional teaching resources. In an earlier study, he found that photographs and other graphics accounted for half the page space in California public school textbooks. Perhaps more significantly, 80 percent of the imagery was what he termed "decorational" and did not serve an instructional purpose.

"Visual modes of presentation can certainly enhance student understanding, particularly in those fields that don't lend themselves to verbal explanations. We simply need to put more thought into how best to integrate graphics and words so that the end product is in fact educational," Mayer said.

Mayer, who joined the UCSB faculty in 1975, is an expert in cognitive and educational psychology. His other books include the textbooks "Educational Psychology (Harper Collins, 1987) and "Thinking, Problem-Solving and Cognition" (Freeman, 1992).

About UC Santa Barbara

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