

## Colloquium

### **Integrating multimedia into a distance learning environment: Is the game worth the candle?**

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#### **Introduction**

An online learning environment (OLE) appears to be a setting in which multimedia enhancements could indeed provide noteworthy benefits. As a form of distance learning, the OLE offers a rather barren environment featuring limited student-to-teacher and student-to-student interaction, limited lecture capabilities, and severely restricted presentation capacity. Laurillard (1998, 1993), Daniels (1994), McCarthy (1997) and Riding and Grimley (1999) suggested various manners in which multimedia enhancements could be effectively used to differentially reinforce the various aspects of the teaching-learning process.

The value of multimedia in education is not, however, universally acknowledged. Lookatch (1997) very effectively reinforced concerns raised by Hall (1996), Solomon (1994) and Pruisner (1995). Although multimedia as an enhancement to learning is intuitively attractive, and anecdotal reports tend to support its value, research that is conducted with accepted controls does not tend to indicate significant benefits. Would incorporation of multimedia in an online learning environment provide benefits commensurate with the associated costs?

To answer this question a cost-benefit study was conducted. The course that served as the focal point of the study was Multimedia Systems offered at the doctoral-level in a modified online format.

#### **Methodology**

The importance of using multimedia to teach multimedia seems self-evident; it is important to “practice what we preach”. With that goal in mind, the instructors developed a CD featuring five media elements—video, audio, animation, interactivity, and text. During that development process, they kept a record of the time, hardware and software necessary, and distribution problems attendant with incorporation of each media element. To permit a basis of comparison, these qualitative data were then quantified using a five-point Likert-type scale.

Subsequent to the completion of the course, the students were asked to complete a brief questionnaire regarding the value of the CD. To permit a comparison of costs to perceived values, the students likewise used a five-point Likert-type scale.

### Findings

A total of 104 students completed the Multimedia Systems course during the period of this study; 53 completed the questionnaire, yielding a return percentage of 51%. Three areas were explored in the questionnaire: the overall perceived value of the product, the number of times each media element was actually viewed, and the perceived value of each media element in attaining course objectives.

Two questions were directed at determining the perceived value of the multimedia CD. Did this CD add value to your learning experience in this course? Should we continue to offer a CD of this nature as part of this course? The responses on both questions were strongly favorable with 75% answering “yes” to the first and 83% “yes” to the second of the two questions.

The questions regarding number of times each of the five media elements included in the CD were used offered six possible responses ranging from “Never” to “5 or More”. The average (mean) number of viewings of each element ranged from a low of 1.6 times for the video files through 1.75 for the animations, 2.0 for the audio files, 2.6 for the interactivity features, up to 3.0 for the text.

Seven learning outcomes were identified for the course. For each of the learning outcomes the student rated the impact of each of the media elements. The effectiveness ratings of each element were then converted to a five-point Likert-type scale. Figure 1 presents the scaled effectiveness rating for each element, together with the associated cost rating.

When taken as a whole, the response to the product was strongly favorable. However, when examined in terms of facilitating attainment of learning outcomes, the response

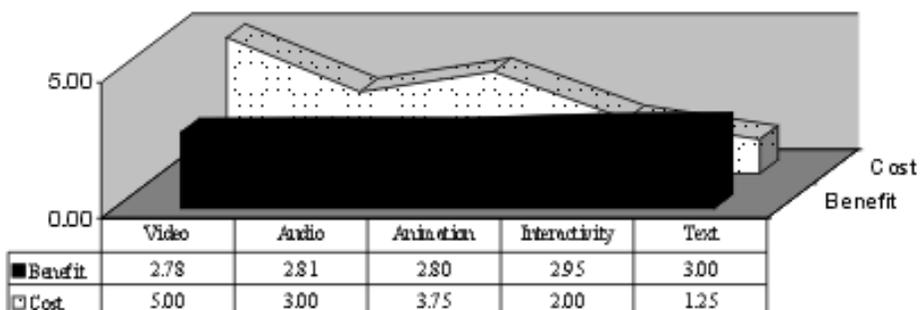


Figure 1: Multimedia cost-benefit analysis

was less definitive. It is indeed unclear that a multimedia product can be evaluated by rating its separate components; the whole might indeed be greater than the sum of the parts in this instance. One conclusion does seem safe regarding the potential value of multimedia in education: effectiveness is indeed relative and a careful balancing of the actual costs versus the anticipated benefits is definitely indicated.

### References

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