Multimedia in the classroom

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This paper focuses on setting up a system for developing and displaying multimedia classroom presentations that is both economical and easy to learn. Four separate aspects of the process are considered: (1) a hardware configuration to serve both the development and display processes, (2) selecting authoring software and learning to use it, (3) presentation development including locating and acquiring multimedia resources appropriate to psychology, and (4) some of the problems that can be expected to arise in both development and use of multimedia presentations. Some discussion of interactive courseware is included.

The multimedia computer and associated technologies offer the psychologist a variety of opportunities for improving and extending the instructional process. Demonstrations, lab experiments, simulations, electronic term papers, interactive courseware, and many other approaches to teaching become possible when the appropriate equipment is available and the psychologist is capable of using it. Unfortunately, there are three obstacles that seem to arise when the use of educational multimedia is considered (Sammons, 1994; Solomon, 1994). First, a major investment in faculty time is required to develop useful material. Second, many of the software packages used to develop multimedia material involve a steep learning curve. Finally, the cost of hardware and software can be prohibitive. All three of these obstacles must be overcome in order to reach the point where multimedia is an effective teaching tool.

Therefore, any effort in this area requires a strong commitment on the part of the individual or department involved. In order to sustain such a commitment, it becomes important to demonstrate tangible results and to do so rather quickly. This makes the choice of a starting point for the multimedia effort critical. The ideal situation would involve relatively low start-up cost and rapid development of a usable product.

The primary purpose of this paper is to suggest that an excellent entry level approach involves the development of multimedia classroom presentations for the introductory psychology course. The advantage of this approach is that it will permit the involvement of a maximum number of faculty while making the product available to the maximum number of students. A basic assumption here is that a move toward a multimedia instructional environment is more effective when it represents a departmental effort. Quite often, an individual psychologist with some computer background will discover a new research or instructional technique and introduce it into a department. However, the costs (in both funds and individual effort)

involved in moving into multimedia instruction often require a commitment that goes beyond the individual faculty member. Thus, the first element in the process should involve developing a consensus concerning the value of multimedia instruction to the department.

Hardware Considerations

There are a number of reasons why classroom presentations represent a reasonable entry-level approach to instructional multimedia. The first involves cost. Moving into multimedia instruction can involve significant expenditures in both equipment and training. A multimedia computer complete with sound and video cards, CD-ROM drive, speakers, and so forth, and the memory necessary to utilize this capacity is a major investment. A lab equipped with many such computers is bound to place a strain on the funding capacity of the average psychology department. Unfortunately, many instructional uses of multimedia require the use of a multiunit lab in order to provide students with reasonable access to the material. However, to get an entire department involved in the use of multimedia classroom presentations requires only one portable presentation unit and the availability of some sort of presentation or authoring software for individual faculty members.

A portable presentation unit utilizes a multimedia cart with an appropriate computer, laserdisc player, and projection device (LCD panel or video projector). All this equipment can comfortably fit on a single cart made specifically for this purpose. The cart can be moved from classroom to classroom as needed, and the presentation can be set up in minutes. Software installed on the computer should include a presentation or authoring package, graphics package, word processor, and any other software that may be needed for the creation of presentations. The unit (along with support materials such as laserdiscs, clip art and audio CDs, and CD-ROMs) should be housed in a central location accessible to all faculty when not being used in the classroom. Each faculty member should have the presentation or authoring package available on his/her office computer. Thus, individuals can do most of the work involved in developing presentations in their of-

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fices and can use network capacity or diskettes to move the material to the presentation unit. Peripheral equipment (video camera, digital still camera, capture boards, scanning hardware, etc.) and software (image and sound editing packages, 3-D and animation programs, etc.) for development can be added as need dictates and funding allows. A portable presentation unit allows a maximum number of faculty to utilize multimedia with a maximum number of students for a minimum cost.

The acquisition of a portable presentation unit is the first step in the process, but it should be obvious that good technical support becomes extremely important in the process of purchasing the unit and putting it together. Standardization among manufacturers of multimedia hardware and software is somewhere in the distant future, and compatibility problems arise as one adds functionality to a computer. Compatibility problems, particularly with sound cards, video capture boards, and overlay boards can be expected. Many of the technical problems may go beyond the expertise of the psychologist, and technical support personnel should be made a part of the process from the beginning.

Software Considerations

The second reason for starting a multimedia effort with classroom presentations involves the training and effective use of software by faculty. The decision as to the software to be used in developing multimedia presentations is fairly straightforward. One can choose relatively simple presentation programs, such as PowerPoint or Compel, or much more sophisticated authoring packages, such as Icon Author, Director, or ToolBook. The presentation packages have the advantage of being relatively inexpensive and easy to learn. However, they are, by their very nature, limited in what they can do in terms of classroom presentations. Some evidence indicates that overuse of "bullet" presentations may be seen by students as using the computer as a glorified overhead projector (Sammons, 1995). Furthermore, such presentation packages do not lend themselves to the more elaborate instructional uses that might be expected to develop out of the initial multimedia effort.

The more sophisticated authoring software is usually more expensive, and learning to use these packages often requires considerable time and effort on the part of individual faculty members, particularly those with little or no experience with programming. However, it can be argued that the advantages of authoring software outweigh the disadvantages. First, these programs offer maximum flexibility for incorporating animation, sound, full motion video, and so forth, into the presentation. Second, although they may be difficult to learn, it is also true that reasonably good presentations can be produced very early in the learning process, and, as the faculty member gains experience, the original productions can be upgraded. Finally, the experience gained in developing classroom presentations with an authoring program can provide a strong background for beginning to utilize the multimedia computer for the creation of interactive pro-

grams, such as tutorials, courseware, and computerized tests. Developing classroom presentations can provide both the skills and the confidence to enable individual faculty to expand the role of multimedia in the psychology curriculum.

One reason for suggesting that the first effort involve the introductory course is that it can involve a large number of faculty. Each member of a psychology department has something to contribute to an introductory course even if he/she is not involved in teaching. Assigning different individuals to develop presentation materials in their own area of competence ensures a high level of quality in the content aspect of the presentations while reducing the time commitment required of any one faculty member. An additional advantage of this approach is that, when all members of the department are learning an authoring package together, they can provide assistance, comfort, competition, criticism, and all the other elements of normal departmental interaction. The end product can be a reflection of the psychological expertise, creativity, and pedagogical skills of the entire department.

The Development Process and Resources

One of the benefits of developing multimedia presentations is that it requires the instructor to look carefully at the content of the course and organize that content around the available multimedia materials. Normally, an instructor walking into a classroom has a general idea of what is going to be covered and may bring to the classroom materials such as handouts, transparencies, slides, and so forth. In developing multimedia programs to supplement instruction, the same materials may be used, but they can be made more efficient by placing them under the control of the computer. The possibility of extending the material using computerized graphics, animation, simulations, and other digital material can enhance the presentation, while the process of development requires the instructor to give considerable thought to the content in terms of logic, sequence, and scope of coverage. The material to be presented in a given lecture period must be organized in such a way as to provide for complete coverage. Multimedia presentations allow the instructor to give the material a degree of immediacy not possible in the past. For example, in a discussion of schizophrenia, a single mouse click can provide a short video clip of a schizophrenic, pictures of the waxy flexibility of catatonia, or a sound file of paranoid delusions. All of these can enhance student understanding of the material, but the instructor must be sure that the content itself remains the focus of the presentation. The program should supplement the instructional process, but it should not control it.

Hyperlinking allows for the storage of material within the presentation that can be used whenever the thread of the discussion calls for it. Therefore, it is important that the presentation material be organized in such a way as to avoid rigidity. One of the advantages of the lecture approach is that it lends itself to a nonlinear approach; that is, the instructor can deviate from the planned presentation on the basis of questions or comments from the

class. In a multimedia presentation, this kind of nonlinearity can be programmed in a number of ways. In a situation that calls for an example, the instructor can program several cases, with the first in linear form and the others hyperlinked. This allows the instructor to cover the material and move on or to go to further examples if it appears necessary. In the same way, material can be programmed that allows the instructor to determine both the breadth and depth of coverage.

The video and audio content of a multimedia presentation is normally developed from two major sources. First, much of the material will be created by the instructor. Authoring packages allow the instructor to create text material that can be manipulated in a variety of ways. Self-produced graphics and animations can illustrate points in a highly personalized manner. Photographs and video material produced by the instructor can be extremely effective. Instructor-produced material has the advantage of looking very professional when projected, and, at the same time, it can incorporate local visual images. One advantage of instructor-produced material is that it avoids the question of copyright.

The second source of content is that which is available commercially. Historically, textbook publishers have provided supplementary material in the form of transparencies, videotapes and laserdiscs, computerized workbooks and simulations, and other aids to instruction. The quantity of supplemental material is normally related to the expected sales of the book, so introductory texts generally are the best sources. All these materials can be incorporated into a multimedia presentation. Photographic material from textbooks can be useful, but the issue of copyright must be considered. When a text has been adopted for a particular course, publishers tend to give blanket permission for use of graphics. However, such permission should be obtained in writing, and appropriate acknowledgment of sources is required.

Other commercial sources of instructional media can also be tapped. Some material not directly related to content may also be useful. Cartoons, clip art, video clips, and sound effects can be integrated into a presentation in psychology in a meaningful manner. A large quantity of such material is commercially available on CD-ROM.

At this point, some consideration must be given to the issue of copyright. A great deal of the information, audio, and visual material that a faculty member might find useful in a multimedia presentation may well be classified as intellectual property with the rights assigned to an individual or organization. In such cases, compensation for use of this material may be required. Until recently, the major problem in this area involved copying of textual material. However, the availability of copyrighted material through videotape, the multimedia computer, and the Internet (particularly the World-Wide Web) have changed the situation completely. Recently, the Consortium of College and University Media Centers has convened a working committee to develop fair-use guidelines for educational multimedia. This committee, made up of interested educators and representatives

of a number of proprietary groups, has been working toward the development of a set of guidelines that educators can use in making decisions about the use of copyrighted materials. Draft guidelines were announced on September 25, 1995, and are still in a process of revision. While a description of these guidelines is beyond the scope of this paper, it should be noted that they recognize that classroom presentations represent a legitimate use of intellectual property and simply suggest general rules by which such use should be governed.

Potential Problems

The most obvious problem in the development of multimedia presentations grows out of the amount of time involved in the process. It has been suggested that this has been a major factor in inhibiting the widespread use of multimedia as well as other advances in instructional technology (Solomon, 1994). There is no commonly accepted guideline as to how much time should go into preparing a 1-h lecture or a three-credit course. The psychologist who is just starting may find that it takes days to get a single lecture ready to go. This can be attributed in part to a lack of familiarity with the multimedia environment. This is another advantage of using an entire department for the initial development effort.

However, unrestrained enthusiasm can also make a contribution to start-up problems. The multimedia computer has a great deal of potential, but it is not necessary or desirable to use all of its functions in the first lecture even though it may seem fun to try. Animation, sound, and color are fine, but the meat of any presentation is going to be found in the same text and graphics that appeared on the chalkboard a few years ago. Professional multimedia designers stress that the key to using color and motion is to use it conservatively. An uncluttered background improves image clarity, which aids comprehension. Designing relatively simple screens that focus attention on a single graphic or text field reduces development time while making the content of the presentation more accessible to the students (McFarland, 1995).

After the development process has been completed, further problems may arise in the use of the package. A major problem in using multimedia presentations is the pressure they can cause for the first-time user. Style and rhythm built up over years of teaching can be disrupted by both the material and the procedure. Content that the instructor has felt comfortable with in the past has to be presented in new ways, and proactive interference can be a problem. At the same time, a lecturer who normally wanders through the classroom will not like being tied to a computer. Finding yourself 30 feet away from the computer when you want to make a dramatic point that requires your presence at the keyboard or mouse pad can be confusing and embarrassing. Fortunately, a cordless mouse can solve this problem.

Finally, it should be noted that student reaction to multimedia presentations must be carefully monitored. If a great deal of text is being displayed, there is a tendency for students to try to copy it all and become frustrated if

they cannot keep up. Text should be displayed in small chunks. In order to keep students actively involved, occasional screens should be presented that ask a question or otherwise require a student response. The instructor should aim for some predetermined level of active involvement on the part of the students and then program the presentation to encourage such involvement.

As skills and confidence increase with experience, the presentation material can be upgraded. Furthermore, content that has been developed for lecture can often be incorporated into other multimedia programs. Tutorials that provide the student with interactive content, simulations, and quizzes can be developed using at least some of the presentation material. These programs have the advantage of being directly related to lecture material using the same emphasis and terminology. Many of the interactive packages that are commercially available have a generic flavor that can cause students to lose interest if they fail to relate the programmed material to the lecture.

In summary, the problems involved in initiating multimedia instruction can be daunting. Acquiring new equip-

ment, learning new software, and adapting old teaching techniques to the multimedia environment requires a major investment in time, effort, and money. However, the process can be beneficial to all parties. Students find themselves in a new instructional situation that can encourage greater involvement with the course content, and adopting these new techniques can have a rejuvenating effect on the instructor who may have taught the class too many times.

REFERENCES

- McFARLAND, R. D. (1995). Ten design points for the human interface in instructional multimedia. *T.H.E. Journal*, **22**(7), 67-69.
- SAMMONS, M. C. (1994). Motivating faculty to use multimedia as a lecture tool. *T.H.E. Journal*, **21**(7), 88-90.
- SAMMONS, M. C. (1995). Students assess computer-aided classroom presentations. *T.H.E. Journal*, **22**(10), 66-69.
- SOLOMON, M. B. (1994). What's wrong with multimedia in higher education. *T.H.E. Journal*, **21**(7), 81-83.

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