

## **THE USE OF TECHNOLOGY IN PSYCHOLOGY: EXAMPLES FROM AN INTRODUCTORY PSYCHOLOGY AND STATISTICS CLASS**

Isabelle D. Cherney  
Creighton University  
Department of Psychology  
2500 California Plaza  
Omaha, NE 68178  
Tel: (402) 280 1228  
Fax: (402) 280 4748  
Email: [cherneyi@creighton.edu](mailto:cherneyi@creighton.edu)

### **INTRODUCTION**

Teaching at its finest requires that instructors consider every educational tool at their command – various techniques and technologies – to give their students the richest educational experience possible. It is important to consider presenting information in multiple modalities to accommodate different learning styles. Some students learn best by listening and discussing, some by reading and writing, others through graphic representations or through hands-on experiences. The traditional college classroom is geared to the auditory and digital learning styles. Students, who are visual or kinesthetically oriented may find themselves at a disadvantage. Visual aids and simulated experiences (e.g., computer simulations and interactive learning modules) help these students excel while reinforcing everyone's learning (Nilson, 1998).

Reaching every student in the classroom may be particularly challenging in large introductory classes (e.g., introductory psychology) and in required (CORE) classes (e.g., statistics). Several studies have shown that student-active teaching methods ensure more effective, more enjoyable, and more memorable learning than do passive teaching methods, the most passive one being the lecture (e.g., Bonwell & Eison, 1991). However, many instructors have been taught using the traditional lecture format and therefore, it is likely that they are going to continue teaching in this format. Also, it is difficult and time-consuming to design meaningful active-learning modules for large classes that cover a wide content area. Thus, many traditional introductory psychology classes are taught using lectures (PowerPoint), video-clips from textbook supplier(s), and only few active learning exercises are carried out during class times.

Only a handful of publishing companies offer integrated technology solutions for introductory classes (i.e., Blackboard, WebCT, etc.). Many textbook publishers supply PowerPoint slides and video segments that complement their text, thus perpetuating the predominantly lecture-based format of presentation. This is not to say that lectures should be avoided. McKeachie, Chism, Menges, Svinicki, and Weinstein (1994) found that lectures are particularly helpful when modeling an approach to problem solving or a style of thinking, when providing background knowledge summaries that are not otherwise available, and when clarifying course materials. Lectures can be highly motivational, but their success depends mainly on the lecturer.

## DIGITAL VIDEO RECORDING

Research suggests that more discovery-oriented and student-active teaching methods ensure higher student motivation, more learning at higher cognitive levels, and longer retention of the knowledge (Nilson, 1998). How can an instructor best introduce experiential teaching into a large classroom without having to make significant changes to the class design? One way is to incorporate technology into the classroom by videotaping student performances. Instructors can assign or have students select the topic, research area, role, school of thought, concept, etc. that they will represent. Often, such formats require advance research, but they can also be set up spontaneously. For example, during an introductory psychology class, students in groups of three were assigned a particular brain structure that they had to research and present in class. The students were given access to all of the classroom technology (i.e., computer, overhead projector, slides, video equipment, model brain, etc.). Before their presentation, they were asked to sign a release and authorization form, hereby unconditionally releasing and discharging the institution of all claims to the pictures and giving the instructor the permission to reproduce the material.

The student presentations were taped using a ZR60 (Canon) digital video camera mounted on a tripod and a Labtec microphone for sound recording. The lighting was indirect (from the ceiling). Panning was done from left to right. Recording started about five seconds before the student talks and continued until after the talk was done. This extra footage was important for editing purposes. After taping, each group presentation was downloaded to a laptop computer (Gateway 600X) running Microsoft XP. XP features Movie Maker V2.0 that allows easy downloads of digital film material. Each film clip can be viewed on the computer screen while it is being downloaded. Once the 1-3 min long film segments were downloaded, they were visible on the "collection" screen. They were edited by dragging each clip into the "timeline" display at the bottom of the screen. Video effects and transitions were added by clicking on the desired feature and dragging them to the timeline. Titles and credits were also added and the movies were pre-viewed using the "storyboard" display. They were saved in .wmv formats. To allow the students to view the clips and to use them for study purposes, the files were transferred to the instructor's website where they can be viewed using streaming video at:

<http://winstream.creighton.edu/idc24708/winstream.html>.

Similar teaching challenges plague introductory statistics classes. Although there are fewer students taking statistics classes than introductory classes, only a limited number of statistical tutorial programs are available. In addition, many students approach statistics classes with rather high anxiety levels. One way to actively engage students in these types of classes is to have them teach certain concepts to their fellow students. Analogous to the introductory psychology class projects mentioned above, students were videotaped as they were demonstrating concepts in probability. These clips can be viewed in Microsoft's Media Player at the same webpage.

## PICTURE SLIDE-SHOWS

Another way to capture student creativity and peer-to-peer teaching is to shoot digital pictures in the classroom. For example, in an introductory statistics class, students were asked to make up three scenarios representing each one of the different t-tests (one-sample, two-sample, and paired-sample t-test). Several digital pictures of the presenters were taken using a FinePix 2600Z Optical Zoom digital camera (Fujifilm). The pictures were imported into Movie Maker V2.0 and dragged to the “timeline” sequentially. In addition, PowerPoint slides that were previously saved in a .jpg format were also imported and added to the timeline. Each sequence was timed and the students responsible for the presentation narrated each picture using a Labtec microphone. The students enjoyed doing this project. Not only did they learn about the different uses of t-tests, but they also learned new technology skills. Their final product can be accessed at: [http://winstream.creighton.edu/idc24708/t\\_testsS03.wmv](http://winstream.creighton.edu/idc24708/t_testsS03.wmv).

Instead of using Microsoft’s Movie Maker, instructors can also create slide shows (using both digital pictures and PowerPoint slides) with the free Real Slideshow program that can be downloaded from Real One. Narration can be easily inserted onto each slide. Soundtracks (.mp3 file) can be added as background music. An example of a real-slideshow used in a statistics class can be viewed at: <rtsp://streamer.creighton.edu/idc24708/idc24708/chisquarefall02/chisquare.smil>. On that segment, students demonstrate the use of a chi-square test. Real slideshow runs with Real One Player.

## SOUND RECORDING

In addition to presentations, technology can also be effectively used during class discussions. While lecture and discussion are roughly equal in helping students acquire factual and conceptual knowledge, discussion is superior in developing their problem solving skills (e.g., Bonwell & Eison, 1991; McKeachie et al., 1994). These skills apply not only to math problems, but to all kinds of solution-oriented tasks. Across disciplines, student ratings of instructors vary positively with the amount of time and encouragement an instructor gives to discussion (Cohen, 1981; Cashin, 1988). One way to capture discussions in a digital format is by using a Pocket PC. The ipac 3980 pocket pc (Hewlett Packard) has a built-in microphone that records sound and saves it directly to a file onto its hard-drive. The file can be synced to a computer or copied via a secure digital memory card. For example, the ipac could be used to record students’ preconceptions about psychology the first day of class. At the end of the semester, to assess attitude change, students could be asked the same question again.

## AUTOBOOT CD

The most effective way to introduce technology into the classroom is to start early, the first day of class. What an instructor does or fails to do the first day of class typically affects the student-instructor relationship. If technology is going

to be a part of the class, why not introduce it at the beginning of the semester? Instead of making copies of the course materials for everyone, the instructor can hand out an auto-boot CD to each student. All the students have to do is to put the CD into a computer, and it will open automatically to a default page. This “home page” may be equivalent to a home web-page. When the students are connected to the internet, they can click on the links and directly access the files on the internet. The CD can contain a multitude of files (up to 700MB). For example, a CD for an introductory psychology or statistics class could contain copies of all PowerPoint presentations, previous exams and review sheets, the syllabus, saved movie clips, soundtracks, pictures, assignments, homework, etc. Students appreciate having the information accessible to them at all times and early in the semester.

### CONCLUSIONS

These few examples illustrate how technology could be incorporated relatively easily into the curriculum of an introductory psychology class and a statistics class. These activities accomplish several goals. For example, they introduce active-learning exercises into the classroom, students get motivated to participate in class, and they learn to use technology. In addition, communicating knowledge and skills via multisensory channels (i.e., cue summation) has been shown to be more effective than using any single channel alone (Lamb, 1992). Experiencing graphic, symbolic, and auditory cues allows learners to select the cues that best fit their own needs and abilities, thus accommodating all learning styles. In addition, interactive learning takes less time than learning through traditional methods. Retention of the acquired knowledge is longer. Cost per student for the technology decreases with the number of students participating, since the primary expense is the initial development and installation (Nilson, 1998). The presentations can also serve as examples in subsequent classes. Finally, interactive technologies give learners more control over their education. With more control, students feel greater ownership of the material.

### REFERENCES

- Bonwell, C. C., & Eison, J. A. (1991). Active learning: Creating excitement in the classroom. *ASHE-ERIC Higher Education Report No.1*. Washington D.C.: School of Education and Human Development, George Washington University.
- Cashin, W. E. (1988). Student ratings of teaching: A summary of research. *IDEA Paper No. 20*. Center for Faculty Evaluation and Development, Kansas State University.
- Cohen, P. A. (1981). Student ratings of instruction and student achievement: A meta-analysis of multi-section validity studies. *Review of Educational Research, 51*, 281-309.
- Lamb, A. (1992) Multimedia and the teaching-learning process in higher education. In Michael J. Albright & David L. Graf (Ed.). *New directions for teaching and learning*, 51. San Francisco: Jossey-Bass.

McKeachie, W. J, Chism, N., Menges, R., Svinicki, M., & Weinstein, C. E.  
(1994). *Teaching tips: Strategies, research, and theory for college and  
university teachers*, (9<sup>th</sup> ed.). Lexington, MA: D.C. Heath and Company.

Nilson, L. B. (1998). *Teaching at its best: A research-based resource for college  
instructors* (Ed.). Bolton, MA: Anker Publishing.