Teaching Visual and “Hands-On” Material at a Distance

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The Instructional Design Center (IDC) at the Sitka Campus of the University of Alaska Southeast (UAS) has been collaborating with faculty to design and produce a variety of multimedia and “hands-on” learning experiences. In what follows we will present some of our approaches, describe how the IDC works with faculty members, and offer some tips and lessons learned. More information and examples of some of our learning activities can be found on the IDC website: www.uas.alaska.edu/sitka/idc/

Background – the Sitka Campus of the University of Alaska Southeast

The University of Alaska Southeast was formed in 1987 with the merging of the University of Alaska at Juneau, Ketchikan Community College and Islands Community College in Sitka. In common with many communities in the southeast Alaskan panhandle, Sitka is accessible only by air and water. The Sitka Campus has been involved in outreach and distance education for several decades. Distance students from neighboring island communities in the southeast first participated jointly with local classes via telephone. Communication by email and audioconference courses began in the early 1990s, and web-based courses in the mid-90s. Every full time faculty member and most adjunct faculty in Sitka are involved in distance education and 48% of our registrations are for distance classes. Distance classes are no longer limited to students in the southeast but are available to students throughout the University of Alaska system. Course offerings include both traditional academic subjects and professional/vocational subjects. We serve a diverse group of students, including 26% identified as Alaska Native. Less than 10% are full time students and the average age is over 36 years.

The Instructional Design Center at Sitka, now in its fourth year of operation, was initiated with funding from a federal Title III grant for Alaska Native serving institutions. In this time we have developed programs for faculty development and technical training, and have worked with faculty to develop new courses and to enhance existing courses. By offering technical training and collaborating with faculty in instructional design, we have been able to successfully develop and offer a variety of innovative learning experiences for our distance students. These include courses that depend heavily on visual and practical experiences. To add to the challenges 1) we must deliver these courses to diverse students in remote rural or “village” locations and 2) without a large technical staff, we depend on collaboration with faculty in both the design and development processes.

Delivering Auditory and Visual Content with Macromedia Breeze

Macromedia Breeze Presentation (www.macromedia.com/breeze/) has been used to add auditory and visual content to several courses. This includes courses that depend heavily on visual content (Digital Photography, for example) as well as numerous other courses in which the presentations benefit students with more auditory and visual (non-text) learning styles. Faculty begin with a PowerPoint® presentation and then use the Breeze PowerPoint plug-in to record and edit audio narration. The audio is synchronized with each PowerPoint slide and can even be synchronized with particular “bullet points” or other types of animation. Quizzes and surveys can also be included. After preparing and previewing the presentation, the author connects via the Internet to our Breeze server (located in Juneau and used by all the UAS...
campuses). The software on the server converts the original presentation to a shockwave (swf) file, which will play in the Flash Player plug-in (present in 98% of browsers). Students can view presentations online and they can also be downloaded and delivered on CD, if desired. The shockwave audio and visual content is streamed and works successfully even for students with low bandwidth connections.

Lessons learned. The Instructional Design Center provides initial training and technical support as well as help with instructional design and pedagogy. We have conducted small group workshops to introduce Breeze, but our most successful training model has been to provide individualized training to one or two faculty at a time. In this way we can begin training at the level needed by those faculty. Some faculty need an introduction to PowerPoint basics and others plunge right into narrating their presentations. We also meet individually with faculty to consult on defining course objectives and design goals.

After a relatively brief introduction, faculty have easily been able to prepare and deliver their own content. It is particularly easy to edit the audio narration and to insert and remove slides, making the content very easy to update or modify. Because of the ease of using the Breeze plug-in for PowerPoint, faculty are not only producing audio/visual “lessons” but can also produce “just in time” content such as weekly feedback on students’ assignments. Students’ evaluations indicate that they appreciate this enhancement to text-based learning materials. They report that they particularly like hearing their instructor’s voice.

Creating Interactive On-Line Learning Activities

For our Digital Photography course, we have also developed interactive on-line activities using Macromedia Flash. These simulations allow students to manipulate controls and observe how factors such as resolution, lighting position, aperture etc. affect the final photograph. For this course, the virtual simulations do not replace the real experience of using a digital camera or of using Photoshop Elements to modify a digital photograph – rather they provide an introduction to concepts which the student then puts into practice. Students then share their photos and comment on other students’ work using an online photogallery, which we implemented using open source software (Coppermine Photogallery: coppermine.sourceforge.net)

The simulations are developed by IDC staff in consultation with faculty. Because they are more time-intensive to prepare, only a limited number of simulations were developed. For the initial online course offering of Digital Photography, five simulations were developed for the 15 week semester. Despite this, students in this course rated the value of the simulations second only to the Breeze Presentations, showing that even a small number of simulations can enhance a course that depends on visual knowledge and hands-on interaction. We plan to add additional interactive simulations in future course offerings.

Lessons learned. We have found that the best way to develop these simulations has been to 1) design small and discrete “objects” with very specific learning goals, 2) embed these “objects” in a larger lesson rather than trying to develop the entire lesson as a “Flash” movie. By starting small and keeping the simulations modular and specific, we can continue to develop and add to the course over time. We will be developing additional interactive learning experiences for a variety of courses. We are also beginning to take advantage of archives of learning objects (www.merlot.org , www.wisc-online.com ).

Producing Digital Video

Our distance ceramics course (Handbuilding and Primitive Firing Techniques) uses digital video to show demonstrations of pottery building and firing techniques. The video is distributed on DVD (or alternatively VHS) so that high-bandwidth connections are not required. Current technologies now allow us to shoot digital video and then edit and produce DVDs on desktop computers. Once again, faculty are
collaborating with IDC staff in the production process. The original video is shot using a simple tripod mounted digital video camera. Faculty then come to the Instructional Design Center to capture the video and do a first edit using Windows Movie Maker. This software is easy enough for “non-techies” to use and allows faculty to make the initial editing decisions. The resulting movie clips are then turned over to an IDC staff member, who uses Adobe Audition to improve sound quality by subtracting background noise, Adobe Premier to combine movie clips and add transitions and titles, and Adobe Encore to produce the DVD with menus and chapters.

**Lessons learned.** A total of five two hour long DVDs were produced for the ceramics course. The project was completed by one faculty member working with one staff member. Some of the “lessons learned” were: 1) Keep things simple – limit the number of camera angles (to one at a time if possible) and the number of video “cuts”. 2) Since the faculty “content expert” is the one making the initial editing decisions, allowing them to do the initial editing speeds up the production process. Although Windows Movie Maker is not a sophisticated program, it is sufficient for the purpose. (Macintosh users benefit from access to iMovie). 3) External hard drives are necessary to transfer files between computers. A 250 GB external drive was dedicated to this project. 4) Subtract background sound – this is very easy to do using Adobe Audition and improves the quality significantly. 5) Keep file sizes to less than 6 GB until the final “movie” is produced. This meant keeping the video initially in clips of less than 20 minutes. This avoids unanticipated problems – for example, Adobe Audition will crash when processing sound for files larger than 6 GB. 6) Don’t try for perfection. In this case the faculty involved kept a sense of humor, and even deliberately included some “out-takes” of video flubs.

**Designing and Managing Labs, Studio, and Clinical Experiences**

The best way to practice hands-on skills is, of course, to incorporate real (rather than virtual) hands-on experiences. We have been using distance labs in our distance Anatomy and Physiology for ten years. Students are sent lab kits and biological samples (frogs, cow eyes, etc) and will perform dissections: labeling features with pins and sending back the samples for evaluation. We are also incorporating distance lab and studio experiences in other science classes, such as Survey of Physics, and in art classes, such as Digital Photography and Ceramics. Faculty teaching distance courses in health related fields such as Certified Nurse Assistant, or Personal Care Assistant, have formed alliances with regional health facilities to provide lab and clinical experiences.

**Lessons learned.** Successful distance lab, studio, and clinical experiences require good design and management. Drawing on the collective experience of faculty who have been involved in distance education for decades, we have learned the need for designing appropriate pre-lab activities and for choosing appropriate lab materials (the meaning of “commonly available household items” changes in rural Alaska). Distribution of lab kits and receipt of returned items is managed by our Distance Education office. This office also manages distribution and return of licensed videotapes and other course material as well as the oversight of remote proctors and distribution and return of proctored tests. This office and its staff supply a vital piece of infrastructure that is required to allow us to offer distance courses that provide true “hands-on” experiences.

**Summary**

A variety of tactics are used to provide visual, auditory, and “hands-on” learning experiences in our distance classes. These benefit not only students in classes with content that emphasizes visual concepts and hands-on skills, but students in all of our courses by offering content to match a variety of learning styles. Although we take advantage of recent technologies in the production of multimedia learning activities, we design them to ensure that they are accessible by rural students with limited internet connections. The IDC provides training and support both in design and use of technology. Faculty are
involved not only in the design, but also in development and production of some types of media – making it possible even for a small institution with limited technical staff to meet the needs of a diverse student population.

**Biographical Sketches**

**Maureen O’Halloran** is an Instructional Designer and Developer at the University of Alaska Southeast, Sitka Campus. She works with faculty on course design and helps with the technical development of a wide variety of learning activities. Maureen is also an adjunct faculty member at UAS and teaches distance courses in Math and Physics. She has a certificate in Distance Learning Design and Development (University of Washington Extension) and a doctoral degree in Physics (Stanford University).

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**Susie Feero** is a faculty member of the University of Alaska Southeast in Computer Information and Office Systems. She has taught distance delivered courses for 9 years using a variety of delivery methods including correspondence, audioconference, and Web. She designed and equipped the Sitka Campus Instructional Design Center facility and works with faculty to enhance new and existing courses by providing pedagogical and technological support and training. Recent presentations include “Best Practices for Delivery of Asynchronous Course Content,” University of Alaska Southeast, Juneau, January 2005 and “Transforming Your Course For Distance Delivery,” University of Alaska Geriatric Education Conference, Anchorage, May 2004.

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