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ABSTRACT

The introductory instructional technology course at Iowa State University is a survey course covering various technologies. In this case, the instructor chose to create a situated learning environment using low-technology everyday surroundings to teach the fundamentals of photographic and video production, linking the photography, audio, and video laboratory exercises together into a cohesive laboratory project anchored in the campus environment. Small groups of students worked together learning to operate 35mm single lens cameras, video recorders, video presentation equipment (Elmos), video editing stations, video dubbing equipment, and audio equipment. The product from one laboratory exercise fed into subsequent exercises. From the instructor's perspective, the success of teaching various technologies in context was determined by how well the students adapted the photographic and video techniques used in the laboratory assignments to create their graded video projects. All of the projects were evaluated very highly in that the video scripts and tapes met or exceeded expectations. During the production process, the student groups exhibited a high level of enthusiasm for and commitment to the projects. (AEF)

Teaching 'How To' Technologies in Context

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Many educators contend that learners learn best when they are active and engaged in activities that are linked to real-life experiences (Bednar, Cunningham, Duffy & Perry, 1992). The concept of having new learning related to personal experiences or prior knowledge is key to situated learning theory and also central to the constructivist paradigm (Fosnot, 1992). Such activities are thought to be both motivating, causing the learner to better attend, and a trigger to prior knowledge. Situated learning is concerned with the learning activities as well as the learning environment. In clarifying the challenges, Harley (1993) states, "for the classroom teacher the challenge of situated learning theory becomes one of developing methodologies and course content that support cooperative activity, and reflect the complex interaction between what individuals already know and what they are expected to learn, recognizing that ultimately meaning can only be established *by* and not *for* the learner" (p. 47). The students also face challenges in that "the role of learners within authentic, situated learning activity is one whereby they are encouraged to recognize that they themselves are intentional agents creating their situate experience within a culture of activity, as opposed to being simply external observers or incidental actors" (p. 49).

Reformers, futurists and educational technologists agree that advanced technologies can go far in creating and supporting complex and rich learning environments (e.g., Dede, 1996; Means, 1994; Cognition and Technology Group at Vanderbilt University, 1993). The classroom teacher is thus encouraged to learn the techniques for creating authentic learning environments as well as become familiar with the technologies that support them. In fact, the encouragement to use technology in the classroom in compelling ways has found itself in the formalized guidelines and standards written by the International Society for Technology in Education (ISTE) and the National Council for Accreditation of Teacher Education (NCATE, 1995). Consequently, the faculty in teacher preparation programs are not immune to these challenges. In preparing teachers that will likely create rich learning environments in the classrooms of the future and use technology in meaningful ways, faculty are encouraged to model such practices throughout the preservice curriculum (Thompson, Schmidt and Hadjiyianni ,1995) . In order to use or create technology supported environments or incorporate technologies into daily curricula, classroom teachers need at least a basic knowledge of the operation of the technologies. To meet this need, technology courses in curriculum and instruction departments naturally contain 'how to' components. In introductory undergraduate and graduate level instructional technology courses at Iowa State University, students are taught how to use photography and video technologies as well as computer-based tools. In these beginning courses, the emphasis is on 'how to' operate the technology, although effectively integrating the technology or the technology products created by the students into learning environments is discussed throughout these courses. The problem becomes how to model the use of situated learning in the teaching of these 'how to' technologies. One could possibly use computer simulations to teach the complex nature of certain technologies. Such a strategy was described by Valde, Bower and Thomas (1996) in teaching the workings of the computer memory as students strive to learn computer programming and the basics of how a computer works. However, the instructor of the graduate introductory instructional technology course described in this paper chose to create a situated learning environment using low-technology everyday surroundings to teach the fundamentals of photographic and video production. It should be pointed out that throughout the course, students were encouraged to use the learned techniques to enhance their classrooms or to create video-based learning environments.

The introductory instructional technology course is a survey course covering various technologies. The instructor decided to link the photography, audio, and video laboratory exercises together into a cohesive laboratory project anchored in the campus environment. Small groups of students worked together learning to operate 35mm single lens cameras, video recorders, video presentation equipment (Elmos), video editing stations, video dubbing equipment and audio equipment. In addition, the product from one laboratory exercise fed into subsequent exercises. This idea of connecting the assignments is somewhat different than what is done in survey courses where each laboratory

exercise is independent of another. In such cases where the assignments or exercises are independent, a group's performance on a photography assignment does not influence their performance on the video editing exercise or a final laboratory product. By linking the exercises together, the instructor hoped to more accurately reflect real-life video production. Thus, each student group learned the various steps of video production by performing the laboratory exercises. The instructor specified a video tour of the Iowa State University campus as the final laboratory project thus providing a real-life environment in which the students could relate and have shared experiences.

This paper outlines the organization of the laboratory exercises and relates how learning in context aided student groups that were expected to use the knowledge attained in the laboratory classroom to produce a graded video project outside the laboratory classroom. The graded video project would contain many or all of the components of the laboratory project yet focus on a social issue of their choosing.

Methodology

During one of the first laboratory exercises, the students were instructed in the use of the video presenter (Elmo) machine to transfer prints to video and were given brief demonstrations on the use of the video editing stations and audio equipment. The photography laboratory was the first laboratory involving in-depth exposure to the technologies. Since photography was not in the area of expertise of the instructor, a senior graduate student delivered a twenty-minute session including direct instruction on the parts of the camera, emphasizing the use of aperture and shutter speed settings to achieve equivalent exposures and to alter the depth of field. During this session each student had a single lens camera to handle. Afterwards, the students were asked to form groups to carry out the laboratory assignment.

Photography assignment

The instructor had sketched various buildings or points of interest around the Iowa State Campus. These roughly drawn sketches were then transposed onto laminated storyboard cards created in PowerPoint (Figure 1). An effort was made to include long, medium, and close range shots. The students divided into three groups and each group was given one camera, one roll of 24 exposure color print film, and an exposure recording sheet (Figure 2). The film was loaded into the cameras prior to leaving the classroom. Because one group failed to load the film properly and no extra rolls of film were available, the class was divided into two groups rather than three. The two groups of students were each given six of the twelve storyboards and were instructed to photograph the points of interest sketched on the cards. They were further instructed to allow each member of the group hands-on experience with the camera and to experiment with various exposures (aperture and shutter speed) for each storyboard card. For each film exposure, the students were to record the storyboard card number, aperture, shutter speed and ASA setting.

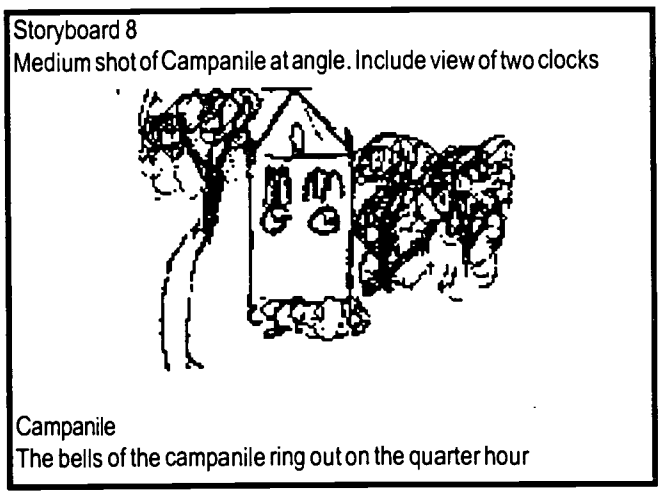
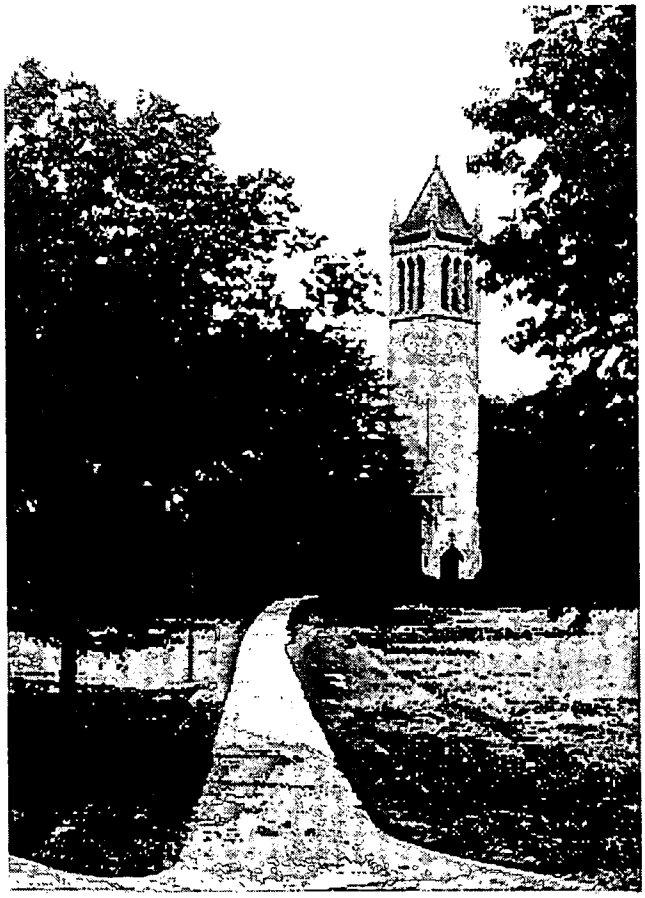


Figure 1. Storyboard card

Exposure Number	Storyboard Number	F Stop	Shutter Speed	ASA
21	8	22	500	200
22	8	16	125	200
23	8	5.6	500	200
24	8	1.7	125	200

Figure 2. Excerpt of recording sheet entries

The student groups returned the two rolls of film and the recording sheets to the instructor. They discussed the exercise and pointed out that some of the storyboard shots were impossible to obtain without special lenses. They emphasized the importance of the photographer being given that information or being able to anticipate the need. Once the film was processed, the storyboard cards were displayed along with the corresponding prints of various exposures and small graphics depicting the aperture and shutter speed settings that were indicated on the recording sheets (all exposures used the same ASA settings). The students examined the prints and commented on the effects that aperture and shutter speed settings had on exposure and depth of field (figure 3). Because of time constraints during the summer session, the prints were transferred to video tape by the instructor rather than the students, and put aside for a later laboratory assignment. The students had observed the techniques for placing photographs to video and would use this technique for a photo essay assignment and later for the graded video assignment. At this point the instructor focused on how still photographs are used in the context of creating a video and did not want to consume undue laboratory time repeatedly carrying out the technique of transferring the many photos needed for the laboratory video.



f stop 16
shutterspeed 1/125

f stop 1.7
shutterspeed 1/125

Figure 3. Effect of Aperture Settings on Exposures.

Video assignment

Prior to performing the video assignment, each student was given a video recorder and practice tape to handle. The instructor reviewed the operation of the recorder and the techniques covered in the assigned readings as the students followed along. For the actual assignment, pairs of students were given one video camcorder and video tape and instructed to take video footage of the structures and grounds comprising the College of Education. They were made aware that this footage should fit into a video tour of the campus along with the still photographs taken earlier. Suggested areas for recording were the terrace garden area and the college grounds where students sit and read or relax. Each pair of students was also instructed to interview a faulty member or a student about Iowa State. They were reminded of the video techniques covered in the assigned readings.

Upon returning to the classroom, some students realized that they overestimated their skill in the use of this technology that has become somewhat of a household item. One group inadvertently turned the recorder off each time they attempted to record the landscape or an interview yet video recorded their feet and captured their personal conversations as they walked along. Other groups experimented with in-camera editing by incorporating cutaways or motivated cuts in their footage. Viewing the exercise footage was both instructive and entertaining for the instructor and students.

Video editing assignment

Working from the photography storyboards, the instructor developed a script and then used the audio sound room equipment to narrate the script and background music onto a video tape (Figure 4). Three copies of this tape were made to serve as master tapes in the video editing assignment. The student groups worked together at the three video editing stations inserting footage from the tapes created from the photography and video assignment onto the master tape (with sound track only). Because of limited laboratory time, no one group attempted to insert all the graphics indicated on the script but instead began the assignment at staggered points in the script. Each group member had the opportunity to perform at least one video insert. The exercise was extremely challenging because the points for appropriate inserts were cued by the narrated script, yet the instructor's voice was barely audible when using the editing stations. Though this was unfortunate, the frustration alerted the students to the need to select a narrator with the desirable voice quality and adequate recording volume when creating their graded video project assignments.

As we leave the Union's front entrance we have a nice view of the Campanile. This memorial was rededicated by the current university president and chimes out various musical renditions usually over the noon hour. You can also set your

watch by the campanile clocks for they ring on the quarter hour.

still photo on video from Elmo

Figure 4. Excerpt from video script.

Audio and Dubbing Assignment

Though the audio sound room was demonstrated, the students did not have significant hands-on experience with the equipment up to this point. As pointed out earlier, the instructor produced the sound track for the video editing assignment in order to conserve time and model audio production techniques by giving them a product to work with that incorporated the various techniques (i.e. fade ins). Student groups would need to produce such a sound track for their graded video projects, therefore they were given laboratory time to practice the use of audio production techniques. The three groups of students rotated with one group in the audio room while the other two groups worked at the video dubbing stations. Each group of students laid a different portion of the sound track using the script that the instructor created. This exercise was for practice only and did not affect the final laboratory videotape.

During this same time period, one group of students at the dubbing station copied their portion of the video editing assignment onto the tape that would be the final video laboratory product. The second group simply watched and facilitated the copying process. The rotation schedule for audio and dubbing stations follows:

First 10 minutes
group 1— copy your video assignment to the master video tape (group 3 watches and facilitates)
group 2— lay your portion of the practice sound track

Second 10 minutes
group 2— copy your video assignment to the master video tape (group 1 watches and facilitates)
group 3— lay your portion of the practice sound track

Third 10 minutes
group 3— copy your video assignment to the master video tape (group 1 watches and facilitates)
group 1— lay your portion of the practice sound track

Once the three groups had rotated through the dubbing station, the three video editing assignments had been transferred to one video tape - the final video laboratory product. The students and instructor returned to the laboratory classroom to view and critique the final video.

Conclusions

From the instructor's perspective, the success of this approach, teaching various technologies in context, was determined by how well the students adapted the photographic and video techniques used in the laboratory assignments to create their graded video projects. By the end of the second week of this four week course, the students had divided themselves into three groups and had chosen the topics for the video projects on which they were to collaborate. The only parameter supplied by the instructor was that the topics of the videos focus on social issues. After a lively whole class discussion in which the instructor offered no input, the students decided upon 'staying in school', 'recycling' and 'elder care' as video project topics and the individuals grouped themselves according to shared interests in the three topics. The three groups had to work on the projects outside of class or laboratory time. The video project consisted of a script and videotape that used a continuous sound track onto which still pictures or video footage were inserted.

The instructor evaluated the three projects very highly in that the video scripts and tapes met or exceeded expectations. During the production process, the student groups exhibited a high level of enthusiasm for and commitment to the projects. This seemed to result from being involved in projects in which the group members had an interest or personal involvement. For example, the group working on the topic of elder care expressed a desire to produce a high quality videotape that could be used by a care provider in the area. A second group became interested in having their video about Iowa State's efforts at recycling shown on the campus television station. Teaching the 'how to' technologies in a context in which the students could relate and subsequently allowing them to apply the new knowledge in contexts that were of personal interest or linked to personal experiences seemed to contribute to the success of the photography and video unit. Furthermore, success also appears related to the fact that the students were able to see how the techniques taught in the laboratory actually fit into producing the laboratory product and were later able to draw upon the laboratory experiences when involved in similar projects such as the graded videos.

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