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SOUTH DAKOTA STATE UNIVERSITY



Bush
Project
Anthology

VOLUME I • 2004

South Dakota State University

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BUSH FACULTY DEVELOPMENT PROJECT
SOUTH DAKOTA STATE UNIVERSITY

Dear SDSU Colleagues,

Well over a decade ago, the late Ernest Boyer authored his much heralded work titled *Scholarship Reconsidered*, and academia quickly began to recognize a variety of meaningful scholarship activities including the scholarship of discovery, integration, application and teaching. Boyer insisted that the scholarship of teaching is a serious and very meaningful form of scholarship associated with what faculty members do to achieve success in the profession of teaching. He also insisted that the scholarship of teaching needs to be transformed from a very private form of scholarship to a much more public form of scholarship. The scholarship of teaching that Boyer sought to promote includes observations that we make as classroom professors regarding challenges to our effectiveness as teachers, our ideas for overcoming those challenges, steps we take to introduce changes in our teaching strategies, how we ultimately assess the results of those changes, what additional ideas for improved teaching effectiveness emerge and finally the sharing of this scholarship with our colleagues in a manner similar to how we ultimately assess the results of those changes, what additional ideas for improved teaching effectiveness emerge and finally the sharing of this scholarship with our colleagues in a manner similar to how we share the scholarship of discovery. This publication is an initial effort of South Dakota State University to provide teaching faculty members a scholarship of teaching medium that will allow them to make public or to share their scholarship of teaching with colleagues on campus and beyond the walls of SDSU.

The Scholarship of Teaching and Learning Team which is supported through the Teaching Learning Center and the Office of Academic Affairs is particularly pleased with the diversity of contributions that the reader will find in our collection of scholarship of teaching articles. Teaching faculty members from seven academic departments and four academic colleges have contributed to this publication. Each of the contributions focuses on a different teaching challenge and a different teaching strategy. Teaching scholars from the College of Nursing have provided us meaningful scholarship findings regarding value based nursing education and reality based assessment and testing methods using video vignettes. Scholars representing three separate departments in the College of Agricultural and Biological Sciences have advanced a scholarship of teaching that focuses on such diverse matters as use of the case study method in wildlife and fisheries education, using digital movie making to teach theories in range science and a strategy for teaching the application of theories in sociology. A scholar from the College of Engineering has authored an excellent piece on teaching electromagnetics using multi-media simulation programs. Three scholars from the College of Arts And Science have contributed including one from Journalism and Mass Communication and two from Political Science. Their

scholarship foci vary from finding a solution for non-proctored online tests using WebCT to journaling as a teaching and learning tool to broadening the global perspective in journalism education. Obviously no academic discipline is or should be removed from the scholarship of teaching. We can all hope to contribute and we can all hope to learn from our colleagues both within and outside of our chosen disciplines.

We hope your reading of South Dakota State University's initial publication saluting the scholarship of teaching will provide you a new source of meaningful knowledge for perfecting teaching effectiveness and that you will be inspired to make your scholarship of teaching public so others might benefit from your findings.

Sincerely,

Robert Burns,

Distinguished Professor of Political Science

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LEARNING BY DOING, AND DOING WHAT OTHERS HAVE DONE: STUDY REPLICATION IN THE CLASSROOM

Meredith Redlin, Mario Hesse
Department of Rural Sociology
South Dakota State University

Introduction

The study of sociology comprises both theory and method, a combination which has resulted in persistent challenges to pedagogical practice in the lower level undergraduate classroom (Cutler 1987; Takata and Leiting 1987). While teaching of general theory is well-suited to the classroom in the instruction of frameworks, teaching the application of theory requires the introduction of data for those frameworks. Similarly, while specific methods can be outlined in the lecture classroom format common to lower-level coursework, teaching the application of methods remains key to building a solid understanding of the discipline and its practices (Cutler 1987; Van Valey 1977, 2001). Therefore, a new emphasis on student “hands-on” learning which integrates both theory and method is emerging in sociological pedagogy (Karp 1995; Takata and Leiting 1987; Van Valey 1977, 2001).

These emphases are both complementary to and in keeping with South Dakota State University’s Lead Forward Objectives. These pedagogical approaches place technological literacy, communication ability, practical skills and critical thinking at the forefront, all of which contribute to student outcomes of international competitiveness, social awareness, and ability to adapt to social change.

Previous practice and observations

This new pedagogical emphasis has taken multiple forms in the classroom. Among these, a national initiative co-sponsored by the National Science Foundation and the American Sociological Association concentrates on student interpretation and analysis of secondary data through the use of hypothesis testing with the aid of new software and technology. Members of the SDSU Sociology Department were selected to participate in this program. The program’s intent is to concentrate on student application of theory and method through the development of modules integrating WebChip software. Faculty used data analysis modules in previous classes at SDSU, and they proved especially effective for medium-sized classes (30-50 students), but not as effective in larger ones (51-150)—the most common class size at the 100-

and 200-level of instruction. One of the key problems was student accessibility and understanding of software.

The challenge facing us for this project was to maintain the strengths of the original hypothesis testing model and hands-on learning experience in a fashion that was more appropriate and accessible to students in larger classes at the lower level. For the fall term of 2003, we decided to implement an alternative practice of hands-on pedagogy in SOC 240 Introduction to Rural America, a large class with an average fall enrollment of 90.

In that term, there were two sections of the course offered. One section had an enrollment of approximately 90 students, the other had an enrollment of approximately 50 students including five distance students at three locations. This disparity in enrollment allowed us the opportunity to examine the pedagogical outcomes in varying class sizes. The end goal was to maintain the applied strengths of the NSF/ASA model, but to develop an alternative vehicle for hands-on pedagogy that was less reliant on student use of specialized technology. The project, integrated in future sections of the course, will impact approximately 200 students per academic year.

A new strategy

To accomplish the above-mentioned goal, we designed a modified study replication and data comparison exercise which used data generated in the classroom and hypothesis testing. Following previous research, we knew that the best way to get students interested in social research and the methods involved was to have the students think seriously about past studies including: how the researchers identified the research question, how they reported findings, and how they selected methods of analysis (Cutler 1987).

Student data bank results, mirroring those of the larger study, were then compared to the study outcomes as presented in Glen Elder and Randall Conger's *Children of the Land* (2002). This text was selected because it provided several advantages: 1) the study emphasizes the social context of rural and small town youth in contemporary Iowa, which is a comparable population to students at SDSU; 2) the text contains many of the survey instrument questions in appendices to the text, which provided a model for survey construction and method; 3) the study outcomes are reported at length in the text, clearly identifying variables and multiple forms of analysis; and 4) the text clearly identifies and demonstrates hypothesis testing.

The new instructional model contained three components requiring both individual and student group completion. The first component was the individual completion of six in-class surveys; the second component involved student group formulation of hypotheses for testing with class survey data. The final exercise was the completion of a data analysis paper, including reporting of results from their hypotheses testing and comparison of their data outcomes with those from the text.

Implementation

Children of the Land was the first of three texts in the course, so this hands-on approach was introduced in the first third of the term. The text progresses through topical chapters, including background and demographic information, family structure, work, school and civic activities, church participation and youth aspirations. At the conclusion of the first six chapters, students in the course completed a series of questions drawn from the survey questions included in the text for that chapter. As we progressed through the text in reading and lecture, we simultaneously built an original data base of approximately 60 variables corresponding to the text's primary concerns. The teaching assistant was solely responsible for maintaining student confidentiality in relation to data entry, and for tracking participation points awarded to student respondents. In this way, we modeled the importance of confidentiality in research, as well as use all steps of the exercise for evaluative purposes.

Data was entered in SPSS software, which facilitated the process of hypothesis testing for the final exercise. Student groups submitted hypotheses electronically, and received their results through e-mail attachments of data results. This process proved most beneficial to distance students, who otherwise would not have had access to campus-based data analysis software, such as SPSS.

Results

Results for this innovation were determined by performance and learning objective outcomes through comparison with outcomes of the previous module exercise. Overall, the data analysis papers for the replicated study exercise demonstrated many of the same qualities and skills as the data analysis modules developed for other classes through the NSF/ASA program. The majority of both classes devised testable hypotheses on their first attempt. Further, with the guidance of the Conger and Elder's analysis, the papers were more thorough in their discussion of specific data outcomes. The students also demonstrated understanding of additional methods skills in survey instrument construction through the use of questions, a learning exercise not possible through the data analysis module.

There were two notable problems which emerged in this exercise. First, although the students saw the original data base and devised hypotheses from it, they were never involved in the computer work that transforms raw data into a hypothesis test. Therefore, the students still remained somewhat separated from a hands-on experience of data analysis, and a few of the students (those having trouble with hypothesis formulation) had great difficulty in conceptualizing the connection between the raw data and their hypotheses. Second, replicating a large scale study which appears in a book proved confusing for some of the students when the time came to analyze their own data. Their own hypotheses were inappropriately compared to

particular outcomes reported in the book. For example, while the students had crosstabulation data to examine for hypothesis testing, Elder and Conger used several correlation tables of weighted measures. A good share of this confusion can be related to the students' exposure in the text to statistical methods considerably above the level of the course, as well as to the above noted separation from data transformation.

Recommendations and Impacts

We will include the replicated study exercise in this same course in upcoming terms with some alterations. First, we will try to expedite the survey process by exploring on-line student entry of survey responses. This change will address the problem concerning student separation from data transformation and maintain student confidentiality while rewarding evaluative participation points for the exercise. Second, more lecture time will be given to explanation of the connection between survey questions, variables, hypotheses, and outcomes analysis. This additional time will be conducted in an on-going format, so that students are more consistently exposed to the progressive logic of sociological methods, as well as to the conceptual substance.

Overall, the replicated study exercise proved more effective than previous models, as indicated in levels of both student enthusiasm and performance outcomes. Indeed, one of the greatest strengths arising from this exercise is the use of Elder and Conger's study. The students not only were engaged in hands-on research work, they were also engaged by the process of seeing the outcomes based on their lives and those of their regional peers. This form of engagement is the most important base for learning, and a very satisfactory outcome of the exercise.

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BIOGRAPHY

Meredith Redlin is an assistant professor in the Sociology Department. Her pedagogical focus is on increasing student experiential learning in the classroom and on creating effective pedagogies in both traditional and distance formats.

Mario Hesse is a graduate student in the Ph.D. program in the Sociology Department. His research interests include the mechanisms of social control pertaining to juvenile detention, juvenile deviance and demography.

USING DIGITAL MOVIE MAKING TO TEACH THEORIES IN RANGE SCIENCE

Alexander J. Smart

Department of Range Science
South Dakota State University

Abstract

Learning complex theories in Range Science can be aided by having students use digital movie making technology. The objectives of this paper were to 1) describe the digital movie making process and 2) provide a qualitative assessment of its use in learning conceptual subject matter. Students were instructed in the use of digital movie making software and the process to create a digital movie describing the state-and-transition plant succession model. Ninety percent of the students thought that the movie making project helped them better understand the state-and-transition plant succession model. Students enjoyed learning the new technology and 40% said they would likely use it in the future. Digital movie making was a successful method to teach complex theories, such as the state-and-transition plant succession model.

Introduction

Range science is a multi-disciplinary science that involves a basic understanding of plant ecology, plant physiology, soils, hydrology, and animal science. We strive to understand our ecosystem through descriptive models. Some of these models are based on hypotheses tested under controlled environments, while others are based on theories developed by extensive field testing. In any event, these concepts are a challenge to the undergraduate to grasp.

Traditional lecture style courses that try to cover as much material as possible often make it difficult for students to grasp a deeper understating of the subject. In addition, students often memorize facts and later forget the information and miss the relevance or fail to see the connection the information has in the “larger picture” of their training. Also, written and oral communication skills learned in freshman and sophomore courses are not enough to train students to the levels desired by employers (Boyer 1998). Lastly, students have little exposure to solving problems that require team working skills that they will need once they graduate.

Teaching pedagogies based on case studies or more recently problem-based learning is the latest advancement in higher education trying to address the previously discussed inadequacies in traditional lecture style of instruction (McKeachie 2002). Problem-based learning is a multifaceted way

of teaching students through solving an open ended “real world” problem (Enger et al. 2002, Mehta 2002). Students work in groups to gather the information they need to analyze and solve the problem. Finally they are required to effectively communicate their findings in oral or in written format.

In 2003, South Dakota State University’s President Peggy Miller outlined the Lead Forward Goals to produce “Excellence in SDSU Graduates” by 1) internationally competitive in academic preparation; 2) globally informed and prepared for a diverse world; 3) communication-able in speaking, writing and technology; 4) able to embrace change in positive ways; and 5) socially responsible (SDSU 2003). This project hoped to expose students to new technology and different teaching styles such that they would be better at communicating and embracing change in positive ways.

Creating a multimedia presentation such as a documentary film or video requires diligent planning of visual and scripted material. The advantage of this type of presentation for the instructor is that “winging-it” is not an option for students such as they might be tempted to do for a “live” presentation. A scripted presentation forces the students to think through how they are going to effectively communicate their ideas, because they have to write it down first.

Digital movie making capability is now readily available. Various programs usually are available with the purchase of most digital video cameras or come as part of the computer operating system. Video, audio, still pictures, and any created image from a graphics program can be imported into the movie making program.

The author has used this technology in teaching subject material for “Range Improvements and Plant/Herbivore Interactions” in the Department of Animal and Range Sciences at South Dakota State University. The objectives of this paper are to 1) describe the digital movie making process and 2) provide a qualitative assessment of its use in learning conceptual subject matter.

Methods

The concept of the state-and-transition plant succession model (Laycock 1991), which describes the nonlinear succession tendency of rangeland vegetation, was introduced in a 50-minute lecture. Students were randomly grouped into four teams of five individuals and assigned a 5-minute movie project to describe a “real world” example of how the model works. A 45-minute training session outside of class time was offered to each team. Training consisted of showing a 5-minute demonstration movie created by the instructor and a tour of the program and file management system. The students were instructed in the following sequence: 1) start with composing their narration script; 2) print their narration script in large font so it can be read easily without mistakes; 3) record their narration script using the movie making program narration feature; 4) produce graphics and text slides using

Power Point and save the slides as a picture file type using the JPEG extension; 5) import created slides and digital pictures into the movie making program; and 6) match the images to the narration using the editing feature of the program by trimming slides and using transitions.

Students had access to microphones, digital cameras, video cameras, computers with a writable CD-drive, and the Internet. Students were given time to work with their team on their narration script during one 50-minute class period. The rest of the time needed to complete the project was done outside of class. The instructor was available to assist students with the technological aspects of the project but, did not interfere with the creation of the content.

Students were surveyed the following questions. 1) Was the movie making project a useful tool to help you better understand the state-and-transition plant succession model? 2) Did you like learning the new technology? 3) Do you think you will use the technology in the future? The survey was conducted to help the instructor evaluate the effectiveness of the method of instruction.

The instructor graded the movie project based on a rubric which helped to keep the grading as objective as possible. Each individual student received an adjusted grade based on peer evaluation criteria that their team created. The peer evaluation was based on the perception of how individuals participated on the project. This process rewarded those who put in extra effort and penalized those who lacked in contribution. An adjustment factor was calculated as the individual peer grade divided by the average team peer grade. The final individual grade was calculated as the team project grade given by the instructor multiplied by that individual's adjustment factor.

Results and Discussion

The results reflected the dynamics of the teams and the personal strengths and weakness of individuals. It was readily apparent the level of enthusiasm differed among individuals and groups. The creativity among teams was unique in that each team had one item that the others did not have. For example, one team had music in the introduction and ending that grabbed the attention of the viewer. Another team drove to a prairie 20 miles southeast of campus and took pictures to illustrate their conception of the state-and-transition plant succession model. The narration voice of one team was well rehearsed and mimicked a professional narrator. Lastly, a team illustrated how range improvement practices were the necessary transitions from one vegetation state to another in a western South Dakota range site.

There were a few things that all teams had in common. Each team used pictures obtained from the internet (which was okay as long as they properly cited the picture and it wasn't copyright protected). They all used graphics and text created in Power Point that highlighted key elements explained in the narration. All teams used fading techniques between slides. Some teams added more animation than others.

The student survey indicated that 90% of the students thought that the movie making project enhanced their understanding of the state-and-transition plant succession model. Eighteen out of 20 students thought that the project was fun. Forty percent said they probably would use the technology in the future, while 30% thought they might use it and 30% said they would not use it.

In conclusion, the instructor viewed that the movie making project was successful in teaching the concept of the state-and-transition plant succession model. Feedback from the students reinforced the idea that they were open and willing to learn new technology. The learning process of how to organize audio and video content into a movie was verified by the innovative products that the students developed. Finally, the students made definite progress toward achieving excellence by becoming better “communication-able” and “change-able.”

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BIOGRAPHY

Alexander J. Smart is an assistant professor/range scientist in the Department of Animal and Range Sciences at South Dakota State University. He teaches undergraduate range classes and graduate level statistics in animal science. His research focuses on grazing management interactions in native rangeland and introduced pastures.

A SOLUTION FOR NON-PROCTORED ONLINE TESTS USING WEBCT

Gary Aguiar

Department of Political Science
South Dakota State University

In developing an Internet-delivered version of my introductory political science course, I found it a challenge to devise online tests that prevented cheating. To the maximum extent possible, I wanted to create an Internet course that mirrored my on-campus course and minimized opportunities to cheat on non-proctored tests using WebCT. Over the last four semesters, I used my on-campus courses to develop online tests in preparation for my first Internet-delivered course.

With the advice and support of other faculty and staff, I developed online quizzes and exams using WebCT that support two Lead Forward goals. First, students learn to embrace and adapt to new and varied methods of evaluation. Instead of traditional pencil-and-paper in-class tests, students must be “change-able” enough to accept online testing techniques. Second, online testing builds students’ technological literacy. Indeed, online tests are rapidly becoming the norm for graduate school placement and professional certification exams.

Although I have created course-specific Web sites by writing HTML code for the better part of a decade, I was initially resistant to using WebCT as an online course delivery system. In particular, it seemed impossible to test students without using proctors or accepting high levels of cheating. Two years ago, I began to incorporate a WebCT e-pack associated with a new introductory text, which is specifically designed to provide a seamless integration between the text and Web resources. I heavily modified the publisher’s e-pack and included supplemental resources to match the approach and perspective that I emphasize.

Like other universities, our institution offers limited capacity for on-campus proctoring. My procedure does not eliminate cheating in non-proctored environments altogether, but disincentives the behavior. I now administer identical online tests in both my Internet-delivered and on-campus courses. Moreover, I use a similar approach for essay exams and objective quizzes, but detail the latter procedure here.

My Solution

Since I do not employ a proctor, I could not police students use of outside materials (i.e., books, notes, and other resources). Hence, my online tests are “open book.” Students are informed that they can use any resource, except another person. At the beginning of each quiz, they must accede to an

“honesty statement” that reminds them of these restrictions.

For each unit (or lesson), I have created a large database of standard objective probes (i.e., multiple choice and true-false questions), which can be garnered from electronic test banks or one’s personal files. Then, I enable WebCT to randomly select questions from these unit-databases for each student’s quiz. Thus, each student sees a unique mix of questions drawn from the various units tested in that particular quiz. Each quiz typically comprises 20 or 25 questions and the various databases total about 100 questions per quiz.

The quizzes consolidate several features that discourage students from looking up every answer. WebCT allows me to time the quizzes, which means students must complete each quiz within a relatively short time period. Also, I activate the WebCT rule that “delivers one question at a time, where students must answer or skip each question to proceed. Once a question has been answered or skipped it cannot be revisited” (WebCT, Version 4.1). Thus, students must proceed relatively quickly through the quiz, because they face a barrage of questions with a time constraint. The timed feature combined with the “one-question-at-time-never-return” rule discourages students from looking up every question in their book or notes (and discourages copying of the questions). On a few particularly difficult questions, students may spend a minute or two looking for the answer. However, they do not have enough time to look up every answer.

Since good quiz questions are costly to produce and valuable to students enrolled in future semesters, my solution must also prevent copying of these questions. Thus, after they have completed the quiz, students are only allowed to view their scores, but not the questions. Moreover, the use of very large databases makes it much less beneficial to watch another student take the test; students who cheat this way are highly unlikely to see the same question on their quiz. Finally, I allow two attempts at each quiz, but I enable WebCT to average the scores. If I scored only the highest attempt, students might be tempted to use one attempt at taking the quiz to copy or print the questions for themselves or other students.

Caveats, Drawbacks, and Advantages

For those considering my solution, some caveats are in order. It is essential that the instructor provide clear, written directions that outline the procedures and potential problems. A “practice quiz” for extra credit is extremely valuable; it relieves much student anxiety and exposes most user difficulties. The most common error is the “question not answered” problem. These typically arise when the Internet is a bit slower than normal and users rapidly click multiple times on the “Save Answer” button. I have been very flexible in responding to these and other students’ problems. Indeed, every semester, a few students encounter user difficulties that can usually be resolved by paying close attention to students’ concerns and a willingness to adapt that models change-ability.

One particularly difficult problem with my solution is that someone else could take the quiz for the student. However, similar challenges exist in large lecture classes on campus and many Internet-delivered classes. My other evaluation techniques (e.g., papers) are tailored to ensure that registered students are doing the work.

Information garnered from official teaching effectiveness evaluations, my own formal class surveys, and informal conversations with students suggest that most students accept my solution to non-proctored online quizzes. For a few students, a major drawback to my solution is their inability to review past quizzes. They argue since they do not know which questions they got wrong, they have a difficult time preparing for future quizzes. Of course, future quizzes test a different set of content, but students have been socialized that tests are also a learning tool. Other students express consternation about the “one-question-at-a-time-never-return” rule. Traditional test-taking advice is to ignore the tough questions and return to them at the end of the test. Here, students are forced to respond and cannot recheck their answers. I remonstrate these techniques are standard practice in contemporary professional certification and graduate school placement exams.

Another disadvantage to my solution for on-campus courses has been a noticeable decline in class attendance as compared to classes where I offered traditional in-class quizzes. Faculty and students recognize that class attendance is close to 100% on test days and somewhat less on other days. Using online quizzes removes test days from the syllabus and, hence, a few students begin to treat the class as an Internet-delivered course. My response has been to explicitly include questions from lectures and discussions on the test.

In my view, the advantages of non-proctored online quizzes for on-campus courses clearly outweigh these disadvantages. Online testing allows me to reclaim class time, which was previously lost to tests, for faculty-student interaction and discussions. Students’ response has been generally positive. Many students, especially first-time WebCT users, express appreciation and report they wish other faculty would use similar techniques. A few students resent the change; most of these are Luddites who admit they “hate computers.” As a result of this solution, all of my introductory students gain significant experience in and develop a level of comfort with online testing via a course Web site.

Many students begin to comprehend that learning is more than rote memorization and reliance on the instructor; these students recognize they must take responsibility for their learning. In the past, many students spent class time trying to convince me to “tell them what was on the test.” In short, they wanted a study guide or “short list” of topics to study. Now, they understand that “everything is game,” because I do not control the questions a particular individual sees when they take a quiz. By moving to very large databases that possess content validity, students no longer try to “guess what the instructor thinks is important.” Rather, they attempt to understand all of the material. Moreover, this method has virtually eliminated the need to offer

alternative or “make-up” tests. Students have a one-week window to take the quiz at their convenience.

No perfect solution exists to offering non-proctored tests online. Instructors must accept some compromises, including “open book” tests, student discomfort with a new set of test-taking procedures, and—perhaps—a slightly higher likelihood of cheating. My solution offers a number of techniques to reduce the incentive to cheat and offers some significant advantages, particularly the reclamation of class time from tests for faculty-student interaction.

BIOGRAPHY

Gary Aguiar, an associate professor of political science, teaches undergraduate courses in American politics at South Dakota State University. In the last few years, he has completely integrated the Web in all of his courses. Once the syllabi are initially distributed to students, all materials are exchanged electronically via WebCT.

VALUE-BASED NURSING EDUCATION

Nancy L. Fahrenwald, Susan D. Bassett, Lois Tschetter,
Paula P. Carson, Lani White, Venita J. Winterboer
College of Nursing, South Dakota State University

Curriculum guidelines from the American Association of Colleges of Nursing ([AACN], 1998) espouse that baccalaureate programs facilitate the development of professional values. The five core nursing values include human dignity, integrity, autonomy, altruism, and social justice. Behaviors that reflect these values characterize the caring, professional nurse (AACN, 1998). Teaching attitudes and actions that facilitate caring is a curriculum challenge. Caring is a multi-dimensional nursing concept that can be actualized through purposeful teaching and student-centered learning of core nursing values. This scholarly paper presents an innovative and integrative approach to value-based education in the baccalaureate nursing program at South Dakota State University (SDSU).

Theoretical Perspective on Value-based Nursing Education

Value-based nursing education appeals to the moral and character development of students. Within the College of Nursing, faculty members apply both a universalist and a particularist view of moral development (Fahrenwald, 2003). The universalist view specifies that moral reasoning is grounded in principles that are understood and accepted within a professional and societal context. Helping students to experience the universalities of each core nursing value within the context of the American Nurses Association's Code of Ethics with Interpretive Statements (2001) is one way to facilitate moral development. The particularist view allows personal issues and emotions to guide moral action (Liaschenko, 1999). This approach allows the student to develop caring behavior from personal experiences that generate an emotional connection with value-based issues.

Organization of the Undergraduate Curriculum

The conceptual framework for the undergraduate program is derived from the College of Nursing mission and philosophy, and the land-grant mission of SDSU. The nursing program challenges students to be internationally competitive, globally informed, change-able, communication-able and socially responsible. In order to meet these challenges, the curriculum places great emphasis on the concept of caring. Caring encompasses the nurse's empathy for and connection with people and issues (SDSU College of Nursing, 2004). The professional values provide the foundation for caring professional practice.

One outcome for the undergraduate program specifies that students will apply nursing values that exemplify the caring, professional nurse. Additional outcomes stipulate that students will demonstrate caring by applying professional values, with particular emphasis on one value during each of the five semesters of the nursing major. The values are emphasized within each of five professional courses and integrated throughout clinical and theory courses offered within each semester. The following section provides an overview of strategies used to teach and evaluate this integrative approach to value-based learning.

Human Dignity: Semester I

Unrestricted respect for the dignity, worth and uniqueness of every individual is the first statement in the Code of Ethics with Interpretive Statements (ANA, 2001). Because of its primacy in nursing practice, human dignity is the first value introduced in the curriculum. In the Semester I professional course, students define the concept of human dignity in their own words and articulate examples of how they plan to apply the value in nursing practice. In the communications course, respect for the dignity of each client is identified as the cornerstone of the therapeutic nurse-client relationship. To further apply the concept to a professional caring relationship, a sensory deficit laboratory is used to simulate clients with vision, hearing and mobility problems. Discussion of personal feelings follows the experience. Key learning includes the importance of empathy and sensitivity when working with sensory-impaired people.

Human dignity is also integrated within a health assessment course. Competent assessment skills include sensitivity to the needs of diverse cultural and age groups. Protecting each client's privacy and maintaining confidentiality are discussed in lecture, practiced in the laboratory, and applied in clinical. Provision of privacy and explanation of procedures are essential components of basic nursing care. Aspects of human dignity that are evaluated as part of clinical include: (a) recognition of communication patterns among health providers; (b) effective communication with clients, peers, faculty and staff; (c) accurate and complete data collection and documentation; (d) competent performance of interventions; (e) maintenance of safety; and (e) accountability.

Integrity: Semester II

The value of integrity is integrated in the second semester of the major. In the professional course, integrity is introduced as "acting in accordance with an appropriate code of ethics and accepted standards of practice" (AACN, 1998, p. 8). Students review the ANA Code of Ethics (2001) then match statements describing nurse behaviors with respective statements from the code. The course professor, who recently completed 10 years of services as a member of the SD Board of Nursing, provides descriptions of nurse

behaviors that violated the ethical code and resulted in disciplinary action. These illustrations assist students to grasp the application of the professional code, rather than to view the document as irrelevant to caring behavior in professional nursing practice.

In a clinical course, students review the Standards of Clinical Nursing Practice, 2nd ed. (ANA, 1998), then describe how they implement each standard in the care of an elderly client. During four elderly client visits, students perform a health history, physical assessment, environmental safety assessment, activities of daily living review and a medication review. Students analyze their nursing care plan in relationship to the standards of practice. The students select one professional performance standard and describe their activities in meeting that standard.

Autonomy: Semester III

The third semester of the major focuses on the value of autonomy, defined as “the right to self determination” (AACN, 1998, p. 8). Patient autonomy focuses on respect for the patient’s right to make decisions, even when those decisions conflict with the values of the nurse. A value-based autonomous behavior is provision of information so individual patient’s can make informed choices (AACN, 1998). In the professional course, the student is introduced to the nurse’s role of helping patients to independently gather and interpret health information. To assure that students are prepared to facilitate health care decision-making, they critique a health-related web-site to determine appropriateness of use by patients, source credibility and information accuracy. Each student leaves the course with a list of web-sites that can be used to facilitate patient autonomy by making informed, optimal, health care decisions.

A course module called “Legal Liabilities in Nursing Care” changes the focus from patient autonomy to nurse autonomy. Discussion, article reviews and quizzes relate to the nurse’s obligation to promote safe practice and to challenge unsafe practices and decisions made by other health care providers. Case studies are used in the classroom to help the student prepare to intervene in situations that require moral action in order to protect people from unsafe care situations.

Altruism: Semester IV

Altruism is defined as “a concern for the welfare and well being of others” (AACN 1998). In the professional course, the definition of altruism project is designed to support each student in personally identifying the value of altruism for nursing practice. The student considers how high-profile public figures, such as Mahatma Gandhi and Mother Teresa, typified altruism. Accessing on-line public sites that identify altruistic actions and qualities portrayed by these public figures is one strategy that engages the student in a personal exploration of the concept. The student then seeks out additional references that exemplify altruism. The student chooses two of these

references to identify the critical attributes of their personal definition of altruism. The outcome of this simple concept analysis guides each student in identifying personal professional behavior that is grounded in altruism. The student then projects how he or she will adopt professional altruism. Each student project is evaluated for definition clarity and identification of personal altruistic behavior to be applied in nursing practice.

In the clinical and theory courses in semester four, students become aware of the resource management necessary to effectively deliver altruistic care to increased numbers of individuals with complex health problems. Faculty and students use clinical conferencing to better understand strategies that best demonstrate altruistic care.

Social Justice: Semester V

Social justice is introduced in the final semester of the major. Social justice implies that there is a fair and equitable distribution of benefits and bearing of burdens in a society (Kneipp & Snider, 2001). The profession embraces social justice (ANA, 2001), yet we tolerate disparities in health status and care, especially as they exist for minority and vulnerable people (Fahrenwald, 2003). In the professional course, students are exposed to health-related justice issues of local, national and international concern.

In the public health nursing course one objective states, "the student will apply the value of social justice in nursing practice." Students complete a social justice issue project applied to population-based health problems. A personal social justice issue is generated either inductively, through experience and self-analysis, or deductively, through reading the literature, examining issues and selecting one issue of interest. Students examine the type of oppression evident in their issue and discover ways to address the issue through a population-based intervention. Intervention examples include advocacy, coalition building, community organizing, and health policy development. Peer evaluation assures accountability for the assignment while empowering students to critically evaluate whether projects met the assignment guidelines. The student also anticipates future involvement in the issue.

Conclusion

Nursing faculty members are challenged to teach core nursing values. Clinical evaluation of senior nursing students reveals that the approach to values integration espoused in this paper is actualized through application of value-based caring behavior in the capstone clinical experience. The revised curriculum provides the conceptual, moral and practical learning necessary to assure that the future nursing workforce is grounded in the concept of caring.

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AUTHOR BIOGRAPHIES

Nancy Fahrenwald, PhD, RN, assistant professor, served as Undergraduate Curriculum chairperson for the SDSU College of Nursing from 2000-2003. Susan Bassett, MS, RN; Lani White, MS, RN; and Venita Winterboer, MS, RN are instructors; Lois Tschetter, EdD, RN, IBCLC is an assistant professor; and Paula Carson, PhD, RN is an associate professor. Each faculty member is either a member of the undergraduate curriculum committee, or, is responsible for coordinating one of the five semesters of the undergraduate nursing program. The authors would like to acknowledge all of the College of Nursing faculty members and administrators who participated in the curriculum development process described in the manuscript.

GLOBALIZATION IN NEWS EDITING

Lyle Olson
Department of Journalism
South Dakota State University

The Problem

“Globally informed and prepared for a diverse world” and “internationally competitive in academic preparation” are two important Lead Forward Land-Grant Goals for South Dakota State University graduates.

In an editing class last year, the author asked students if they could identify a hot topic in higher education that begins with “g.” Only one of the 20 students (all juniors and seniors) readily identified the word—globalization. The student had taken an SDSU honors course on the topic, had traveled overseas, had studied six foreign languages at SDSU, and is currently teaching English in France.

Students’ lack of response to the question revealed to the author that he did not have an answer to another key question: How globally aware are journalism and mass communication majors at SDSU?

Background

To help answer that question, the author conducted a literature review and surveyed students in the Department of Journalism and Mass Communication.

On a national scale, the literature review revealed that although globalization is a hot topic in many academic circles, journalism and mass communication is not one of them. In a key journal, Holm (2002) discussed what he calls “The Forgotten Globalization of Journalism Education.” He argued that “journalism education needs to break out of the national mold in which it has been traditionally cast” (p. 67). Another article a year earlier in the same journal titled “Educating ‘New’ Journalists: Challenges to the Curriculum” addressed several key topics, but it did not discuss globalization (Deuze). There was no other pertinent research on globalization awareness of journalism and mass communication students nationally.

To gain a SDSU perspective, the author created a three-page survey that included Cushner’s (1986) Inventory of Cross-Cultural Sensitivity.¹ The first page gathered demographic information including students’ international experience. The second page was a Likert-scale survey with items related to students’ awareness of international newspapers and media. The third page was the Cushner inventory.

A seven-point Likert scale was used with 1 as “strongly disagree,” 2 “disagree,” 3, 4, and 5 middle range responses, 6 “agree” and 7 “strongly agree.” Seventy-seven students (about 30 percent of majors in the

Department of Journalism and Mass Communication) in reporting and editing classes volunteered to complete the survey. Twenty-five percent were seniors, 31 percent juniors, and 42 percent sophomores.

Of the 77 students, 40 percent had traveled to Canada, 17 percent to Mexico, and 32.5 percent overseas/abroad. Although 61 percent of the respondents had visited an Indian reservation in South Dakota, 45 percent of those had only spent “hours or less on a reservation.”

Results of the survey are shown in Table 1.

TABLE 1

Survey Item	n = 77	% strongly agree or agree	% strongly disagree or disagree
I don't know very much about media outside the United States.		39.0	11.7
I know a lot about newspapers outside the United States.		5.4	61.0
I know something about the media in at least one country outside the United States.		35.1	24.7
I can name at least one non-American journalist.		13.0	76.6
Knowledge of media outside the United States will be valuable to my career.		50.6	7.8
I have at least one friend who is not a United States citizen.		49.4	35.1
In the past year, I have discussed some aspect of journalism with at least one non-American citizen.		41.5	53.2
In the past year, I have had a significant conversation (more than five minutes) with at least one person for whom English is his/her second language.		59.7	22.1
Knowledge of Native American culture in my state will help me understand international cultures.		37.7	11.7
I regularly read international news in a daily newspaper.		24.7	45.5

Student responses to 10 items concerning international media awareness.

In an open-ended item, students were asked to list the country, city, and name of up to three newspapers outside the United States. Sixty-eight percent did not name any. Only five percent named three correctly.

The survey clearly revealed that although journalism and mass communication majors at SDSU understand the value of an international mindset, they are not particularly globally astute in their own field.

What kind of project could the author design to help break SDSU journalism students out of the national mold the literature review identified and help them gain a more global perspective?

The World's Best-designed Newspapers Project

By examining the Society for News Design's annual *The Best of Newspaper Design*, students learn effective and award-winning editing and presentation techniques. In previous years, students examined American newspapers. The obvious next step was for students to examine award-winning newspapers outside the United States.

Twenty students paired up and selected a non-American, non-English language newspaper to research from an edition of *The Best of Newspaper Design*. Sample recent award-winning newspapers include *Le Devoir* from Montreal, Canada; *Helsingborgs Dagblad* from Helsingborgs, Sweden; *Die Welt* from Berlin, Germany; *a.m. De León* from León, Mexico; *Diario de Noticias* from Pamplona, Spain; and *Correio Braziliense* from Brasilia, Brazil.

Students researched both the newspaper and the country's press system. They e-mailed or telephoned editors to ask questions about the staff (i.e., size, training) or production software. Students searched the Internet for information on journalism education or working as a journalist in the country. Some students interviewed SDSU sources (i.e., a Spanish or German professor, an international student from Sweden or Mexico) about the press in the country and used these sources as translators.

Students presented their research via a tabloid-size poster using QuarkXPress, the world's leading page design software. The poster report, printed in color, displayed the foreign newspaper's nameplate and sample pages from the paper's Web site or scanned from *The Best of Newspaper Design*. The reports contained comments from the Society for News Design judges, comments from the staff members contacted, and an "in our opinion" analysis in which the students briefly discussed the newspaper they examined. The reports contained a related article about either the press, journalism education, or working as a journalist in the country. Each report listed the country's press freedom index assigned by international watchdog Reporters Without Borders². Students presented their posters and reported orally to the class on the newspaper they researched.

Impact of Project

The pairs of students were required to exhibit mastery of a variety of journalistic skills. The author evaluated in detail the design, editing, reporting, and writing. As a bonus to help meet two of SDSU's Lead Forward Goals, students learned about the press in "their" country as well as in countries their peers researched. Incorporating an international component, the assignment reinforced and expanded course content and, at the same time, broadened students' global perspectives. It was a win-win project.

At the start of the semester, some of the 20 students in the class were among the 95 percent of SDSU journalism and mass communication students surveyed who said they could not list the country, city, and name of three non-American newspapers. After the project, 100 percent could name

three non-American newspapers and 100 percent knew something about the press systems in a few countries.

Student response to the project was positive. The author will continue using, refining, and expanding the assignment to assist journalism majors in developing more global awareness.

BIOGRAPHY

Lyle D. Olson, a professor in the Department of Journalism and Mass Communication, teaches design, editing, and writing and directs the graduate program. He is nationally known for his research in scholastic journalism and teaching writing. He earned a B.S. in journalism from South Dakota State, an M.A. in journalism from the University of Oklahoma, and an Ed.D. in higher education and English from Oklahoma State University.

FOOTNOTES

¹ Maria Krane, international programs director from Creighton University, administered this cross-cultural sensitivity survey at the Bush Faculty Development Conference titled “A Community Understanding of Global Competence” on January 6, 2003, at South Dakota State University.

² The second world press freedom ranking created by Reporters Without Borders is located at http://www.rsf.org/article.php3?id_article=8247. The list is compiled from questionnaires distributed to journalists, scholars, rights activists, and jurists. According to the list, North Korea is the worst state oppressor of journalists, while Finland, Iceland, the Netherlands, and Norway tie for the most press freedom.

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USE OF THE CASE STUDY METHOD TO ENHANCE THE EDUCATIONAL EXPERIENCE FOR STUDENTS

David W. Willis

Department of Wildlife and Fisheries Sciences
South Dakota State University

Introduction

I have always believed in teaching with practical examples. However, I typically have presented these examples to students in a passive manner (i.e., a traditional lecture format). Because I was not pleased with retention of what I considered important material, I searched for a means to improve retention through more active learning while retaining practical examples. Thus, I first learned about the National Center for Case Study Teaching in Science (<http://ublib.buffalo.edu/libraries/projects/cases/case.html>) and attended their annual meeting.

Background

The case study method is not new. While it has commonly been used in disciplines such as law, business, and medicine, it has not been utilized to the same extent in science teaching. The primary distinction between lecturing with actual examples and the case study method is the active and cooperative learning that take place with case study instruction.

Case study instructional techniques can range from relatively simple to quite complex. Simple activities may only involve presenting a problem to the class, dividing the class into small teams, giving them five minutes or less to discuss the problem, and then having each group orally present their solution to that problem. Similarly, students can be provided with background material during the class lecture period, and the teams asked to prepare a written report. A more complex approach to instructional methods is an activity such as a debate or “public meeting” where students are assigned a role to play. Interactions between and among students, their discussions and arguments, and their agreement leading to resolution of their problem, all combine to create active learning that leads to better retention of the material presented.

An Example of a Case Study

Let me provide some information on a case that has recently proven valuable.

Even though my primary purpose is to explain the case study method, I do need to provide background information.

The largemouth bass is the most popular sport fish in the United States, and is commonly managed through regulation of anglers, most often with length limits. Our students must understand the difference between a minimum length limit (all fish less than a specified length must immediately be released) and a protected slot length limit (all fish within a protected length range must immediately be released while fish smaller and larger than the protected slot can be harvested). Minimum length limits are typically used to improve the sizes of largemouth bass in a low-density, fast-growing population in which larger fish have been harvested by anglers. The protected slot regulations can be used to reduce the abundance of small largemouth bass through selective harvest, thereby increasing fish growth, and producing more large fish in the population. The objectives of each regulation type are quite different and students must understand these differences so that they can make appropriate management decisions when they are subsequently employed by state or federal natural resource management agencies.

For years, I “preached” the distinction between these two regulations and was frustrated when students could not recall their proper application a year later. This seemed to be a ideal situation in which to encourage a more active learning style.

This particular case is based on work we initiated in 1989 for largemouth bass in a Jones County pond. In 1989, Knox Pond contained a high-density, slow-growing largemouth bass population. To conduct a population estimate, we captured 386 largemouth bass by angling, and an additional 221 were collected by night electrofishing. Of these fish, not one exceeded 300 mm in length. We then implemented a “protected slot length limit” on this largemouth bass population, under which bass smaller than 300 mm would be harvested, while larger fish would be released. Because of the lack of angling in this rural pond, anglers could not be used to harvest the small fish. Thus, we removed the small largemouth bass with an electrofishing boat, and those fish were then moved to other South Dakota waters. We monitored changes in the population through 1993.

Changes occurred, but not immediately. We did not capture our first 300-mm largemouth bass until 1991, and our first 380-mm bass was not collected until 1993. Larger fish were produced after growth of the largemouth bass increased because this simulated regulation resulted in lower bass density. The lower density resulted in more food available per individual fish. In 1989, a 200-mm largemouth bass typically grew only 35 mm in one year. By 1993, a 200-mm largemouth bass grew approximately 105 mm per year.

At this point, the study was concluded, and I used the study results as a teaching example. However, a unique opportunity was then provided to us. In 2000, after the Knox Ranch was purchased by the Turner Foundation, we were invited to sample the pond again in 2000 and 2001. No angling had occurred in the pond between 1993 and 2000.

These new data allowed me to pose a unique, important question to students. Once a largemouth bass population has been restructured with a successful application of a slot regulation, would the population maintain a “balanced” size structure that included larger bass, or would it revert to the original condition of high density, slow growth, with only small bass? Some biologists consistently argue the “maintenance” point of view and believe that larger largemouth bass will prey upon small bass, thereby regulating density. However, other biologists who argue the latter viewpoint (i.e., reversion to high density, slow growth, and decreased size structure) believe that habitat is the key to reproduction and survival of young largemouth bass, and believe that the population will respond to the “exploitation” caused by the removal with increased reproduction and survival, and a high-density population will re-develop.

Students were divided into small groups of two to four and provided with an extensive summary of sampling data for the 1989-1993 time period. Then, I asked them to predict the likely sampling data for 2000 and 2001. After discussing the potential viewpoints within their group, they had to come to a consensus that was orally reported to the rest of the class. Once all groups reported, I then showed them the actual field sampling data from 2000 and 2001.

To date, I have obtained limited feedback on retention using the case study method. From all I have read and learned concerning case study teaching, this active learning style will undoubtedly provide better retention for most students than passively listening to me present the information. In addition, I have had substantial positive feedback from students who appreciate the active learning involved. Older students, especially graduate students and non-traditional students, seem especially to appreciate this method because it validates their belief that past learning and experiences are valuable and appreciated.

Results of the New Method

As a result of our excitement over this teaching method, I am working with a colleague at Virginia Tech University to write a series of case studies for fisheries educators. All cases include both a student version and an instructor version. The student versions include only the minimum necessary background, and students are often asked to read a scientific paper, a book chapter, or perhaps research a topic on the Internet. The students are then asked a question (i.e., the problem), broken in groups to discuss the case, and then asked to report either orally or in writing their resolution to the problem. The instructor version contains substantially more background information and the actual results for the case under study. Thus, after students report the likely solutions to the problem, the instructor can provide full information on what actually occurred.

I have not abandoned the traditional lecture format in my classes. Instead, I use case studies to reinforce important concepts and provide a

break in the lecture format. Current plans involve integration of case studies for our introductory classes, our upper-division undergraduate classes, and our graduate-level classes.

Recommendations and Reflections

Earlier, I mentioned the National Center for Case Study Teaching in Science at the University of Buffalo (New York) and provided their web address. Through a National Science Foundation Undergraduate Faculty Enhancement program grant, this group now maintains a refereed national repository for case studies in science (<http://ublib.buffalo.edu/libraries/projects/cases/ubcase.htm>).

One of the primary values of this repository is the broad variety in disciplines that are covered, including anatomy and physiology, anthropology, astronomy, chemistry/biochemistry, computer science, ecology/environment, evolutionary biology, food science, geology, mathematics/statistics, medicine/health, microbiology, molecular biology/genetics, nutrition, pharmacy, physics/engineering, plant science, psychology, and teaching. Thus, a wide variety of educators may find this website and the available case studies to be of value in the classroom. Similarly, the website provides articles that provide in-depth analysis of the case study method in science, as well as information on preparing various types of case studies.

EPILOGUE

By the way, at the end of our second analysis the Knox/Turner Pond largemouth bass population had reverted to a high-density, slow-growing population with almost no fish exceeding 300 mm in length.

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I thank Drs. Don Marshall and Fred Cholick for supporting my travel to the Case Study Teaching in Science 2002 Annual Meeting.

BIOGRAPHY

Dave Willis is a Distinguished Professor in the Department of Wildlife and Fisheries Sciences. He has been with SDSU since 1987. Prior to that time period he was employed first as a management biologist and then as a research biologist by the Kansas Fish and Game Commission. He received the F.O. Butler Excellence in Teaching Award from SDSU in 1991, the Award for Excellence in Fisheries Education from the American Fisheries Society in 1997, and the Excellence in Public Outreach Award from the American Fisheries Society in 2003.

ENHANCING STUDENT LEARNING USING SIMULATION PROGRAMS AND SCIENTIFIC VISUALIZATION

Madeleine Andrawis
Department of Electrical Engineering
South Dakota State University

Abstract

A new approach in teaching electromagnetics using multi-media simulation programs was implemented to enhance student learning and hence increase student retention. The fundamental nature of Electromagnetics makes its understanding a necessity in order to comprehend all the other Electrical Engineering topics. The basic Electromagnetics theory and its engineering applications material are all based on highly mathematical equations. Students had difficulty understanding and/or visualizing its abstract topics. This course is presently taught using the latest class technologies and its contents are available on the Internet for out of class access.

I. Background

Electromagnetics, the oldest and most fundamental branch of electrical engineering, is basic to everything electric and magnetic. Because of its fundamental nature, understanding Electromagnetics is essential in most areas of electrical and computer engineering. The study of waves and wave propagation, for example, is necessary in the analysis and design of power lines, communication links, optical fibers, high-speed digital electronics, satellite communications, and many other emerging technologies. At South Dakota State University, this material is covered by the undergraduate required four-credit course: Electromagnetics (EE 385).

II. Motivation (Problem)

The challenge for educators in the Electromagnetics field is to maintain student interest in this difficult and highly abstract subject. Students usually hate the material covered in this course for lack of understanding and visualization.

III. Approach (Method)

Research has proven that student interest, involvement, and retention are greatest when material is studied in a practical framework with hands-on experiences [1], and [2]. One such approach is the use of virtual reality

through simulation and multimedia software to bring the student's learning experiences to life.

The strategy then was to redesign the Electromagnetics course to integrate simulation software and computer-based visualization to render the abstract concepts of electricity and magnetism into a more intuitive form. In addition, the use of multimedia software, computer generated class presentations, digitized videos and other computer technologies would be incorporated in the redesigned course. Virtual laboratories, which focus on basic theories, would allow students to experiment and discover the fundamental relationships between electricity and magnetism. This presents an alternative to experimental laboratories that are prohibitively expensive to develop. Students' conducting key experiments in the field enhances their learning through active participation. Interactive games and quizzes would also be included for review and self-evaluation.

IV. Software Tools

After investigating different software packages, a compiled software packages integrated together by the Center of Computer Applications in Electromagnetics Education (CAEME) at the University of Utah was chosen. To accomplish its main goal: to stimulate and accelerate the use of computers and software tools in electromagnetics education, the center packaged many tools into what they called: The CAEME software package. It consists of two volumes. The first one is comprised of a collection of sixteen software packages, covering basic topics included in the electromagnetics course.

Eighteen additional simulation packages and four multimedia interactive lessons in electromagnetics have been compiled in the second volume. The software included in the second volume is equipped with state-of-the-art graphics that will help students learn while having fun. Many of these packages deal with the design and simulation of electromagnetics systems such as transmission lines, wave-guides, optical fibers, and antennas. Furthermore, software used to solve electromagnetics problems using numerical techniques is also included.

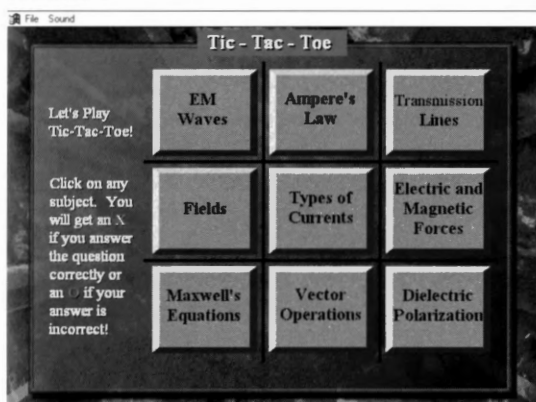
V. Methodology

The delivery of the course material moved from a complete lecture format to a technology-base delivery format. A combination of power point presentations and blackboard demonstrations is used to cover the different parts of a section. Then, the CAEME software is used to address the same topics through computer tutorials, simulations, video clips and computer-enhanced visual aids. To reinforce the students' understanding, the software is also used to present solved examples. Finally, students are challenged to answer questions through interactive games for self-evaluation. For example, a Tic-Tac-Toe game gives students nine categories to choose from, as shown in Figure1. By clicking on a button, students are given random questions and

given an “X” or an “O” for a correct or a wrong answer respectively. Students need three “X”s in a row, column, or diagonally to win. Depending on whether a student wins or loses, the software plays appropriate music.

The active learning approach is also extended to outside the classroom by making the software available to students. Through a user-friendly computer interface, students can answer questions and go through a number of exercises by taking quizzes and playing games designed to test the students’ knowledge. Scattered throughout the application, these quizzes are quite challenging requiring access to a calculator, pencil and paper to solve equations. The software package keeps students’ scores and provides feedback when needed. Students taking the redesigned course presently are attracted to this software application due to the high level of interactivity it offers.

FIGURE 1



Software Screen Showing the Tic-Tac-Toe game and its Topics.

VI. Methodology Assessment

Although no formal or qualitative assessment was done after teaching Electromagnetics with the new method, typical student evaluations show good qualitative results. Some of these comments are quoted below:

- “The simulation computer tool provided a graphical representation of these invisible quantities to promote the learning of the topics.”
- “It [software tool] helps paint a picture that equations just can’t illustrate.”
- “The questions on both the Quiz and the Tic-Tac-Toe game [of the multimedia software] were educational as well as challenging.”
- “This [software tool] helped give a better understanding of topics discussed in class.”
- “I will leave the course with that visual reminder that will help with my understanding of the material.”

VII. Conclusion

The Electromagnetics course is still taught at SDSU using the software tool CAEME that includes multi-media presentations, simulation, and assessment tools. Integration of use of technology in the instruction of this highly abstract subject enhances student comprehension and learning hence leads to higher undergraduate student retention. Furthermore, by understanding the basic phenomena of Electromagnetics, students become more successful in learning the more advanced courses and subjects in Electrical Engineering which leads them to be more nationally and internationally competitive in the real world job market.

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BIOGRAPHIES

Dr. Madeleine Andrawis is a Professor in the Department of Electrical Engineering and Computer Science at South Dakota State University since January 1992. She has been the Teaching Learning Center coordinator from July 2002 till present.

Dr. Andrawis was a NASA Faculty Fellow for the summers of 1994 and 1995 at Langley Research Center in Virginia; 1997 at Goddard Space Flight Center in Maryland; 1998 and 1999 at EROS Data Center in South Dakota.

Dr. Andrawis is very interested in the scholarship of teaching and learning. She has won two Governor's Faculty Awards for Teaching with Technology in 2000 and 2001 and Governor Rounds Faculty Award in 2003. She has redesigned many of her courses to integrate the latest technologies and enhance student learning.

Dr. Andrawis has reviewed books in the area of Electromagnetics and VLSI Circuit Design. She has published in refereed journals and presented in many professional conferences.

REALITY-BASED ASSESSMENT AND TESTING METHODS USING VIDEO VIGNETTES

Dianna Sorenson
College of Nursing
South Dakota State University

Problem

Nursing is a practice profession that requires a transfer of learning to clinical practice (Billings, 2000). Clinical practice settings for nursing education have changed drastically from directly supervised, inpatient care settings to indirectly supervised, community based settings. Indeed, the American Association of Colleges of Nursing (1993) specifically emphasizes the need for master's programs to incorporate more educational opportunities for health promotion interventions to families and aggregates within community based settings. Furthermore, there is increasing demand for practitioners to assess and care for rural patients using technologic mediums like telehealth, telemedicine, telehome, teleradiology, telepsychiatry and virtual medical centers (Bachman & Panzarine, 1998; Billings, 2000).

Changing practice settings and technologic advancements create special problems for nursing education. Nursing educators are challenged to identify cost-effective, standardized experiences that validate student progression from supervised to unsupervised, community experiences. Of particular note, the College of Nursing recently opened an "all Internet" option for distance students to obtain their master's degree. We were faced with the challenges of providing clinical experiences to students faculty have never met. Clinical simulations provide a growing avenue to prepare students for the realities of independent practice (Billings, 2000). The purpose of this project was to introduce reality-based assessment and testing methods that validate students' clinical competence, using video vignettes to simulate family dynamics and health promotion needs in community settings. A secondary purpose was to provide students with an introductory technologic interface for family and health promotion assessments. These primary and secondary purposes are congruent with South Dakota State University's Lead Forward Objectives by addressing technologic skill proficiency, communication ability (counseling skills are the focus), clinical skill development and critical thinking. Project achievement directly enhances students' international competitiveness, and clinically reflects social awareness and adaptability to change.

Background

Course objectives directed students to assess family processes, connectedness, and interactions in order to derive contextually-based family counseling interventions that promote healthy behaviors. Traditional methods for teaching family dynamics focused on written case studies and role playing. Although communication is a core competency in the nursing profession, it is difficult to depict human experiences that are symbolically communicated through language and nonverbal responses in writing. Written case studies lack many implicit and explicit meanings, including the nuances, subtleties, and intuitive cues (Dickinson-Hazard, 1999; Mallow & Gilje, 1999; Salmon, 1999).

Paradoxically, other drawbacks to written case studies relate to written details that “lead” students to the “obvious answer.” Subsequently, students fail to see the relevance of learning health promotion counseling skills, resulting in a disengaged learner. This disengagement impacts learner competence, confidence and satisfaction with personal performance when faced with actual clinical experiences (Keller, 1987). What we would often see is students who were “book smart,” but were unable to identify family dynamics and apply the appropriate intervention when clinically faced with the complexities of family interactions.

Strategy

Principles of adult learning, creativity, and technology were considered in the development of this project. Specific attention was given to develop instructional processes that would engage the learner. Students attended didactic classes that provided course content related to counseling, family assessment, and health promotion. Clinical examples were provided along with classroom role-play situations. Concomitantly students were assigned community based families and submitted audio recordings of their interactions for faculty review and feedback.

At mid-term, students were given a take-home examination that included written case studies for structured analysis. As a final synthesis and review, students were given a video-driven, take-home final examination on CD-rom that paralleled the same set of analysis questions given at mid-term. The video was comprised of clinical vignettes that simulated family dynamics and health promotion needs commonly found in family homes. Inherent in this exam was time for the review and elaboration of information. This exam provided students opportunities to assess their own critical thinking, problem solving, and actions. Because it provided a standardized clinical simulation, student performances could be compared for evaluative purposes.

Results

Students were apprised of the course learning progression and the format of the final examination during the course introduction. Students indicated that they worked harder at learning family assessments and counseling skills because they knew they would be held accountable to demonstrate their clinical skill mastery on the final examination. Student performances on the clinically simulated final examination were more closely approximated to their audio recorded clinical performance than their performance on the written case study mid-term examination. These findings seem to indicate that students were more actively engaged in learning and that simulations provide a low-cost, standardized approach to validate clinical performance.

Impact on Students

The project was designed to stimulate active learning and engagement within the testing process. Students expressed gratitude for the opportunity to review previously covered material and synthesize their thoughts. I heard direct comments like, "I didn't know that I didn't understand it until I tried to apply it." Consistent with adult learning, students indicated that they learned more and would retain it longer because they believed the learning was interesting, exciting, and directly applicable (Dickinson-Hazard, 1999; Billings, 2000; Chandler & Hanrahan, 2000; Gagne, 1984).

Current student evaluations directly reflected this. Three quotes from the evaluation are: "This course helped identify communication skills that I need to work on;" "This was a different style of learning for me, more experiential than cognitive. I'm a visual learner so it was harder for me to incorporate the auditory parts of the tapes, but necessary and valuable to have this for learning to listen to patients, and listen for their experiences;" and "I think you do an excellent job on emphasizing learning rather than the letter grade, and it is refreshing."

Students who expressed dissatisfaction with the testing process were largely students who expressed a direct disinterest in counseling skills, indicated that they had not practiced the counseling skills, and had submitted fewer assignments. Student commitment to the number of clinical hours was also a consistent theme influencing their satisfaction. Student comments included, "There were so many assignments and obligations that had to be made; it ended up being what had to get done . . .," and "the assignment of finding 2 articles each week was not very helpful for me. I felt pushed and rushed so I grabbed the first articles I could find. I never had time to investigate what others found."

Recommendations

Mallow and Gilje (1999) advise caution in the development of technologically-driven vignettes, asserting that the role of technology within

caring and narrative pedagogies has not been clearly defined. This advice is a good reminder that clinical simulations cannot completely replace direct clinical experiences. However, experientially, this simulated clinical exam provides an opportunity to assess students' general performance. Recommendations for future trial are: 1) to use a simulated clinical examination at mid-term so that students can grow from the experience and their performance growth trajectories can be compared between mid-term and final examinations, and 2) clearly explain to students the amount of work requirements generated with the use of technology with the course requirements. This sometimes may require careful advisement for students who do not allocate sufficient time for course work completion.

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BIOGRAPHY

Dianna Sorenson is a professor in the College of Nursing. She was a three-year recipient of the Governor's Award for Technology (1992, 1991, 1990). Her work as a licensed clinical nurse specialist was recognized through her research efforts, receiving the Hildegard Peplau Award through the American Nurses' Foundation in 1990.

JOURNALING AS A TEACHING AND LEARNING TOOL

Delmer Lonowski

Department of Political Science
South Dakota State University

Requiring students to keep journals is a most valuable teaching and learning tool. Student writing can be more than a way that we justify the grades we give students at the end of each term. Writing is a multi-functional tool that can be used not only for evaluation but also for teaching and learning. In using writing for teaching and learning, we help our students develop analytical, critical thinking, and organizational skills that will help them be successful. Requiring students to keep journals is just such a tool. In addition, it helps achieve the SDSU Lead Forward Goal of making students communication-able. Journaling can also help achieve a second Lead Forward Goal, that of student retention. Journals open a door to a personal connection between the teacher and the student that provides opportunities both to assist students in their academic lives and to serve as mentors.

Britton et al. (1975, Chap. 6) have identified three types of writing in which students engage: transactional, expressive, and poetic. Transactional writing involves full and explicit communication. It is used to inform, persuade or instruct people. Our students usually utilize transactional writing either in essay examination questions or in term papers. The student communicates what has been learned in the course or in his or her research. I use both essay exams and term papers in my classroom to evaluate how well students have understood the content of the class.

The problem with essay examinations and term papers is in the notion that “they are used to evaluate how well students have understood the content of the class.” Both activities assume that they have understood the material. Transaction writing is the basis for final evaluation, not really a process for getting to the point of mastering the material.

Freisinger (1982, 9) says that the most serious problem with transactional writing is the student’s inability to think critically, to synthesize, to structure logical arguments. His solution is the second type of writing—expressive writing.

Expressive writing is writing involving the revelation of the student’s experiences, attitudes, and assumptions. It involves the free flow of ideas and feelings (Britton et al., 1975, 90). It is through expressive writing that writing can be transformed into a teaching and learning tool. One way to provide students with the opportunity for expressive writing is through journaling. Journaling is a most valuable teaching and learning tool. I ask students to write reactions to lectures, to assigned readings, and to class discussions. This

gives them the opportunity to think about the ideas and issues involved in the course. Britton et al. (1975, 11) say that expressive writing is a means by which new material can be tentatively explored. This is where real learning is done. It is part of the process of making the information the student's own, of making it fit into his or her thinking or adjusting his or her thinking to the new information (Freisinger 1982, 9).

Journal writing provides a window into the student's mind. Stephen BeMiller (1990, 122), a math professor who has his students keep journals, said: "I had been frustrated because I had no way of seeing student's thinking. I hoped they were, but I couldn't get at the process. What I came to realize was that writing is thinking made visible. It was the tool I had been looking for."

Journaling provides an opportunity to know what the students are thinking. If students do not understand some point in class, I recommend that they write an essay about it in their journals. The process of this writing activity may set them straight. It also provides an opportunity to correct misunderstandings and misperceptions and for them to find out if they are on the right track prior to being graded in their examinations.

Students are also encouraged anticipate examination questions in their journals. I explain to them how I tie the various sections of the course together in my examinations. For example, if they write an essay in their journal on the relationship of interest groups to the legislative process, they will already have thought through the issues involved and will be well prepared for such a question on an exam.

Journals provide more reticent students an opportunity to express their opinions without the public judgment of their peers that would take place in class discussions. It is a private means to participation. Sometimes positive reinforcement in their journals can open up these students to participation in class discussions. If not, I can at least be certain that they understand the material.

Journals provide the opportunity to understand from where my students are coming. I am able to learn about the values developed in their earlier socialization. This helps me address course content to their needs. Course material must be made to fit in with the student's earlier socialization if it is to be incorporated into the student's thinking. This is essential if the students are to assimilate materials into their image or to restructure their images to make them compatible with the new information (Freisinger 1982, 9). By knowing and understanding the student's values, I am better able to help them accomplish this task.

Journals can also help retain students, a second Lead Forward Goal. Journals can be a most personal connection between the student and the teacher. Like most instructors, I encourage my students to visit me in my office. Like most students, they do not. They do however take the time to write in their journals. Their grade depends on it. If they are trying on new ideas, it is much easier to explore those ideas in front of a piece of paper where they can have time to think through their arguments rather than to have to present them in a face to face encounter with their professor.

Sometimes, those ideas are radical ideas that may jeopardize the student's relationship with his or her classmates. They need to be explored in a non-threatening environment. This personal connection establishes positive student-teacher relationships that can result in the identification of opportunities to mentor students.

On an even more personal note, sometimes students have more important things on their minds than the content of my classes. I have never encouraged discussing personal problems in the journals but sometimes they find their way into the discussion. Sometimes, they are relevant if they impact on the student's performance in the class. Other times, problems can be accommodated to reduce the stress in student lives. With really serious problems, the student can be referred to resources on campus that can help

Student writing can be more than just a way to justify grades. It can be a tool to facilitate the teaching and learning process. It can be the means by which we accomplish all of the goals we have for our students. Writing can help our students develop organizational skills. It can help make our students become the critical and analytical thinkers that we want them to be. Our students' writing can provide us with the personally rewarding experiences that we expected when we became teachers.

Writing is also rewarding to students. I like Michael Abbott's (Abbott et al. 1992, 108-109) response to students who ask why he requires them to write. First, it can make you a better person. Writing is a skill and an art. Anyone who writes well is an artist to the rest of the world and a better person because of it. Second, it can make you feel good. Doing anything well makes one feel good. Writing is a satisfying experience. Third, it can make you famous. Good writers become well known. Finally, it can make you rich. Abbott says that writing is the only way that one can make it in corporate America.

On the more practical side, I have found E-mail journals easier to work with than paper journals. E-mail journals do not have to be carried to and from class or home to read them. Penmanship is not a problem, either for me, or for the students. In the E-mail format, there is unlimited space in which to respond. However, I do find that I do spend more time on the journals in this format because I can take advantage of the teaching opportunities which the journals provide.

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BIOGRAPHY

Delmer Lonowski is a professor of Political Science. He was the 2003 Edward Patrick Hogan Award for Teaching Excellence.

AVOIDING BINARY THINKING: USING MULTIPERSPECTIVISM AS A CLASSROOM TOOL

María T. Ramos

Department of Modern Languages
South Dakota State University

One of the greatest challenges teachers face in literature classes is encouraging students to go beyond the easy answers. That is especially true when students are studying literature in a second language. In their lower-division classes, they have become accustomed to providing the “right” answer applying the language they are learning. Therefore, when they enter a more advanced language class with a literature focus, they feel cheated when the instructor fails to tell them what the right answer is... even if the issues involved are extremely complex.

Students must learn that most literary works pose questions that have no easy answers, both within their own culture and in others. They should also learn that symbolism and many other aspects of a literary text in another cultural context take on a completely new set of meanings. Although it is difficult to persuade students to consider complicated issues and to reconsider them in light of a different value system, it is important to move students beyond memorizing isolated facts “for the test.”

This is the challenge I faced when teaching *The House of Bernarda Alba*, a well-known play by the Spanish poet and playwright Federico García Lorca. Ironically, the stage directions for this play call for a set in which the walls are completely white and all the characters are dressed in black. It is a set that suggests a “black-and-white” environment, where values and behaviors are clearly stipulated and there is no room for “shades of gray.” This is the situation of the nine women in this drama, and this is precisely the type of world-view that Lorca deconstructs in his play. However, the students had difficulties with the interpretation of such a symbolic/poetic view of reality.

During each class period, we worked through each act of the play to make sure that students understood what each line of dialogue meant. Students worked in groups to analyze and to present to the rest of the class their observations on the various aspects of the play including the symbolism of names and the importance of color (in a black-and-white stage, any color carries special importance), including the different symbolic meaning of different colors in Spanish culture. We also discussed several aspects of the play that critics have emphasized.

With some help and suggestions, students were able to discover the answers to specific questions regarding the work. However, when asked about

the larger universal meaning of the work, the students were silent. They could not relate to a world in which a tyrannical mother controls and manipulates the lives of her daughters. If they had found themselves in such a situation, they would have left home and found something else to do. To them, the play was senseless.

In order to help the students understand the plan and the society in which it was based, I created an activity that would force the students to consider the various points of view presented in the play and also require them to present their arguments orally to the entire class. In other classes I had used activities in which the class was divided into two groups to debate a topic. But, in this instance, I wanted students to see the complexity of the issues involved and how social interaction and responsibility affected the actions of the characters. Most of all, I wanted the students to appreciate the fact that, often, there are no right or wrong answers and that this is true regardless of cultural context.

I began by asking the students who was responsible for the central tragedy of the drama (the youngest sister commits suicide after being told falsely that her lover—who was going to marry the oldest sister for her money—is dead). The students had no difficulty identifying the repressive mother as one of the people responsible; they also took little time in singling out the sister who lied. With a little prodding, the students recognized that the oldest sister might have been responsible—as well as the lover. With a little more encouragement, the students came to realize that the villagers obsessed with finding and condemning any deviations from their moral values, were also responsible.

After we identified all those responsible, which included almost all the characters who appeared in the play and some who did not, I divided the students in the class into small groups and assigned each group one of the “guilty parties.” I told the students that we would conduct a “multisided” trial. Each group would serve as the defense team for their “client.” Instead of seeing the blame for the tragedy as distributed among all the characters, the teams would be responsible for defending one specific character.

Each group had ten minutes to prepare its defense strategy. The first group to present was the one defending the mother (theirs was a difficult task and they deserved to go first). As soon as the first group accused someone else, that character’s team was invited to offer a rebuttal. When the new group accused yet a third character, that team was invited to enter the debate. Soon, the students were involved in a lively conversation that lasted quite a while.

When groups of students were asked to defend a specific character in the play, they showed a greater comprehension of the work and paid greater attention to nuances of meaning than they had before. Through this process, the students came to understand that the world of *The House of Bernarda Alba* is not black and white. Even the most despised character in the play has motives that the students can understand.

As the students participated in this activity, they became aware that the values depicted in this Spanish play were not so far removed from their own.

They became aware of the commonalities between a seemingly archaic system and their own system of values. They were able to relate to the conflict between passion and a rigid social system and to see how this kind of conflict exists in their own world.

This kind of activity can be useful in classes that involve neither a modern language nor literature. It can be applied to classes in history, political science, sociology and education. In any area in which there are conflicting views and conflicting values, a multisided debate can be useful. It involves several of the Lead Forward Land Grant Goals, especially being communication-able, globally competitive and socially responsible.

Additional benefits of this kind of activity are the following:

- a) involves all students, both in small groups and as a whole class
- b) requires collaboration
- c) forces students to collect all the information learned and focus on details since every bit of information can work for or against their "client"
- d) increases student involvement through competitiveness and yet shields the students because their own values are not involved
- e) encourages students to advocate instead of judge and thus reduces the distance between the student and the situation depicted in the play
- f) utilizes a format familiar to students: the trial

EPILOGUE

My experience with this activity in a Spanish literature class was extremely positive. I know that it did not totally transform my students' lives. But, it did enhance their ability to think critically, to consider issues of tradition and social responsibility and to communicate their concerns to others.

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BIOGRAPHY

María T. Ramos-García is a native of Galicia (Spain). She graduated with a Licenciatura from the Universidad de Santiago de Compostela in 1991, and obtained her M.A. (1993) and Ph.D. (1997) in Spanish at Washington University in St. Louis. She became part of the Department of Modern Languages at SDSU in 1998. Currently she is associate professor of Spanish and became department head on August 2004.



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