FEEDBACK FROM THE FIELD

Teaching Introduction to Disaster Management: A Comparison of Classroom and Virtual Environments[*]

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In this paper I show that one can teach Introduction to Disaster Management effectively using either traditional or web-based instruction. To create the foundation for comparison, I discuss course structure, learning objectives, Bloom's taxonomy and teaching techniques. My analysis focuses upon issues of course development, the learning process, the degree of material presented and the amount of labour and time expended by the faculty member. Two key points emerge from this analysis. First, the instructor must realize that although the end results should and can be similar for both teaching methods, the paths taken to achieve those results are much different. Second, even after a class is developed and established, web-based distance learning is much more labour-intensive than traditional classroom methods.

Introduction

Increasing and new types of disasters (Mileti 1999) and the expanding necessity for professionalism in disaster management (Wilson 2000) create a growing demand for university degree programs in disaster management throughout the world (Neal 2000). Traditional classroom

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approaches can meet some of the rapidly growing educational needs. Web-based distance learning provides an alternative approach to meet the increasing requirements of educating current and future professionals.

This paper compares the similarities, differences, challenges and outcomes between web-based and traditional classroom settings of an undergraduate Introduction to Disaster Management course. Recent analyses suggest that instructors can achieve academic excellence through either web-based or traditional techniques (Keegen 2000, p. 76; Olson and Wisher 2002). Since web-based instruction and the academic area of disaster management have both emerged recently, a comparison of the two instructional methods is imperative.

I base this paper on my own experiences teaching Introduction to Disaster Management and related courses. I have taught the in-class version at least five times, most recently during Spring semester 2003. In addition, I have taught similarly structured undergraduate Sociology of Disaster courses, the first version during Spring semester 1979 and the most recent during Spring semester 2001. More generally, I have consistently taught a wide range of traditional undergraduate and graduate disasters courses in Emergency Management, Sociology and Public Administration degree programs since 1989.

Since Fall Semester 2001, I have taught the web-based version of Introduction to Disaster Management course seven times (once it was team taught) and seven other web-based undergraduate and graduate disaster management courses. In short, my academic background in disasters, my teaching experience in disaster degree programs and my growing background in web-based instruction ground my comparisons and discussion.

The next section of this paper outlines some central ideas for teaching Introduction to Disaster Management and provides the foundation for my analysis. Topics include the course outline, Bloom's taxonomy, in-class teaching techniques, and virtual teaching techniques. In the third section, I compare and contrast the traditional and web-based environments. Finally, I discuss how a web-based Introduction to Disaster Management course can achieve the same educational outcomes as a classroom course.

Teaching Introduction to Disaster Management

Background

The University of North Texas (UNT) initiated the first emergency management bachelor's degree program in 1982. The curriculum initially consisted of an introductory course and three other disaster courses

that reflected both substantive program needs and faculty interests (i.e., mitigation, economics of disaster, elderly and disaster). With the program stagnating, in 1986 the university replaced the two full-time faculty members with two new instructors (Robert Reed and Tom Joslin). Tom Joslin, a long time federal employee in emergency management, drew upon the idea of Comprehensive Emergency Management (CEM) to organize, design and teach the introductory course.[1]

The National Governor's Report (1979) first advocated CEM as an effective means to organize and coordinate disaster management activities. CEM is defined as "all four phases of disaster activity: mitigation, preparedness, response, and recovery for all risks—attack, man-made, and natural—in a federal-state-local operating partnership" (National Governor's Report 1979: 105). Drabek (1991: 18) commented that upon its introduction, CEM rapidly generated a "broad base of support." In 1991, The International City Management Association published the first introductory textbook in the field titled, *Emergency Management: Principles and Practice for Local Government* (Drabek and Hoetmer 1991). This text also used CEM (along with the idea of integrated emergency management) as the foundation for the text (Hansell 1991: xiv). During the early 1990s the UNT program reaffirmed the use of CEM as the intellectual basis for both the introduction course and refinement of the overall curriculum.

Course Structure

Joslin influenced my views for teaching an introduction disaster course. CEM and the four phases of disaster provide a logical approach to organize key concepts (Neal 1997). For example, I integrate a wide range of other topics and issues within the course (e.g., policy, gender, ethnicity, social class, vulnerability, sustainability, governmental relationships, volunteer organizations, terrorism, business continuity) under the CEM umbrella. Below is an outline of how I generally structure both classroom and web-based courses:
- Overview
    - Defining Emergency Response and Disaster Management
    - Integrated Emergency Management
    - History of the Profession
    - Background of Research
- Comprehensive Emergency Management
    - Preparedness
    - Response

- • Recovery
- • Mitigation
- • Final Section
    - • Special or current topics (e.g., Business Continuity, Terrorism)
    - • Summary and overview of the class

Since the core of the course focuses upon CEM, I dedicate between two to three weeks for each disaster phase. An overview of key introductory issues and a look at current and applied topics serve as "bookends" for the course. For both traditional and web-based courses, I use the same general course objectives, stating that students will:

- • understand and describe how individuals, groups, families, organizations and governments prepare for, respond to, recover from and mitigate disasters.
- • describe the history of emergency or disaster management.
- • identify and understand relevant federal legislation.
- • apply course information to actual settings and situations.
- • identify, discuss and critique concepts, issues and themes relevant to emergency and disaster management.

Not only does CEM provide a firm foundation for an introductory course and an overall curriculum, it also allows instructors to reinforce critical Knowledge, Skills and Abilities (KSAs). However, I also believe that disaster management courses should not carry the burden of exposing students to all KSAs defined by professionals, academics and others. If this were to occur, then disaster management professors would spend their time teaching such topics as writing, public speaking, networking and a wide range of other KSAs rather than substantive issues on disasters and hazards. In reality, university general education requirements (e.g., courses in writing, speech, social sciences, math, physical sciences, the arts) should cover most if not all general KSAs. However, disaster management instructors can and should select specific KSAs that appear most salient with the profession and integrate these KSAs with course assignments (e.g., writing, public speaking, networking skills). In sum, CEM provides a useful foundation for designing an introductory course and integrating a wide range of important concepts, topics and KSAs.

Bloom's Taxonomy

Bloom's taxonomy is well known among educational professionals. It drives how educators both present course material and assess students' progress. Scholars can also use Bloom's taxonomy as a foundation for

analyzing curriculum. For example, recently Fischer (2003) used Bloom's Taxonomy to compare Jacksonville State University's (JSU) on-line graduate introductory course in disaster with an on-line course offered by FEMA's Emergency Management Institute. He found that JSU's course reflected a higher level of learning than the FEMA on-line course. I have relied upon the main ideas from Bloom's taxonomy since I began my teaching career. In my comparison of instructional approaches, I draw upon Blooms' taxonomy for part of my analysis.

In essence, Bloom (1956) contends that different levels of learning exist. These levels include:
- Knowledge (facts, memorize)
- Comprehension (understand, interpret)
- Application (use information, solve problems)
- Analysis (see patterns, explain why)
- Synthesis (make new ideas from old ones)
- Evaluation (assess, select)

For an introductory undergraduate course, instructors generally focus on the lower levels of knowledge (i.e., knowledge, comprehension, and to a degree application). Philosophically, instructors believe that students need to recognize and understand basic concepts in any field and show some capability to apply these concepts. Objective questions (e.g., true/false, multiple choice) are best suited to assess students' accomplishments for these levels of knowledge and to manage large classes. Upper level courses, and of course most graduate level courses, should focus on the higher levels of learning (i.e., application, analysis, synthesis, evaluation). Various types of applied written assignments (e.g., essays, research papers) are best suited to evaluate these higher levels of learning.

Teaching Techniques

In both the classroom and virtual environments, instructors have a wide range of options for teaching and managing courses while also maintaining students' interests. Below, I discuss the different techniques I use within each. Information from this section plays a role for later comparisons between in-class and virtual techniques.

Classroom

To create an educational and exciting traditional classroom environment (or put another way, so not to bore both the students and myself), I use a variety of teaching techniques. The standard lecture

serves as a familiar base for students and instructor. To maintain variety, for every three hours of class time I try to have at least one or two hours of teaching that is not straight lecture (see below). Generally these classes have ranged from 30 to 90 students. As a result, most of these techniques, although engaging, are more passive rather than active learning. Over the course of a semester, I try to integrate each of the techniques below:

- Lecture
- Lecture and discussion
- Guest speaker(s) followed by student questions
- Use of visuals
  - PowerPoint slides of key points of lecture/discussion/presentation
  - Slides of disaster events to illustrates a point
  - Slides from a disaster to create a case study
  - Videos of disasters
    - Commercial
    - Governmental
    - Movies
- Textbook readings
- Supplemental readings to the textbook
- Evaluation techniques (testing)
  - Objective questions (true/false and multiple choice)
  - Short essay (only if the class is under 40 students)

During my teaching career now spanning 27 years, I find that students have become more visually oriented. As a result, I use a wide array of images to maintain their interest and learning. Visuals include photographic slides (most from my own field trips), videos, charts, diagrams and current (or saved) web sites. Other images are simply the outlines of my lecture that allow students to follow the logic of my argument. All of my visuals are on CD-ROM and projected via a computer to the class.

Virtual Classroom

Teaching virtually takes a totally different mindset than teaching in the traditional classroom. My university uses the platform by "Blackboard" (see Blackboard Inc. 1994). Although this and other platforms have a variety of options to facilitate education, I intentionally stick to the basics (e.g., discussion boards, chats) for my introduction class. First, many of the students are new to web-based education. Second, many of our students are non-traditional who have not been in a college envi-

ronment for a number of years. As a result, they must (re)learn how to be a student and/or learn web-based instruction. Using "extras" from the platform for the introductory course would create an additional and unnecessary burden to their educational experience. Simply, when I measure the students' performance, I want to determine how much of the course content they are learning, not how much "Blackboard" they are learning. However, as students move through the academic program and become more comfortable with the platform's capabilities, our instructors expose them to additional tools or activities available (e.g., group projects, advanced chats). The flexibility of web-based instruction attracts non-traditional students (e.g., students over 25 years old, students with full time jobs) who often find it difficult to be locked into a typical classroom schedule due to familial, work, academic and other responsibilities.

Techniques that I use for the on-line course include:
- Discussion Board—weekly graded writing assignment on selected topics based upon reading assignments in asynchronous (delayed time) communication
- Chats—weekly chats allowing instructor to reinforce key points for the week and allowing students to ask questions for clarification in synchronous (real time) communication
- Guest "lecturer" in some chats
- Textbook(s) readings
- Course Documents—location for course materials that may include:
  - Course outline and syllabus
  - Supplemental Readings
  - Other supplementary materials for the course
- E-mail
  - Contact simultaneously all or select students on any key issues
  - Require students to check e-mail every 48 hours
  - Provide students updated information on class, events, topics, etc.
- Evaluation
  - Provide all students' grades via the platform
  - Assess weekly posting(s)
  - Individual and/or general class feedback provided weekly
  - Assess chat contributions
  - Midterm and Final Exams
    - Short essay questions
    - Application focus

In summary, web-based instructors must use different education tools provided through distance learning platforms to insure that the learning objectives or outcomes are successfully met.

Comparison of Approaches

In this section, I compare the two types of instruction, focusing on course development, the learning process, the amount of material presented, and the amount of labour and time used.

Course Development

Developing web-based instruction from an existing in-class outline is not a simple process. In my own case, although the course outline and textbook readings generally stay the same, I rely upon key components of Blackboard to deliver key points. To supplement the text and present more current information, I also provide papers I have written based on some specific topics (e.g., defining disaster, warning and protective action). The course focuses upon weekly students' postings on the discussion boards with feedback from the instructor, weekly virtual chats, and essay exams. Although the goals of the virtual and traditional courses are the same, in essence I create a totally new course for the virtual environment. An instructor should not take the materials from a non-virtual course, dump it all into the course web site, test the students on the readings, and consider it a virtual course. This form of instruction does not draw upon the many advantages of web-based instruction (e.g., active learning, communication directly with the instructor).

In fact, some may find it easier to develop a distance learning course from scratch rather than drawing upon an existing syllabus for a non-virtual class. One can develop the web-based course with a fresh mind rather than struggling with making a translation from a traditional course to a distance-learning course.

Learning Process

Although the educational goals for my traditional and web-based courses are the same, the process for reaching those goals differs. Using Bloom's Taxonomy as a guide, I find that my web-based course forces students into a higher level of learning than does the classroom approach. The weekly writing assignments and chat room discussions compel students to deal with issues of application and even pulling different concepts together. Drawing upon some general issues related to the readings, I design my chat questions in order to reinforce one or two key points from that week's readings. These questions force students to apply or synthesize specific ideas or concepts related to their own set-

ting or community. Unlike the traditional classroom setting and lecture, students who miss a specific chat can check the archives and read the complete session. Generally, to enhance chat participation I require students to attend a set number of chats during the semester.

To establish proper web-based instruction, both chat sessions and class size cannot be large. Palloff and Pratt (1999: 55-56) recommend that effective chat sessions should contain no more than 5-10 participants. Although I can manage chats with15 students, I prefer no more than 10 or 12 students per chat. Larger size chats can inhibit other students from participating and hinder instruction (e.g., keeping track of the topics, managing the flow of discussion).

By contrast, traditional introductory classes focus on lower levels of knowledge (e.g., knowledge, comprehension). The structure and economics of many introductory courses, such as large lecture halls of students, computerized true/false or multiple choice questions, social settings inhibiting interaction between professor and students, and an environment encouraging passive learning all obstruct higher levels of learning.

Amount of Material

Although the traditional and web-based courses strive toward the same objectives, I find that the traditional classroom provides a wider range of techniques to present material and reinforce key points. Such extra information may come in the form of five-minute vignettes by the professor, illustrations, slides/pictures, videos or some combination thereof.

These techniques are difficult to use in a virtual settings. For example, my five-minute vignettes to illustrate points, often based upon my fieldwork and volunteer activity, work well to punctuate points in a traditional classroom setting. The virtual chat environment, however, functions better when most comments are short and a dialogue develops among students and instructor. Second, bandwidth problems continue to inhibit the use of other web sites, pictures and slides during chats. Bandwidth and electronic storage problems also exist when attempting to put this type of information on the class web site. Commercial videos create copyright, technical and bandwidth problems.

I have found some solutions to these problems. First, I have turned some of my lectures including the vignettes into text. I place these lectures under "Course Documents" in Blackboard so that on-line students can retrieve the additional information. Currently, I am investigating options to videotape some of my lectures (especially those that go beyond textbook readings). The videotapes would include a wide array

of visuals and at times a "talking head." The final product could be put on videotape, CD-ROM, or even DVD. Finally, key documents and images that do not have copyrights, such as my own photographs or chats, can be placed on a CD-ROM and mailed to students at the start of the class.

Labour and Time

Pachnowski and Jurcauk (2003) and Reeves (2002) show that web-based instruction is much more labour-intensive than the traditional classroom. Faculty must expend extra time in developing and preparing courses along with learning and becoming comfortable with new teaching methods and technology. Even after a course is developed, web-based instruction takes two to three times the effort than traditional instruction (Palloff and Pratt 1999, pp. 49-50). Most of the extra effort is spent toward administration issues related to the class. Whereas a traditional class may take three hours a week for an actual lecture and between three hours to six hours for preparation and administration, a distance learning course includes time participating in and possibly grading weekly chat sessions, reading and grading students' postings on the discussion board, responding to students' postings, and responding to students' questions via e-mail, the discussion board or phone. All of these necessary weekly activities usurp the instructor's time. More generally Palloff and Pratt (1999: 57) also find that unlike a traditional class, adding more students to a web-based class does not create an economy of scale (p. 57). In summarizing his experience teaching a disaster course on Blackboard for the first time, Green (2004: 3) observes, "This is not a simple or easy way to teach. Neither is it a way to save time." Overall, the above findings suggest that web-based instruction, although an effective means of education, takes much more of the professor's time than a traditional classroom setting.

The findings noted above reflect my own experiences. With my Introduction to Disaster Course, even after teaching it a number of times, it still takes at least 1.5 to two times the amount of time of a traditional on-campus introductory course. For example, during Fall Semester 2002, I kept track of my time spent teaching one class of 25 students. Even though I had already taught this web-based course three times, I found that I was spending at least 15 hours a week on just this one course. I also kept track of the number of e-mails I received from students during our 14-week grading period. I received over 600 e-mail messages from students. Per our departmental policy, I responded to these messages within two working days (usually the response was within a few hours).

I also find that no economy of scale exists when additional students are added in a virtual. The workload simply increases.

Debates have emerged at universities dealing with the extra work associated with distance learning and how that should translate into an instructor's teaching load. At JSU, we are still trying to clarify policy regarding teaching loads and class size. Clearly, modifications to teaching load, advisement, research, service and other activities should be considered for those involved in web-based instruction, not only during initial course development, but beyond.

More generally, the labour-intensive dimension of distance learning has implications for the university structure. Kanter (2001) suggests that successful organizations using the Internet must be willing to change in order to use the web. Certainly her discussion has strong implications for how universities integrate web-based learning and programs into their organizational structure. Other studies suggest that web-based learning institutions or programs take on the characteristics of decentralization and organizational flexibility (Paulsen and Torstein 2001, Lefor, Benke and Ting 2001, Sharma 2001). As a result, universities may struggle in finding ways to integrate centralized bureaucratic components of their organizations with growing, decentralized and flexible structures. Perhaps for those faculty involved in web-based instruction, university faculty and administrators need to revisit the issues of service, teaching, and research/creativity. Maybe the whole structure of the university must be reconsidered in order to accommodate successfully web-based programs. Simply, an organizational structure in part based upon 15th century religious hierarchy may not be applicable for the virtual educational world of the 21st century.

Final Observation

Yet, the standard classroom and virtual environment are not mutually exclusive. For example, instructors of traditional courses can incorporate some aspects of distance learning platforms (e.g., postings, chats, course documents, e-mail) into their regular class (e.g., see Draves 2000, pp. 37-41). With my most recent on campus introduction course, I used Blackboard to assist or provide my students with various course documents. In the future, I hope to video some of my traditional lectures and make them available to distance learning students. In short, one should not try to replicate the bricks and mortar approach to a virtual class, and *vice versa*. Yet, instructors can incorporate some techniques from one approach to the other.

Conclusion

The increasing number of disasters, the growing recognition that disaster management is a profession and the increasing threat of new hazards and risks all highlight the need for more disaster management professionals. Few true disaster management degree programs exist and most are based within the traditional classroom setting. As a result, educational options and opportunities are limited for those wanting a degree in this new emerging field. Web-based instruction provides a means to increase access to students interested in disaster degree program, especially among those who may be non-traditional students and/or who do not live near a university with a degree program. Thus, the wide range of flexibility offered through web-based learning can provide one important means to meet the growing need of disaster management education.

My own experience teaching Introduction to Disasters in both virtual and classroom settings suggests that students are receiving the same general information. The delivery method does not impact course objectives. However, the process by which an instructor reaches each course's objectives is different. Most introduction classes provide a general overview of key concepts and are often taught to large numbers of students. As a result, traditional lectures and assessment (i.e., primarily objective exams) focus typically on low levels of learning (i.e., knowledge, comprehension). However, the delivery method and demands of proper distance learning (e.g., writing assignments, chats, essay exams, small classes) push students to a higher level of learning through a more active engagement with the material.

Although instructors can meet educational objectives, some issues must be addressed. First, I find that the amount of material (some of it redundant, but presented in different ways) is much greater in the traditional classroom approach than through web-based instruction. However, innovative or additional approaches (e.g., providing text or videos of lectures) can mitigate this problem. Second, research by others and my own experience show that web-based instruction is much more labour intensive than traditional classroom instruction. In addition, course section sizes for effective instruction should not exceed 25 students. As a result, fair mechanisms must be devised to recognize the continual additional workload faculty face when doing web-based instruction.

Notes

1. Having been a member of the UNT degree program from 1989 through 1998, comments on the development of the UNT program are based upon my personal papers and recollections of events. McEntire's (2004) recent paper on the history of the UNT program also documents some of the activities and events I mention.

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