

ON-LINE TRAINING AND EDUCATION IN EMERGENCY MANAGEMENT:
PERSPECTIVES BASED ON EXPERIENCE

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INTRODUCTION

The University of Richmond and Emergency Services Management

The Emergency Services Management degree program at the University of Richmond is a multidisciplinary public safety degree program with a focus on integrated and comprehensive emergency management. The program started in August 1996 and graduated its first students with a Bachelor's in Applied Studies in Emergency Services Management in June 1999. The University now offers Certificates, Associate's degrees, Bachelor's degrees, and Graduate Certificates in emergency management, business continuity, and disaster science. The program is directed by one full time faculty member, with an adjunct faculty of twelve.

Teaching On-Line in Emergency Services Management

To increase the flexibility of delivery for students who work shifts, to increase our catchment area, and to increase diversity in both the student body and the faculty, we made a conscious decision to go online with our entire degree program, starting in 1998. Initial teaching technology was very simple, an Internet page for assignments, objectives, and supporting contextual material, and a listserv for the distribution of e-mail based discussion. We recognized at the time that this was a very limited solution, but it provided the opportunity to experiment with teaching methods and to gain operational experience at a very inexpensive cost.

In 1999 we transitioned to the use of WebBoard, a web bulletin board system that allowed discussion to be conducted in the threaded discussion format. WebBoard was effective at what it did (although the chat capability proved unusable), but the dependence on a single method of delivery and the inability to conduct exercises effectively limited its use. In retrospect, this growth through two approaches

was very beneficial in identifying what was really important about on-line teaching and in bringing our students along in a step by step progression to better and more sophisticated teaching technology.

At the same time other Schools in the University were exploring use of online materials to support class delivery. In the search for an easy to use standard teaching platform, the University's On-Line Teaching and Learning Committee examined a number of possible softwares. Although faculty members had experience in the use of both Web CT and WebBoard, the consensus, based on a combination of experience and vendor demonstrations, was to adopt Blackboard in 2000-2001. Currently, over 300 courses at the University use Blackboard for everything from automated testing and reference material storage to complete class delivery.

CHOOSING A TECHNICAL APPROACH

The approach selected to teach online deliveries may vary considerably based on student body, enrolment period, costs, instructor availability, and the degree of interaction required to deliver the subject matter. Table 1 summarizes some of the factors to consider in selecting a specific approach. Table 2 provides an overview of one of the most sophisticated teaching platforms, Blackboard.

In general, Internet deliveries appear to be most suitable for students who are used to being self-directed, who have a strong desire to learn the material, and who can approach unsupervised learning in a disciplined way. Although the temptation to view Internet based instruction as a solution to distance, limited travel budgets, or available time is great, the reality is that students who are marginal or uninvolved or unmotivated in a classroom training environment will not perform any better on the Internet.

Internet delivery can be on-demand, with individuals being accepted into classes continually, or be as structured as a normal classroom class. In general, on-demand courses would seem to be most practical using simpler methods. The more sophisticated teaching platforms could be used in an on-demand approach, especially for their testing capabilities, although many of their features would not be useful in this environment.

One important constraint when considering online delivery is budget. In most cases this is not driven by software or service costs – for example, Blackboard hosts a commercial service on its site that allows users to establish a course and teach it for one year for \$295. Yahoo's Education Center offers free course hosting with a reasonable selection of tools that approaches a low end teaching platform. However, online delivery is very costly in terms of staff time, in developing and maintaining the site and instructional material, and in monitoring student performance. This is to some degree offset by costs for students; no travel eliminates much of the direct cost, if you completely or partly reimburse student costs.

LESSONS LEARNED

The following are my personal observations based on my on-line teaching experiences. In many cases they are based on things I have done less than well. They are unsupported by anything other than a practitioner's perspective.

Table 1. Factors To Consider In Selecting a Technical Approach

Approach:	Best Used When:	Advantages:	Disadvantages:
Web pages for course materials with student work submitted by e-mail	Small number of students with no fixed enrolment terms for the course. Students are self-directed, can identify what they need to learn, and perhaps even tailor course learning to personal objectives. Material is relatively simple in content. Particularly applicable for short, just-in-time deliveries to address specific needs.	Low to no additional cost for software or services. Simplest to develop. Requires least sophistication on part of developers and users.	Little opportunity for discussion. Tests have to be manually scored. Limited ability to use variety of media. Not suitable for group exercises.
Web pages for course materials supported by a listserv (one example of a listserv service is that provided by L-Soft International, inc.)	Relatively small number of students. Material requires some discussion, but not extensive interchange. Material is relatively simple in content.	Listserv automatically distributes e-mail to all course participants – allows for some discussion. Primary direct cost is listserv service or software.	Large class swamps everyone with e-mail. Tests have to be manually scored. Limited ability to use variety of media. Not suitable for group exercises.
Threaded discussion board (one example of a threaded discussion board is WebBoard)	Small to moderate number of students. Material requires extensive discussion.	Allows organized discussions to be conducted asynchronously.	Tests have to be manually scored. Little ability to use variety of media. Not suitable for group exercises.

Teaching platform with full range of features. (examples include Blackboard, WebCT, e-College)	Most closely replicates the classroom environment. Especially useful when course material requires variety of approaches and extensive interaction.	Wide variety of teaching features. All course materials are organized in one place. Supporting media can be used. Automated testing.	High cost. Greater instructor sophistication required. Full use of features requires significant amount of work.
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Table 2. Features of Blackboard

Features	Blackboard
posted documents	primary means of providing instructional material – text can be typed or cut and pasted in to a document file or provided as an attachment or a link
announcements	yes – are posted on the initial page students access
threaded discussion	yes – in an area separate from course documents
variety of media	yes – allows PowerPoint and a variety of other types of visual and audio material to be built into the course
testing	yes – with automated grading and feedback for multiple choice and short answer – tests can be timed
grading	gradebook students can access – allows manual entry of grades and automatically enters test results
allows incorporation of links	yes – there is a specific link area
chat capability	yes – with an excellent whiteboard that simulates a classroom blackboard
e-mail capability	yes – also has a student drop box in which students can leave assigned work as electronic files
spell checking	no
editing order of materials	yes – but is a one entry by one entry system – to recorder an entire folder you have to reorder each document individually
ability to reveal and hide material	yes – makes manage what you want students to see very easy to do

ease of learning and use	very easy to learn – but requires a lot of thought to make your presentations effective
interface issues	there are some – appear to be browser and service provider dependent

This is not a simple or easy way to teach. Neither is it a way to save time. And it does not instantly make an instructor a super star. Poor or lazy classroom instructors are not saved by Internet technology; instead they are revealed as truly awful.

For material that is knowledge based and that does not require discussion in depth, and with highly self-directed students, you can teach very large classes. There are strategies for managing classes in the 100 to 600 range, but they require a large network of supporting teaching assistants, and very sophisticated design and monitoring systems. For material that is more conceptual in nature and that requires in depth discussion the number of participants must be rigorously managed. Fifteen students in a well-designed class that offers a good degree of interaction is a large number of students and a tremendous amount of intense work in this environment. More than 20 would take over your entire life.

Translation of course material from the classroom environment to on-line is not a trivial undertaking. If all you have is reams of handwritten lecture notes, your task is to convert everything to word for word text in an electronic format, and then insert it in the site. My personal rule of thumb is that one hour of instruction takes anywhere from 2 to 8 hours of work to translate it to the site. The length of effort required appears to depend entirely on the selected teaching method and the complexity of the course session. Relationships between material must be thought out carefully and the site structured to make these relationships clear to the users. In the classroom we can achieve that quickly with voice tempo and inflection, expression, gesticulation, and quickly drawn diagrams on the board. On-line, the perfection of our thought is only obvious if we spend the extra time to make it so.

Some types of things that we do in the classroom require considerable rethinking. Group exercises and scenarios are probably the most difficult to do, although chat and a whiteboard capability does come close to the classroom environment.

This is not a format for lecture. There are some things you can do to replicate the lecture environment, but simply typing out text for students to read on the screen achieves the same level of compliance as assigning them reading material. For some material this may be completely appropriate. For material that requires an instructor teach interactively, my experience is that an approach based on Socratic Dialog appears to work well; the discussion thread mechanism enhances that.

Every instruction must be considered carefully for the written message. Students working asynchronously depend on information posted on the site for their understanding of course requirements. Any ambiguity will confuse them and result in the course not working as desired. Even reproducing the

instructor's manual word for word does not eliminate the possibility of confusion; the on-line instructor must think very much in terms of step one followed by step two.

Proof and test everything before you use it on students. The time to find out that a feature does not work the way you thought it did is not in the middle of a chat presentation.

What is obvious to you will confuse at least a third of the class. For the first several sessions you are well served if you insert detailed instructions on the level of "use the orange ASSIGNMENTS button to ..." every time you want the students to do anything.

Asynchronous delivery using discussion threads is not self-teaching. Instructors must regularly read the student postings and respond to them using questions, praise for good responses, and examples to reinforce learning. Regular daily review of material is necessary, even if work is scheduled on a weekly basis. This includes Saturday and Sunday, because these are times students post. The Internet environment creates expectations of instant response; if students post material and do not receive feedback within a day they start to feel the instructor is not interested in their work.

Use of chat requires training, both for the instructor and the students. Effective chat sessions are moderated, with the moderator controlling the flow of the dialog, and participants not conversing until they are cleared to do so. Delivery of lecture material by chat requires mastery of the techniques of preparing chunked material, cut and paste, and developing a delivery rhythm. Neither of these are intuitive skills.

Both discussion threads and chat are much slower than normal conversation. We speak at 200 words a minute. I type at 20 words a minute. Simplistic analysis says that for me to convey the same material I would speak in writing takes ten times as long. Expect that a one hour chat session will cover about 20 to 30 minutes of classroom material and discussion, and that delivery by threaded discussion of a 2 hour class to 11-12 students requires about 7 to 8 hours of teaching time a week.

Tests in instructor manuals typically do not come with explanatory material beyond an answer key. Software that uses automated testing may include an option to provide reinforcement to correct answers and explanatory material for wrong answers--feedback significantly increases the learning value of the tests. However, test construction is the slowest and most demanding of the activities in these programs.

Because the written word replaces the both the oral and visual inputs, your writing is critical to the success of the course. Students lack the visual and tonal clues that the classroom provides; instructors have to use extra care to avoid negative effects. What you think is funny will almost certainly be taken as demeaning or offensive by someone.

Simple is important. Not every student has an 800 MHz computer and an ISDN or T1 line. Even in a city, there are people connecting at 19K rather than 57K. The more complex the material is, the more mouse clicks needed to reach material and assignments, and the more graphically intense the teaching

platform is, the slower it is. With state of the art equipment this does not have a negative impact. With old equipment and a slow connection it frustrates students and makes delivery very time consuming.

You have to train your instructors. Although the software is generally relatively intuitive, even very experienced classroom instructors will have difficulty making the transition initially. Those who believe there is only one way to teach the material they are expert in will have almost insurmountable problems until they get past the “fact” they already know everything there is to know about teaching. Commit time and resources to training instructors not only on how the software works, but also on how to structure lessons, present material, answer questions – all of the things that have to be learned all over again.

Watch out for copyright issues. Almost every wonderful picture or superb graphic is owned by someone. If you did not do it yourself, or it is not clearly in the public domain, you have to get permission to use it. Remember that you cannot simply reproduce large amounts of other’s material in your courses. If they did it, they own it, you are infringing on their copyright, and you may end up in court. While fair use doctrine does allow some uses of materials for educational purposes, it does not allow you to post it on the Internet for all to see. Similarly do not plagiarize – take peoples ideas without giving credit. If someone else thought it up, give him or her credit. No one likes a thief.

AND WHAT DO THE CONSUMERS (STUDENTS) SAY ABOUT IT?

The following paraphrased comments from students (in person and in evaluations) may be of use in thinking about on-line teaching in general:

More work than a classroom class ...

You don’t have to worry about cheating—I couldn’t pay anyone enough to do this.

I really like that I can think about the questions rather than just responding off the top of my head.

I am the guy who sits in the back row and never opens his mouth in a classroom—this course forced me to be involved and interact.

More and better instructor involvement than in a classroom.

Some really good discussions ...

I learned a tremendous amount.

With my shift schedule in my agency this was the only way I could do the class.