

Digital Video and Internet as an Effective Supplement for an Innovative Course.

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Abstract

This paper describes innovations in teaching a new course developed in the area of Terrorism and Counter Terrorism (TACT) during the Fall 2000 semester. The course was interdisciplinary and it covered political as well as scientific and technological topics. In addition external speakers from industry and government also lectured in this course. Students in the course ranged from journalism, science, medicine and engineering.

To assist students from different backgrounds, each lecture was digitally recorded. The video and audio was then transformed into a MPEG file and burned onto a CD. A separate audio file was then produced and was downloaded to the course web page. The audio file was accessible through the course web page. Students were allowed to check out the CDs and view the lectures.

Our experience has shown that students were better able to comprehend a new topic by not only attending the lectures, but also by having access to the audio files through their home computers. Some students preferred viewing the video. We will discuss our experiences with this method of presenting a multidisciplinary course to a multidisciplinary student body.

1. Introduction

The recent events such as bombing of USS Cole, Oklahoma City bombing, Tokyo Subway Sarin attack have created a need to educate students in area of terrorism and counter terrorism. Terrorism has been a familiar tool of political conflict, and it has assumed greater importance during the past twenty years. Political scientists in various forms have treated this subject, but the scientific and technological aspects of different forms of terrorism have not been treated in a single place. Terrorism and Counter Terrorism are covered in several disciplines, such as public administrations, public policy, political science, history, science and technology. Most of the courses on this subject are taught as a part of Political Science, Public policy and Law curriculum, and some courses are taught by different Defense establishments for in-house training. It is important for persons who propose counter measures to understand the basics of different types of terrorism such as for instance the nature of chemical agents, their properties such as toxicity, etc. in order to build defense systems. There are hundreds of books, and a host of journals dealing with this subject; however, the scientific and technological aspects of TACT are loosely and thinly spread in some journal articles as for example in the JAMA in 1997 on biological warfare. A quick

survey of the courses in this area revealed that some departments like Political Science teach courses on this subject with reference to the political and public policy issues, but we could not find a course that covered the scientific and technological aspects. Therefore we thought that it would be of value and interest if we can focus more on the scientific and technical aspects of terrorism and counter terrorism.

The latest Rand Report (1) states that counter terrorism measures must be developed and should be in place, and that research, development, testing and evaluation must be supported. This can be achieved if we educate our students. We also felt that political scientists, politicians and others involved in decision making needed some scientific and technological background on this subject, and engineers and scientists some political science background. Therefore we have combined various topics with emphasis on the technological and scientific parts of the subject.

2. Course

This is an interdisciplinary course with more than a dozen faculty members teaching the course. Colleges and universities in approximately 25 States were surveyed, and the survey revealed that no such course has been offered. The students as the first class assignment carried out this survey. Table I shows the course syllabus, and the number of 1.5-hour lecture periods. There was no single textbook prescribed for the course, as none were available. However a number of books written on the topics outlined in Table I were used by the instructors lecturing on different topics. In addition to the textbooks, a considerable amount of very valuable information can be found on the Internet.

The diversity of the student group added much to the discussion, and strength of the course. Local press and television publicized the course, particularly after the USS Cole incident, and on a National level Christian Science Monitor (November 7, 2000) had a write-up that was later reproduced in the Chicago Sun-Times (November 14, 2000). There were also inquiries from law enforcement agencies both locally and outside Missouri as to the contents of the course. The course has been posted on the Internet and can be accessed at the address <http://prelas.nuclear.missouri.edu/NE401>. In addition, students were able to borrow the CD's (the way in which these were transcribed from the videotapes is described below) if they missed a lecture. Every instructor gave an assignment based on the lectures keeping in mind that the student body came from science, arts and engineering departments. The students wrote a paper, and made presentations at the end of the semester. The course appears to have encouraged some students to pursue careers in counter terrorism.

Table I. Course Outline

Topics	# of 1.5 h Lectures
1. Introduction	
2. Nature of Terrorism Origin of Terrorism and the Political	2
3. Psychology Of Diplomacy	1
4. Biological Weapons Classification, Manufacture, Toxicity, Effectiveness, Control, Delivery, Counter Measures	4
5. Nuclear Terrorism Motivation, Threats, Proliferation Control	4
6. Cyber Terrorism Cyber Terrorism: Its nature and Scope The Attack: Vulnerabilities and Consequences Protection and Response	4
7. Chemical Terrorism Chemical Agents, Manufacture, Properties, Delivery, Advantages, Disadvantages, Counter Measures Interaction on human system	4
8. Case Studies	4
9. Disaster and Emergency Measures, and Preparedness Types of Disaster, Emergency Emergency Management and Training Government and Voluntary Agencies International Agencies and their Resources and responsibilities	4
10. Paper Presentation	3

Table 2. Faculty, Speakers, and their affiliation

Faculty	Affiliation
1. G. Christensen	School of Medicine
2. M. Diamond	Institute of Public Policy
3. T. Ghosh	Nuclear Engineering
4. V. Gopalaratnam	Civil Engineering
5. S. Loyalka	Nuclear Engineering
6. W. Miller	Nuclear Engineering
7. M. Prelas	Nuclear Engineering
8. H. Tillema	Political Science
9. R. Tompson	Nuclear Engineering
10. H. Tyrer	Computer Science and Compute Engr.
11. D. Viswanath	Chemical Engineering and Nuclear Engr.
External Speakers	
1. Julie Bentz	U.S. State Department
2. Chris Graham	Callaway Nuclear Power Station
3. D. Trokey	Missouri Dept. Public Safety

It was the intent of the course to give our students some insights in occurrence of terrorism, the role of mentality of some groups and/or religions in promoting terrorism, different methods employed by terrorists, the delivery of materials used in terrorist attack, the methods of destruction of these materials, strategies in combating terrorism, and the preparations needed to meet such attacks.. However as can be seen from Table I emphasis was placed on the scientific and technological aspects of this subject rather than the political and public policy issues. Some of the comments of the students published in the press reports may be instructive. These are as follows.

- Christina Plies, a nuclear engineering graduate student commented, “she gained key insights on how group mentality and generational influences can contribute to terrorist behavior, particularly when it comes to religious and territorial disputes”.
- Michael Devaney, undergraduate in Electrical Engineering, stated, “I certainly have a broader awareness of the different aspects of terrorism. I have a greater understanding of terrorism and the different types of it, such as biological, chemical and nuclear aspects”.
- Letty Kampen, Senior Political Science major, stated, “She was skeptical about taking a graduate-level engineering class, but said it hasn’t been too difficult. It is an interesting thing to learn about. In political science classes on terrorism, we don’t get much background on terrorist attacks. In this class, you get a deeper understanding of things you normally just hear about”.
- Microbiology graduate student Jane Hata said, “She enjoys the discussion-oriented atmosphere of the class. It is very interactive, there is a lot of discussion, which is something you don’t often see in math or science classes”.

3. Assignments

Too many assignments could not be given for this course as:

- (a) The students had a very diverse background from political science, journalism, pathology to nuclear, and computer engineering,
- (b) Instructors from other departments, industry, and other institutions came on a professional courtesy to lecture and to burden them with correcting the assignments would have been too much to ask, and
- (c) This class had a mix of undergraduate and graduate students.

However some assignments were made and a couple of examples are given below. Students were asked to write a 10-15 page Term Paper and make a 15-minute presentation that was graded by the instructors present. The presentations were graded on technical content, preparation, answers to questions and relevance of the topic. Although topics were suggested to the students, they were also allowed to choose a topic of their choice. These presentations were also video taped.

4. Video to CD and Web

There were regular lectures, and the lectures were recorded with a Sony Digital Handycam. The digital recording was transferred to a computer using Ulead VideoStudio 4.0, edited with Ulead Media Studio Pro 6.0 and then burned onto a 700 MB CD. The lectures were typically one hour and twenty minutes in length. Using MPEG, we could put 1 hour and eight minutes on a single CD. This limitation required that we use two CDs for each lecture. When DVD recorders become available, it will be possible to put each lecture on a single disk.

The high quality stereo audio was extracted from the digital recording and made into a wav file. The wav files were compressed to about 15 Mega Bytes and then posted on the course web site. The download time of each audio lecture was about 3 minutes using DSL.

5. Course Web Site

A course web site was designed to supplement the lectures. The Internet was used as an effective teaching tool by providing daily news, important links, audio, course information and feedback. This use of the Internet was an important component to the course and helped make it an enjoyable experience for students of diverse backgrounds.

Bibliography

- (1) "Toward a National for Combating Terrorism" Second Annual Report to The President and The Congress, Chairman James S. Gilmore, III, Rand Corporation, Arlington, Virginia, Dec. 15, 2000

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