

Creating Web Enhanced Avalanche Education at Utah State University

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ABSTRACT: Beginning spring term 2007, Utah State University will offer a web enhanced level I avalanche class. The following year a graduate level avalanche and snow dynamics course will become available. For registered students, online tutorials will supplement or replace in-class lectures.

Both courses will meet the American Avalanche Association guidelines for the classroom portion of Level I and Level II avalanche courses. The basic course will target recreational backcountry users. Upon successful completion, students should be able to identify avalanche terrain; identify dangerous stratigraphy; perform basic stability tests; recognize dangerous terrain and weather conditions; and demonstrate proficiency with an avalanche transceiver. The graduate Level II course is tailored for students with a science background. Advanced topics will include the role of avalanches in disturbance ecology, basic snow hydrology, and avalanche control.

Most importantly, both the basic and advanced course content will be available free to the general public through the Utah State University's OpenCourseware site. Anyone with interest and an internet connection will be able to access the classes.

KEYWORDS: avalanche education, web based, web enhanced

1. INTRODUCTION

The vast majority of avalanche "accidents" are avoidable. Over 90% of people caught in avalanches trigger the slide themselves (McCammon 2000). The real enemy in the war against avalanche fatalities is ignorance. Most caught either do not know the signs of danger, or they choose to ignore them.

The effectiveness of avalanche education in preventing fatalities depends upon the quality of its presentation and the quantity of potential students it reaches. Web-enhanced course material may aid avalanche educators in both respects.

2. Web Based vs. Web Enhanced

Both the basic and advanced avalanche courses to be offered by USU should be considered web-enhanced, not web based. Students will not receive credit for completing a series of online tutorials and lectures alone, but must attend an on-hill training session where students learn by

practicing beacon searches, stability tests, and evaluation of the terrain.

The American Avalanche Association mandates an on-hill portion of the course. The AAA requires that least half of any avalanche class must be field based. The series of online lectures and tutorials being developed on WebCT are meant to replace or supplement the classroom portion of a traditional class only, not act as an entire class in themselves. The material will prepare students for field sessions, and act as a reference for them in the future. The material on OpenCourseware should be viewed as an information resource for backcountry enthusiasts, not a stand-alone course.

3. OpenCourseware and WebCT

Course content will be put into Utah State Universities WebCT and OpenCourseware programs. WebCT is an "an online course management system used to handle the administrative functions of a face-to-face or a fully online course" (FACT website

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2006). It's essentially a software system that allows educators to integrate the online education materials into their classes in a standardized format. OpenCourseware is designed to provide information and education to the general public. Universities that employ OpenCourseware "strive to create a worldwide environment in which individuals are able to gain access to the learning opportunities they want and need, and in which open education is a respected part of the larger educational ecosystem". The learning opportunities provided by the online courses and materials in OpenCourseware are available free to anyone with an Internet connection and the motivation to access them.

4. Advantages of Web-Enhanced Format

Avalanche educators must tackle the challenge of reaching a diverse group of backcountry users. Skiers, snowboarders, snowmobilers, and snowshoers all may come into contact with dangerous avalanche conditions. Even though each group may venture out into the backcountry for different reasons and display very different behaviors, both likely use the Internet as one of, if not their main information resource. According to the Utah Avalanche Center website, over the course of the 2004-2005 season the website received almost 2 million hits, double the number from hits in the previous season. Five times as many people checked the online advisory as called the automated advisory (Utah Avalanche Center website).

Perhaps most important for registered students, replacing class lectures with online tutorials may save instructional time and frustration. Giving students an interactive means of learning conceptual material before showing up to class means that potentially less time needs to be spent on teaching concepts face to face in the classroom, and more of time and energy can be devoted to field based training where concepts can be applied to the real world.

5. Using Learning Styles in Online Education

Students learn in a variety of ways. By catering to a student's natural inclination to process information in specific ways, it's possible to teach students more effectively. These inclinations towards different types of learning are commonly called learning styles.

In 1988, Richard Felder and Linda Silverman formulated a learning style model designed to capture the differences in learning styles among their engineering students (Felder and Silverman. 1988). They broke learners into the following categories,

- Sensing learners (tend to be fact and procedure oriented) or intuitive (abstract, oriented towards theories and underlying meanings)
- Visual (prefer diagrams, pictures) or verbal (prefer written or spoken explanations)
- Active (learn by doing) or reflective (learn by thinking things through, prefer working alone)
- Sequential (learn by small incremental steps) or global (learn in large leaps)

The material delivered on the web for both the Level I and II courses will work equally well for both visual and verbal learners. Verbal learners will most likely be drawn to the written material and the video of lectures and field exercises from WILD 5690. Visual learners utilize less of the written text and more of the diagrams and video. As for the other categories, by its very nature educational material presented on the web requires students to utilize reflective observation (learning by watching and listening) and abstract conceptualization (learning by thinking) simply because of the way course materials are organized and delivered (Aragon, Johnson, and Shaik 2002). Consequently, the online material may appeal more to learners that tend to fit into the intuitive, reflective, and sequential categories.

However, this doesn't mean that the online format isn't useful for learners in the other categories. For students that tend to have a harder time with abstract conceptualization, the material may be used as a study guide for extra help on quizzes and tests. As already mentioned, providing online course material that students can access individually on their own time means that more time can be devoted to field based instruction which is likely to be more valuable to those who are more sensing, active, and global.

6. Use of Multimedia Content

Throughout both courses, video of the Avalanche/Snow Dynamics course will be integrated with text and images to explain

concepts. . Once selected, the clips will enrich and illustrate concepts covered in the text. These video clips will be an important part of the course, as they will provide a visual and auditory component to the course delivery.

Each unit of the course will include an automated lecture based on lectures and slideshows given in WILD 5640, a study guide consisting of written text and integrated video, as well as a quiz to test student progress. The final test in the Level I module will guide students through a hypothetical ski tour, asking them to make decisions about stability as they progress through the exercise. The content of the Level II course will be catered towards students with a science background. Advanced topics will include snow hydrology, avalanche control, and avalanches roll in disturbance ecology.

7. Conclusion

The Level I course will be available through Utah State University OpenCourseware site at <http://ocw.usu.edu/> beginning January 2007. The Level II course will be available the following year. All material is available free to avalanche educators and the general public.

References

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