ITS America Best of ITS Awards
Nomination for the Consortium for ITS Training and Education (CITE)
Training and Education Category
January 2005

Innovation

Courses taken over the internet (referred to as web-based courses or e-learning) have become the fastest-growing segment of the education and training community. For example, the University of Phoenix Online, which delivers only e-learning courses, is the largest private university in the country, and it has only been in existence since 1976. The combination of our busy schedules and exploding technology, is forcing more and more people to use e-learning to satisfy their education and training needs. E-learning offers many benefits including flexibility, reduced travel and interactivity of course material.

In spite of the many benefits of e-learning, many students are dissatisfied with its lack of personal interaction with the instructor and other students. The schedule flexibility provided by e-learning, also results in low completion rates, since there are no mandatory dates for students to finish their work. The concept of blended learning has been introduced to overcome these problems.

The blended learning concept combines web-based courses with other types of more traditional instruction. Although the idea of combining multiple presentation formats is not new, it has proved extremely effective when applied to e-learning. Blended learning is an exciting concept because it recognizes the variety of learning strategies used by students, and the need to utilize more than one type of teaching method. In essence, it permits educators to match the delivery technique with students' learning styles and requirements. Blended learning clearly provides more participation, more enthusiasm, and ultimately, greater learning success. CITE has found that this approach overcomes most, if not all of the drawbacks of e-learning.

In November 2002, CITE offered its first blended learning course jointly with the World Bank's Global Development Learning Network (GDLN), when it delivered its introductory ITS course to more than 160 students in five countries. Instruction consisted of on-line interaction with the CITE material, interspersed with video-conferences at which students were asked to present information on ITS applications in their own countries, and discuss the course material. The course included three two-hour video-conferences set over a period of a week and a half. As a part of the course assignments, students participated in group discussions on questions posed by the instructors. The answers to these questions were debated within each group at the local level, and subsequently shared with the other participating sites during the video-conferences. In this way, a high level of interaction was achieved among the students and with the instructor.

The success of this course led to the refinement and subsequent development of other blended offerings in which teleconferencing was substituted for the video-conference. The teleconference format was selected for reasons of cost and accessibility. CITE's blended courses combine what we believe are the best features of both instructor-led and web-based instruction. The features of these courses include:

- Live discussions with the instructor through the use of conference calls,
- Convenient, flexible web-based learning,
- Workshop problems designed to reinforce the concepts being taught, and promote interaction with other students,

- A specific time schedule in which to complete the course, and
- Networking and interaction with both students and instructors through the use of class problems posted on a discussion board.

Since 2003, CITE has offered two blended courses, "Traffic Signal Timing" and "Managing High Technology Projects in Transportation." The "Fundamentals of Database Management Systems" and "Introduction to Telecommunications Technology" courses will be offered in a blended format beginning in February 2005.

CITE Background – Maturity of Organization

The Consortium for ITS Training and Education (CITE) was formed in late 1998, to provide transportation engineering students and current professionals with an integrated curriculum covering the technologies and management subjects associated with ITS. This curriculum includes a broad range of material related to transportation engineering, computer science, systems engineering, and project management. CITE is a unique organization of more than 100 universities and industry associations focused on providing comprehensive advanced transportation training and education throughout the world.

CITE's courses are all delivered in an interactive web-based format and are available 24 hours a day, seven days a week. After four and a half years, CITE offers 28 individual short courses, two full semester courses, five courses in Spanish, and three certificate programs made up of six courses each. A "Careers in ITS" course is also offered to inform freshman and sophomore college students of the opportunities in the advanced transportation field.

CITE is currently in its fourth year of a Learning Anytime Anywhere Partnerships (LAAP) grant it received from the U.S. Department of Education Office of Post Secondary Education. LAAP is a highly competitive grant program for distance education projects that are asynchronous, innovative, scalable, and have national significance. It was a tribute to the CITE organization that its proposal was ranked third in a highly competitive environment that included 394 pre-qualification submissions and 89 proposals. Due to uncertain LAAP funding for FY 2002, only six contracts were awarded. The entire ITS community will benefit from the activities that will be implemented as a result of this grant to CITE.

Quantitative and Qualitative Performance Measures

Blended courses have been a huge success for CITE, as shown by quantitative performance measures. For the period June 1, 2003, through May 31, 2004, blended course students accounted for 56% of all students taking CITE courses. During that same time period, CITE increased the number of students taking courses by 298% from the previous year's twelve- month student total. The completion rates for students enrolled in blended courses are is 91% compared to a 54% completion rates for regular web-based courses.

In the final survey given to all students taking CITE's blended courses, the students were asked the following question:

> *"In a regular web-based course, you take it at your own pace (no specific deadlines) and there is no live interaction with the instructor, only access via e-mail. In this course, we blended three features of instructor-led courses with a regular web-based course... If both of these formats (regular web-based and a blended version) were available to you for a future course, which would be your preferred delivery mode?"*

Only 11% of the students selected the traditional web-based format, while 89% preferred the blended format.

The effectiveness of the blended training is further demonstrated by the nature of the discussions taking place during the teleconferences. In a conventional classroom course, most students are from the same agency, or same geographical area. Students in blended courses, however, offer a variety of geographic and organizational backgrounds. As a result, a rich combination of differing approaches and experiences are offered, which provides an educational experience that is superior to either the classroom or traditional distance learning alternatives.

To ensure the pedagogical quality of the courses, CITE requests that students complete an on-line survey after taking their final exam. This gives students an opportunity to comment on all aspects of the course and provides CITE with valuable feedback on the various course components and their effectiveness. These surveys are completed and submitted anonymously. Some of the survey comments received from students taking the blended courses are listed below.

- "The learning aids and the conference call concept is definitely a winner. I look forward to other 'blended' courses from CITE."
- "Definitely a worthwhile learning experience."
- "I am a former university professor. I can say that it was an excellent course— - well designed, presented, and conducted. I would rate the course as excellent and would recommend it to others."
- "Excellent, informative, beneficial."
- "Great course, great value, really enjoyed it."
- "Great course, will recommend strongly to other ITS Engineers."

Below is a sampling of answers to the question, "*What did you like most about the course?*"

- "The teleconferences and the response postings were the best features."
- "Flexibility to do the course when I had time while also being able to share experiences of instructor and other students."
- "The review of other students' ideas and resolutions to problems. This gave me a broader view of problems."
- "That it was an online course with an instructor."
- "Real-world experience discussions during the conference calls."
- "The course content, structure, conference call, discussion forum, and learning aids."
- "The interactivity of the course learning process."

How this Program Saves Lives, Time and/or Money and Improves the Quality of Life

CITE's curriculum is all designed in an interactive web-based format. Web-based training is a form of distance learning. This approach eliminates the cost and inconvenience of attending a course away from the office. Instead, CITE's courses have been designed to be accessible 24 hours a day, 7 days a week over the internet.

CITE's blended courses save both time and money. There is no need for students to travel to obtain the training they need, therefore, the courses save participants both travel time and travel money. It also saves them from taking time away from the office and their family. All of these things add up to an improved quality of life for students.

For the two courses offered, students are able to improve their ITS project management skills, and their traffic signal timing skills. Improved project management skills will lead to an increase in the number of ITS systems that are acquired on-time and within budget. Improved signal timing skills will lead to better signal operations with its attendant reduction in emissions, fuel consumption and travel times. In essence, this relatively inexpensive, yet effective form of training represents an approach for leveraging public investment for improved operational effectiveness.

Conclusion

Through its blended training, CITE has been able to attract a significant number of students to continuing education in ITS, overcome the shortcomings of traditional web-based training, and improve the quality of its educational delivery. As a result, the knowledge and skills of the ITS professional have been significantly advanced.

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