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16. Abstract This report describes the preparation, delivery, and evaluation of a short course developed for delivery through compressed video to remote sites. The course covered basics of travel demand models and involved approximately 28 hours of classroom contact time, offered during five days in a ten-day period. The course was a first time course offered by remote delivery. The attendees were split into two groups, with the groups alternating between the remote classroom and the live classroom. Students were asked to evaluate the course and the electronic learning experience. Recommendations are provided on changes to the hardware and software used for the electronic learning, and on future use of this course, and possible other courses, that may be based on it.					
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Development of a Short Course in Transportation Planning for Electronic Delivery to
DOTD

by

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ABSTRACT

This report describes the preparation, delivery, and evaluation of a short course developed for delivery through compressed video to remote sites. The course covered basics of travel demand models and involved approximately 28 hours of classroom contact time, offered during five days in a ten-day period. The course was a first time course offered by remote delivery. The attendees were split into two groups, with the groups alternating between the remote classroom and the live classroom. Students were asked to evaluate the course and the electronic learning experience. The evaluations were very positive both for the course and the electronic learning medium. Recommendations are provided on changes to the hardware and software used for the electronic learning and on future use of this course, and possible other courses, that may be based on it.

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IMPLEMENTATION STATEMENT

This project resulted in the implementation of the course through one offering over the period of Nov. 27 through Dec. 5. The materials used in the course – the Corel Presentations® slide show, the homework problems, and solutions to the problems – are provided on CD-ROM with this report and can be utilized by others to offer the same course or to adapt the course for other uses. Other instructors will require training in the use of the technology, which can be provided by the LSU Center for Distance Education. Other than that, this course can be offered again as and when required.

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INTRODUCTION

As part of an effort to establish in Louisiana a professional Master's degree in Civil Engineering, with a concentration in Transportation Engineering, it has been proposed that a number of courses should be offered through distance learning, throughout the state. It has further been proposed that distance learning could provide a means to offer continuing education to professional engineers in the state department of transportation and development, as well as to other professionals in the state. The purpose of this project was to develop a short course on a topic of major interest to DOTD and to offer this through distance learning capabilities, specifically using compressed video. The course was designed to serve two purposes: first to offer an opportunity for staff of the DOTD, FHWA, and the MPOs to learn something about transportation planning, and second, to act as a prototype and proof-of-concept test of distance learning education for professionals within these organizations.

The course instructor was Dr. Peter R. Stopher. The syllabus of the course covered an introduction to the concept of transportation planning, land use, trip generation, trip distribution, mode choice, and assignment models as currently used in the state's transportation planning efforts. The course was to be developed for electronic delivery, using compressed video, and offered simultaneously in a live and a remote classroom on the LSU campus.

METHODOLOGY

From meetings with Dr. Kalivoda of DOTD, a curriculum for the short course was agreed. It was tentatively planned that the course should cover the topics of land use models, trip generation, trip distribution, mode choice, and assignment, together with needed background and supplementary material. The course was to be developed as an introductory level course that would also include homework problems that students could solve in spreadsheets or with calculators. The course was planned initially to not involve more than three days of teaching for two weeks, totaling of six days.

In order to understand how to prepare a class for compressed video delivery, assistance was sought from the Center for Distance Education at LSU. Training was provided by the center on the use of compressed video and the technologies available to the instructor during a teaching session. Training was also provided subsequently on some aspects of the use of the internet for distance education, although it was not planned to use this capability in the short course under development.

A previously-offered course on travel forecasting was used as a basis for developing this course. However, based on the information provided by the Center for Distance Learning, the existing overheads required major re-working. First, a new master was created with background and layouts for the different slide types. Based on advice from the Center, a blue background was chosen. Colors for the lettering were also selected to provide a good contrast against the blue background and to be easily visible through the compressed video medium. An example of a bullet slide is shown in figure 1, illustrating the color scheme chosen.

Second, the fonts were changed to sans-serif fonts, specifically using Frankfurt Gothic and Futura as the principal fonts. Font size was also increased. Titles of slides were set to 48, although title slides used a 60-point font. Bullets ranged from 36 points to 48 points, and tables and charts used generally nothing less than a 32-point type. This required some considerable inventiveness on tables where the large font size made it difficult to include all of the data that was desired. In a number of instances, additional slides were required.

The large font sizes also restricted the amount of text that could be placed on a slide. This necessitated considerable re-writing of bullets, creation of additional slides, and removal of some information from the slides. In all, it took approximately five to six hours of preparation for each hour of class contact time, even with the starting point of a previously-prepared slide show. It is likely that the creation of such a presentation from scratch would take up to eight hours per hour of class contact time, particularly if tables and charts are included. This time commitment also included the development of six homework problems and solutions that were prepared in a format for the students to self-grade.

All of these students were provided with a ring binder containing print-outs of the overheads for the class, with space beside them to allow for additional notes. The homeworks, which were handed out subsequently, were also punched for inclusion in the notebooks.

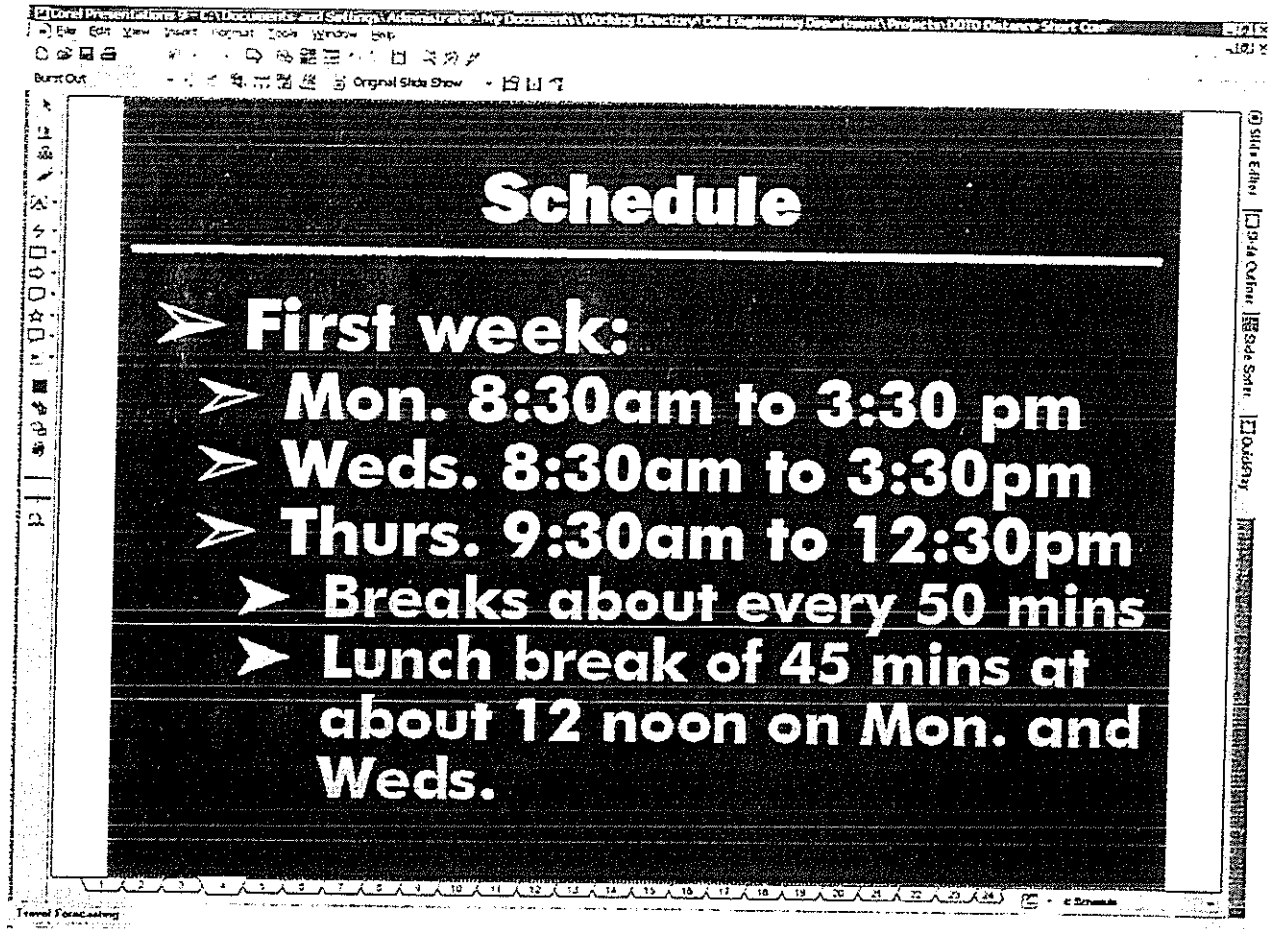


Figure 1
Example of a Bullet Slide

DISCUSSION OF RESULTS

Instructor Evaluation of Distance Learning

From this instructor's view, the distance learning environment turned out to be one that was quite comfortable and relatively easy to use and manage. The instructor controlled the camera in the live classroom, while a proctor was provided for the remote class room. With only one remote classroom, some of the aspects of a full distance delivery were not experienced, such as switching from classroom to classroom as questions are asked by different students. There were times when it was easy to forget to switch between a view of the instructor and a view of the visual aids. Generally, however, this did not present the students with serious problems, because they had copies of the overheads in front of them.

In the classrooms in Coates Hall, there are two monitors at the front of the classroom, and there are repeater monitors at the back of the classroom for the instructor. One of these monitors remains on the remote classroom(s), switching only as students ask questions. However, in both the remote classroom and the live one, this monitor remains showing the last classroom that spoke. This seems to waste the resource. It would be better to have this monitor show whoever is speaking, including the instructor, when he/she is talking. Most of the students in this class observed that they would prefer to have been able to see the instructor at the same time as the visual aids. The static view of the remote classroom for long periods of time during the teaching was not useful. If this change is made, then the second monitor can be dedicated to the visual aids, and need not be used to show the instructor. An even better system would be one in which the instructor could also use the two monitors to show two different visual aids at the same time. There were points in this class when it would have been ideal to be able to show both a slide and the material on the Elmo projector, simultaneously.

Another improvement would be if the monitors at the front of the classroom could be replaced with LCD projectors and screens, so that students would receive images that are more similar to those experienced in a standard classroom. The monitors were also mounted rather high (so that the instructor would not block them in the live classroom), adding discomfort for some students.

Student Evaluation of the Course and Media

Two evaluation forms were used for this course. The first evaluated the course itself and the instructor, while the second evaluated the distance learning experience. All six students who attended the majority of the class completed evaluations. Table 1 shows the results of the course evaluation. Evaluation was on a 5-point scale, with 1 indicating poor, 2 – Fair, 3 – Good, 4 – Very Good, and 5 – Excellent. Table 2 shows the evaluations of the distance learning experience, facilities, and media.

Table 2
Average evaluations of the course

Item Rated	Average Rating
Content of program as expected from course description	4.17
Adequate coverage of subject matter	4.33
How applicable to your current job	3.17
Course materials (workbooks, handouts)	4.00
Skills gained from the program	4.00
Overall knowledge gained from the program	3.83
This program overall	4.17
Instructor's organization	4.67
Instructor's presentation	4.67
Clarity of instruction	4.5
Encouraging participation	4.33
Would you recommend providing this training to other department employees?	Yes (6) No (0)

Table 1
Average evaluations of the distance learning procedure

Item Rated	Average Rating
Seating comfort	3.33
Ease of viewing videos and graphics	3.83
Audio quality	4.00
Helpfulness of support staff	4.33
Satisfaction with telecommunication used to deliver this class	4.00
Instructor's delivery to both local and distant learners	4.50
Instructor's comfort using classroom's media facilities	4.00
Instructor's use of camera in class and remote site	4.33
Instructor's use of multimedia in the classroom	4.17
Instructor's delivery addressed both local and distant learners	4.50
Instructor's encouragement of participation by all students	4.00
Instructor's accessibility via e-mail, fax, or in person	4.33
Timeliness of distributing printed materials	4.17
Did you find this an effective method of training	Yes (6) No (0)

Overall, the ratings indicate that most items are rated as being between very good and excellent, with only three – seat comfort, ease of viewing videos and graphics, and applicability to current job – being rated below 4.0. Each of these items rated in the good to very good range.

A number of the students wrote comments on the evaluation sheets. With respect to the distance learning experience, the comments were positive about the potential of distance learning, and some useful suggestions were provided on ways in which the hardware and software could be improved. Overall, students appear to be of the opinion that distance learning is a very acceptable format for learning, especially if the instructor involves those in the remote classroom(s). Written comments on the instructor and the course were also generally quite positive.

Future Directions

This class was given all day on Monday, Nov. 27, all day on Wednesday, Nov. 29, and for a half day on Thursday, Nov. 30. It continued in the following week and was given all day on each of Monday and Tuesday, Dec. 4 and 5. There were approximately 28 hours of classroom contact time. The pace at which the class was given appeared to be about right for the participants. However, the compression of the course into two consecutive weeks, with sometimes 6 or 7 hours of instruction in a day, is pedagogically undesirable. Students did not have sufficient time to absorb material and do the homeworks. By the end of the class, only two of the six homeworks had been completed by any of the students, and many had only completed one. The distance learning format removes the need to offer a course in a compressed time period. If the course can be offered at multiple locations around the state, it would be possible to spread the course over a much longer period of time, such as a full semester, or a period of seven or eight weeks.

It is suggested that a 3-credit hour course be developed from this material that could serve multiple purposes. It could serve as a continuing education course for professionals around the state, particularly who have no background in transportation planning and desire to learn the rudiments of planning. It could also serve as a course for the proposed professional Masters degree (the MCE, currently being developed as a proposal by six universities in the state), and could serve as a course for regular MSCE students in transportation who are not specializing in transportation planning. For these various purposes, it would be desirable to develop the course to a full 42 hours of class contact time. The following are suggestions to increase class contact time.

1. Add an opening module of eight hours dealing with how planning is done, how it is funded, and what agencies are responsible. This module should also include some discussion of the relationship between planning, decision making, and politics, and should discuss short-range, long-range and strategic planning.
2. Add a short segment of about one hour on the basics of modeling – what models are, and how they are put together.
3. Add a little more detail to the treatment of land-use models, probably adding about one hour.
4. Add a module on model validation, probably about two hours.

5. Move auto ownership into the inputs section and treat in more detail, probably about one hour.
6. Add a small segment on time of day modeling and factoring, probably about 1 hour.

This will bring the course up to about 42 hours, which is the equivalent of a semester-long 3-credit hour course.

One suggestion by a class participant was to have some periods of time where students could be alone or in small groups solving problems. This is a good idea and adds about six hours of tutorial time to the class.

Another alternative that has been discussed is to condense, from this class material, a one-day course that would provide an introduction to transportation planning for professionals working in areas such as design, construction, etc. This one-day course could probably use the introductory material that describes the history of transportation planning, an overview of the four-step process, and some elements from the section that includes how transportation planning is done and the distinction between short-range, long-range, and strategic planning. Such a course should take about 48-60 hours to prepare, and should involve somewhere in the vicinity of 8 hours of class contact time. It would not include any homeworks or other assignments, but would provide participants with a brief overview of how planning is done and how it relates to design and construction.