

**TECHNICAL SUMMARY**

Engineering Development of a Short Course in Transportation Planning for Electronic Delivery to DOTD

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**INTRODUCTION**

As part of an effort to establish a Louisiana 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 on different Louisiana campuses through distance learning. Distance learning has also been suggested as a means to offer continuing education to professionals in the state, especially engineers in the State Department of Transportation and Development.

**OBJECTIVE AND SCOPE**

The purpose of this project was to develop and offer a short course on a topic of major interest to DOTD through distance learning capabilities, using compressed video. The course was designed to serve two purposes: 1) offer an opportunity for staff of the DOTD, FHWA, and the MPOs to learn about transportation planning and 2) act as a prototype and proof-of-concept test of distance learning education for professionals within these organizations.

**RESEARCH APPROACH**

DOTD defined topics for the short course, including land use models, trip generation, trip distribution, mode choice, and assignment, together with needed background and supplementary material. The course was developed as an introductory level course, with homework problems that students could solve in spreadsheets or with calculators.

Training on preparation and delivery was provided by the Center for Distance Education at LSU. A previously-offered course on travel forecasting was used as a basis for developing the course. Fonts for the slides were increased and changed to sans-serif. 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.

The large font sizes 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. Approximately five to six hours of preparation time was required for each hour of class contact time, even with the starting point of a previously-prepared slide show. This time commitment also included the development of six homework problems and solutions that were handed to the students for self-grading.

All students were provided with a ring binder containing print-outs of the overheads for the class, with space allocated for additional notes. Homeworks was also included in the notebooks.

**ANALYSIS**

*Instructor Evaluation of Distance Learning*

The Pilot Distance Education Course used two classrooms. The instructor controlled the camera in the live classroom, while a proctor was provided for the remote classroom. 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 were asked by different students. The instructor occasionally forgot to switch between a view of the instructor and a view of the visual aids.

The classrooms were set up with two monitors in the front, and repeater monitors in the back of the classroom for the instructor. One of these monitors showed the remote classroom(s). This camera was programmed to switch between different remote rooms when students asked questions. Since there was only one remote classroom, this was not necessary. Most of the students in the class observed that they would have preferred to see the instructor and the visual aids simultaneously. If this change is made, then the second monitor can be dedicated to the visual aids. 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.

Other improvements could include replacing the monitors at the front of the classroom with LCD projectors and screens, so that students would receive images that are similar to those experienced in a standard classroom. The monitors

were also mounted too high (so that the instructor would not block them in the live classroom). Because this caused some discomfort to the students, they should be mounted lower.

### ***Student Evaluation of the Course and Media***

Two evaluation forms were used for this course. The first form evaluated the course itself and the instructor, while the second evaluated the distance learning experience. All six students who attended the class completed evaluations. Evaluation was on a 5-point scale: 1 indicating poor through 5 indicating excellence.

Overall, the ratings indicate that most items were rated between very good and excellent, with only three – seat comfort, ease of viewing videos and graphics, and applicability to current job – 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 which provided positive feedback about the potential of distance learning. Some useful suggestions were given on ways in which the hardware and software could be improved. Overall, students appear to believe 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 positive.

### ***Future Directions***

There were approximately 28 hours of classroom contact time given over two weeks. The pace of the class appeared to be about right for the participants. However, compression of the course into two consecutive weeks, with six or seven hours of instruction on consecutive days, is undesirable. Students did not have sufficient time to absorb the material and to complete the homework. By the end of the class, only two of the six homeworks had been completed by any of the students, and most had only completed one. The distance learning format removes the necessity of offering a course in a compressed time period.

A possible future implementation is to take the distance education material and form a 3-credit hour course for the proposed professional Masters degree. Suggestions on changes to the content of the class for this purpose were developed.

Another alternative that has been discussed is to condense from this material a one-day short course that would provide an introduction to transportation

planning for professionals working in areas such as design, construction, etc. Suggested modifications to the course for this purpose were also put forward.

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