The feasibility and sustainability of a distance learning program at the Texas Transportation Institute, which is part of the Texas A&M University system, was investigated. A literature review and online survey of current transportation professionals were conducted to examine the market potential for a distance learning program and to identify those engineering topics that are in high demand within various transportation organizations. The survey was publicized via e-mail announcements that were sent to professional societies and organizations within the transportation community. Of the approximately 1,500 recipients of the announcement, 209 completed the survey. Most respondents had an overall good perception of continuing education opportunities within the field of transportation. Although the respondents expressed a slight preference for online course techniques, they also expressed significant levels of interest in interactive video-based and CD-ROM-based courses. Most respondents indicated a desire to participate in distance learning courses once or twice a year. Courses in traffic engineering, modeling/simulation, and intelligent traffic systems were rated as top three types of courses most urgently needed. Although awareness of distance learning opportunities was high, relatively few respondents or their coworkers had participated in such opportunities. (The bibliography lists 7 references. The questionnaire and raw results are appended.) (MN)
AN ANALYSIS OF THE MARKET POTENTIAL FOR DISTANCE LEARNING OPPORTUNITIES IN TRANSPORTATION PROFESSIONAL DEVELOPMENT

By

Brooke R. Durkop
Texas Transportation Institute
3135 TAMU
College Station, TX 77843-3135
Phone: (979) 862-6636
Fax: (979) 845-9873
E-Mail: b-durkop@tamu.edu

Debbie Jasek
Texas Transportation Institute
3135 TAMU
College Station, TX 77843-3135
Phone: (979) 845-5239
Fax: (979) 845-9873
E-Mail: d-jasek@tamu.edu

Beverly T. Kuhn, Ph.D., P.E.
Texas Transportation Institute
3135 TAMU
College Station, TX 77843-3135
Phone: (979) 862-3558
Fax: (979) 845-9873
E-Mail: b-kuhn@tamu.edu

Report SWUTC/01/167702-1
Project Number 167702
Research Project Title: An Analysis of the Market Potential for Distance Learning Opportunities in Transportation Professional Development

Sponsored by the
Southwest University Transportation Center

April 2001

TEXAS TRANSPORTATION INSTITUTE
The Texas A&M University System
College Station, Texas 77843-3135
ABSTRACT

One in seven jobs in the United States is related to the transportation industry and qualified employees are in high demand for these positions. The increased use of advanced technologies in transportation has created a dilemma for transportation professionals. This dilemma is to find employees capable of working within this new technology influenced arena. Furthermore, the skills required of the transportation workforce are constantly changing and becoming more complex and diverse. Thus, there is also a need to enhance the knowledge, skills, and abilities (KSAs) of current transportation professionals. Distance learning is an attractive means of enhancing KSAs because students are provided with the opportunity of anytime, anywhere learning. Additionally, the potential audience for distance learning courses is not limited to a specific region.

This research investigated the feasibility and sustainability of a distance learning program at the Texas Transportation Institute through the Center for Professional Development. Through a literature review and an on-line questionnaire, the research examined the market potential for a distance learning program, including those engineering topics that are in high demand within various transportation organizations. Some other issues that the research addressed included an individual's willingness to pay for courses, potential frequency of participation, and preferred course delivery medium. The results yielded a determination of the feasibility and sustainability of such a program and a prioritized list of topics that will provide direction in the initiation of a transportation-related distance learning program.
ACKNOWLEDGMENTS

This publication was developed as part of the University Transportation Centers Program, which is funded 50 percent with general revenue funds from the State of Texas. The authors would like to acknowledge the following individuals, without whose assistance this undertaking would not have been possible: Robert Brydia of TransLink® Research Center, Texas Transportation Institute, and Sheri Pappas of Texas Engineering Experiment Station, Texas A&M University System.

The study team also wishes to acknowledge the cooperation and input of the individuals who responded to the study questionnaire. Their input was critical to the success of this project and their assistance was appreciated.
DISCLAIMER

The contents of this report reflect the views of the authors, who are responsible for the facts and the accuracy of the information presented herein. This document is disseminated under the sponsorship of the Department of Transportation, University Transportation Centers Program, in the interest of information exchange. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.
EXECUTIVE SUMMARY

One in seven jobs in the United States is related to the transportation industry and qualified employees are in high demand for these positions. The increased use of advanced technologies in transportation has created a dilemma for transportation professionals. This dilemma is to find employees capable of working within this new technology influenced arena. Furthermore, the skills required of the transportation workforce are constantly changing and becoming more complex and diverse. Distance learning is an attractive means of enhancing the knowledge, skills, and abilities (KSAs) because students are provided with the opportunity of anytime, anywhere learning.

Through a literature review and an on-line questionnaire, completed by current transportation professionals, the market potential for a distance learning program was examined. Some issues addressed by the questionnaire included an individual’s willingness to pay for courses, potential frequency of participation, course topics, and preferred course delivery medium.

The examination of the questionnaire responses indicated that respondents have an overall good perception of the need for continuing education in the transportation field, and that the establishment of a distance learning program is a viable means of presenting these courses. The respondents were asked to select from a list of 15 possible topics of interest for continuing education courses. They were allowed to select as many responses as they felt were appropriate and were also given “other” as an option with space to further clarify this response. The analysis of these responses indicated that there
is a diverse field of interest within the transportation community for continuing education. However, the most desired topic was traffic engineering, followed closely by modeling/simulation and intelligent transportation system (ITS) courses.

A critical topic in the consideration of feasibility and sustainability for a program is the fee that a participant is willing to pay for a distance learning course. The preferred fees given for distance learning courses tend to be lower than those currently found for conventional continuing education courses. A further analysis of course fees is important to ensure sustainability of the distance learning program. The next step in the establishment of a distance learning program is to develop a pilot course that meets one of the needs expressed by the transportation professionals. This pilot course would be tested for usability and appeal to the target market.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF TABLES</td>
<td>x</td>
</tr>
<tr>
<td>I. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Research Objectives</td>
<td>1</td>
</tr>
<tr>
<td>II. LITERATURE REVIEW</td>
<td>3</td>
</tr>
<tr>
<td>III. STUDY DESIGN</td>
<td>5</td>
</tr>
<tr>
<td>IV. RESULTS</td>
<td>7</td>
</tr>
<tr>
<td>General Continuing Education</td>
<td>8</td>
</tr>
<tr>
<td>General Distance Learning</td>
<td>9</td>
</tr>
<tr>
<td>Distance Learning Course Topics</td>
<td>11</td>
</tr>
<tr>
<td>Continuing Education Units (CEUs)</td>
<td>13</td>
</tr>
<tr>
<td>V. FINDINGS AND RECOMMENDATIONS</td>
<td>17</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>19</td>
</tr>
<tr>
<td>APPENDIX A – QUESTIONNAIRE</td>
<td>21</td>
</tr>
<tr>
<td>APPENDIX B – RAW RESULTS</td>
<td>31</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table 1. Examples of Synchronous and Asynchronous Delivery ........................................... 4
Table 2. Type of Organization Where Participants are Employed ...................................... 7
Table 3. Preferred Method for Distance Learning Participation ...................................... 11
Table 4. Continuing Education Topics Needed in Transportation ................................ 13
Table 5. Distance Learning Course Fees ......................................................................... 14
I. INTRODUCTION

In today's world of rapidly changing technology and escalating competition, employers are finding it increasingly difficult to keep their workforces technologically current and well trained. Furthermore, time, distance, travel costs, and other constraints on workers have made traditional approaches to training more difficult. By using technology such as computers and telecommunications, knowledge experts can use innovative approaches to deliver training and education to those who need or desire it. These new approaches include "just in time" delivery of critical information where and when it is needed, at the appropriate and desired level of detail, and in a format preferred by the user. Avoiding excessive and extraneous information ensures that the education workload for the user is manageable and meaningful. One of the approaches for this type of learning environment is termed distance learning.

Research Objectives

The purpose of this research was to investigate the feasibility and potential sustainability of developing a distance learning program at the Texas Transportation Institute (TTI) through the Center for Professional Development (CPD). The research identified the potential market for distance learning opportunities provided by the Center to transportation professionals, both within the Southwest Region University Transportation Center (SWUTC) region and nationwide. The research also identified
those transportation-related topics that are critically needed by that market and will most likely generate interest and support for a distance learning program.
II. LITERATURE REVIEW

Quite simply, distance learning is any type of education that occurs when location, time, or both separate the participants. In distance learning, the teacher, through the use of technology, delivers instruction to a student at a separate location. The teacher then receives feedback, either immediate or delayed, from the student. Contrary to popular opinion, distance learning does not have to be “high tech.” A classic correspondence course in which printed materials are mailed to the student and returned to the teacher is distance learning. In fact this method, which utilizes the postal system, was the original form of distance learning. Distance learning may utilize any individual or combination of the following four technologies:

- Printed materials;
- Audio/Voice technologies;
- Computer technologies; and
- Video technologies

Types Of Distance Learning

Distance learning may be roughly divided into two delivery types - synchronous and asynchronous. Synchronous learning implies that the student and trainer interact with each other in real time, while asynchronous learning relies on delayed feedback. Distance learning that utilizes printed materials exclusively is always asynchronous,
although utilization of faxes or electronic mail minimizes the delay between interactions. Audio, computer, and video technologies may be used for either synchronous or asynchronous distance learning. Table 1 outlines synchronous and asynchronous delivery methods of distance learning utilizing various technologies.

Table 1. Examples of Synchronous and Asynchronous Delivery.

<table>
<thead>
<tr>
<th>Technology</th>
<th>Synchronous</th>
<th>Asynchronous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Printed Material</td>
<td>None</td>
<td>Self Paced Textbooks</td>
</tr>
<tr>
<td>Audio/Voice</td>
<td>Audio conferencing</td>
<td>Audiotape</td>
</tr>
<tr>
<td></td>
<td>Telephone</td>
<td>Radio</td>
</tr>
<tr>
<td>Computer</td>
<td>Chatroom</td>
<td>E-mail</td>
</tr>
<tr>
<td></td>
<td>Desktop video conference</td>
<td>CD-ROM</td>
</tr>
<tr>
<td>Video</td>
<td>Video conferencing</td>
<td>Videotape</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Television Broadcast</td>
</tr>
</tbody>
</table>
III. STUDY DESIGN

The intent of this study was to determine the professional development needs, with regard to distance learning, of current professionals in the arena of transportation. The study team determined that an on-line questionnaire would be an effective method for gathering input from the target audience. An initial study questionnaire was distributed during the 2000 TransLink® Partners Meeting to receive feedback and to ensure that the study was gathering the appropriate information for analysis and decision making by the researchers. A copy of this initial questionnaire was also given to the external project advisor. The intent was to receive her input regarding essential questions and format based on her expertise in the continuing education field.

Based on the feedback received from these two sources, the study team refined the questionnaire and made it available on-line through the TTI website to gather information from professionals nationwide. The study targeted professionals within all interest areas and career paths of transportation. Team members sent messages to professional societies and organizations within the transportation community via email to encourage them to complete the questionnaire. The original messages were sent to 11 different listserv groups with approximately 1500 recipients total. A copy of the on-line questionnaire is located in the Appendix A. Also included in Appendix A are the definitions given for certain key terms within the questionnaire.

Study responses were collected over a three month period to allow adequate time for participation. Once the participant had completed the on-line questionnaire, the data
was automatically stored in a database. Electronic safeguards were put into place so that a person could not complete the questionnaire more than once. Also, the responses were stored such that all identifying information was removed, and the responses were completely anonymous.

The study team analyzed the collected data to identify the general needs of the audience with regards to professional development and distance learning. Information was gathered regarding familiarity with continuing education and distance learning, topics of interest to the transportation community, and demographic information such as employment and computer availability and usage.
IV. RESULTS

The on-line questionnaire collected 209 responses, during the three month period that it was available. This response rate constitutes approximately 14 percent of the original message recipients, which is considered acceptable for the blind questionnaire format. The raw results for this study can be found in Appendix B.

The volunteers who participated were primarily full-time employees within the transportation profession. Table 2 provides a breakdown of the types of organizations where the participants were employed. Also, it should be noted that the participants in this study were distributed almost equally among experience levels from less than 5 years to greater than 20 years of experience.

Table 2. Type of Organization Where Study Participants are Employed.

<table>
<thead>
<tr>
<th>Organization</th>
<th>Number of Participants</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultant</td>
<td>61</td>
<td>29</td>
</tr>
<tr>
<td>Educational Institution</td>
<td>41</td>
<td>20</td>
</tr>
<tr>
<td>Municipal Department of Transportation</td>
<td>29</td>
<td>13</td>
</tr>
<tr>
<td>State Department of Transportation</td>
<td>23</td>
<td>11</td>
</tr>
<tr>
<td>County Department of Transportation</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Research Establishment</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Metropolitan Planning Organization</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Federal Agency</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Systems Integrator</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Automotive Manufacturer</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Vendor</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Public Transit Agency</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>5</td>
</tr>
</tbody>
</table>
Another area of interest to the researchers was the availability of computers and the Internet to transportation professionals. Questions were asked regarding both home and work computer access. Responses indicated that all of the participants have computers at work, and 91 percent have computers at home. The majority of those with available computers have access to the Internet (99% at work and 96% at home). However, these results are most likely biased as the questionnaire was distributed and completed electronically. Despite this recognized bias, the fact that computers are readily available to individuals within the transportation profession creates a viable conduit for the exchange of information during the process of distance learning. Further information regarding these computer systems is that the majority of them are PC based systems (98 percent at work, 94 percent at home), and have a CD-ROM as a component of this system (95 percent at work, 97 percent at home). These features are important to consider when determining delivery methods that could be employed for distance learning.

General Continuing Education

In response to the questions regarding continuing education within the participant’s organizations, 96 percent responded that either they, or someone in their organization, had taken a continuing education course. It was the perception of the participants in this study that continuing education courses are beneficial to employees within their organizations in many ways. The most frequently cited benefit in this study was increased responsibility within the organization.
The responses indicated that 96 percent of the organizations employing the study participants give some form of support for continuing education. Financial reimbursement, or financial reimbursement and leave, are the most common ways that an employer encourages participation in continuing education. This support by the employer is a major factor in a person’s ability to participate in these courses.

The participants’ desire to take part in continuing education opportunities can be seen in their ranking of need for continuing education as high or medium, indicating that they believe it would benefit them in their future work, or that it was mandated for graduation or employment. However, sending a large number of employees to a training course at a location is often not feasible due to the limited amount of travel funds available for this purpose. To make continuing education opportunities readily available to employees, these courses need to be made available in-house. Currently, less than 50 percent of the employers in this study provide in-house continuing education opportunities to their employees on a regular basis. This indicates that other formats beyond the traditional classroom format should be investigated to expand the learning opportunities available to transportation professionals.

**General Distance Learning**

Familiarity with the concept of distance learning was fairly high among the participants in this study (88 percent), but only a small percentage of the participants knew employees within their organization participating in such courses (35 percent).
The viability of a distance learning program as a continuing education opportunity within the transportation community can best be indicated based on the importance of the conventional classroom format to individuals within this profession. In this study, the majority of the participants (84 percent) said that a conventional classroom format was only somewhat important or not important to them in continuing education. Only 16 percent of participants thought that it was very important to participate within a conventional classroom situation. Based on these results, it would appear that the use of distance learning techniques would be well accepted by the target audience, the transportation profession.

Further questions investigated the frequency with which the respondents would like to participate in distance learning opportunities. In response to this, the majority of the participants (75 percent) stated that they would be interested in participating once or twice a year, with only seven percent indicated that they would never be interested in such courses.

One of the key points for this study was to determine the preferred method of participation for distance learning within the transportation profession. Table 3 contains the responses to this question. In the responses, the rankings were given as 1 being the favorite option and 4 being the least favorite option. The “Ranking Sum” was calculated by summing the rankings given for each option. Using this method, the preferred option in the table would have the lowest “Ranking Sum”.

19 10
Table 3. Preferred Method for Distance Learning Participation

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Participation Options</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Interactive Video</td>
</tr>
<tr>
<td>1 (Favorite)</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>51</td>
</tr>
<tr>
<td>3</td>
<td>56</td>
</tr>
<tr>
<td>4 (Least Favorite)</td>
<td>27</td>
</tr>
<tr>
<td>0 (Not Sure)</td>
<td>54</td>
</tr>
<tr>
<td>Ranking Sum</td>
<td>398</td>
</tr>
</tbody>
</table>

On-line courses received the overall best ranking for preferred method of participation. However, both interactive video and CD-ROM based courses were also frequently selected and would provide good alternatives when students do not have access to the Internet. The divided responses indicate that all three methods would be well received as possible tools for distance learning courses.

**Distance Learning Course Topics**

Further aspects of distance learning sustainability that was explored during this study were:

- the need for particular topics in continuing education, and
- the perceived current topic opportunities within the area of transportation.

It was the perception of 71 percent of the study participants that continuing education courses already exist that are specifically tailored to transportation. Some of the examples provided of such courses included: engineering courses, university offered...
continuing education, seminars at professional organization meetings, software courses, and many more varied responses. Several people simply stated that too many exist to list.

When taken in conjunction with the results presented earlier, the survey indicates that while there are a large number of opportunities available to transportation professionals, most of the profession is not taking advantage of the opportunities. This raises the question of would distance learning make them more accessible to the profession as a whole?

When the participants were asked to select topics that they believed were of significant need to the transportation community for distance learning opportunities, the most frequent response was traffic engineering courses, followed by modeling/simulation software, and ITS courses. Table 4 lists all of the available topics that were given as options in the survey, and the percentage of participants who selected each individual option. It should be noted, that participants could select more than one topic for this question.
Table 4. Continuing Education Topics Needed in Transportation.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Percentage of Responses (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic Engineering</td>
<td>71%</td>
</tr>
<tr>
<td>Modeling / Simulation Software</td>
<td>58%</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>54%</td>
</tr>
<tr>
<td>Analysis Software</td>
<td>47%</td>
</tr>
<tr>
<td>Strategic Planning</td>
<td>36%</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>33%</td>
</tr>
<tr>
<td>Systems Engineering</td>
<td>32%</td>
</tr>
<tr>
<td>Other</td>
<td>29%</td>
</tr>
<tr>
<td>Contract Management</td>
<td>27%</td>
</tr>
<tr>
<td>Incident Management</td>
<td>25%</td>
</tr>
<tr>
<td>Systems Architecture</td>
<td>22%</td>
</tr>
<tr>
<td>Environmental Management</td>
<td>20%</td>
</tr>
<tr>
<td>Financial Management</td>
<td>20%</td>
</tr>
<tr>
<td>Grants Management</td>
<td>17%</td>
</tr>
<tr>
<td>Emergency Management</td>
<td>15%</td>
</tr>
</tbody>
</table>

Within the 29 percent of the responses that included "Other," some of the trends regarding additional topics included: human factors in transportation, communication skills (including technical writing, public speaking, etc.), and roadway and structural design courses.

**Continuing Education Units (CEUs)**

Although most of the study participants were familiar with CEUs, only 15 percent of the employers used them for promotion/salary increase. Forty-two percent stated that CEUs were required for their professional certifications. It is the feeling of the researchers that this percentage will continue to increase as more professional
certifications or employers within the transportation field begin requiring CEUs for continued licensing and/or employment.

CEUs can be a driving force behind the need for continuing education and, more specifically, distance learning. Through distance learning, individuals are able to earn CEUs without having to take leave from work and, in many cases, are also able to complete courses at their own pace and time convenience.

Though it appears that most employers reimburse employees for continuing education costs, fees for the courses are still a major issue in establishing a successful distance learning program. Table 5 shows the breakdown of study participants' opinions about the fees that should be associated with distance learning courses. The number within each box indicates the number of respondents who would pay the given fee for a course of the specified duration. For example, 45 respondents indicated a willingness to pay $500 for a 4 day (3.2 CEU) course.

<table>
<thead>
<tr>
<th>Length of Course (CEUs)</th>
<th>$200</th>
<th>$300</th>
<th>$400</th>
<th>$500</th>
<th>$600</th>
<th>$700</th>
<th>$800</th>
<th>$900</th>
<th>Not Sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 day (0.8 CEUs)</td>
<td>102</td>
<td>24</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>82</td>
</tr>
<tr>
<td>2 day (1.6 CEUs)</td>
<td>71</td>
<td>50</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>84</td>
</tr>
<tr>
<td>3 day (2.4 CEUs)*</td>
<td></td>
<td>10</td>
<td>15</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>4 day (3.2 CEUs)</td>
<td></td>
<td>45</td>
<td>44</td>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>104</td>
</tr>
<tr>
<td>5 day (4.0 CEUs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>55</td>
<td>33</td>
<td>14</td>
<td></td>
<td>98</td>
</tr>
</tbody>
</table>

* Partial data was lost due to database error.
Table 5 shows that the preferred fees given in these responses tend to be lower than those currently found for conventional continuing education courses. Traditional courses, with an instructor, cost more to produce and offer than stand-alone, self-paced course. The lower costs associated with distance learning make it feasible to provide these courses at the indicated lower fees, depending on both the nature and delivery method of the course. This may be an incentive to employers in encouraging distance learning as a preferred continuing education opportunity.

Further examination of the survey responses regarding acceptable fees shows that a large number of the respondents answered “not sure”. This response could be due to the significant number of employers who are financially supporting employee participation in continuing education courses. As a result of this support, survey respondents may not be fully aware of the cost issues surrounding distance learning opportunities.
V. FINDINGS AND RECOMMENDATIONS

Based on the analysis of the study questionnaire, respondents have an overall good perception of continuing education opportunities within the field of transportation. This positive background bodes well for the feasibility and potential sustainability of a transportation distance learning program at the Texas Transportation Institute. The following points should be considered in the establishment of this program.

1. The preference of the study participants leaned slightly towards the use of on-line course techniques. However, because this format is not accessible for all potential students, and there were close rankings for all three alternatives provided, interactive video or CD-ROM based courses are also potential media for distributing information. One issue that should be further examined is that a large number of the participants selected “Not Sure” when asked what learning format they preferred. The researchers believe that this finding could be attributed to a lack of experience with distance learning formats and that participant feedback during the administration of courses would be necessary to gauge participant opinion as experience increases.

2. The majority of respondents indicated a desire to participate in distance learning courses once or twice a year.

3. While the awareness of distance learning opportunities is high, a relatively low number of respondents indicated that they, or a co-worker, had participated in such opportunities. These results indicate that alternative methodologies and subject material may provide a viable basis for a distance learning program.

4. The most urgent curriculum need, based on participant response, is for traffic engineering courses, followed closely by modeling/simulation courses and ITS courses. However, responses also indicated diverse needs with regard to curriculum in a distance learning program.
The next step in the establishment of a distance learning program is to develop a pilot course that meets a need expressed by the transportation professionals. This pilot course would be tested for usability and appeal to the target market. Furthermore, an in-depth analysis of course fees associated with this effort is important to ensure sustainability of the distance learning program.
REFERENCES


APPENDIX A

QUESTIONNAIRE
Section 1: Distance Learning and Your Organization
(16 questions - approximately 5 minutes)

1) Have you, or any member of your organization, attended or taken a continuing education course?
   - Yes
   - No

1a) If Yes, what percentage of people in your organization have?
   - Less than 25 percent
   - 25 to 50 percent
   - 50 to 75 percent
   - More than 75 percent

2) Does your organization support continuing education?
   - Yes
   - No

2a) If Yes in what manner does your organization support continuing education?
   Please select all that apply - (Hint: Hold down the CTRL key to make multiple selections)
   - Financial
   - Reimbursement
   - Leave
   - Other

   If you answered Other in Question 2a above, please list what other types of support they have.

3) In your opinion, do staff in your organization benefit from continuing education?
   - Yes
   - No

3a) If Yes, how do they benefit?
   Please select all that apply - (Hint: Hold down the CTRL key to make multiple selections)
   - Increased Responsibility
   - Promotion
   - Salary Increase
   - Other

   If you answered Other in Question 3a above, please list what other benefits they receive.
4) Does your organization currently provide in-house training and development on a regular and continuing basis?
   Yes
   No
   Occasionally

5) Your need to take continuing education is?
   High - You need them for graduation and/or your job
   Medium - They might benefit you in the future
   Low - Would only be for personal interest

6) Are there continuing education courses that are specifically tailored for your field of employment?
   Yes
   No

If you answered Yes in Question 6 above, please list what courses are available.

7) In your organization, what are the topics that you feel are of significant need to you, your staff, or in the transportation community at large?
   Please select all that apply - (Hint: Hold down the CTRL key to make multiple selections)
   Traffic Engineering
   ITS
   Systems Engineering
   Modeling / Simulation Software
   Analysis Software
   Telecommunications
   Systems Architecture
   Environmental Management
   Incident Management
   Emergency Management
   Financial Management
   Contract Management
   Grants Management
   Strategic Planning
   Other

If you answered Other in Question 7 above, please list what courses you feel are of significant need.
8) In continuing education, how important is it to be part of a conventional class?
   - Very Important
   - Somewhat Important
   - Not Important

9) Are you familiar with Distance Learning?
   - Yes
   - No

10) Have you, or any member of your organization, obtained degrees, certification, continuing education, or workforce development via distance learning?
    - Yes
    - No

10a) If Yes, what percentage of people in your organization have?
     - Less than 25 percent
     - 25 to 50 percent
     - 50 to 75 percent
     - More than 75 percent

11) If you were to take a distance learning course, which method would you prefer to use when participating?
    Please rank from 1 (favorite) to 4 (least favorite)
    a) Interactive Video
    b) On-line Courses
    c) CD-ROM Based Courses
       
12) How often would you be interested in participating in a distance learning course regarding transportation continuing education?
    - Once a year
    - Twice a year
    - Three times a year
    - Four to six times a year
    - More than six times per year
    - Never

13) Are you familiar with Continuing Education Units (CEUs)
    - Yes
    - No
14) Does your company use CEUs for promotional/salary increase purposes?
   Yes
   No

15) Are you required to obtain CEUs to maintain a professional certification?
   Yes
   No

16) What do you consider a reasonable fee for a course offered via distance learning? (remember, 1 CEU is equivalent to 10 PDHs)
   a) 1-day course (0.8 CEUs) $200 $300 $400 Not Sure
   b) 2-day course (1.6 CEUs) $300 $400 $500 Not Sure
   c) 3-day course (2.4 CEUs) $400 $500 $600 Not Sure
   d) 4-day course (3.2 CEUs) $500 $600 $700 Not Sure
   e) 5-day course (4.0 CEUs) $700 $800 $900 Not Sure

Section 2: Demographic Information
(7 questions - approximately 3 minutes)

17) What is your highest level of education?
   High School
   Associate Degree / Technical (Vocational) Education
   Bachelor's Degree
   Master's Degree
   Doctoral Degree
   Other / Decline to answer

18) What is your employment status?
   Full-time
   Part-time
   Student
   Retired
   Other / Decline to answer
19) How many years of transportation-related experience do you have?
   - Less than 5 years
   - 5-10 years
   - 10-15 years
   - 15-20 years
   - More than 20 years

20) What type of organization do you work for?
   - State Department of Transportation
   - Municipal Transportation Department
   - County Transportation Department
   - Metropolitan Planning Organization
   - Consultant
   - Federal Agency
   - Toll Road Authority
   - Public Transit Agency
   - Law Enforcement
   - Systems Integrator
   - Educational Institution
   - Research Establishment
   - Automotive Manufacturer
   - Vendor
   - Other

   If you answered Other in Question 20 above, please list what type of organization you work for.

21) In which state/province do you work??
   Select State/Province

22) What is your position with your organization?

23) What professional certifications you you have?
   Please select all that apply - (Hint: Hold down the CTRL key to make multiple selections)
   - Professional Engineer
   - Professional Traffic Operations Engineer
   - Project Manager
   - Professional Engineer-In-Training
   - None
   - Other

   If you answered Other in Question 23 above, please list what certifications you hold.
Section 3: Your Available Computer Technology
(10 questions - approximately 4 minutes)

24) Do you have access to a computer at work?
   *If the answer is "No", please go to Question 28*
   Yes
   No

25) Does your computer at work have Internet access?
   Yes
   No

25a) How do you connect to the Internet at work?
   - Dial-up modem
   - ISDN (Integrated Digital Subscriber Network)
   - DSL (Digital Subscriber Line)
   - Cable Modem
   - Corporate LAN
   - I'm Not Sure

26) Does your computer at work have a CD-ROM?
   Yes
   No

27) What type of computer do you have at work?
   - PC
   - Mac
   - Other/Not Sure

28) On what platform does your computer at work operate?
   - Windows 95/98
   - Windows NT/2000
   - Apple Macintosh System 6 or higher
   - Sun Solaris
   - Linux
   - Other / Don't Know
29) Do you have access to a computer at home?  
*If the answer is "No", please go to the end of the survey*

Yes  
No

30) Does your computer at home have Internet access?  

Yes  
No

30a) How do you connect to the Internet at home?  

Dial-up modem  
ISDN (Integrated Digital Subscriber Network)  
DSL (Digital Subscriber Line)  
Cable Modem  
I'm Not Sure

31) Does your computer at home have a CD-ROM?  

Yes  
No

32) What type of computer do you have at home?  

PC  
Mac  
Other/Not Sure

33) On what platform does your computer at home operate?  

Windows 95/98  
Windows NT/2000  
Apple Macintosh System 6 or higher  
Sun Solaris  
Linux  
Other / Don't Know
APPENDIX B

RAW RESULTS
<table>
<thead>
<tr>
<th>Q1:</th>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>200</td>
<td>96</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>9</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q1a:</th>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 25%</td>
<td>98</td>
<td>47</td>
<td></td>
</tr>
<tr>
<td>25 – 50%</td>
<td>47</td>
<td>22</td>
<td></td>
</tr>
<tr>
<td>50 – 75%</td>
<td>33</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>&gt; 75%</td>
<td>31</td>
<td>15</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q2:</th>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>201</td>
<td>96</td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>8</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q2a:</th>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial (F)</td>
<td>70</td>
<td>35</td>
<td></td>
</tr>
<tr>
<td>Leave (L)</td>
<td>8</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Other (O)</td>
<td>6</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>F,L,O</td>
<td>18</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>F,L</td>
<td>87</td>
<td>43</td>
<td></td>
</tr>
<tr>
<td>F,O</td>
<td>8</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>L,O</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Did Not Respond</td>
<td>2</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
Q2b:

| Policy considers certain training CRITICAL. | Travel reimbursement, time to develop courses, |
| On-site classrooms for live and TV courses | Flexible schedule |
| Training on company time | Training, Masters program with leave and full pay |
| We offer CC, but not in transportation | working flex time |
| whatever it takes | Bring in some types of training |
| Sponsored Training classes at the workplace. | Provided Extra Training & First Aid Training |
| 40hrs per calendar year for outside training available | fellowships, on-site courses (distance learning) |
| paid working day | Both financial reimbursement or leave |
| Meets the requirements of an extra PD day | 1/2 Financial Reimbursement |
| Salary Credit | Time and resources for course development |
| conducts it or arranges it thru contract, etc. for | We plan and present continuing education. |
| Inhouse Seminars | Educational instruction |
| Flexible hours to allow attending classes | time off for training taken during the summer |
| Marketing & Promotions | continuing education credit, university credit, |
| Development and Delivery | If time (schedules permit), travel $ is available |
| travel expenses | Paid as work if sanctioned by Dept |
| provide course for others | |

Q3:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>205</td>
<td>98</td>
</tr>
<tr>
<td>No</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>
Q3a: Responses

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased Responsibility (I)</td>
<td>49</td>
<td>24</td>
</tr>
<tr>
<td>Promotion (P)</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Salary Increase (S)</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Other (O)</td>
<td>41</td>
<td>20</td>
</tr>
<tr>
<td>I,P,S</td>
<td>57</td>
<td>28</td>
</tr>
<tr>
<td>I,P</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>I,S</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>P,S</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>I,P,S,O</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>I,P,O</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>I,S,O</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>P,S,O</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>P,O</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>S,O</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>I,O</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>Did Not Respond</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Q3b:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>Expands work types that are performed</td>
<td>Increase opportunity for future trainings</td>
<td></td>
</tr>
<tr>
<td>Job security</td>
<td>Knowledge</td>
<td></td>
</tr>
<tr>
<td>More effective</td>
<td>More responsibility w/ little or no compensation</td>
<td></td>
</tr>
<tr>
<td>Motivation and job satisfaction</td>
<td>Increased Skills</td>
<td></td>
</tr>
<tr>
<td>Broadens projects that individual can work on.</td>
<td>Better able to do their job</td>
<td></td>
</tr>
<tr>
<td>Stay up to date with the most recent technology</td>
<td>Increased information which may not help in job</td>
<td></td>
</tr>
<tr>
<td>A better understanding of what tools are available</td>
<td>To be informed in new technologies and development</td>
<td></td>
</tr>
<tr>
<td>General professional development</td>
<td>Knowledge</td>
<td></td>
</tr>
<tr>
<td>greater knowledge, better employee</td>
<td>Professional development (knowledge)</td>
<td></td>
</tr>
<tr>
<td>Increased awareness of new technology &amp; legislation</td>
<td>Increased job capability, improved public confidence</td>
<td></td>
</tr>
<tr>
<td>Wider range of responsibilities</td>
<td>Improved morale</td>
<td></td>
</tr>
<tr>
<td>A more rounded background, personal growth</td>
<td>Self worth</td>
<td></td>
</tr>
<tr>
<td>Exposure to new methods, Professional Contacts,</td>
<td>Increased Job knowledge/productivity</td>
<td></td>
</tr>
<tr>
<td>New skills</td>
<td>increased knowledge &amp; skills; employee retention</td>
<td></td>
</tr>
<tr>
<td>professional development</td>
<td>Broadened perspective, exposure to new ideas</td>
<td></td>
</tr>
<tr>
<td>Maintaining proficiency</td>
<td>Personal Achievement</td>
<td></td>
</tr>
<tr>
<td>They do their jobs better</td>
<td>Development of Expertise; Improved Performance</td>
<td></td>
</tr>
<tr>
<td>increased sense of their own expertise and worth</td>
<td>more knowledgeable so they are more marketable</td>
<td></td>
</tr>
<tr>
<td>I was thinking more of personal benefits</td>
<td>inherent benefits of additional education</td>
<td></td>
</tr>
<tr>
<td>have more knowledge</td>
<td>Improved skills</td>
<td></td>
</tr>
<tr>
<td>Meets C.E.U.’s for professional licensing</td>
<td>Networking</td>
<td></td>
</tr>
<tr>
<td>sense of worth - improved morale</td>
<td>Keeping up with industry standard skills / info</td>
<td></td>
</tr>
<tr>
<td>Ability to attract/retain clients</td>
<td>Broader knowledge and increased opportunity</td>
<td></td>
</tr>
<tr>
<td>Desire to increase knowledge + promotion sometimes</td>
<td>Better at what they do</td>
<td></td>
</tr>
<tr>
<td>new knowledge, contacts</td>
<td>Professional satisfaction of doing the job better,</td>
<td></td>
</tr>
<tr>
<td>Increased productivity, self-confidence, etc.</td>
<td>Enhanced technical knowledge</td>
<td></td>
</tr>
<tr>
<td>Increased Technical Skills</td>
<td>More valuable employee.</td>
<td></td>
</tr>
<tr>
<td>Cross train in other transportation areas</td>
<td>Increased skills, but no direct financial benefit</td>
<td></td>
</tr>
<tr>
<td>Knowledge</td>
<td>Additional Skills</td>
<td></td>
</tr>
<tr>
<td>Greater efficiency</td>
<td>Keep up with changing technology</td>
<td></td>
</tr>
<tr>
<td>Retention</td>
<td>Maintaining professional competence and licensure</td>
<td></td>
</tr>
<tr>
<td>Increase Productivity and Better Quality of Work</td>
<td>More knowledge and they do better at their jobs.</td>
<td></td>
</tr>
<tr>
<td>Increase knowledge</td>
<td>Increased professionalism</td>
<td></td>
</tr>
<tr>
<td>Increased competency</td>
<td>Professional development</td>
<td></td>
</tr>
<tr>
<td>Able to better do their jobs, and therefore advance</td>
<td>Ability to do current work better</td>
<td></td>
</tr>
<tr>
<td>License Req., ability to better serve the client</td>
<td>Knowledge gain</td>
<td></td>
</tr>
<tr>
<td>knowledge helps them do their job better</td>
<td>None of above. Just improved knowledge for future</td>
<td></td>
</tr>
<tr>
<td>Increases Productivity &amp; Job Satisfaction</td>
<td>self-esteem, positive morale</td>
<td></td>
</tr>
<tr>
<td>Increased proficiency, productivity, expertise</td>
<td>Greater expertise, increased knowledge</td>
<td></td>
</tr>
<tr>
<td>Increase knowledge - professional development</td>
<td>Networking opportunities with other engineers</td>
<td></td>
</tr>
<tr>
<td>Ability to perform at a higher level</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Q4:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>100</td>
<td>48</td>
</tr>
<tr>
<td>No</td>
<td>52</td>
<td>25</td>
</tr>
<tr>
<td>Occasionally</td>
<td>57</td>
<td>27</td>
</tr>
</tbody>
</table>

### Q5:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>78</td>
<td>38</td>
</tr>
<tr>
<td>Medium</td>
<td>105</td>
<td>51</td>
</tr>
<tr>
<td>Low</td>
<td>22</td>
<td>11</td>
</tr>
</tbody>
</table>

### Q6:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>148</td>
<td>71</td>
</tr>
<tr>
<td>No</td>
<td>61</td>
<td>29</td>
</tr>
<tr>
<td>Q6a:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Seminars at professional meetings</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Many universities offer cont. edu programs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Various engineering courses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Local university courses, conference workshops</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>but we need GASB 34 &amp; benchmark contracting</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Courses are available from NHI, and TEEX.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>none locally - through Northwestern University</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Michigan State University - Civil Engineering</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>management, traffic engineering, software application</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transspeed, TransNow, Inst for Transp. Studies, GA</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The DOT provides training seminars and the University</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transportation Engineering - there are dozens of courses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>wide variety of seminars, etc. in traffic/transportation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lots of traffic and transportation engineering courses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Project management</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Standard Transportation and Traffic Short Courses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Traffic Institute, software developers, manufacturing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Those already offered by other universities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Computer &amp; Personal development courses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>NHS Courses, Northwestern Univ. Traffic Institute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>too many - traffic engineering course by Northwestern</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>too many to list</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Northwestern offers a series of courses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transportation planning and engineering</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>There are too many to list.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Consultant Firm Management</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Usually through the state centering around ITS, NT</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>The Traffic Engineering Institute via Northwestern</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>from ASCE other professional organizations</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Traffic Operations Classes, Traffic Signal Optimizing</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>not here, but courses available at Northwestern</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Traffic &amp; Transportation Engineering have a great</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Northwestern Transportation Institute, ITE, TRB</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ITS (Berkeley) offers a range.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>software-related (operating systems, etc.)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MS in Infrastructure Engineering through U of Minn</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>transportation engineering, HCM, Land Development</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<p>| Computer education, Highway capacity education                     |
| Many                                                                  |
| Numerous courses offered by various organizations                    |
| Various topics of Civil Engineering provided by ASCE                |
| Traffic engineering, Pavement maintenance                           |
| management, transportation engineering &amp; safety, construction       |
| computer software application courses                               |
| Forecasting, modeling, planning, design, construction               |
| traffic signal design and maintenance, road surface                 |
| management, technical training                                      |
| Managing Projects, Transportation related innovations               |
| Extra class for work site supervisor, also employee                 |
| Courses at the Human Factors and Ergonomics Society                 |
| Consulting; computer skills                                         |
| Planning and Implementing work Zone Traffic Control, Child Safety   |
| see University of Washington - Transspeed Program                   |
| Traffic Engineering                                                |
| Many: ITE, TRB, NHI, ASCE and other universities                    |
| NUMEROUS human factors and computing courses through local universities |
| many Transportation Planning related courses offered by many agencies/organizations/associations |
| too many to list                                                    |
| Too many to name.                                                   |
| traffic engineering, project management                            |
| School Bus Transportation Management; School Bus                    |
| Transportation Supervision; Public Agency Budgeting and Accounting; Public labor Relations |
| Northwestern and Georgia Tech have a full battery of Transportaion Related courses, but they are costly to attend |
| ITS Professional Capacity Building courses.                         |
| Northwestern Traffic courses, Georgia Tech courses, etc.            |
| not sure                                                             |
| Traffic engineering related                                        |
| Courses from the Northwestern University Center for Public Safety. Traffic Signal Control Workshop and many others. |
| Courses at Michigan State Univ. and at Wayne State Univ.            |
| Transportation Planning/ Traffic Modeling                           |
| GIS users courses to stay up-to-date on the latest software          |
| Berkeley has short courses. Also Northwestern? uni                  |
| All kinds from TEEX, ITE, ASCE, Univ. Neb., Geo. Tech.,             |
| Northwestern, Univ. Florida, and others                            |
| organizational Design and Development, Management                   |</p>
<table>
<thead>
<tr>
<th>Development</th>
<th>CAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>several cont ed courses at different universities</td>
<td>ISU CE Cont Ed program, FHWA NHI courses, Auburn U CE Cont Ed program, TRB seminars, etc.</td>
</tr>
<tr>
<td>Engineering and transportation related courses</td>
<td>Various management, computer, and technical related training is available through out community college.</td>
</tr>
<tr>
<td>electronics, computers, power point</td>
<td>Curriculum Development, ISO9001 Training, Leadership Development</td>
</tr>
<tr>
<td>Technical Update forum Automotive Manufactures</td>
<td>Physical Therapy related courses are provided within the state for continued licensure</td>
</tr>
<tr>
<td>Very general traffic courses - Transpeed here in W</td>
<td>Education, teaching, subject matter content</td>
</tr>
<tr>
<td>Delivery of distance education courses, technology</td>
<td>As business technology educator, continuing education courses are offered in many areas within my field.</td>
</tr>
<tr>
<td>Auto skills courses from Gateway Community College</td>
<td>TRAFFIC MANAGEMENT</td>
</tr>
<tr>
<td>transportation technical training, ADA accessibility</td>
<td>a variety of legal CLEs</td>
</tr>
<tr>
<td>Transportation Engineering</td>
<td>from the Education Service Center Region XII-Waco in-service training</td>
</tr>
<tr>
<td>Local university has traffic engineering courses;</td>
<td>teaching strategies, legal aspects, specific occupational competencies</td>
</tr>
<tr>
<td>1000s . . .</td>
<td>FSUTMS courses by FDOT, other modeling/forecasting/planning courses around the country, seminars, etc.</td>
</tr>
<tr>
<td>Many</td>
<td>Northwestern University Center for Public Safety Courses, graduate work in transportation engineering</td>
</tr>
<tr>
<td>Traffic Engineering-related courses</td>
<td>Transportation Related training courses are offered by our Training Division regularly. From design to computer applications</td>
</tr>
<tr>
<td>CAD training, roadway design, traffic design and p</td>
<td>Numerous out of state short courses are offered</td>
</tr>
<tr>
<td>Technical education teaching methods courses; comp</td>
<td>Northwestern's Transportation Engineering Courses, Numerous Automotive Service Ind. Technical Update/</td>
</tr>
<tr>
<td>Northwestern's Transportation Engineering Courses,</td>
<td>There are many. Some of the short courses</td>
</tr>
<tr>
<td>There are many. Some of the short courses</td>
<td>Transportation training thru TXDOT</td>
</tr>
<tr>
<td>Wetland courses, Hazwopper, NEPA process</td>
<td>teaching methods</td>
</tr>
<tr>
<td>Northwestern University</td>
<td>Traffic Flow theory</td>
</tr>
<tr>
<td>Northwestern traffic Institute has excellent program</td>
<td>Some transportation courses (technologist level)</td>
</tr>
<tr>
<td>Geopak Training, Computer Science courses</td>
<td>TEEX Engineering Training Course</td>
</tr>
<tr>
<td>UTA offers some courses in transportation and civil</td>
<td>only at dist level workshops &amp; pro organ offer workshops</td>
</tr>
<tr>
<td>Human Factors, Training development, distance learning</td>
<td>Any courses pertaining to traffic operations/transportation</td>
</tr>
<tr>
<td>Traffic Calming, Highway Capacity, Project Management</td>
<td>Too numerous to list</td>
</tr>
<tr>
<td>Traffic Engineering related courses</td>
<td>ITE Seminars</td>
</tr>
</tbody>
</table>
Q7:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Total</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic Engineering</td>
<td>148</td>
<td>71%</td>
</tr>
<tr>
<td>ITS</td>
<td>113</td>
<td>54%</td>
</tr>
<tr>
<td>Systems Engineering</td>
<td>66</td>
<td>32%</td>
</tr>
<tr>
<td>Modeling/Simulation Software</td>
<td>122</td>
<td>58%</td>
</tr>
<tr>
<td>Analysis Software</td>
<td>98</td>
<td>47%</td>
</tr>
<tr>
<td>Telecommunications</td>
<td>68</td>
<td>33%</td>
</tr>
<tr>
<td>Systems Architecture</td>
<td>47</td>
<td>22%</td>
</tr>
<tr>
<td>Environmental Management</td>
<td>41</td>
<td>20%</td>
</tr>
<tr>
<td>Incident Management</td>
<td>52</td>
<td>25%</td>
</tr>
<tr>
<td>Emergency Management</td>
<td>31</td>
<td>15%</td>
</tr>
<tr>
<td>Financial Management</td>
<td>42</td>
<td>20%</td>
</tr>
<tr>
<td>Contract Management</td>
<td>56</td>
<td>27%</td>
</tr>
<tr>
<td>Grants Management</td>
<td>35</td>
<td>17%</td>
</tr>
<tr>
<td>Strategic Planning</td>
<td>75</td>
<td>36%</td>
</tr>
<tr>
<td>Other</td>
<td>42</td>
<td>29%</td>
</tr>
</tbody>
</table>

Q7a:

Wow! Courses on the role of PEOPLE in the transportation system. This is a HUGE need!

- Indiv-directed efficiency increase courses: time, contact, proj.
- management courses
- Use of Internet, communications skills
- Hydrology and Hydraulics
- Understanding data (Not just analytic software)
- Human Factors in Transportation
- Transit routing and ops, School Transportation Routing and Ops
- Human Factors Engineering
- Transit Planning
- GIS in Transportation
- Technician level Sign Management, maintenance, placement, markings placement, signal construction, street light and high mast operation maintenance.
- geometric design, public speaking for hostile audiences
- Technical classes in roadway design, structural design, etc.; of particular interest might be classes introducing new technologies and new methods.
- Accident Reconstruction, Maintenance & Inspection of ITS and Electrical Equipment, Inspection of Pavement Markings
- Sustainable Transportation Alternatives
- Disability accommodation
- Supervisory Skills, Customer Relations, Safety, ADA
- DEVELOPMENT PLANNING, ADA
- Statistical methods in traffic engineering or transportation planning
- Communication, Public Relations Skills, Public Speaking
- simulation software system architecture
- collision investigation
- Instrumentation, Project management, Risk Management
- Civil Rights Program Management; Diversity; Accessibility Planning; Environmental Justice;
- safety, human factors
- Auto Ind. Tech Update
- Roadway Design, Hydraulics/Hydrology, SWPPP,
- Air Quality Issues and EIS preparation
- Roadway design
- education (teacher in public HS)
- Project Management
- Accident investigation
- Presentations and Technical writing
- NEPA training
- Safety; intermodal transportation; public involvement
- Pavement preventive maintenance
- New transportation technologies
### Q8:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Important</td>
<td>34</td>
<td>16</td>
</tr>
<tr>
<td>Somewhat Important</td>
<td>123</td>
<td>59</td>
</tr>
<tr>
<td>Not Important</td>
<td>52</td>
<td>25</td>
</tr>
</tbody>
</table>

### Q9:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>183</td>
<td>88</td>
</tr>
<tr>
<td>No</td>
<td>26</td>
<td>12</td>
</tr>
</tbody>
</table>

### Q10:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>74</td>
<td>35</td>
</tr>
<tr>
<td>No</td>
<td>135</td>
<td>65</td>
</tr>
</tbody>
</table>

### Q10a:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 25%</td>
<td>201</td>
<td>97</td>
</tr>
<tr>
<td>25 – 50%</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>50 – 75%</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>More than 75%</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

### Q11:

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Interactive Video</th>
<th>On-line Courses</th>
<th>CD-ROM Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (favorite)</td>
<td>20</td>
<td>39</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>51</td>
<td>63</td>
<td>68</td>
</tr>
<tr>
<td>3</td>
<td>56</td>
<td>39</td>
<td>46</td>
</tr>
<tr>
<td>4 (least favorite)</td>
<td>27</td>
<td>14</td>
<td>24</td>
</tr>
<tr>
<td>0 (Not Sure)</td>
<td>54</td>
<td>53</td>
<td>50</td>
</tr>
</tbody>
</table>

### Q12:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>once</td>
<td>83</td>
<td>40</td>
</tr>
<tr>
<td>twice</td>
<td>73</td>
<td>35</td>
</tr>
<tr>
<td>three</td>
<td>23</td>
<td>11</td>
</tr>
<tr>
<td>four-six</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>six+</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Never</td>
<td>14</td>
<td>7</td>
</tr>
</tbody>
</table>
Q13:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>196</td>
<td>94</td>
</tr>
<tr>
<td>No</td>
<td>13</td>
<td>6</td>
</tr>
</tbody>
</table>

Q14:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>32</td>
<td>15</td>
</tr>
<tr>
<td>No</td>
<td>177</td>
<td>85</td>
</tr>
</tbody>
</table>

Q15:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>88</td>
<td>42</td>
</tr>
<tr>
<td>No</td>
<td>121</td>
<td>58</td>
</tr>
</tbody>
</table>

Q16:

<table>
<thead>
<tr>
<th>Length of Course (CEUs)</th>
<th>$200</th>
<th>$300</th>
<th>$400</th>
<th>$500</th>
<th>$600</th>
<th>$700</th>
<th>$800</th>
<th>$900</th>
<th>Not Sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 day (0.8 CEUs)</td>
<td>102</td>
<td>24</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>82</td>
</tr>
<tr>
<td>2 day (1.6 CEUs)</td>
<td>71</td>
<td>50</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>84</td>
</tr>
<tr>
<td>3 day (2.4 CEUs)</td>
<td>10</td>
<td>15</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>23</td>
</tr>
<tr>
<td>4 day (3.2 CEUs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>104</td>
</tr>
<tr>
<td>5 day (4.0 CEUs)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>98</td>
</tr>
</tbody>
</table>

Q17:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Associate Degree/Technical (Vocational) Education</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Bachelor’s Degree</td>
<td>63</td>
<td>30</td>
</tr>
<tr>
<td>Master’s Degree</td>
<td>107</td>
<td>51</td>
</tr>
<tr>
<td>Doctoral Degree</td>
<td>32</td>
<td>15</td>
</tr>
<tr>
<td>Other / Decline to answer</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Q18:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full-time</td>
<td>202</td>
<td>97</td>
</tr>
<tr>
<td>Part-time</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Student</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Retired</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Other / Decline to answer</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Q19:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5 years</td>
<td>46</td>
<td>22</td>
</tr>
<tr>
<td>5-10 years</td>
<td>42</td>
<td>20</td>
</tr>
<tr>
<td>10-15 years</td>
<td>34</td>
<td>16</td>
</tr>
<tr>
<td>15-20 years</td>
<td>29</td>
<td>14</td>
</tr>
<tr>
<td>More than 20 years</td>
<td>58</td>
<td>28</td>
</tr>
</tbody>
</table>

Q20:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consultant</td>
<td>61</td>
<td>29</td>
</tr>
<tr>
<td>Educational Institution</td>
<td>41</td>
<td>20</td>
</tr>
<tr>
<td>Municipal Department of Transportation</td>
<td>29</td>
<td>13</td>
</tr>
<tr>
<td>State Department of Transportation</td>
<td>23</td>
<td>11</td>
</tr>
<tr>
<td>County Department of Transportation</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Research Establishment</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Metropolitan Planning Organization</td>
<td>9</td>
<td>4</td>
</tr>
<tr>
<td>Federal Agency</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Systems Integrator</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Automotive Manufacturer</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Vendor</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Public Transit Agency</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Toll Road Authority</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Law Enforcement</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>5</td>
</tr>
</tbody>
</table>

Q20a: Other Responses -
- Province of Nova Scotia
- Insurance
- City Government
- City department with emphasis on plan reviews
- State economic development agency
- Regional Transportation Agency
- Land Association
- Traffic Flagging & Certifying Flaggers at Community College
- Teacher, but was in the Coast Guard for over 20 years

43
Q21:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alaska</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Arizona</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Arkansas</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>California</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Colorado</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Connecticut</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Delaware</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Florida</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Georgia</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Hawaii</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Illinois</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Indiana</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Iowa</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Kansas</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Kentucky</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Louisiana</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Maryland</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Michigan</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>Minnesota</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Missouri</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Montana</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Nebraska</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Nevada</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>New Jersey</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>New Mexico</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>New York</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>North Carolina</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Ohio</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Oregon</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Tennessee</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Texas</td>
<td>56</td>
<td>27</td>
</tr>
<tr>
<td>Vermont</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Virginia</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>Washington</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>West Virginia</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>British Columbia</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Ontario</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Not applicable / No response</td>
<td>13</td>
<td>6</td>
</tr>
</tbody>
</table>
Q23:

<table>
<thead>
<tr>
<th>Response</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professional Engineer</td>
<td>101</td>
<td>48</td>
</tr>
<tr>
<td>Professional Traffic Operations Engineer</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>Project Manager Professional</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Engineer In Training</td>
<td>26</td>
<td>12</td>
</tr>
<tr>
<td>None</td>
<td>53</td>
<td>25</td>
</tr>
<tr>
<td>Other</td>
<td>31</td>
<td>15</td>
</tr>
</tbody>
</table>

Q23a: Other Responses

- Certified Planner
- Certified Engineering Technologist: PEng in Canada, EI in Colorado and New Mexico
- Certified Public Manager, American Academy of CPM
- Certified Engineering Technologist
- school administrator; technical center director
- C. Eng (UK)
- ASE Master
- Licensed Psychol. PA; CFHP (Human Factors)
- not transportation related
- Professional Traffic Engineer
- Teaching
- Teacher Certification
- Technology Education
- Associate Ergonomics Professional from BCPE
- AICP
- Vocational Education
- FLAGGER, INSTRUCTOR, WORKSITE TRAF.
- SUP. WRD PROCESS
- IMSA tech cert, CDL
- Traffic Control Supervisor
- ATSSA
- Department of Education Manager's Certificate
- Professional Traffic Engineer - California
- Oklahoma Teacher Certificate, Vocational Business
- American Institute of Certified Planners
- English for scientific purposes & interested in HE
- Licensed in physical therapist assisting
- Training Generalist
- Math Certification
- Teaching, administrative, vocational job placement
- Law degree
- Certified Public Manager
- Driver Ed teacher and Supervisor, Secondary Admin

Q24:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>209</td>
<td>100</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Q25:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>207</td>
<td>99</td>
</tr>
<tr>
<td>No</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
Q25a:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dial-up Modem</td>
<td>19</td>
<td>9</td>
</tr>
<tr>
<td>ISDN</td>
<td>41</td>
<td>20</td>
</tr>
<tr>
<td>DSL</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Cable Modem</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Corporate LAN</td>
<td>102</td>
<td>50</td>
</tr>
<tr>
<td>Not Sure</td>
<td>27</td>
<td>13</td>
</tr>
</tbody>
</table>

Q26:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>199</td>
<td>95</td>
</tr>
<tr>
<td>No</td>
<td>10</td>
<td>5</td>
</tr>
</tbody>
</table>

Q27:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC</td>
<td>205</td>
<td>98</td>
</tr>
<tr>
<td>Mac</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Other/Not Sure</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Q28:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows 95/98</td>
<td>105</td>
<td>50</td>
</tr>
<tr>
<td>Windows NT/2000</td>
<td>99</td>
<td>47</td>
</tr>
<tr>
<td>Apple Macintosh System 6 or higher</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Sun Solaris</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Linux</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Other/Don’t Know</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Q29:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>191</td>
<td>91</td>
</tr>
<tr>
<td>No</td>
<td>18</td>
<td>9</td>
</tr>
</tbody>
</table>

Q30:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>183</td>
<td>95</td>
</tr>
<tr>
<td>No</td>
<td>9</td>
<td>5</td>
</tr>
</tbody>
</table>
Q30a:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dial-up Modem</td>
<td>148</td>
<td>77</td>
</tr>
<tr>
<td>ISDN</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>DSL</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>Cable Modem</td>
<td>16</td>
<td>8</td>
</tr>
<tr>
<td>Corporate LAN</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Not Sure</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Q31:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>186</td>
<td>97</td>
</tr>
<tr>
<td>No</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

Q32:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC</td>
<td>180</td>
<td>94</td>
</tr>
<tr>
<td>Mac</td>
<td>11</td>
<td>6</td>
</tr>
<tr>
<td>Other/Not Sure</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Q33:

<table>
<thead>
<tr>
<th>Responses</th>
<th>Number</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows 95/98</td>
<td>161</td>
<td>84</td>
</tr>
<tr>
<td>Windows NT/2000</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>Apple Macintosh System 6 or higher</td>
<td>11</td>
<td>6</td>
</tr>
<tr>
<td>Sun Solaris</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Linux</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Other/Don’t Know</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
An Analysis of the Market Potential for Distance Learning Opportunities in Transportation Professional Development

Brooke R. Durkop, Debbie Jasek, and Beverly T. Kuhn

Texas Transportation Institute
The Texas A&M University System
College Station, Texas 77843-3135

Southwest Region University Transportation Center
Texas Transportation Institute
Texas A&M University System
College Station, Texas 77843-3135

Supported by general revenues from the State of Texas.

One in seven jobs in the United States is related to the transportation industry and qualified employees are in high demand for these positions. The increased use of advanced technologies in transportation and the monumental leaps in the use of technology in all aspects of life has created a dilemma for transportation professionals. This dilemma is to find employees capable of working within this new technology influenced arena. Furthermore, the skills required of the transportation workforce are constantly changing and becoming more complex and diverse. Thus, there is also a need to enhance the knowledge, skills, and abilities (KSAs) of current transportation professionals. Distance learning is an attractive means of enhancing KSAs because students are provided with the opportunity of anytime, anywhere learning. Additionally, the potential audience for distance learning courses is not limited to a specific region.

This research investigated the feasibility and sustainability of a distance learning program at the Texas Transportation Institute through the Center for Professional Development. Through a literature review and an on-line questionnaire completed by current transportation professionals, the research examined the market potential for a distance learning program, including those engineering topics that are in high demand within various transportation organizations. Some other issues that the research addressed included an individual’s willingness to pay for courses, potential frequency of participation, and preferred course delivery medium. The results yielded a determination of the feasibility and sustainability of such a program and a prioritized list of topics that will provide direction in the initiation of a transportation-related distance learning program.
I. DOCUMENT IDENTIFICATION:

Title: AN ANALYSIS OF THE MARKET POTENTIAL FOR DISTANCE LEARNING OPPORTUNITIES IN TRANSPORTATION PROFESSIONAL DEVELOPMENT

Author(s): Brookie E. Durkor, Debbie Jakes, Beverly T. Kuhn

Corporate Source: SOUTHWEST REGION UNIVERSITY TRANSPORTATION CENTER

Publication Date: APRIL 2001

II. REPRODUCTION RELEASE:

In order to disseminate as widely as possible timely and significant materials of interest to the educational community, documents announced in the monthly abstract journal of the ERIC system, Resources in Education (RIE), are usually made available to users in microfiche, reproduced paper copy, and electronic media, and sold through the ERIC Document Reproduction Service (EDRS). Credit is given to the source of each document, and, if reproduction release is granted, one of the following notices is affixed to the document.

If permission is granted to reproduce and disseminate the identified document, please CHECK ONE of the following three options and sign at the bottom of the page.

The sample sticker shown below will be affixed to Level 1 documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL HAS BEEN GRANTED BY

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

Level 1

Check here for Level 1 release, permitting reproduction and dissemination in microfiche or other ERIC archival media (e.g., electronic) and paper copy.

The sample sticker shown below will be affixed to Level 2A documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE, AND IN ELECTRONIC MEDIA FOR ERIC COLLECTION SUBSCRIBERS ONLY, HAS BEEN GRANTED BY

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

Level 2A

Check here for Level 2A release, permitting reproduction and dissemination in microfiche and in electronic media for ERIC archival collection subscribers only.

The sample sticker shown below will be affixed to Level 2B documents

PERMISSION TO REPRODUCE AND DISSEMINATE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

Level 2B

Check here for Level 2B release, permitting reproduction and dissemination in microfiche only.

Documents will be processed as indicated provided reproduction quality permits. If permission to reproduce is granted, but no box is checked, documents will be processed at Level 1.

I hereby grant to the Educational Resources Information Center (ERIC) nonexclusive permission to reproduce and disseminate this document as indicated above. Reproduction from the ERIC microfiche or electronic media by persons other than ERIC employees and its system contractors requires permission from the copyright holder. Exception is made for non-profit reproduction by libraries and other service agencies to satisfy information needs of educators in response to discrete inquiries.

Signature: Beverly Kuhn

Printed Name/Position/Title: PROFESSOR T. KUHN DIVISION HEAD

Organization/Address: TAMU COLLEGE STATION, TX

Telephone: 979-862-3568 FAX: 979-845-9873

17843-3135
### III. DOCUMENT AVAILABILITY INFORMATION (FROM NON-ERIC SOURCE):

If permission to reproduce is not granted to ERIC, or if you wish ERIC to cite the availability of the document from another source, please provide the following information regarding the availability of the document. (ERIC will not announce a document unless it is publicly available, and a dependable source can be specified. Contributors should also be aware that ERIC selection criteria are significantly more stringent for documents that cannot be made available through EDRS.)

<table>
<thead>
<tr>
<th>Publisher/Distributor:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Address:</td>
<td></td>
</tr>
<tr>
<td>Price:</td>
<td></td>
</tr>
</tbody>
</table>

### IV. REFERRAL OF ERIC TO COPYRIGHT/REPRODUCTION RIGHTS HOLDER:

If the right to grant this reproduction release is held by someone other than the addressee, please provide the appropriate name and address:

<table>
<thead>
<tr>
<th>Name:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Address:</td>
<td></td>
</tr>
</tbody>
</table>

### V. WHERE TO SEND THIS FORM:

Send this form to the following ERIC Clearinghouse:

However, if solicited by the ERIC Facility, or if making an unsolicited contribution to ERIC, return this form (and the document being contributed) to:

**ERIC Processing and Reference Facility**  
4483-A Forbes Boulevard  
Lanham, Maryland 20706  
Telephone: 301-552-4200  
Toll Free: 800-799-3742  
FAX: 301-552-4700  
e-mail: ericfac@inet.ed.gov  
WWW: http://ericfac.piccard.csc.com

EFF-088 (Rev. 2/2000)