A Computer-Based Multimedia Pavement Training Tool for Self-Directed Learning

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Outline

• Current training environment
• Pavement Guide concept
• Demonstration
• Student reactions
Current Training Environment

- Industry growth and change
- Average experience level decreasing
- Dearth of undergrad courses
Current Training Environment

- Industry growth and change
- Average experience level decreasing
- Dearth of undergrad courses

Carter and Rochon (1996) study of pavement professionals in state agencies:

- Retirements at an above-average rate
- 20% retired in past 3 years
- Over 50% have less than 5 years experience
Current Training Environment

- Industry growth and change
- Average experience level decreasing
- Dearth of undergrad courses

Course catalog survey of the top 50 U.S. civil engineering colleges by the number of 2001 civil engineering graduates

- Pavement Design Course: 22 (44%)
- Asphalt Course: 5 (10%)
- Graduate Course: 36 (72%)
Reliance on the Short Course

Source: Training Magazine (Nov 2002)
1994 NHI Course Participants

Source: Carter and Rochon (1996)
Pavement Summary

• Problem
  – Training is needed on a large scale
  – Most training is from instructor-led classroom short courses

• Result
  – Short course is the only option
  – Attendance not reflective of need

• Conclusion
  – Outreach is often poor
  – Efficiency is low
The Missing Ingredient…

- **Self-Directed Learning Options**
  - Individual learning without an instructor
  - **Advantages**
    - Accessible
    - Timely
    - Efficient
    - Immediate dissemination
    - Reinforcement
The *Pavement Guide* Concept

An archetype self-directed pavement learning tool
Main Menu (List of Modules)

2. Pavement Types. Flexible and rigid pavement basics, types and recycling.
4. Design Parameters. Subgrade, traffic loads, environmental and drainage design inputs.
5. Mix Design. Mix design overview and the principal methods of HMA and PCC mix design.
7. Construction. Major pavement construction steps, equipment, issues and variables.
10. Maintenance & Rehabilitation. Typical methods of both with a focus on overlay design.
Pilot Trial

• Undergraduate Pavement Design Class
  – 25 students (21 completed survey)
  – WSDOT and WAPA Guides as texts
## Pilot Trial – Survey Results

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Number of Questions</th>
<th>Average Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Views towards computer interaction.</td>
<td>3</td>
<td>3.94</td>
</tr>
<tr>
<td>Views on individualized instruction.</td>
<td>3</td>
<td>3.59</td>
</tr>
<tr>
<td>Perceptions of self-directed learning.</td>
<td>3</td>
<td>3.51</td>
</tr>
<tr>
<td>Attitude towards learner control of the instructional sequence.</td>
<td>3</td>
<td>3.69</td>
</tr>
<tr>
<td>Attitudes towards <em>Pavement Guide Interactive</em> usability.</td>
<td>2</td>
<td>3.60</td>
</tr>
<tr>
<td>Degree of involvement with the <em>Pavement Guide Interactive</em>.</td>
<td>4</td>
<td>3.39</td>
</tr>
<tr>
<td>Level of anxiety when working with multimedia</td>
<td>3</td>
<td>3.83</td>
</tr>
<tr>
<td>General opinion of the Pavement Guide Interactive.</td>
<td>4</td>
<td>3.86</td>
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</tbody>
</table>
## Pilot Trial – Survey Results

<table>
<thead>
<tr>
<th>Statement</th>
<th>Average Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>The pictures, videos and animations enhanced my experience with the WSDOT Pavement Guide.</td>
<td>4.19</td>
</tr>
<tr>
<td>It is easy to find information in the WSDOT Pavement Guide.</td>
<td>3.43</td>
</tr>
<tr>
<td>The WSDOT Pavement Guide contributed to my learning of the class material.</td>
<td>3.95</td>
</tr>
<tr>
<td>I would recommend the WSDOT Pavement Guide to future students of CEE 421.</td>
<td>4.14</td>
</tr>
<tr>
<td>I would consider using the WSDOT Pavement Guide in my future job to find the answers to pavement-related questions.</td>
<td>4.24</td>
</tr>
</tbody>
</table>
For Further Viewing

• **WSDOT Pavement Guide Interactive**  
  – [hotmix.ce.washington.edu/wsdot_web](http://hotmix.ce.washington.edu/wsdot_web)  
  – Contact WSDOT Mat Lab (http://www.wsdot.wa.gov/biz/mats)

• **NAPA Guide for Hot Mix Asphalt Pavement**  
  – Available from: [www.hotmix.org](http://www.hotmix.org)

• **WAPA Asphalt Pavement Guide**  
  – [www.asphaltwa.com](http://www.asphaltwa.com)

• **HAPI Asphalt Pavement Guide**  
  – [www.hawaiiasphalt.com](http://www.hawaiiasphalt.com)