Classroom Presenter: A Tablet PC-based Presentation System

Richard Anderson*, Ruth Anderson®, Tammy VanDeGrift*, Steven A. Wolfman*, and Ken Yasuhara*

http://www.cs.washington.edu/research/edtech/

Beyond Conventional and Computer-based Presentation

Overhead projectors and whiteboards offer instructors the freedom to adapt presentations to suit the audience. Existing computer-based presentation tools such as PowerPoint are less flexible but offer advantages in preparing structured presentations with high-quality examples and illustrations. Classroom Presenter provides novel navigation and handwriting features motivated by experience with the system in real classrooms and fully integrates the advantages of computer-based presentation systems with the flexibility of handwriting provided by conventional systems.

In-Class Studies, Iterative Design

Background Study
course: distance-learning cryptography
setup: PowerPoint and digitizing whiteboard
design lesson: integration of handwriting directly over slides

Pilot Studies
courses: distance-learning databases; large, non-distance intro programming
setup: successive versions of Classroom Presenter
design lessons: separation of instructor view with handwriting and presentation controls; value of wireless instructor device

Deployment Study
course: large, non-distance intro programming
setup: Classroom Presenter

Ongoing Use of Classroom Presenter
15 courses, 10 instructors, ~1400 students

Student and Instructor Response

Classroom Presenter has been enthusiastically received by students and instructors. Student Responses About Classroom Presenter (vs. PowerPoint & whiteboard)

<table>
<thead>
<tr>
<th></th>
<th>less</th>
<th>no change</th>
<th>more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attention to lecture</td>
<td>4%</td>
<td>39%</td>
<td>57%</td>
</tr>
<tr>
<td>Understanding of lecture</td>
<td>2%</td>
<td>52%</td>
<td>46%</td>
</tr>
</tbody>
</table>

In interviews, the instructor said handwriting on the Tablet PC was very natural. He said he could give more engaging presentations, because he could draw pictures and provide stimulus for the students. The instructor repeatedly mentioned to the class that he loved using Classroom Presenter, even telling them he wished he could use the system in his other courses to make them better.

Acknowledgments

We thank the many students, teaching assistants, and instructors who provided feedback on the system and participated in studies. We also thank ineligible colleges at our institutions and in the Microsoft Research Learning Sciences & Technology group. This work was supported in part by a grant from Microsoft Research.

Instructor View

High-quality handwriting directly over slides allows instructors to extemporaneously augment prepared slides. Handwriting on a separate layer from the slides allows instructor to scroll off handwriting to accommodate additional notes—“virtual mylar.”

Shrinking the current slide expands margin space for additional handwriting without losing presentation context.

Filmstrip View displays current slide in context of next and previous slides, including handwriting. Instructor can click on a slide to navigate directly to it.

System Architecture

PC driving classroom projector

Wireless networking allows instructor to move freely about the classroom or even hand the tablet to students, e.g., to handwrite solutions to in-class exercises.

Separation of Instructor and Classroom views allows instructor’s interface to be tailored for fast, direct access to useful features, e.g., filmstrip view and notes displayed only to the instructor.

Toolbar includes choices of pen color and type (marker vs. highlighter), erasing handwriting, switching to whiteboard mode.

Background Study
course: distance-learning cryptography
setup: PowerPoint and digitizing whiteboard

Background Study
course: distance-learning cryptography
setup: PowerPoint and digitizing whiteboard

Pilot Studies
courses: distance-learning databases; large, non-distance intro programming
setup: successive versions of Classroom Presenter

Design lesson: integration of handwriting directly over slides

Office of Washington, Computer Science & Engineering Education & Educational Technology Group
http://www.cs.washington.edu/research/edtech/

* UW CSE, Seattle, WA 98195-2350 (anderson, tammy, wolfman, yasuhara) ucs.washington.edu
® U. of Virginia, Computer Science, Charlottesville, VA 22904-4740 ruth@cs.virginia.edu

Classroom Presenter is available free for educational and research use:
http://www.cs.washington.edu/research/edtech/presenter/