Promoting Student Engagement with Classroom Presenter

Richard Anderson
Department of Computer Science and Engineering
University of Washington

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Classroom Presenter

- Distributed, Tablet PC Application
- Initial development, 2001-2002 at MSR
- Continuing development at UW
- Collaboration with Microsoft
- CP3 just released

- Simple application
- Ink Overlay on images
- Export PPT to image
- Real time ink broadcast
- UI Designed for use during presentation on tablet
- Presentation features
  - Instructor notes on slides
  - Slide minimization

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Classroom Presenter as a distributed application

- Designed as distributed application for distance learning
- Enables many scenarios
  - Mobility
  - Walking and talking
  - Sharing materials with students
  - Note taking
  - Classroom interaction
  - Student submissions

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Instructor View
Public Display

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Ink based presentation

- Tablet PC Inking on images
- Simple pen based controls
- Whiteboard, slide extension
- Multiple views – instructor/display
  - (dual monitor)
- Multiple slides decks with filmstrip navigation

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“Typical ink usage”

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Draw a picture of something from Seattle

Student Attention vs. Time

Classroom Presenter

Deployment Studies
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Classroom Activities

Key results
Discussion Artifact

- Use student generated example to explore different aspects of a topic
- Assess overall understanding
- Diagnose misconceptions

Seattle Precipitation and Temperature

- Use Blue
- Use Red

Temperature
- Daily average, degrees F
- Use Blue

Precipitation
- Inch per month

Topological Sort

- Given a set of tasks with precedence constraints, find a linear order of the tasks

Label vertices with integers 1, 2, ..., n
- If v precedes w, then l(v) < l(w)

Find a topological order for the following graph

Collective Brainstorm

- Generate student ideas for discussion
- Build a list of ideas
- Analyze and evaluate responses
Special problem: Large Size

List at least three problems trees must face (& solve) because of their large sizes.

1.
2.
3.

Problem Introduction

Have students explore an instance of a problem before topic is introduced

Determine the LCS of the following strings

BARTHOLEMESIMPSON

KRUSTYTHECLOWN

Submissions

Design discussion

Collect student ideas for public display and discussion

Note: CP3 allows students to send information to the instructor, the instructor cannot (currently) return these to students

Sketch the layout of an office for teaching assistants to hold office hours
Challenge problems

- Competition in getting solutions
- Simultaneous work
- Submission and discussion

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Handwriting Recognition:
Identify the following words

- Programming
- OP
- Skills
- Solutions

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Recognition results

```
All programmers are optimistic. Perhaps this is because they believe in looking at the bright side of life.
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Classroom Usage

- Data from Undergraduate Algorithms course
- Logged data – timings of submissions
  - Work time – students working independently on activities
  - Discussion time – student work shown on public display
  - Average work time 4:29
  - Average display time 2:41
- Participation Rates
  - Percentage of students present submitting work
    - Min 11%, Max 100%, Average 69%
  - Some students would answer without submitting
  - Resubmission common

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Collaboration

- One to three students per tablet
- Interaction between students often encouraged
- Instructors would survey and occasionally comment on student work during activity phase
- Student work a key part of classroom discussion

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Anonymity

- Work displayed on public display without any identification
- Limited information about submission displayed on the instructor machine
- Anonymous display valued by the students
- Students often believe the instructor can identify their work
- Tagging behavior observed

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Results

- Comparison with classroom networks
  - Classroom response systems, "clickers"
  - Single display of rich responses versus aggregated, finite responses
  - Support different classroom goals

- Comparison with paper based activities
  - Most of the activities can be done with paper!
  - Improved logistics with digital system
  - Anonymity
  - Key is ability to incorporate into public display

Classroom Presenter 3

- 3.0 Release – Available now!
- Website
  - classroompresenter.cs.washington.edu
- Most significant changes from CP2
  - Support for TCP/IP networking
  - Improved ink support
  - Direct import of PPT (no need for deckbuilder)
- For more information contact
  - Richard Anderson, anderson@cs.washington.edu
  - Natalie Linnell, linnell@cs.washington.edu

Any questions?

For more information, contact Richard Anderson
(anderson@cs.washington.edu)
http://classroompresenter.cs.washington.edu

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