Educational Technology and Educational Outreach in CSE

- Survey of Technology and Outreach Projects
- Demonstration of Technologies

Classroom Presenter

- Tablet PC Based Presentation and Classroom Interaction system
- Developed Collaboratively between Microsoft and University of Washington
  - CP3 is available for free as an academic download
- Presentation features
  - Writing on slides
- Interaction features
  - Communication between devices
Plot Student Attention vs. Time

What problems do trees face because of their large sizes?

1.
2.
3.

Internet based video conferencing

• Professional Master’s Program
• Students working full time in local industry
• Courses offered in the evening
  – Coursework based degree
• Courses offered using internet based video conferencing
• ConferenceXP
  – Microsoft Research developed conferencing system

CXP Demo

• Lecture from a remote site

Distance Learning Challenges

• Technology
  – Reliable networking
  – Audio
• Pedagogy
  – Engaging the remote audience
  – Maintaining an interactive classroom

4-way Courses

• UW-UCSD-UCB-MS
• CSE Courses
  – Public Policy
  – History of Computing
  – Cybersecurity
• Technology worked well
• Success Factors
  – Courses with shared expertise
  – Active instructors at multiple sites
UW-MS-Pakistan

- Computing and the developing world
- Regular UW-MS course
  - Additional site in Lahore, Pakistan
- Lower bandwidth, greater latency
  - But it still works
- Communication from remote site
  - Audio
  - Student submissions

UW TVI Projects

- Introductory programming
  - Address community college articulation
  - Experiment with alternate approaches to introductory computing instruction
- UW – Beihang Algorithms course
  - Offering of CSE 421 in China
- Digital StudyHall
  - Primary education in rural India

Tutored Video Instruction

- Recorded lecture materials
  - Generally based on live classes
- Class model
  - Lecture playback alternating with facilitator led discussion
  - Facilitation models
    - Gibbons: Peer instruction
    - Active facilitation

UW – Community College

- Lectures recorded from UW Introductory CS class
- Shown at CCs with local instructors as facilitators
- Complicated institutional relationships
  - CC students concerned about competition with UW students
- Facilitation model
  - Did not achieve peer facilitation
  - Co-teaching a more accurate description
  - Facilitators wanted external support (e.g., classroom activities)
- Program helped with instructor development

UW-Beihang CSE 421

- Offer course based on UW course in Beijing
- UW Instructor could not give the course in Beijing
- Scheduling prevented live course offering
  - 1:30 pm Seattle, 4:30 am Beijing
  - Materials captured from live classes
- Tutored Video Instruction
  - Slides, talking head, digital ink

Building on UW – CC experience

- Instructor visits to Beijing to set up project
- Balanced role of institutions
  - Materials from UW
  - Grading, administration at Beihang
  - Have students view the course as a Beihang course
- Training of facilitators
- Support materials
Digital StudyHall

- Affiliated Project
  - DSH, MSRI, UW
- Tutored Video
  Instruction for primary education in rural India
- Targeting very poor schools

Key components

- A people’s database
- Mediation based pedagogy
- Hub and spoke model
- Content distribution by DVD

What we’ve learned from all of this

- Value of electronic materials in the process of classroom instruction
- Tools for teaching
  - Teacher and students drive the process
  - Flexible and unpredictable use
- Importance of high reliability
  - And attention to address issues
- Broader context – interplay of technology and other issues

Project Summary

- Classroom Technology
  - Presentations Systems
  - Interaction with student devices
- Distance Learning
  - Development of ConferenceXP
  - Multisite classes: UW, UCB, UCSD, MS
  - International connections: UW, Pakistan
- Tutored Video Instruction
  - Course export to community colleges
  - Course offering in China
  - Digital StudyHall

Any questions?

Есть ли у вас какие-то вопросы?

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