Systematic Evaluation of the Use of Technologies in Enhancing Teaching and Learning in Engineering

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A. To investigate professors’ current uses of, objectives for, and concerns about technology within the Faculty

B. To enhance teaching and learning by integrating technology effectively

C. To develop an evaluation protocol

Survey Findings

- ¾ of Engineering faculty members use WebCT
- ¾ of these users use WebCT regularly
- Most used teaching methods = lecture, in-class problems, Q&A
- ⅓ never use, while ⅓ regularly use: quizzes, demonstrations, student presentations, discussion
- 55% want to use more technology
- Need for: robust equipment, human resources, training

Pedagogical Technological Support

WebCT
- 1 course, common to all programs
- 2 sections, 2 professors
- Equal numbers of students
- End of term online survey

State-of-the-Art Technologies

Slate PCs
- 1 field course, 1 design course
- Test: 1 week per student, followed by paper-based questionnaires
- Professor interviews

Students

- Features most used or having most impact on learning = assignments, previous exams, online quizzes
- Suggestions = more practice, more faculty-wide use, more notes & videos
- Students with higher grades tended to be higher users

Professors

- Originally concerned about impact (e.g., attendance, misuse of quizzes)
- Overall positive experience
- Acknowledge benefit to students
- Concerns = expertise needed, time commitment, support required

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Conclusions

- WebCT and student learning
  - Students appreciate it, especially for practice & communication
  - Further study: how to engage less frequent student users?
  - Student feedback valuable to professors
  - Professors need help to build their skills & their sites
- Support for professors
  - Technical
  - Pedagogical
  - Expanded evaluation may help determine how to engage less frequent users
- Equipment
  - Teaching & learning depend on: functional, reliable, compatible hard & software
  - Wireless access is essential
  - Ongoing evaluation
  - Use of student feedback to improve course design over time
  - Curriculum & program design need systematic & scholarly approaches
  - Shared results lead to improved infrastructure, policy & practice

Recommendations

- Continue systematic, ongoing evaluation of technological innovations
- Ensure wireless access throughout the Engineering buildings
- Match technologies & use of technologies to student learning needs
- Clarify professors’ needs for support: type & format preferred
- Establish faculty-wide Teaching Assistant positions to support initiatives
- Share with professors that students appreciate opportunities for practice activities
- Use the evaluation protocol