Assessing the Impact of Technology on Student Learning: An Institutional Initiative

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Assessing the Impact of Technology on Student Learning: An Institutional Initiative

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Session Outcomes

• By the end of the session, participants will be able to develop or improve their assessment efforts by:
  – Defining issues that need to be addressed when assessing technology’s impact on student learning;
  – Identifying specific assessment methods that would be applicable to their institution; and
  – Using the available list/handout of resources.
Session Overview

• LITRE as a Quality Enhancement Plan
• The LITRE Plan
  – Implementation
  – Assessment
• Results of Assessment
• Lessons Learned
• Issues
• Questions
LITRE Planning

• LITRE as an outgrowth of accreditation review
  – Plan for transformative, institutional improvement
  – Crucial to enhancing educational quality
  – Directly related to student learning
  – Based on comprehensive analysis of institutional effectiveness
LITRE Planning

- Initial Benchmarking
  - Defining the “learning with technology” environment
  - Focus Groups
  - Critical Infrastructure Needs (*we’ll discuss later...*)
  - 2003 Faculty Survey
**LITRE Faculty Survey (2003)**

- **Why:** Inform recommendations of LITRE and provide baseline for future LITRE efforts
- **Who and What:** Faculty were surveyed about their experiences with computer-based instructional and learning aids. 1,790 faculty were invited to participate in the survey. 983 did—a response rate of 55%.
- **Indicator:** Respondents were asked what would make it easier to use the technologies that they did use in their courses: “If they were available and supported in the classrooms in which I typically teach” was chosen most often, 37% of the time.

- See [http://litre.ncsu.edu](http://litre.ncsu.edu) for survey report and instrument.
The Essence of the LITRE Plan

• Scholarly inquiry focused on enhancing the technology-rich learning environment

• Investigative process through which new approaches to student learning, using technology, are proposed, vetted, empirically evaluated, and if the evaluation results indicate, deployed and routinely assessed

• Evidence would be collected and analyzed to inform future projects
First Wave Initiatives

• Classroom and Laboratory Improvements
  – University-wide Classroom Improvement Plan
  – Student Group Collaboration (FlySpace)
  – ClassTech projects
  – SCALE-UP Classroom

• Faculty Innovation Grants
  – LITRE grants
LITRE Assessment

- Overarching Goals
- Focused on assessment related to student learning
- Assessment Methods
- Support through LITRE Assessment Committee
LITRE Goals

- Improve student learning
- Systematically investigate effectiveness of technology-based innovations in learning and teaching
- Use results to scale our successes, shape future investigations and inform campus decision making
Student Learning Assessed: Four Dimensions Defined

- Problem Solving
- Empirical Inquiry
- Research from Sources
- Performance in the discipline

See LITRE Plan, Appendix A for definitions: http://litre.ncsu.edu/
Assessment Methods for Goals

- Faculty Survey
  - Was used in developing LITRE
  - Will be conducted periodically to look for improvements and other issues
  - Will include faculty perceptions of how student learning improved in 4 dimensions

- Student Surveys
  - Student perceptions on the 4 dimensions of student learning

- Alumni Survey

- Summary of LITRE Projects (LITRE-Like Projects) & Grants
  - Lessons learned
  - Improvement of student learning
Discussion Questions

- What issues, related to assessment, do you think our goals have raised?

- If you were given the task of developing goals for an institution-wide assessment of technology related to student learning – what goals would you develop?
LITRE Assessment Committee

- Faculty
- Assessment Professionals
- Computer/Information Technology Professionals
- Available to help with assessment design of Individual Faculty Proposals ([http://litre.ncsu.edu/dfiles/people.html](http://litre.ncsu.edu/dfiles/people.html))
Assessment of Each of LITRE’s Projects Summarized in Annual Report

Projects:
• Improving Classroom Technology throughout campus
• ClassTech
• Flyspace
• G108 – Scale-UP
• Individual Faculty Grants

Annual Report:
• What have we learned? What are the best technologies, processes, pedagogies, etc. to move forward?
• In what areas has student learning improved? Can we tie to LITRE projects?
• Use information to plan next steps …close the loop!
Assessment of Individual Faculty Grants

• Each Faculty Grant MUST include assessment activities
  – “How will I know if I accomplished my goals?”
  – “How does the technology and pedagogy affect student learning?”

• PI does the assessment work, but the LITRE Assessment Committee members are available to consult with PIs
Assessment of ClassTech

- How does the technology help students achieve course/program objectives?
- How does the technology affect how faculty members teach and how students learn?
- Determine needs and adequate support and training for faculty members to use the technology effectively.

- Initial Data to include:
  - Equipment usage
  - Operability/Maintenance
  - Training
  - Faculty and student perceptions on workload and learning
  - Course-based data on improvement in student learning
Modified ClassTech Assessment 2005-2006

• How does use of technology impact course’s:
  – pedagogy
  – faculty workload
  – faculty attitudes
  – amount of material delivered

• How does having the technology in the classroom affect:
  – use of class time and assigned coursework
  – how students learn (following LITRE defined outcomes)
  – student achievement of course and program objectives

• Are students, faculty and technical staff satisfied with the use of this technology in academic settings?

• What are the challenges of using technology in the classroom for students, faculty, and technical staff?
Assessment Methods 2005-2006

• ClassTech Assessment Team to define model that incorporates
  – technology
  – pedagogy
  – learners
  – environment
  – outcomes

• Survey faculty who use rooms (More in-depth in spring)

• Automatic tracking of usage in some of the rooms

• Interviews with faculty and classroom observations in 20 courses

• Sample of student work in observed classes to assess student learning

• Student surveys in selected classrooms

• Focus group with technical staff

• Review of problem call tracking logs
ClassTech results – 2004-2005

- Overall favorable perceptions of technology use on faculty workloads
- No significant evidence of direct impact on pedagogy or assessment methods
- Almost half (48%) of faculty respondents felt pace was faster with technology
- Half said technology allowed for wider variety of topics
- Most (61%) said they were able to cover material in more depth
ClassTech results – 2004-2005

- Most faculty felt students were more engaged in class when teaching with technology compared to teaching without it.

- Much more involved: 16%
- Much less involved: 1%
- Somewhat less involved: 7%
- Somewhat more involved: 43%
- Same involvement: 33%
ClassTech results – 2004-2005

• In-class surveys indicated 81% felt it positively affected their learning

• Most students surveyed in classes prefer moderate (71%) or extensive (21%) use of instructional technology

• 2004 Sophomore/Senior surveys generally indicate effect on learning is either same or better, depending on methods used

• See www.ncsu.edu/classtech/survey_results/
Critical Infrastructure Needs

- Classroom Improvement
- Faculty Computing
- File Space Quota
- Software Licensing
- Learning Management Systems
- Digital Asset Management
- Student E-Portfolios
- Technology Support for Students
- Faculty Innovation Grants
- Information Exchange
- Accessibility and Universal Design
- Wireless Data Connectivity and Mobile Computing/Communication Systems
- Advanced Remote Access Services
Results Related to Student Learning

Senior student survey:
- The highest increase was seen in use of computerized exams:
  - USE: 23% in 03/04 increased to 30% in 04/05
  - LEARNED BETTER: 18% in 03/04 increase to 28% in 04/05

From LITRE projects:
- Only a few results related to student learning from 2004-2005 efforts because:
  - Time needed for Infrastructure
  - Time for faculty to incorporate technology into coursework
  - Time to develop DIRECT assessment methods of student learning (not rely on just indirect methods such as surveys)
- Majority of faculty felt that the pace, variety and depth of their course has been increased and students were more involved in learning.
- Need to Modify Question: the interaction of technology as a tool, faculty’s pedagogy and student use of the technology on student learning.
Lessons Learned - Overall:

- Enables innovations in teaching and learning
- Diffuses innovation among mainstream faculty
- LITRE, LITRE, LITRE on the label, label, label
- Helps improve teaching
- Helps improve understanding of assessment
- Involve everyone!
Lessons Learned: Our Next Steps

• Modifications:
  – Revisit overarching questions: What pedagogical issues are we trying to solve? How can technology help address challenges?
  – Focus assessment: Conduct fewer projects well and do meta-syntheses
  – Increase time and resources in assessment
Lessons Learned—Assessment

- Obtain baseline data
- Develop Assessment Committee that actively engages community in discussions
- ASK: What do we want to learn from assessment? What will it tell us?
- Overestimate time and resources
- Get faculty involved in assessment
- Provide support and training for assessment
Success Factors

• Institutional investment
• External driver (SACS)
• Team of professionals
• One or two champions of the process
• Communication
• Develop culture
• Brand identification – LITRE
Issues From Each of Our Perspectives

• Joni – Assessment Issues
• Stan – Classroom Improvement
• Sharon – Learning Technologies
Questions?
Resources


• LITRE Goals and Assessment Plan: http://litre.ncsu.edu/dfiles/goals_short.html


• Classroom Technology @ NC State: http://www.ncsu.edu/classtech/

• Other Session Documents: http://www.ncsu.edu/classtech/workshops/eli2006/

• Resources on assessment of technology related to student learning: http://www2.acs.ncsu.edu/UPA/assmt/litre/
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