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

ELI Annual Meeting, January 2006
Session Documents: http://www.ncsu.edu/classtech/workshops/eli2006/

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

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NC State University

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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 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

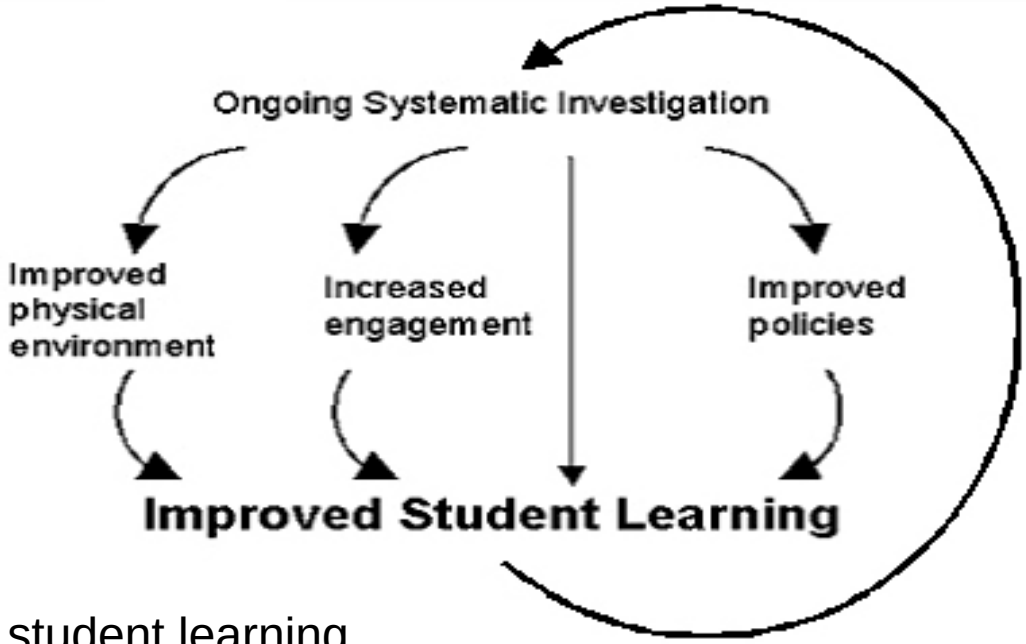
First Wave Initiatives

- **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

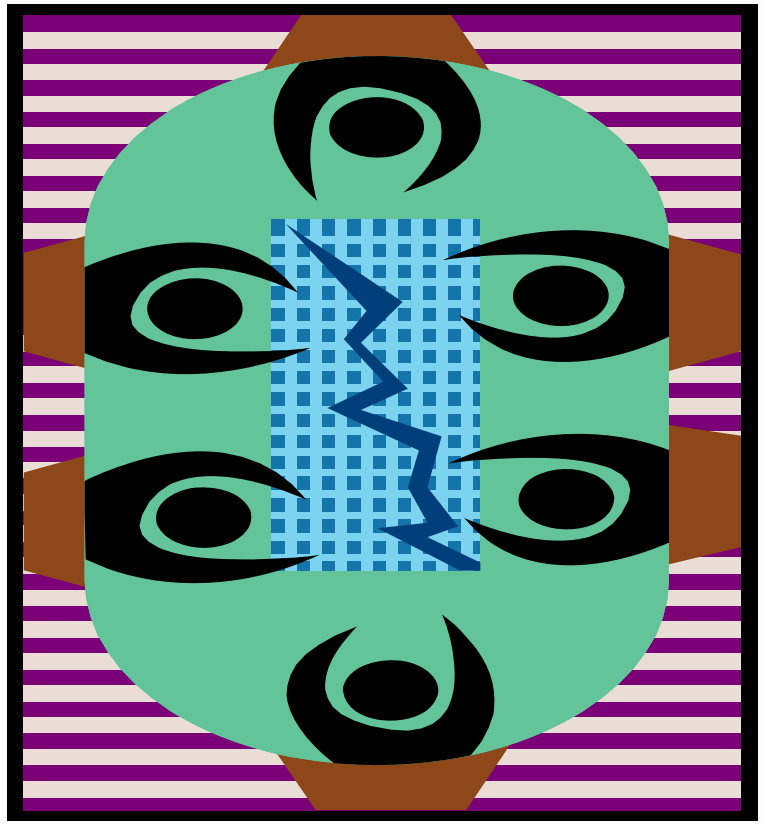
Discussion Questions

- 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)



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

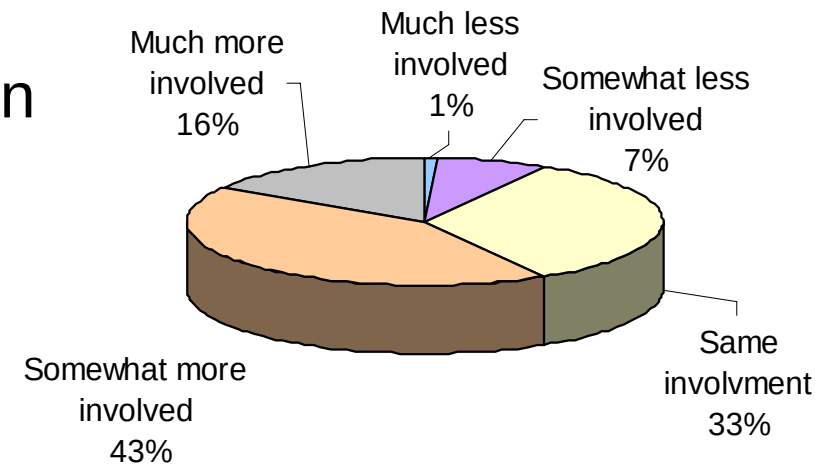
- ClassTech Assessment Team to define model that incorporates
  - technology
  - pedagogy
  - learners
  - environment
  - outcomes
- Survey faculty who use rooms (More in-depth in spring)
- Automatic tracking of usage in some of the rooms
- Interviews with faculty and classroom observations in 20 courses
- 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



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

- Quality Enhancement Plan for Learning in a Technology-Rich Environment at NC State: http://litre.ncsu.edu/pdf/litre_qep.pdf
- LITRE Goals and Assessment Plan: http://litre.ncsu.edu/dfiles/goals_short.html
- 2003 LITRE Faculty Survey Report: http://litre.ncsu.edu/fac_sur.pdf
- 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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