Patterns of Technology and Technique Use in an Active Learning Classroom

Presentation by:
- Matt Smock, Director of Instructional Design and Technology
  - Jill Leonard, Professor of Biology
  - J.D. Phillips, Department Head/Professor of Mathematics

### Equipment Type

<table>
<thead>
<tr>
<th>Equipment Type</th>
<th>Winter '12</th>
<th>Fall '12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructor Laptop</td>
<td>0%</td>
<td>20%</td>
</tr>
<tr>
<td>Student Laptop</td>
<td>20%</td>
<td>40%</td>
</tr>
<tr>
<td>Response System</td>
<td>40%</td>
<td>60%</td>
</tr>
<tr>
<td>Internet Access</td>
<td>60%</td>
<td>80%</td>
</tr>
<tr>
<td>Instructor Camera</td>
<td>80%</td>
<td>100%</td>
</tr>
<tr>
<td>Student Cameras</td>
<td>100%</td>
<td>80%</td>
</tr>
<tr>
<td>SMART boards</td>
<td>80%</td>
<td>100%</td>
</tr>
<tr>
<td>Video Screens</td>
<td>100%</td>
<td>80%</td>
</tr>
<tr>
<td>Digital Tablet</td>
<td>80%</td>
<td>100%</td>
</tr>
<tr>
<td>Student Mics</td>
<td>100%</td>
<td>80%</td>
</tr>
<tr>
<td>Instructor Mic</td>
<td>80%</td>
<td>100%</td>
</tr>
<tr>
<td>White boards</td>
<td>100%</td>
<td>80%</td>
</tr>
</tbody>
</table>

CEEIRSS Conference  ❘  Mt. Pleasant, MI  ❘  March 22, 2014
About Northern Michigan University

- Located in Marquette, on Michigan’s Upper Peninsula
- About 9,400 students
- A little over 300 faculty members
- About 200 academic programs
Today’s Objectives

Upon conclusion of this breakout session, you will be able to:

- Identify considerations for selecting active learning classroom technology.
- Describe the Active Learning Catalysts model for propagating active learning and associated technologies.
- Describe various technologies that may be used to enhance spaces designed to facilitate active learning.
- Outline technology usage data gathered through the Catalysts project.
- Continue developing specific ideas for integrating technology into your active learning space.
The Active Learning Catalysts Project

- **Goal:**
  - To increase the adoption of technology-enhanced active learning in classes taught by science, technology, engineering and mathematics faculty.

- Funded as an NSF TUES Phase I project DUE-1043984 (*Increasing adoption of active learning in STEM disciplines by integrating a faculty development program and a technology-facilitated learning environment*), with additional support from Northern Michigan University.

- **Timeframe:** May 1, 2011 - April 30, 2014
Faculty Catalysts

Cohort of six STEM faculty catalysts facilitate the implementation of technologically-enhanced active learning.

- Received training, development time, and resources.
- Redesigned at least one of their own courses and served as models for other faculty
- Shared ideas and activities in a variety of forums
- Promoted active learning within their departments and disciplines
- Presented their experiences at conferences
Active Learning Studio Classroom

- Designed to support active learning pedagogy
- Follows SCALE-UP principles developed by Dr. Robert Beichner’s team at North Carolina State
  - Round tables, 7 feet in diameter
  - 9 students per table
- Inspired by University of Minnesota classrooms
Considerations for Selecting Active Learning Classroom Technology

- What technology is standard in your traditional classrooms?
- What disciplines/courses will be using the room?
- How big is your room? Shape?
- Campus technology culture (e.g., PCs, laptops, tablets, clickers)
- New room or renovation?
- Other considerations?
Discussion

- Think about an active learning classroom that you are planning to build (or would like to build).

- In small groups, take about 10 minutes discuss what technology you would include and why.

- Report out small group discussion to the overall group.
Technology in NMU’s Pilot Room

- Dry erase surfaces
- LCD panel with SMART overlay for each student table – hookups for 9 laptops per table
- Document cameras
- Microphones
- Web-based student response system
- Dual projectors
- Instructor annotation tablet
Assessing Technologies

- Log book
- Maintenance
- Feedback
- Other ways?
Log book data:

Catalysts vs. Non-catalysts

- Everyone uses technology that they are more familiar with more than new gear
- Non-catalysts using internet and student laptops more
- Catalysts using instructor camera and tablet more
Differences by Discipline

- Problem based courses (phys sci & math) not using student laptops or internet much, but use the instructor camera and tablet
Logbook data:

Differences by Course Level

- More equipment use in the upper level courses, except for instructor camera
Beyond the Pilot – Building Additional Classrooms

- New classroom building opens in Fall 2014
- Includes three 36-seat technology-enhanced SCALE-UP classrooms

Technology choices
- No SMART Boards
- No student microphones
- Document cameras
- Whiteboards
- Wireless video transmission
Questions and Additional Discussion

For more information about the Catalysts Project, visit

http://catalysts.nmu.edu