UMN Technology-Enabled Classroom Design

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47% of classrooms serve 1630 students in 9 ALCs.
How many active learning classrooms are part of your institution’s learning space inventory?

- In planning!
- 1-5
- 6-10
- 11-15
- More than we can count
- No Vote
Outcomes

- Review UMN research that demonstrates learning improvements when students work collaboratively with instructors and peers
- Learn how distinct teaching and learning improvements result from use of the ALC
- Identify the key design and technology elements in an ALC that enhance faculty/student interaction
- Review UMN’s vision for future design of technology-enabled classrooms
Active Learning Classrooms Pilot Evaluation: Fall 2007 Findings and Recommendations

Prepared By The ALC Pilot Evaluation Team

Thank you to the following members of the Active Learning Classrooms (ALC) Pilot Evaluation Team for their contributions to this report and their dedication to faculty development and support: Deb Alexander, Bradley A. Cohen, Steve Fitzgerald, Paul Honeye, Linda Jorin, John Knowles, Peter Oberg, Jeremy Todd, J.D. Walker, and Annice Whitmire.
Figure 1. Expected vs. Actual Grades  
Traditional vs. ALC

Figure 2. Expected vs. Actual Grades  
Lecture vs. Active Learning
Comparison Studies Summary

- Controlled studies have shown that new learning spaces:
  - Help student outperform final grade expectations.
  - Affect teaching-learning activities, even when the instructor attempts to hold these activities constant.
  - Do not conduce to a lecture-based approach; student performance improves when instructors move to active, student-centered teaching methods.
Prototype research data was applied to the design concept for this integrated facility.
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Comparison Studies

Expected versus Actual Grades in Three ALC Courses

- PSTL 1131**
  - Expected: 75.76%
  - Actual: 80.73%

- BIOL 1003****
  - Expected: 71.77%
  - Actual: 76.49%

- FSOS 3101****
  - Expected: 80.96%
  - Actual: 85.50%
Classroom Activities and Instructor Behaviors

- **Lecture**: ALC 69.3%, Traditional 74.1%
- **Discussion**: ALC 4.7%, Traditional 2.1%
- **Group Activity**: ALC 32.6%, Traditional 43.2%
- **Q&A**: ALC 35.9%, Traditional 40.4%
- **At Podium**: ALC 82.2%, Traditional 91.1%
- **Not at Podium**: ALC 75.0%, Traditional 89.0%
- **Consulting**: ALC 14.6%, Traditional 26.7%
- **Not Consulting**: ALC 95.8%, Traditional 97.4%
Biology 2002 tries to apply these basic principles of learning.

• Each brain is unique.
• What I pay attention to is what I learn.
• More senses = more learning.
• The person who does the work learns.
• Making memories requires repetition, elaboration, & sleep.
• The brain is social.
• Metacognition enhances learning.
What are the learning outcomes of the Foundations courses?

• Learn foundational biology concepts in an evolutionary context

• Develop foundational skills needed for success in science & future careers
  • Problem solving, critical thinking
  • Data analysis & interpretation
  • Laboratory skills & experimental design
  • Team work & Communication
  • Quantitative reasoning

Biology 2002 – Foundations of Biology for Majors
provided by Prof. Robin Wright
The critical thinking and group aspects of this course have improved my knowledge of and increased my interest in biology to an astronomical degree. You are doing something right with this course, and even though it was a love/hate relationship, I am going to have to say that I thoroughly enjoyed the journey. Thank you so much, and I look forward to working with you in the future.
Perhaps the largest sign of respect I’ve received in my two semesters of attendance has been the demanding questions you ask us. The best indicator of confidence in ability is the quality of work that is asked of someone. You respected us to ask the hard questions, and I appreciate it.

Thanks for a great course, please keep doing what you’re doing.
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Physical attributes

• Room, furniture and group size
  – Room: 2800ASF, 126 students = 22-23ASF/student
  – Furniture shape and size?
Acoustics

• Acoustical isolation maintained while using raised floors and operable partitions

• Provides enhanced:
  – Flexibility
  – Privacy
Technology

• Physical classroom setting: ALC vs. traditional
• Student collaboration using technology to collect and analyze information on demand
• Audio/video to further the shared learning process
In our research we have also found that targeting the virulence of the pathogenic bacteria in itself presents a viable approach for development of a drug which could potentially reduce the high rate of resistance acquisition. However, much of our research revealed that virulence is opposed to the bacteria itself often led to very “small scoped” drug with low effectiveness.

Taking an element of each of the benefits of these two previous areas of research, we hope to target DNA binding protein (TDP-43). TDP-43, we propose, will provide a wide variety of antibacterial (and therefore low rate of resistance acquisition) and low risk approach to the development of a new drug.
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Learning commons
A.L.I.V.E. for Learning

• Weaver Densford Hall 7-135, a 117 seat classroom, is transformed into the University’s first Active Learning and Interactive Video Environment.

• Pharm.D. students on the Twin Cities and Duluth campuses learn together.
Learning space, final frontier

The holodeck in USS Eclipse, Star Trek, Second life - CC BY-SA 3.0
Wishing you great learning space!
Questions?