Transforming the Lecture Hall: Toward a Comprehensive Classroom Redesign

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Background

- University of North Carolina Center for Faculty Excellence looking for opportunity to leverage work in large course redesign
- Steelcase Education grant program created opportunity for collaboration on large classroom project
- Greenlaw 101 project is a joint investment that will inform best practices for large active classrooms related to pedagogy, technology and classroom design.
Large Active Classrooms 2.0

A human-centered research initiative focused on large classroom experiences

With the need to support active learning within large classrooms, how might we design space and technology to create better learning experiences?
Research and Insights

DESIGN RESEARCH ACTIVITIES

- Literature review and secondary research
- 8 Campus visits and 14 classroom observations
- 59 user and stakeholder interviews
- Faculty and student workshops

KEY INSIGHTS

- SHIFT
- SOCIAL
- SPACE
- SCALE
Key Insight: Shift

Turning the Titanic
Schools recognize the benefits of large active classrooms, but don’t know how to get started, nor how to scale.

Change is Hard
Active learning works, but students and faculty can be reluctant to change.
Key Insight: Social

Student Instructor Alliance
Social engagement with the instructor is important for learning, but that's not considered in most large classrooms
Key Insight: Space

Supersized Multimodal + Multipurpose
Large classrooms are optimized for a single mode, but there’s a need to use them in a variety of ways within a class (project, generative, testing, etc) and outside of a class (club meetings, speakers, etc).
Key Insight: Scale

See to Learn
Students need visual access to the instructor, other students, and the content, but technology, architectural elements, personal tools, and people get in the way.

Identifying and Directing Many
Active learning involves more contact between instructors and students, but it's difficult to identify and direct so many individuals and groups in a large space.
Design Principles

• Prepare the Mindset
• Design for Social Engagement
• Design for Participation
• Design for Feedback
• Design for Flexibility

• Design for Group Identification
• Design for Noise
• Design for Teaching Staff
• Support Learning Before and After Class
28-seat classroom with tablet arm chairs on casters
45-seat studio classroom using round tables of nine
48-seat swivel-seat classroom
October, 2012

2012 Classrooms Survey
Executive Summary of Findings

Background

During the Spring 2012 semester the Classroom Policy and Steering Committee (CPSC) solicited the input of faculty members on a variety of issues related to the University’s general purpose classrooms. The goals of the faculty outreach effort were to 1) collect faculty suggestions for improving classrooms, 2) identify inconsistencies in access to adequate classroom facilities, 3) increase faculty awareness about classroom constraints and opportunities, and 4) identify potential areas for innovation.

Two online surveys were developed, one for instructors and one for individuals with primary responsibility for scheduling classrooms on behalf of individual academic units.

A total of 489 (51.3%) out of 953 faculty members invited to participate completed the
Classroom Design Goals

To facilitate:

Student interaction (sustained eye contact)
Instructor movement throughout the room
Transitions between instructional modes
<table>
<thead>
<tr>
<th>Instructor</th>
<th>Days</th>
<th>Time</th>
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<tbody>
<tr>
<td>John Papanikolas, Chemistry</td>
<td>MWF</td>
<td>9:05-9:55am</td>
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<tr>
<td>J.D. DeFreese, Exercise and Sports Science</td>
<td>MWF</td>
<td>10:10-11am</td>
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<td>Anne Hastings, Sociology</td>
<td>MWF</td>
<td>11:15-12:05pm</td>
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<td>Kathleen Duval, History</td>
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<td>12:20-1:10pm</td>
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<tr>
<td>Erika Wise, Geography</td>
<td>MWF</td>
<td>1:25-2:15pm</td>
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<td>Thomas Freeman, Chemistry</td>
<td>MWF</td>
<td>2:30-3:20pm</td>
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<tr>
<td>Devin Hubbard, Biomedical Engineering</td>
<td>M</td>
<td>3:35-4:25pm</td>
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<tr>
<td>Cheryl Moy, Chemistry</td>
<td>TTH</td>
<td>8:00-9:15am</td>
</tr>
<tr>
<td>Miguel La Serna, History</td>
<td>TTh</td>
<td>9:30-10:45am</td>
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<tr>
<td>Dennis Mumby, Communication</td>
<td>TTh</td>
<td>11am-12:15pm</td>
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<tr>
<td>John Sweet, History</td>
<td>TTh</td>
<td>12:30-1:45pm</td>
</tr>
<tr>
<td>Lois Boynton, Media and Journalism</td>
<td>TTh</td>
<td>2-3:15pm</td>
</tr>
<tr>
<td>Patricia Sullivan, Public Policy</td>
<td>TTh</td>
<td>3:30-4:45pm</td>
</tr>
</tbody>
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It takes a village......

Faculty members
Student Government
Classroom Policy Steering Committee
University Registrar
Facilities Services
Disability Services
ITS Classroom Hotline
Steelcase (external)
RND Architects (external)
Whitlock AV Group (external)
Walkable space
Dedicated aisle space
Power outlets (48)
Room controls
Displays
**Splashtop Mirroring360**
Use Mirroring360 to mirror a student's Chromebook or iPad screen to the teacher's PC or Mac.

**Splashtop Classroom**
Use Splashtop Classroom to let the teacher share their computer screen with student Chromebooks, iPads, and other devices.

**Solstice**
Display Software for Windows
Assessment questions

Comparison of faculty/student perceptions in traditional vs. interactive classrooms

Faculty use of classroom space

Impact on students with diverse learning needs

Longitudinal impact on faculty development and methods adoption
Prevalent themes of *positive* student comments:

Easier to get into groups, talk to other students
Extra screens make it easier to see displayed content
More engaging environment than other lecture halls
Prevalent themes of *negative* student comments:

- Space feels cluttered
- Extra screens are distracting
Faculty adjustments

“Cluttered” look (Embrace chaos!)

Whiteboards up front

Managing classroom technologies

Adopting active learning techniques

Walking entire classroom
“Students aren't just staring at the front screen. They're looking at the individual speaking, they're speaking with each other, they're collaborating. All these are essential for them to learn what they need to function post-graduation.”

Associate Professor, Journalism and Media

“I think some of the students I have who come from under-represented student populations in the major benefited greatly from being in a space where I could more easily engage and create personal relationships.”

Lecturer, Biomedical Engineering
“Greenlaw 101 allowed me to do a simulation, have the students get into their teams. They could move their seats around, move themselves around, make decisions, talk about team strategy…..you just move your seat and everybody’s meeting that way. That couldn’t have happened in the lecture hall. The students must be able to move around.”

Associate Professor, Public Policy

“We did one all-day activity where students made little presentations in groups and projected from their laptops on each of those screens. It was pretty neat, so I’d like to come up with some more ideas of how we could expand on that.”

Assistant Professor, Geography
What conclusion can we draw from this data?

(PNAS, Freeman, 2014)
“Lectures aren’t just boring, they’re ineffective too”

Active learning raises exam scores AND lowers failure rates

Average failure rate for lecture ~33.8%

Average failure rate for an active class 21.8%

(PNAS, Freeman, 2014)
Propose a sequence of steps to accomplish…. 

\[ H_3C - C≡CH \rightarrow \text{OH} \]
What helped us succeed?

• Support for faculty through the UNC Center for Faculty Excellence and each other!
  – Built a community
  – Discussions starting in the spring
  – Online discussions
  – Shared best practices
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More information interactive classrooms at UNC-Chapel Hill:
http://cfe.unc.edu/teaching-and-learning/resources-for-faculty/#class_redesign

PHOTOS COURTESY OF:
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   Viji Sathy, Psychology and Neuroscience
   ITS-Teaching and Learning
   Center for Faculty Excellence

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