

# Transforming the Lecture Hall: Toward a Comprehensive Classroom Redesign

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THE UNIVERSITY  
*of* NORTH CAROLINA  
*at* CHAPEL HILL

**Steelcase**  
EDUCATION

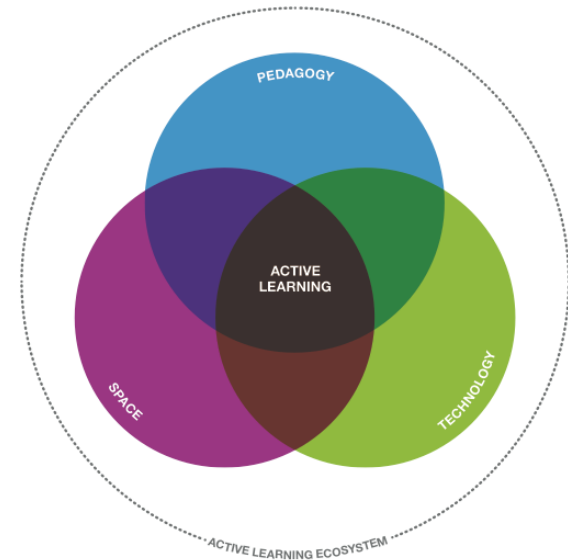
## Background

- 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.

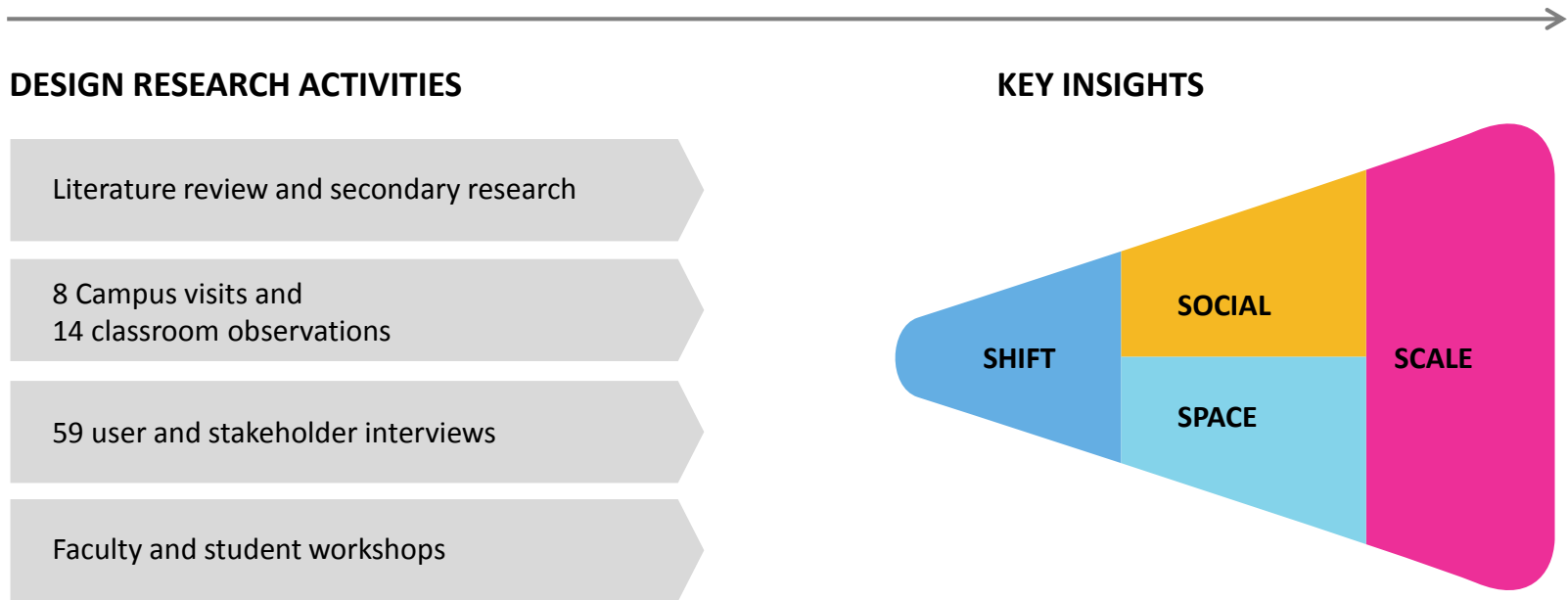
## Large Active Classrooms 2.0

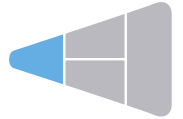
**A human-centered research initiative focused on large classroom experiences**

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





## 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**

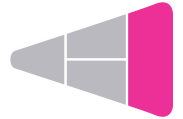
Social engagement with the instructor is important for learning, but that's not considered in most large classrooms



## 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

**Greenlaw 101**  
**University of North Carolina at Chapel Hill**

## 28-seat classroom with tablet arm chairs on casters



# 45-seat studio classroom using round tables of nine



# 48-seat swivel-seat classroom

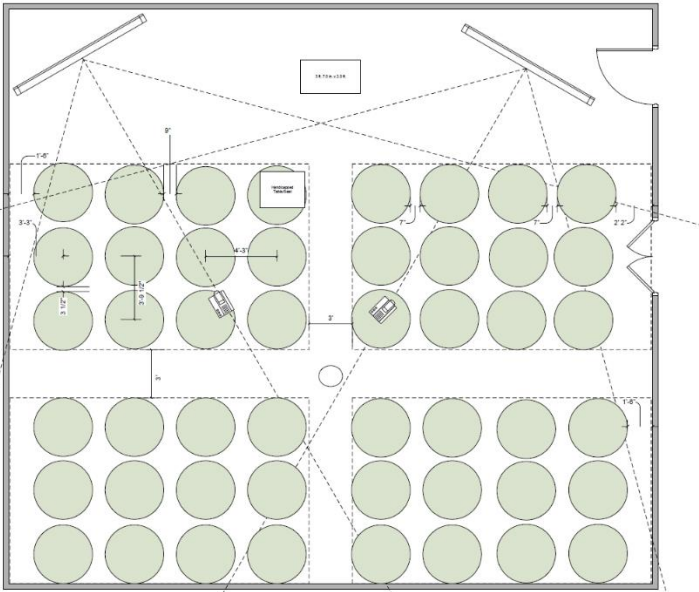


**NOTE:**

In each quadrant, there is a 17' 10" wide x 11' 1" deep rectangle. Seats along the left wall are 6" from the wall, or 20" from the center of the first column of seats. Horizontally, they are spaced 5' apart, or 2' from center to center. Vertically, they are 2' apart, or 42" from center to center.

Seats in the right upper quadrant are closer together due to the location of the door. They are only 1' apart, or 18" from center to center, and 2' 1" from the right side wall.

Seats in the lower right quadrant can be the same as the left side quadrant, but the center stage.







October, 2012

## **2012 Classrooms Survey Executive Summary of Findings**



**UNC**  
CENTER FOR  
FACULTY EXCELLENCE

### **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





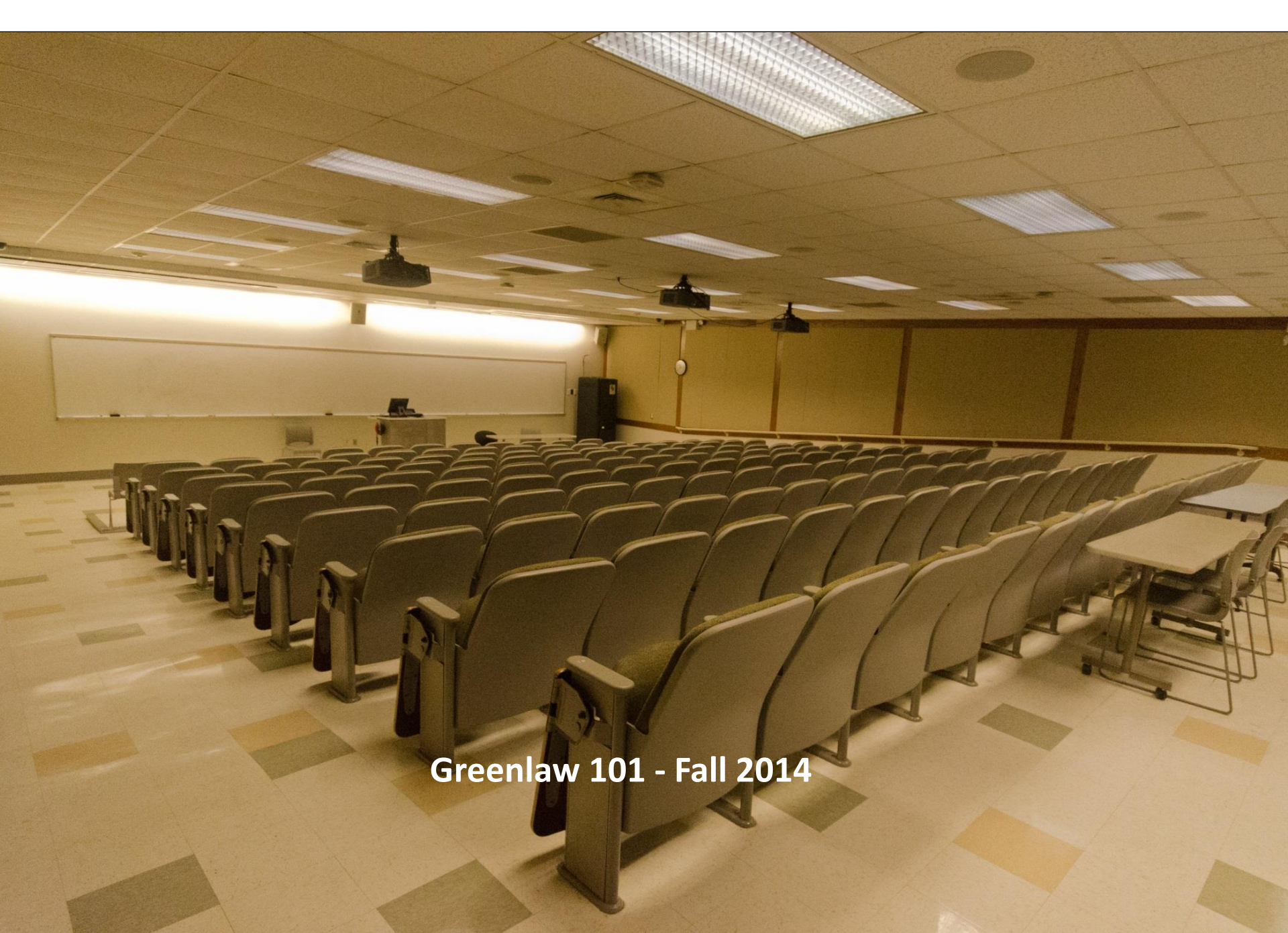
# Classroom Design Goals

To facilitate:

Student interaction (sustained eye contact)

Instructor movement throughout the room

Transitions between instructional modes



**Greenlaw 101 - Fall 2014**



## Fall 2015 Semester Schedule for Greenlaw 101

John Papanikolas, Chemistry	MWF: 9:05-9:55am
J.D. DeFreese, Exercise and Sports Science	MWF: 10:10-11am
Anne Hastings, Sociology	MWF: 11:15-12:05pm
Kathleen Duval, History	MWF: 12:20-1:10pm
Erika Wise, Geography	MWF: 1:25-2:15pm
Thomas Freeman, Chemistry	MWF: 2:30-3:20pm
Devin Hubbard, Biomedical Engineering	M: 3:35-4:25pm
Cheryl Moy, Chemistry	TTH: 8:00-9:15am
Miguel La Serna, History	TTh: 9:30-10:45am
Dennis Mumby, Communication	TTh: 11am-12:15pm
John Sweet, History	TTh: 12:30-1:45pm
Lois Boynton, Media and Journalism	TTh: 2-3:15pm
Patricia Sullivan, Public Policy	TTh: 3:30-4:45pm



# 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)

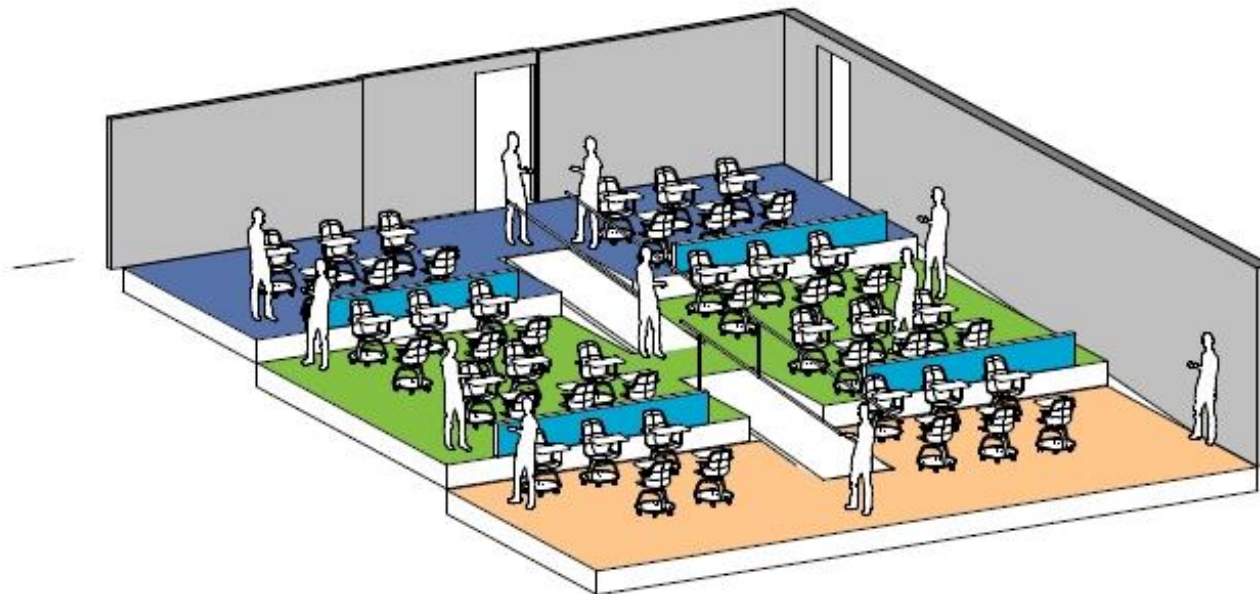




OSHA

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ROSE



## "MIDDLE RAMP"

ROUGHTON ■ NICKELSON ■ DE LUCA  
Architects, PA

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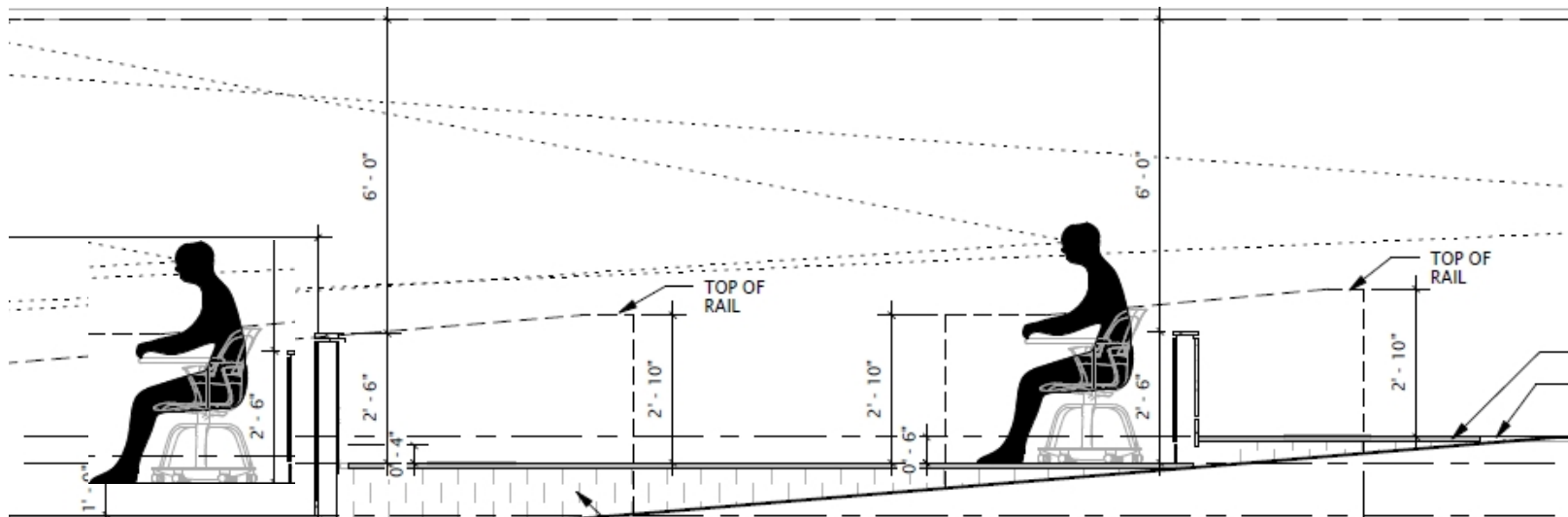
Date 11/17/14

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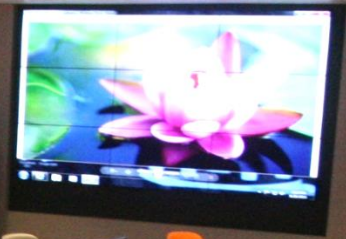
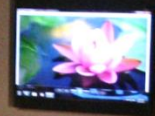


2B

1B

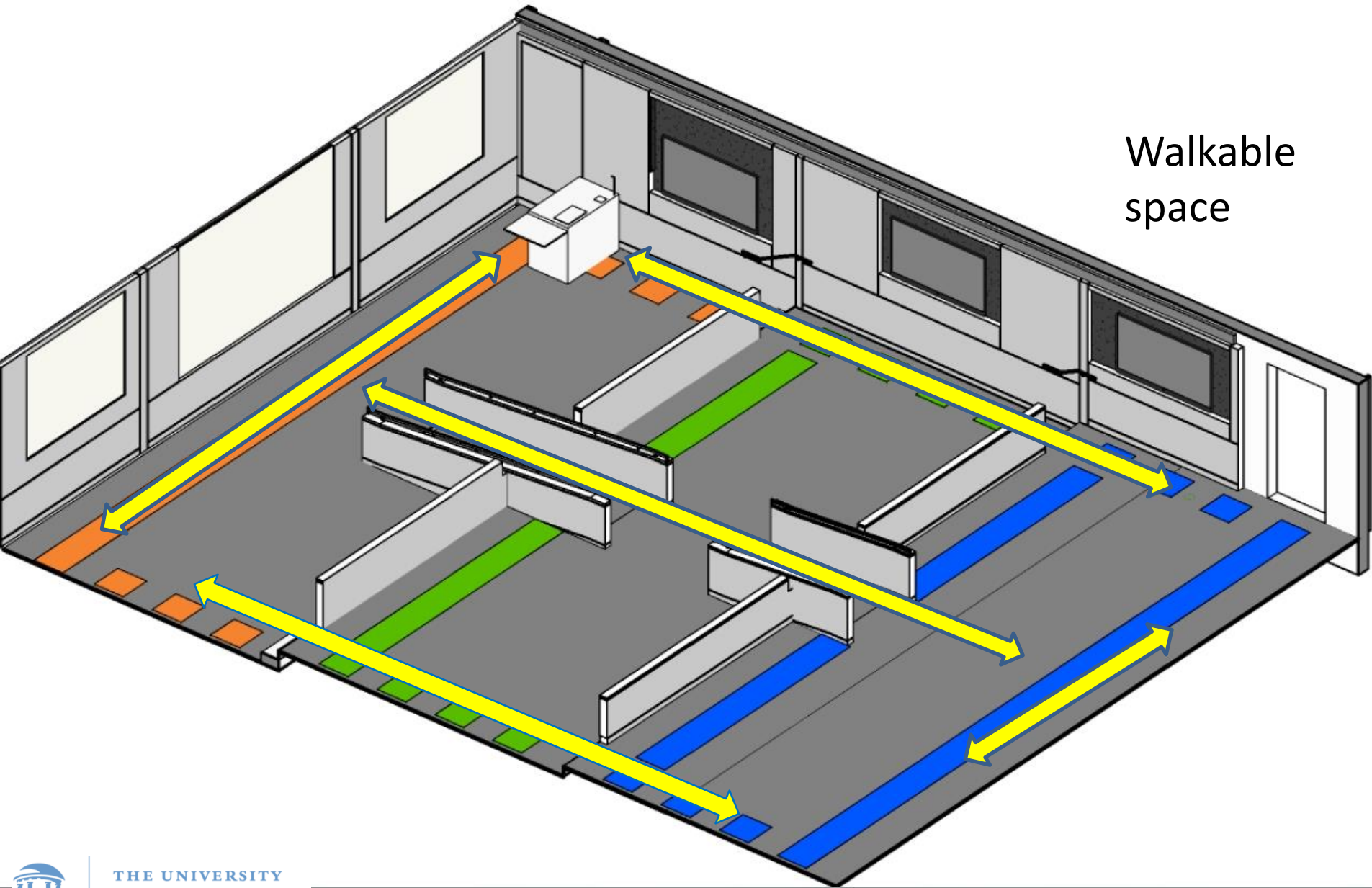
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GREENLAW 101

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GREENLAW 101



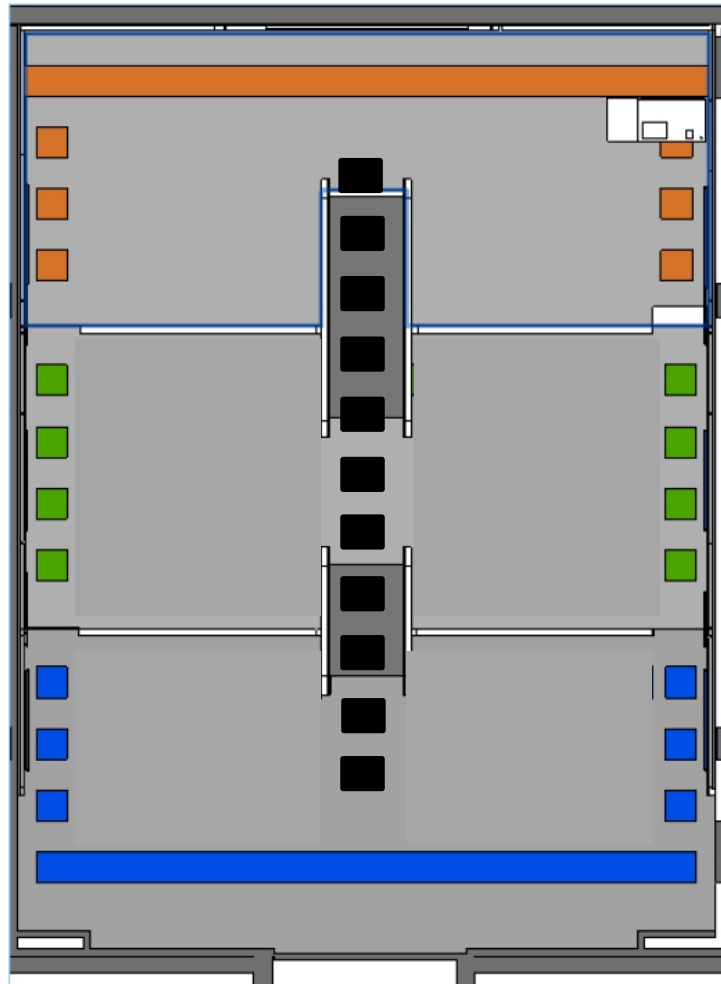






Walkable  
space

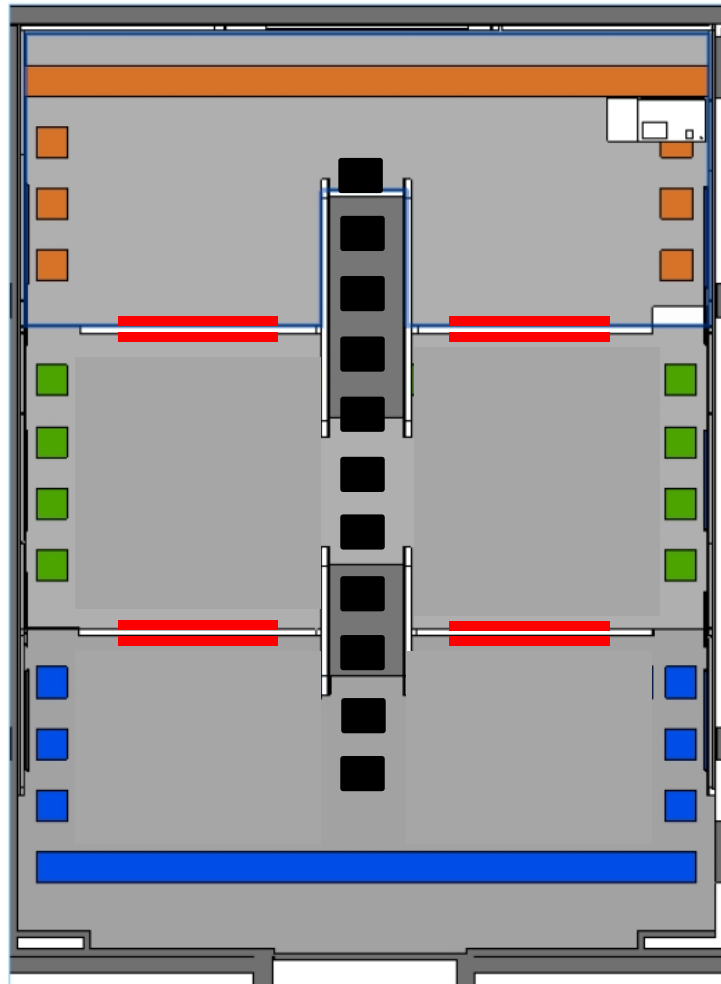




Dedicated  
aisle space







Power  
outlets (48)





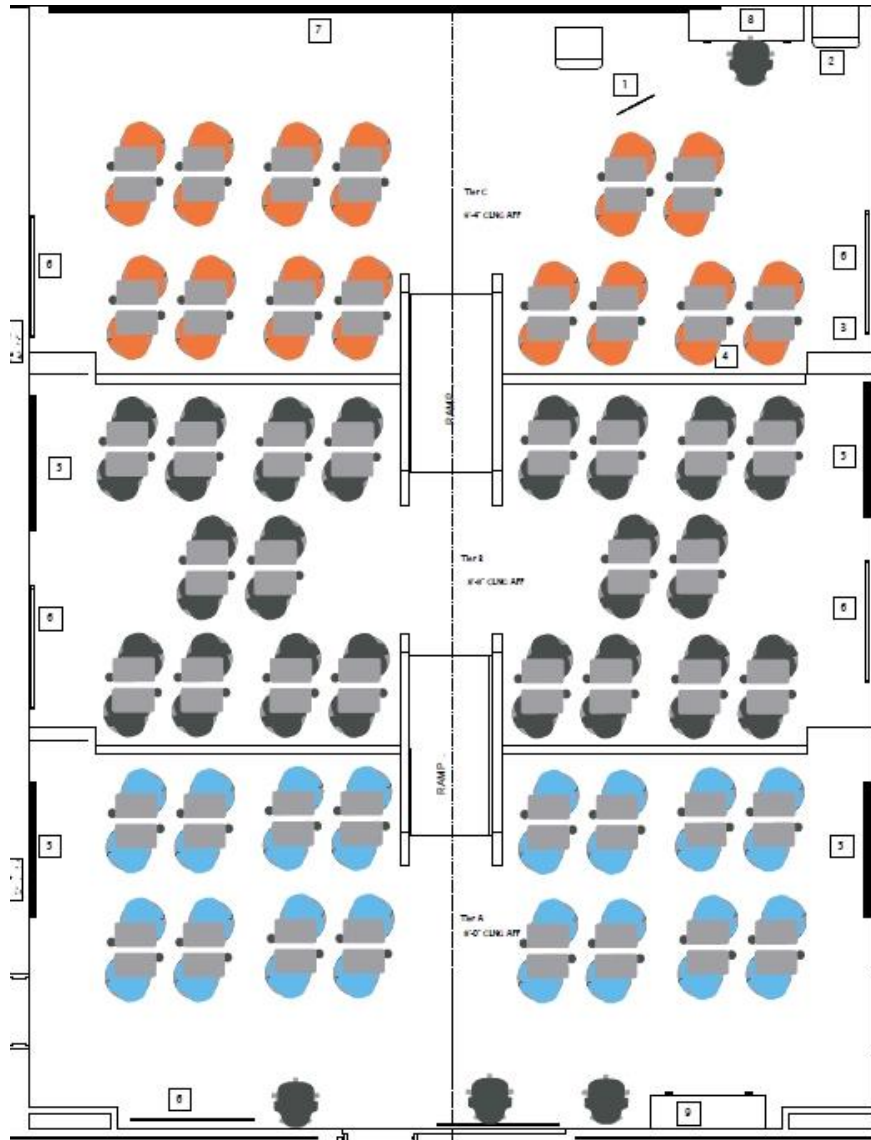


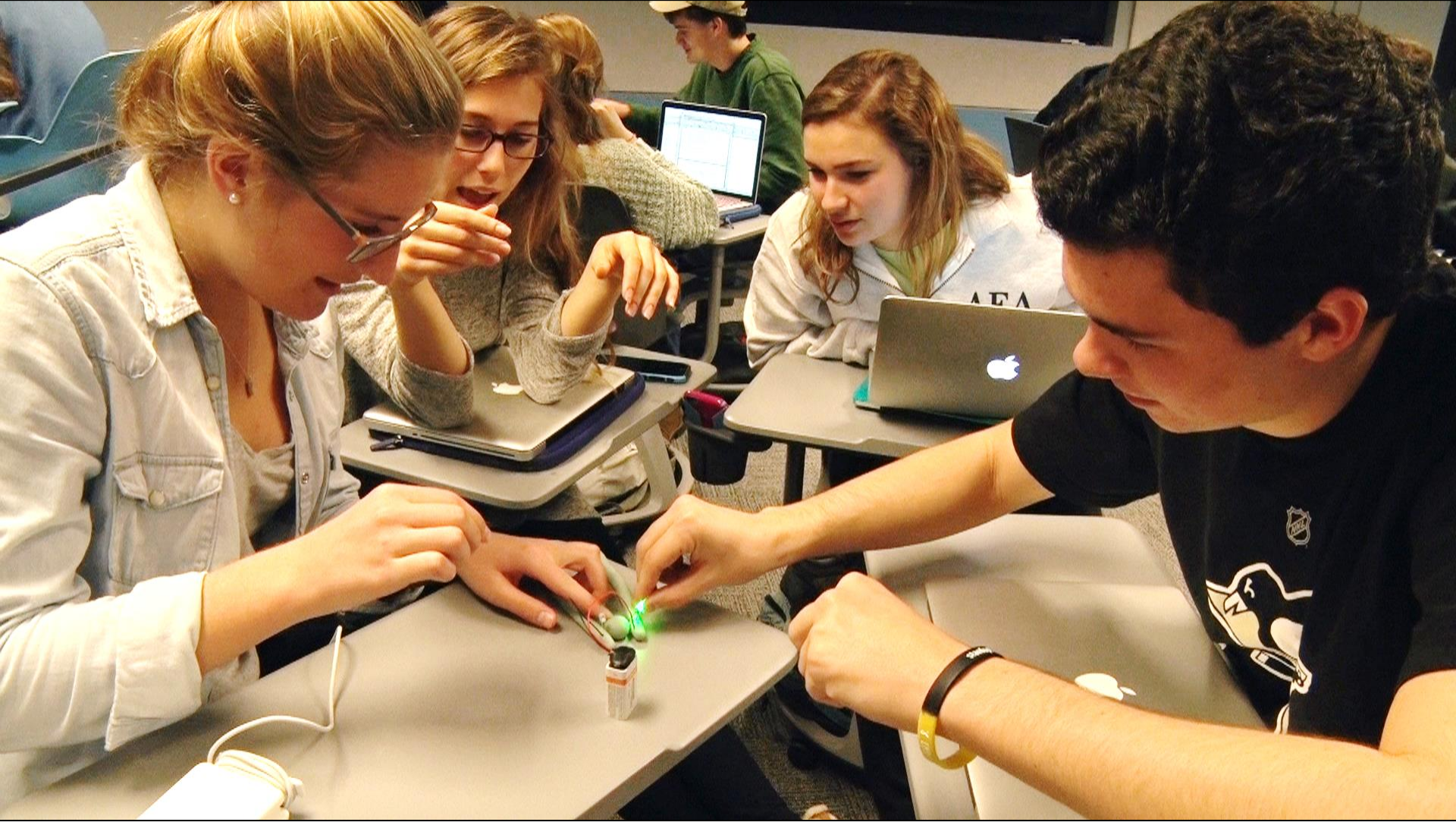


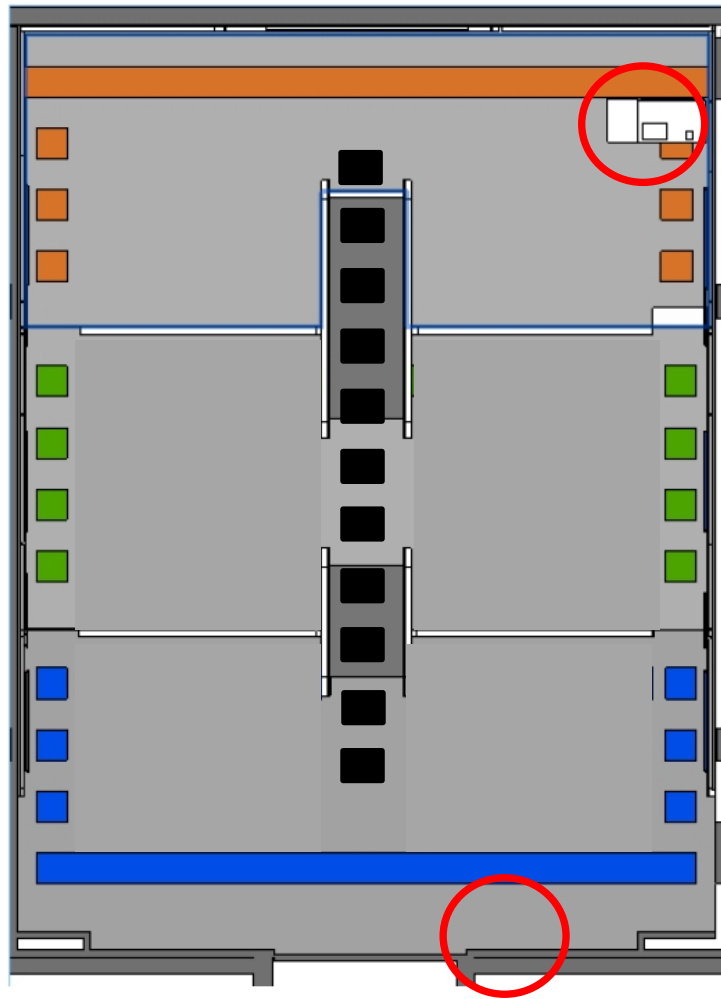












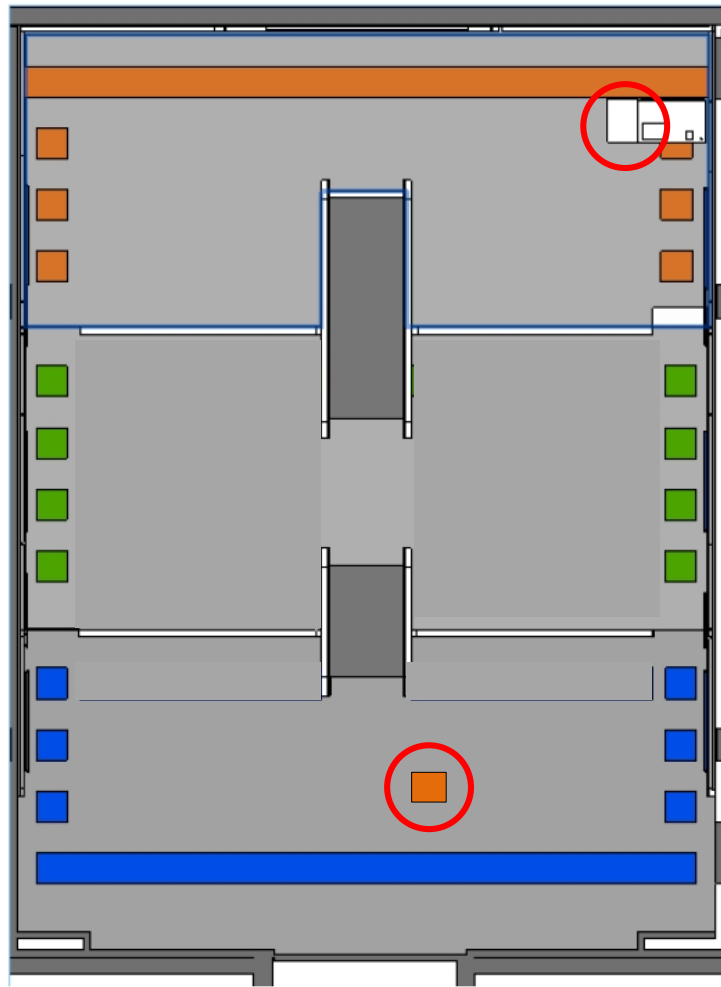
Room  
controls







12:40  
Friday, January 29



Document  
cameras





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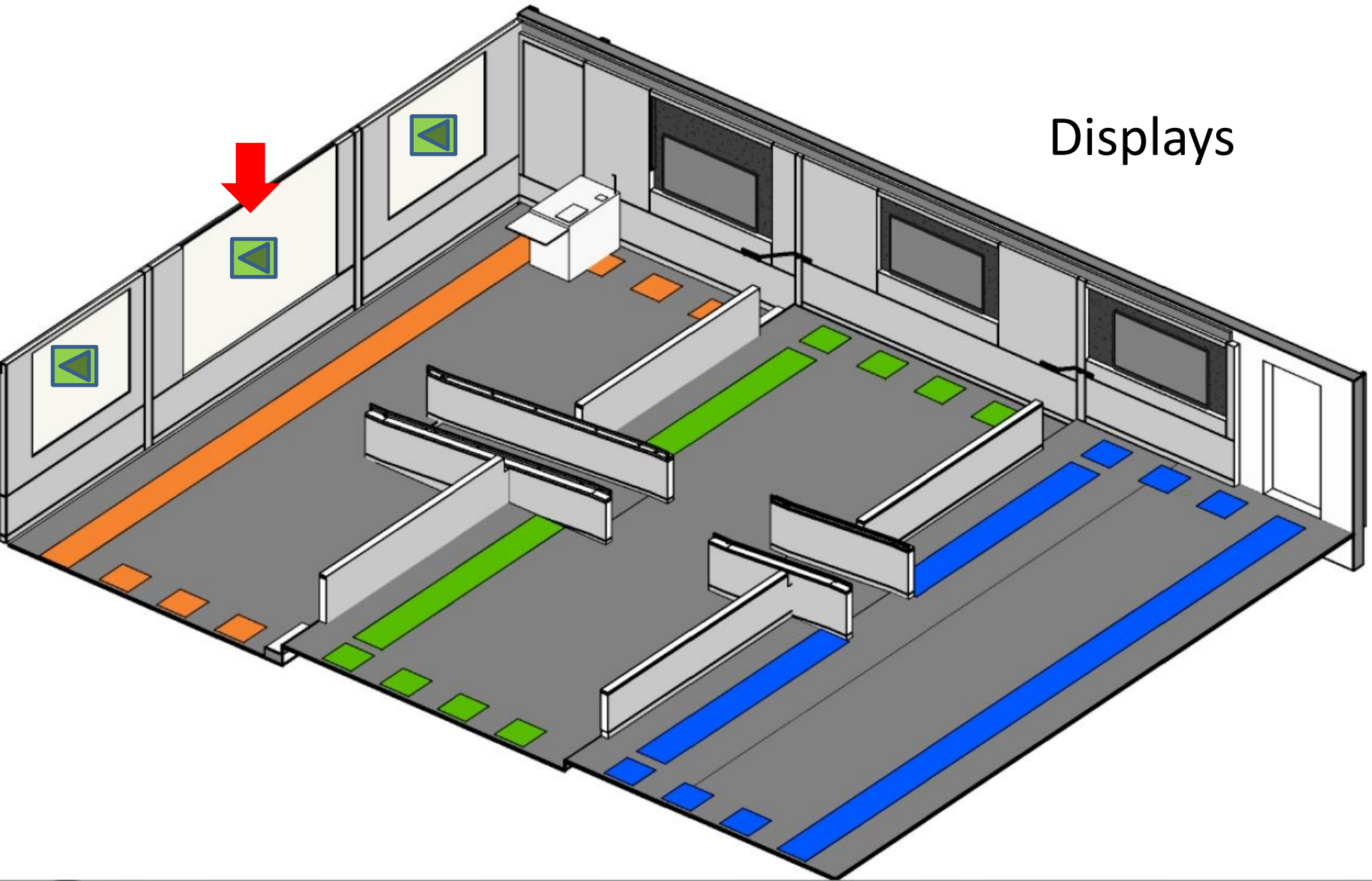
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18



Displays

Internet Explorer  
Acrobat Reader DC

Mozilla Firefox  
iTunes

Google Chrome  
QuickTime Player

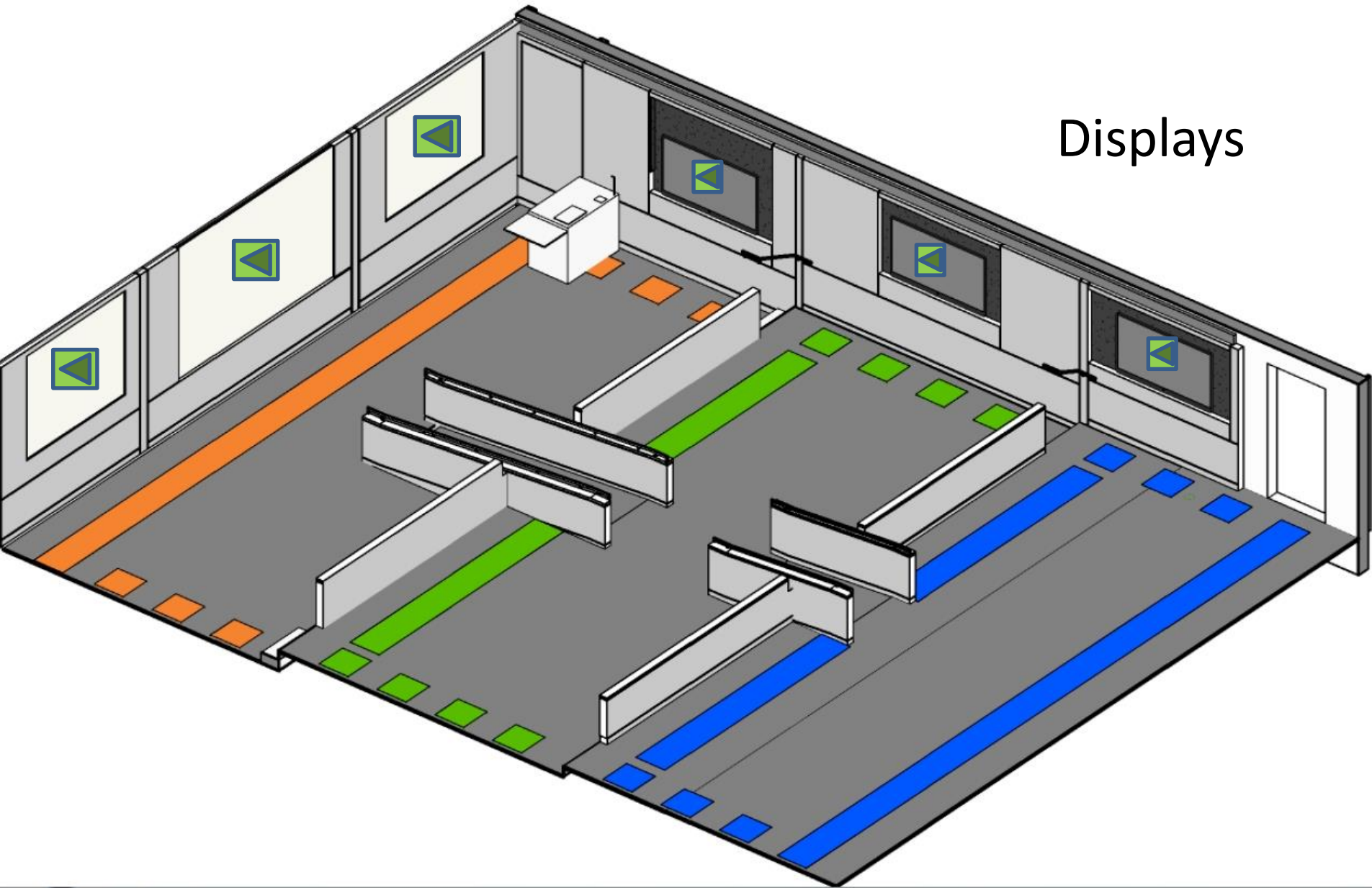
Word 2016  
RealTimes (RealPlayer)

Excel 2016  
VLC media player

PowerPoint 2016  
Google Earth



12:30 PM  
1/28/2016



Displays





1A

Website displayed on the large screen:

- Navigation menu: Home, About, Contact, Services
- Header: Your battery & running low (beta)
- Main content area: A large green banner with a button labeled "Learn More".
- Footer: A list of links or categories.

Whiteboard content:

- Chemical structures: Several molecular diagrams are drawn on the whiteboard, including what appears to be a protein backbone and various side chains.

#tbtunc

SE



## 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.



MIRROR

SHARE



# 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.”

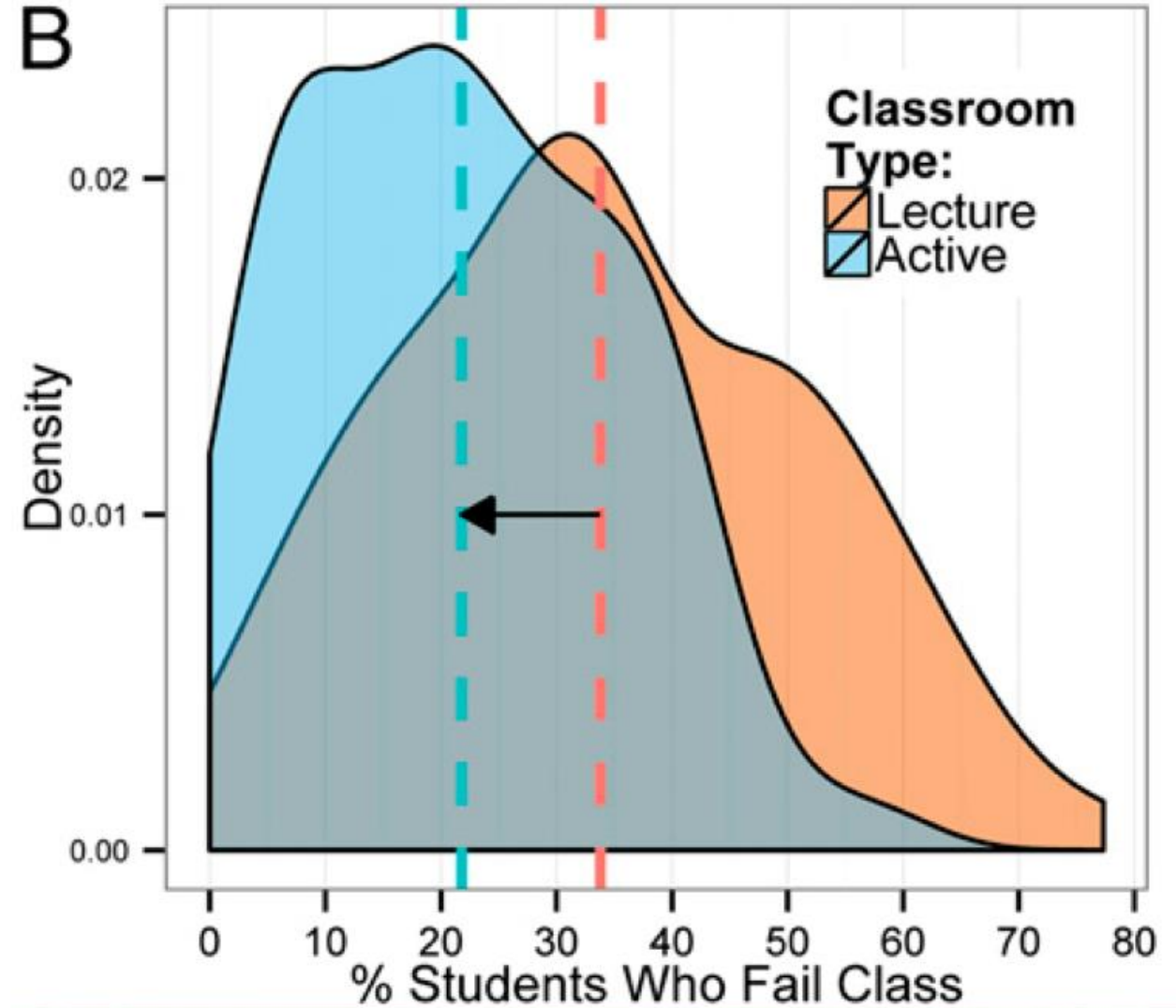
Assistant Professor, Geography







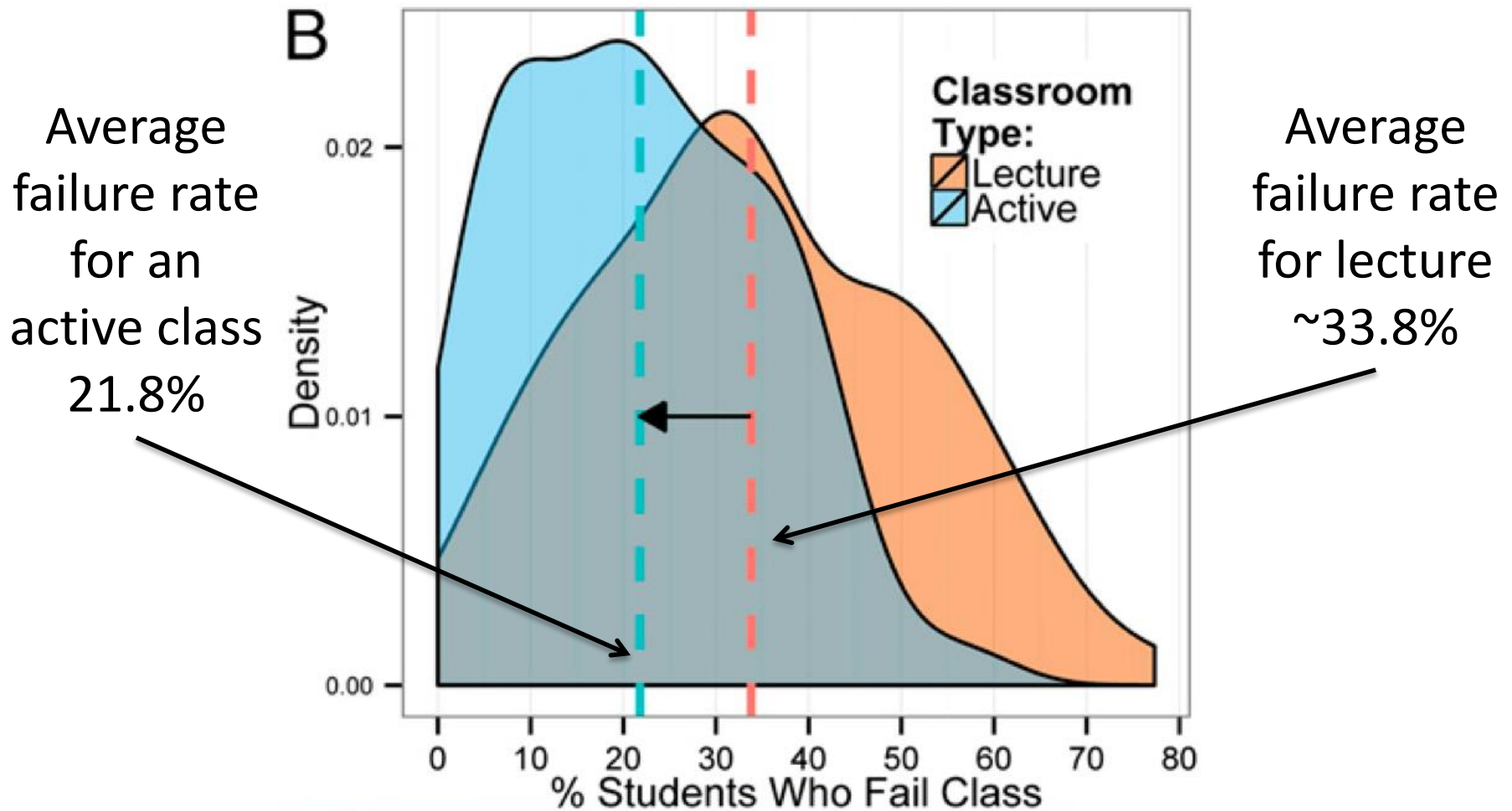
# What conclusion can we draw from this data?



(PNAS, Freeman, 2014)

# “Lectures aren’t just boring, they’re ineffective too”

Active learning raises exam scores AND lowers failure rates



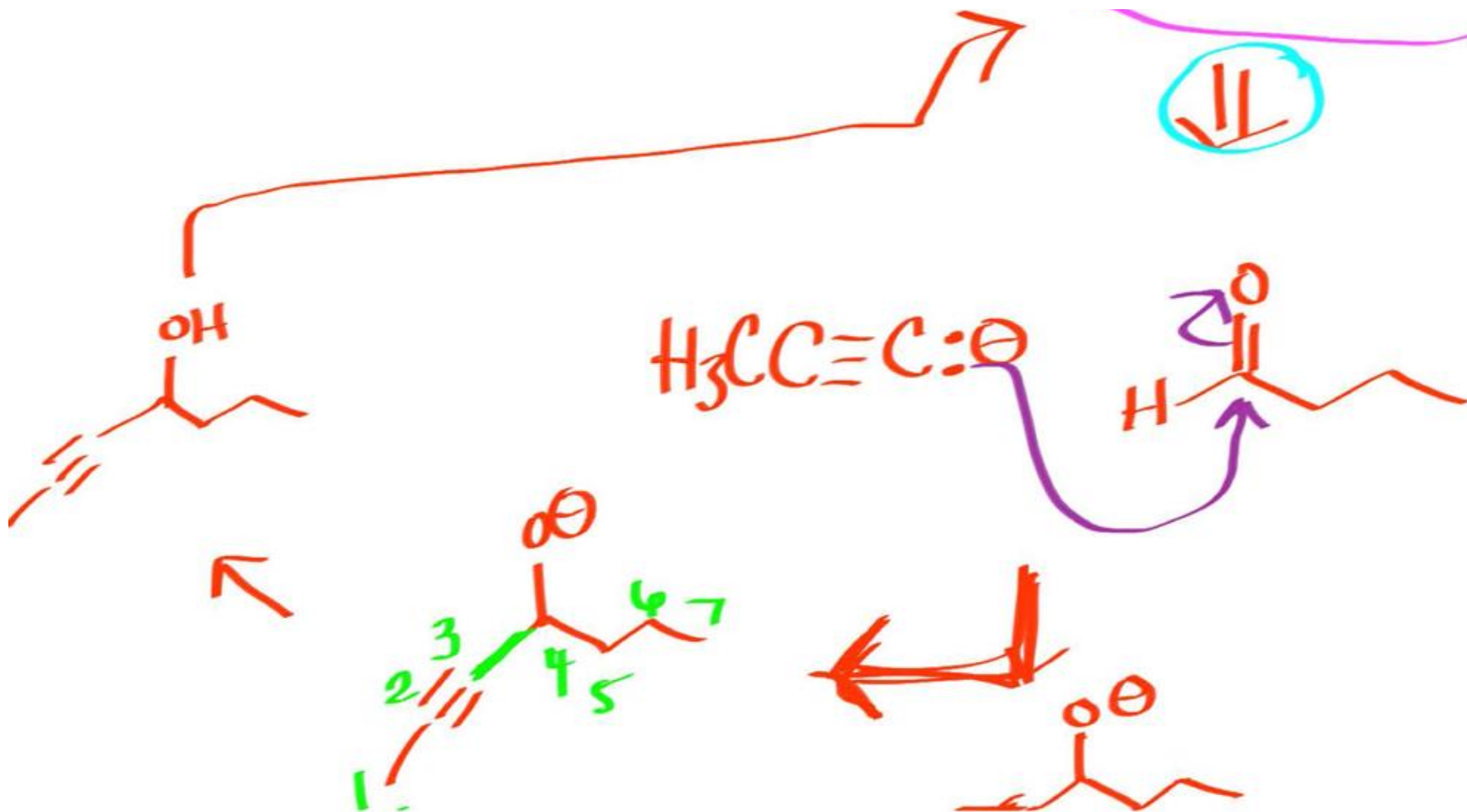
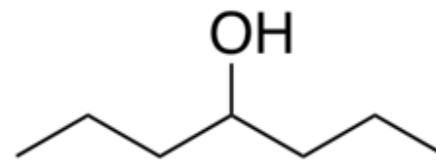
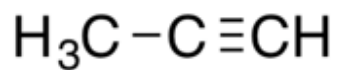
(PNAS, Freeman, 2014)







Propose a sequence of steps to accomplish....







# 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](http://cfe.unc.edu/teaching-and-learning/resources-for-faculty/#class_redesign)

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