cefpi
where great schools begin

connecting the SPECTRUM
education | funding | facilities

No Front of the Room

Changes in the Student Experience

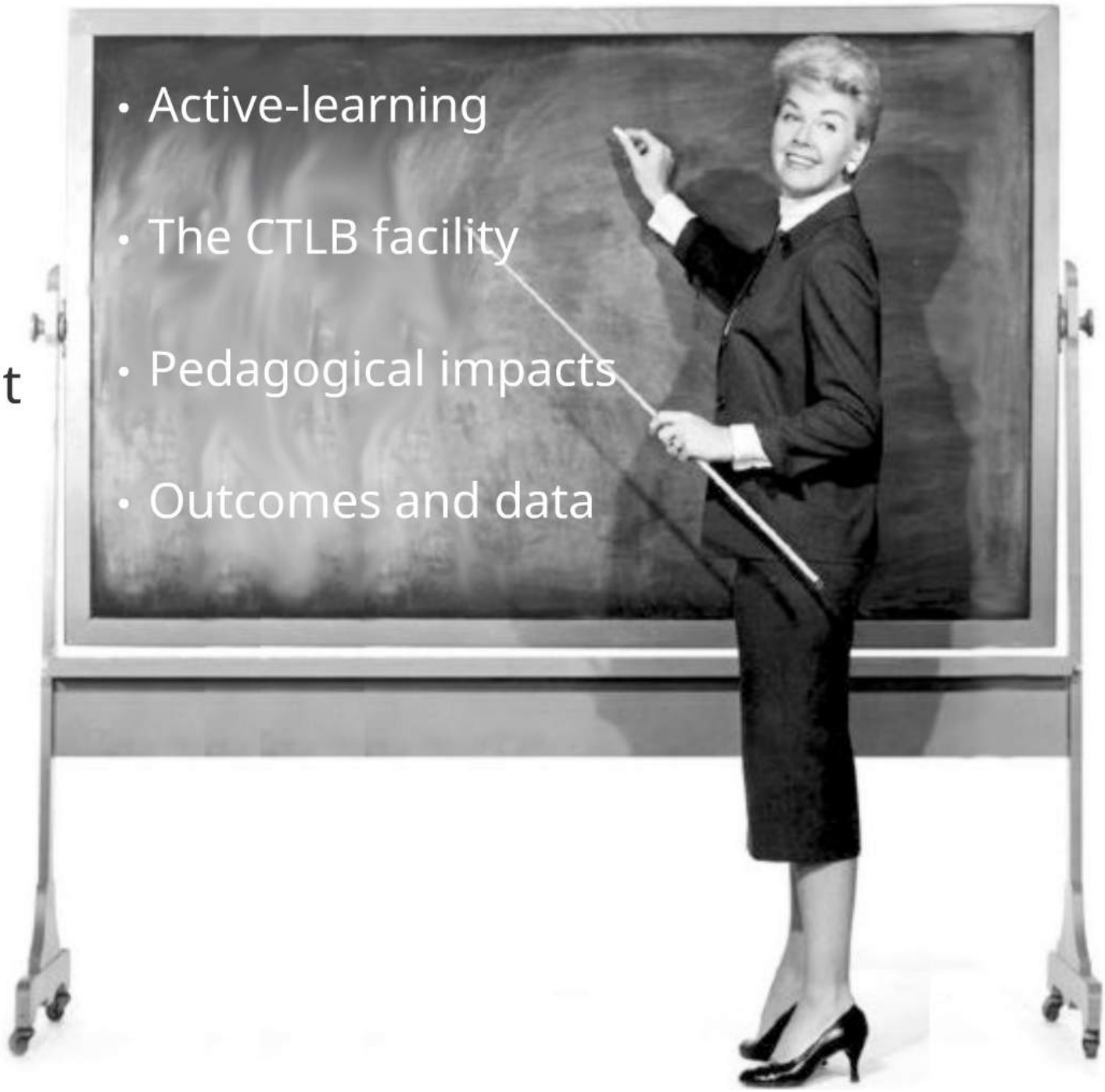
Friday, May 15, 2015
10:15 am - 11:15 am

Dr. Jeff Saul - University of New Mexico
Audriana Stark - University of New Mexico
Dan Kemme - Dekker/Perich/Sabatini

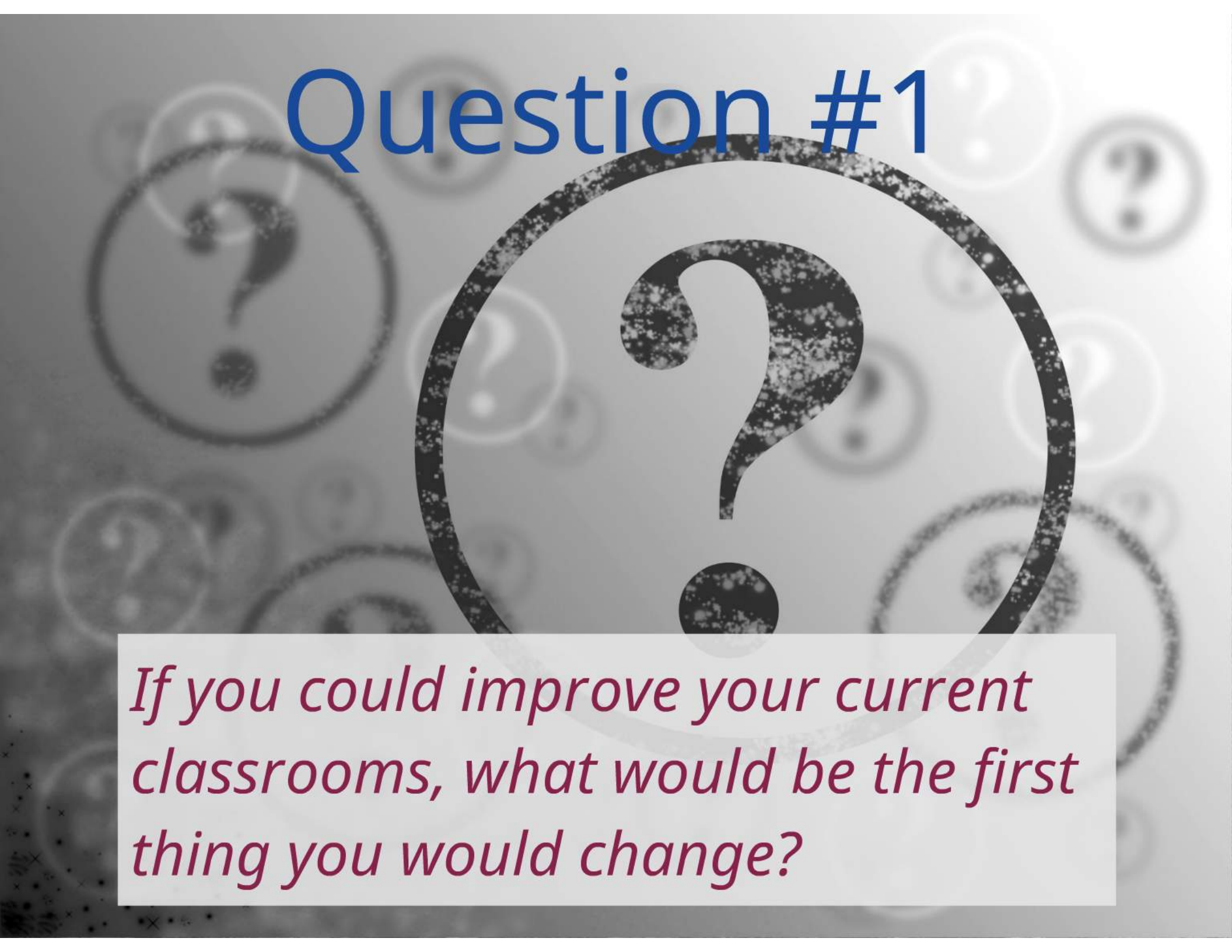
introduction

the Collaborative Teaching and Learning Building at

The University of New Mexico



Question #1



If you could improve your current classrooms, what would be the first thing you would change?


No Front of the Room

developing a 21st-Century Classroom

education issues:

21st Century Classroom

lecture is good for information transmission

but not information processing

active learning:

to process, use, synthesize, internalize

best way to implement?

supplement lecture?

augment and improve lecture?

replace lecture?

what is active learning?

students are actively involved
in building an understanding

materials are carefully designed
to promote conceptual change

cooperative groups allow students
to teach each other

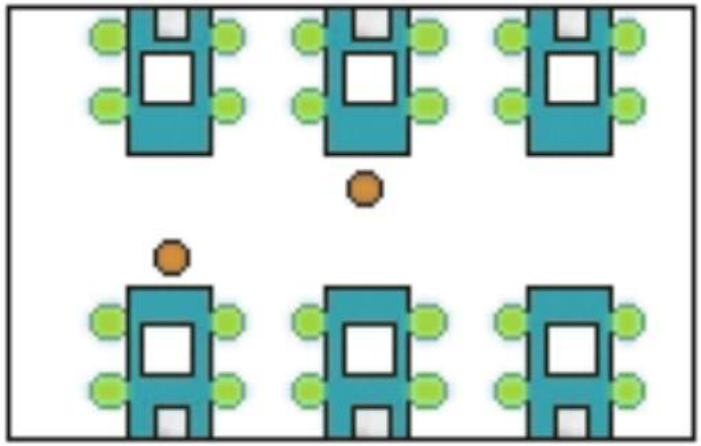
instructors as coach:

Meddler-in-the-Middle

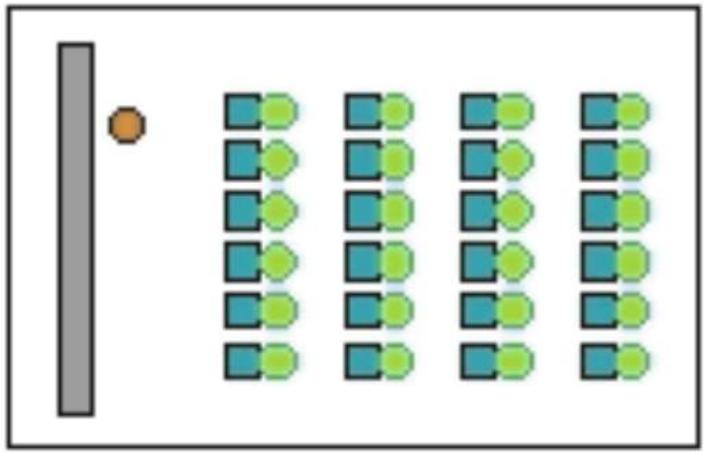
vs.

Sage-on-the-Stage

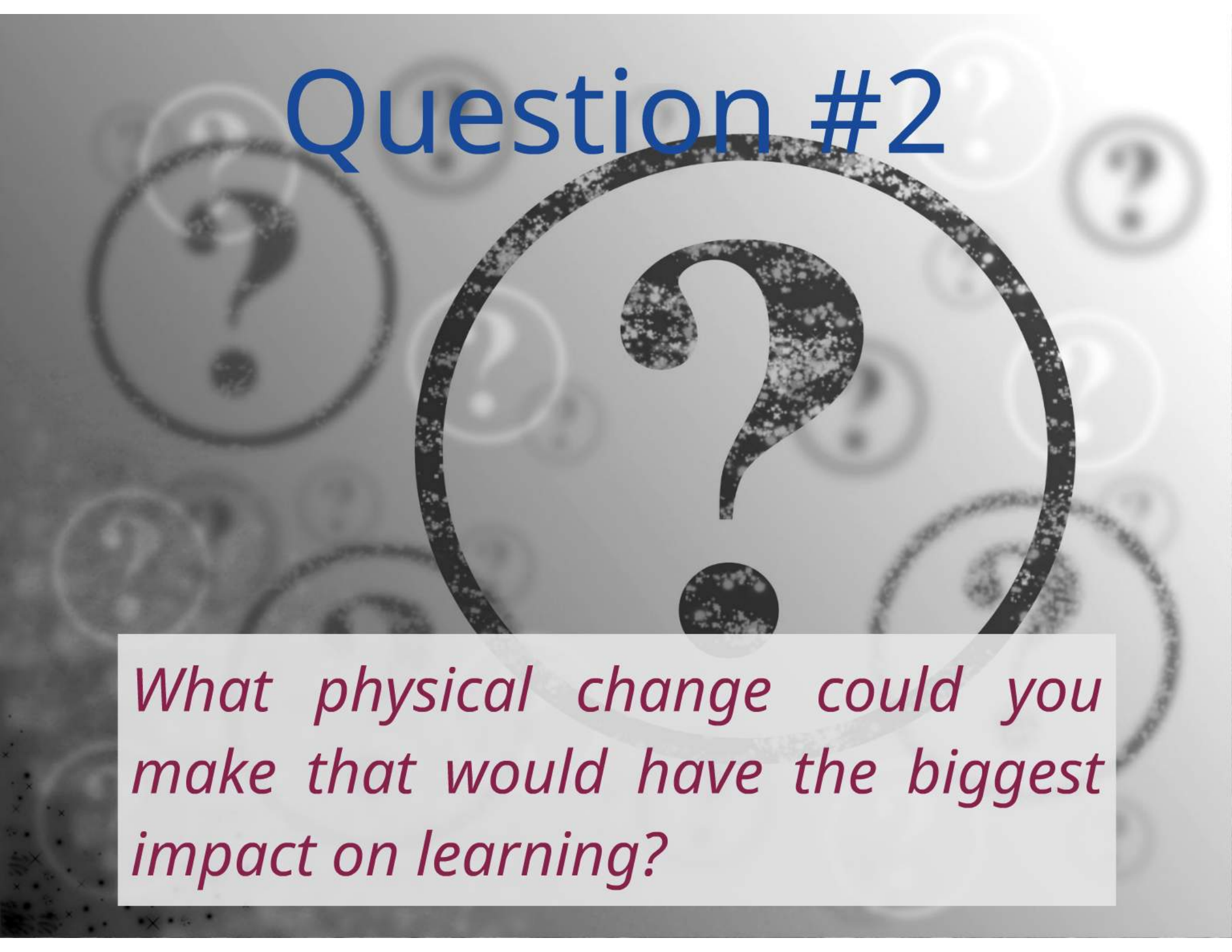
Activity-based Learning



Traditional Lecture/Recitation



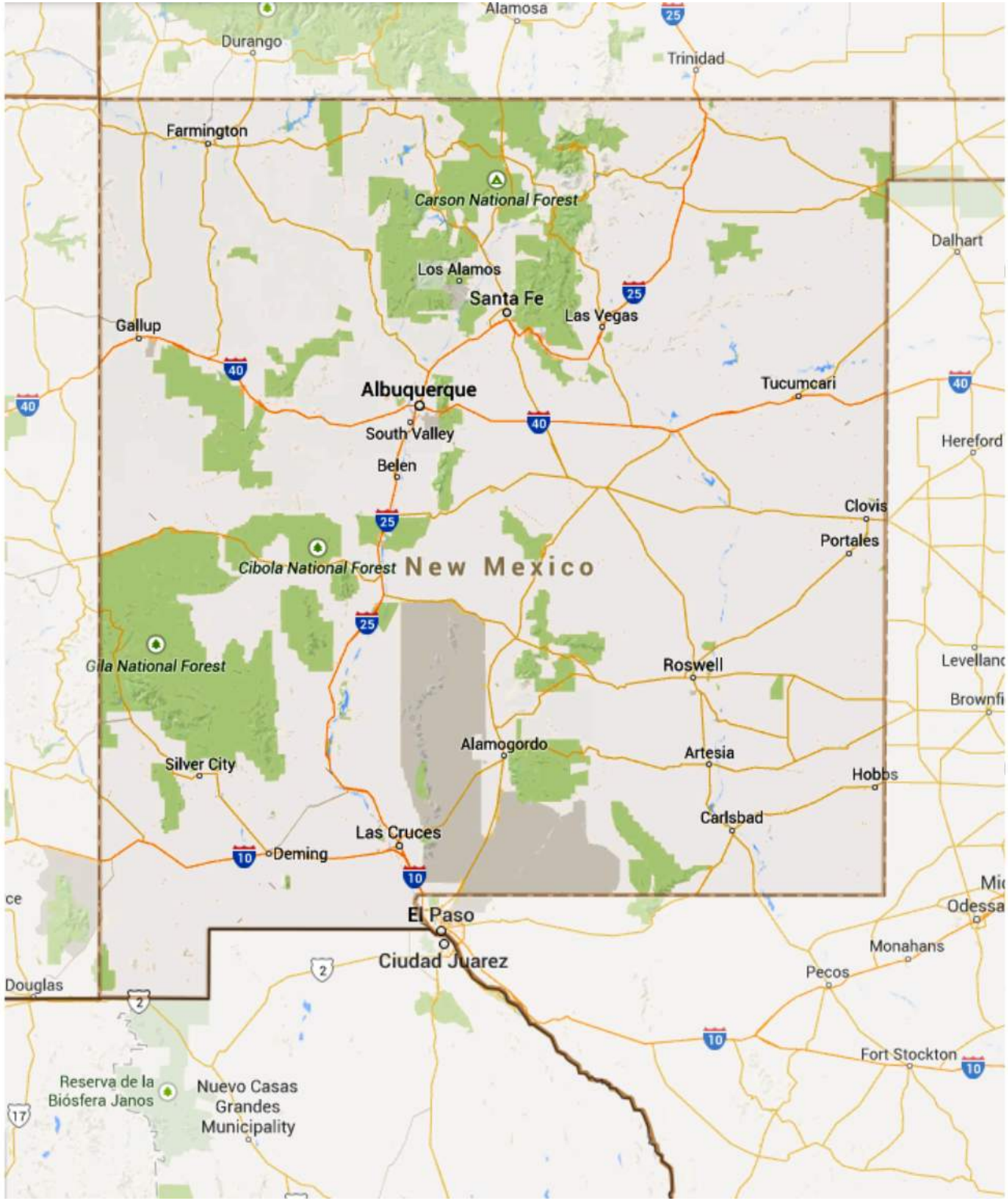
Question #2

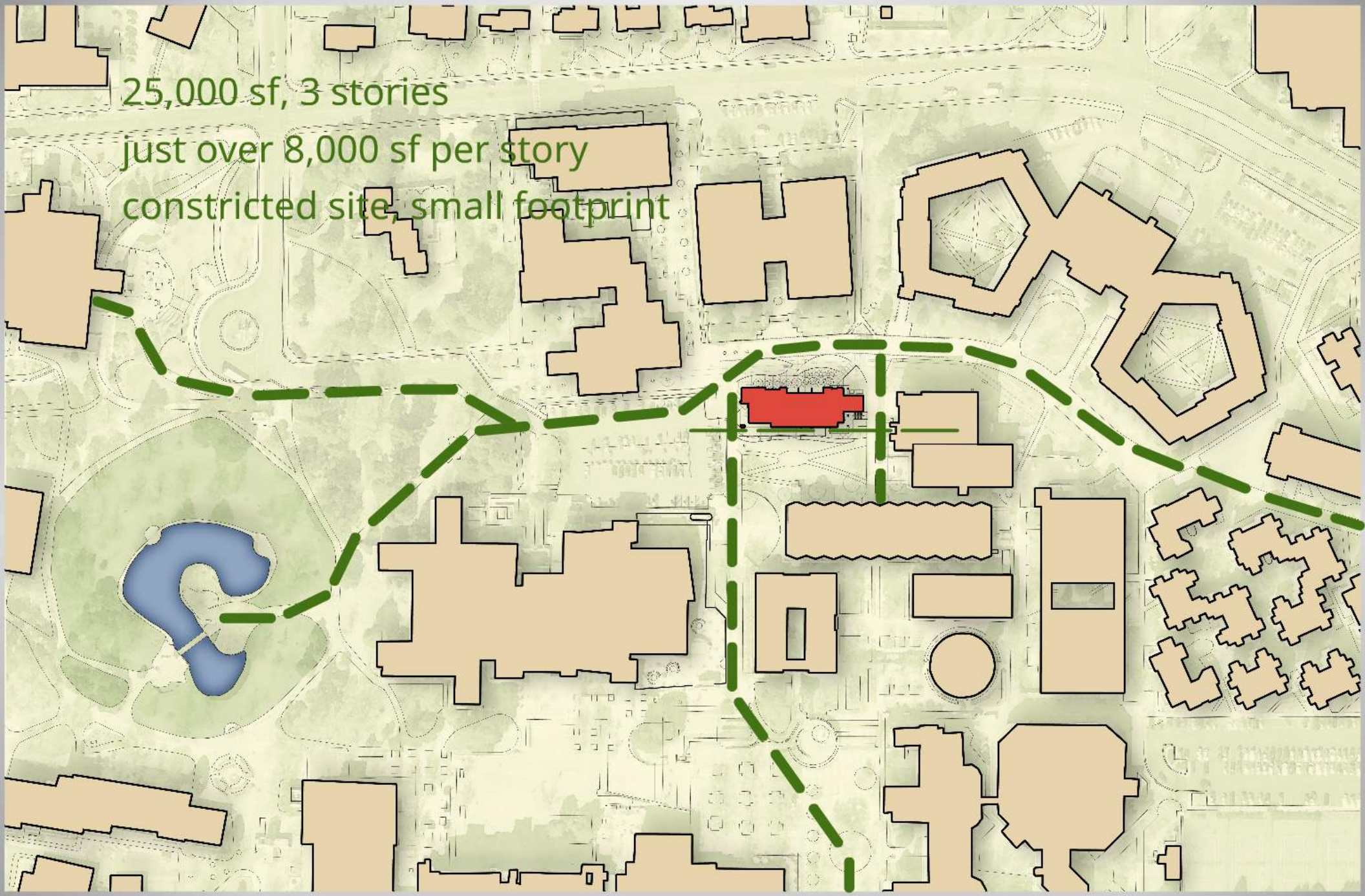


What physical change could you make that would have the biggest impact on learning?

the CTLB facility...

project parameters
and design
considerations


Alamosa
Durango
Trinidad
Farmington
Carson National Forest
Dalhart
Los Alamos
Santa Fe
Las Vegas
Gallup
Albuquerque
Tucumcari
South Valley
Hereford
Belen
Clovis
Portales
Cibola National Forest
New Mexico
Gila National Forest
Roswell
Alamogordo
Artesia
Silver City
Hobbs
Carlsbad
Las Cruces
Deming
El Paso
Ciudad Juarez
Monahans
Pecos
Douglas
Fort Stockton
Reserva de la Biósfera Janos
Nuevo Casas Grandes Municipality


25,000 sf, 3 stories
just over 8,000 sf per story
constricted site, small footprint

design considerations

3

2

1

building plans

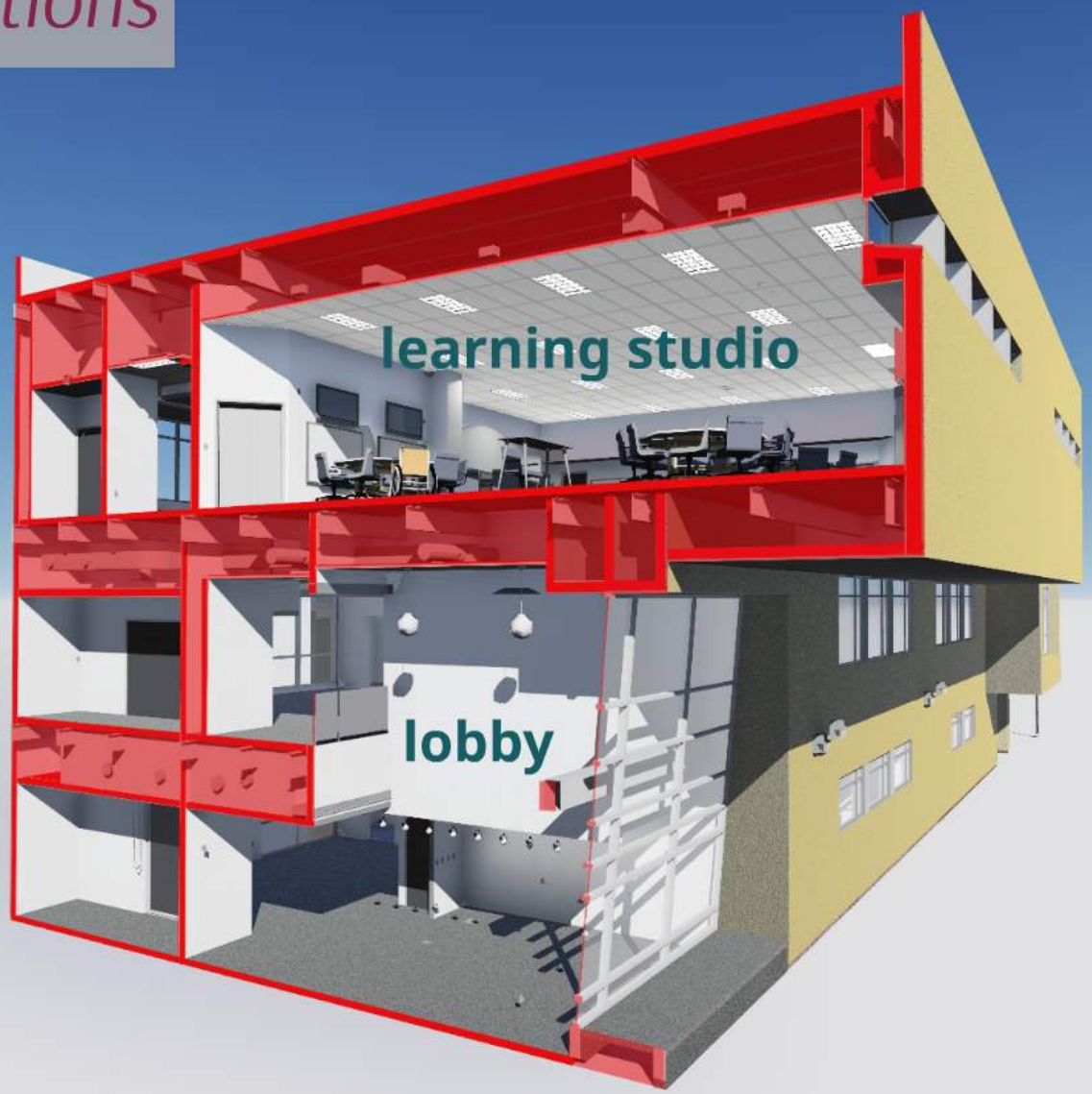
design considerations

building section

3

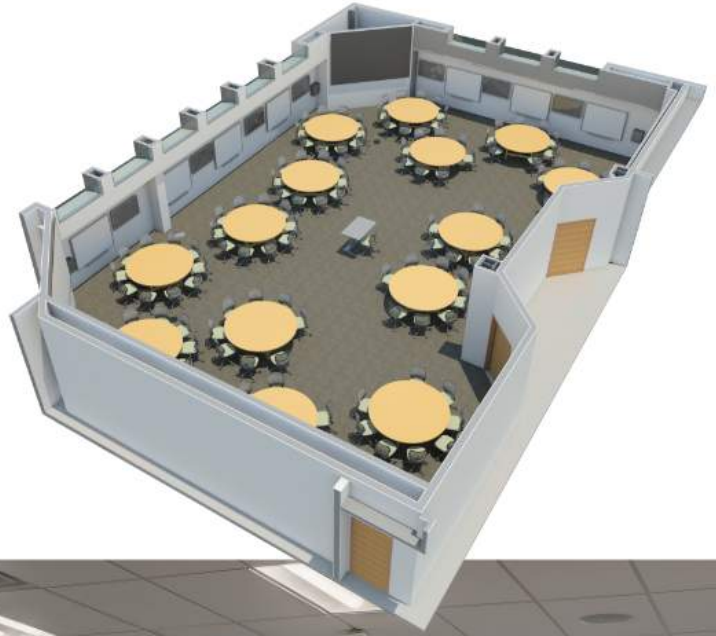
2

1



LEARNING STUDIO: A CLASSROOM DESIGNED FOR LEARNING BY **DOING**, RATHER THAN LEARNING BY **LISTENING**

rom above



Students should be able to:

work in groups

have access to computers

perform experiments

be accessible to instructors

participate in class discussions

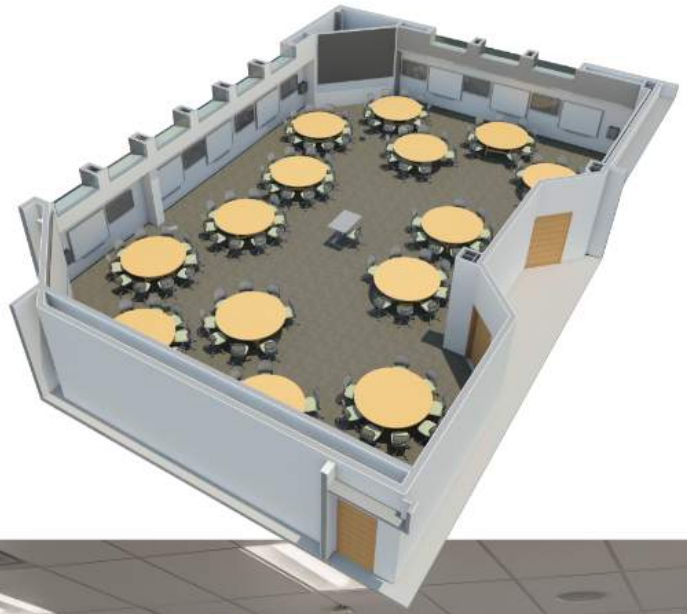
display work to peers

design considerations

design considerations

LEARNING STUDIO: A CLASSROOM DESIGNED FOR LEARNING BY **DOING**, RATHER THAN LEARNING BY **LISTENING**

- 25 s.f. per student ...but fully accessible
- higher ceilings required ...but allow light from above
- room proportions are key...visibility
  but each table needs access to wall
- active learning ...but not physically
  flexible
- technology rich ...consider access floor
- lots of activity...consider room acoustics




OPEN MINDED

Technology for Teachers

pedagogical impacts

"If you build it,
will the faculty
use it effectively?"

comparing classroom environments

Fig. 2 Traditional fixed seat lecture hall (LH) with capacity of 290 students

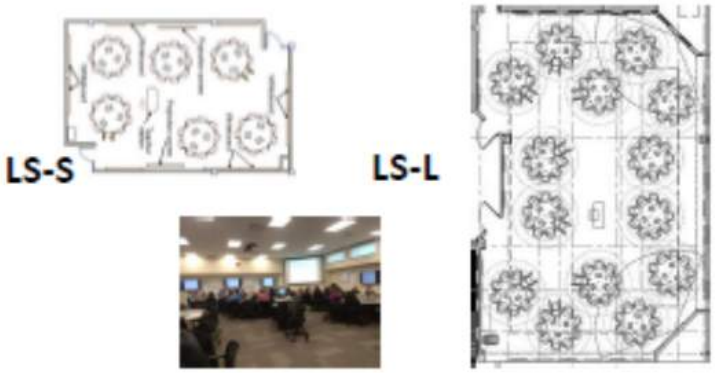


Fig. 3 54 seat (LS-S) and 126 seat (LS-L) studio classrooms

	LH	LS-S*	LS-L
Facilities and Technology	Doc. camera, Computer, 2 large projection screens	Doc. camera, Computer, 2 large projection screens 6 round tables, 3 laptops per table, whiteboard walls.	Doc. camera, Computer, 2 large projection screens, 1 small projection screen per table, 14 round tables, 3 laptops per table, one white board per table.
Pre-class preparation	Reading assignment, quiz and 'muddy point'	SAME	SAME
In-class activities	Unassigned groups, activities assessed by clickers, peer facilitators (PFs). 50% lecture.	Instructor-assigned groups, graded feedback. PFs. 25% lecture	SAME as LS-S

Table 1: Comparing resources available and pedagogy used in the different classrooms

Source: Dr. Sushilla Knottenbelt, *The Effects Classroom Environment on Student Learning*; Poster, 2014. Department of Chemistry and Chemical Biology, University of New Mexico.

Proposal to Teach in a Studio Classroom at UNM
University of New Mexico Learning Environments Committee
Office of the Registrar • Center for Teaching Excellence • Information Technologies

To help us better understand how your vision for the course fits with UNM's common goals for teaching in a studio classroom, please tell us how you plan to include *any or all* of these goals in your use of the space:

- ☐ Maximizing learner time-on-task
- ☐ Providing immediate learning-progress feedback
- ☐ Supporting peer collaborative learning
- ☐ Improving the pass rate and grade achievement in courses
- ☐ Increasing instructor access for students

how faculty learn to use the studios

Workshops

Literature

STEM GATEWAY

The University of New Mexico STEM Gateway Program is funded through a U.S. Department of Education TITLE V grant, 2011-2016 (total anticipated funding $3.82 Million)

learning studio community of practice

teachers teaching teachers

online discussion board

UNM | Learn

Audriana Stark

My Learn Support

☐	TROUBLESHOOTING	Use this to ask a question of our group pertaining to any issues you're having with teaching and learning in the studios.	0	0	0
☐	Learning Studio Student Survey	STEM Gateway has developed a survey instrument that helps instructors assess the teaching and learning experience in the Learning Studios. You can view the demo student survey by following the link below: https://esurvey.unm.edu/opinio/s?s=22662 *Please do not distribute this link to your students. Instructors will be issued custom links for their course(s). Please respond to the following questions on this discussion board: 1) Would you like to administer this survey in your course near the end of the semester? Please indicate the course(s) you would like the survey to be administered in. 2) Are there questions that you want revised or added to the survey? 3) Do you have any questions, comments, or concerns regarding the survey?	0	0	0
☐	Group / Team Work Questions	Group or teams in the studios: Should we have teams in the learning studios? Should teams be set or allow students to self-select? How do you decided on the team members? What size of team works best? How often to change teams? How to facilitate team work? How to deal with dysfunctional teams? How to deal with drops mid-semester? How to ensure that all members of a team are engaged and learning? When giving grades for group work, how to avoid 'hangers on'? What happens when students 'tune out'?	7	7	5
☐	Learning Studio Facilitation	Classroom facilitation: How do we use studios efficiently with and without support from TAs/Peer learning facilitators (PLFs)? How do we most effectively use Peer Learning Facilitators in and outside the classroom? What techniques do you use to end group discussion and bring the room back to listening to the instructor? How do we use the technology to facilitate learning?	2	2	2

Question #3

Which of the following would you most want to see as an improved outcome?

A. Better passing rates

B. More positive student experience

C. Increased learning gains

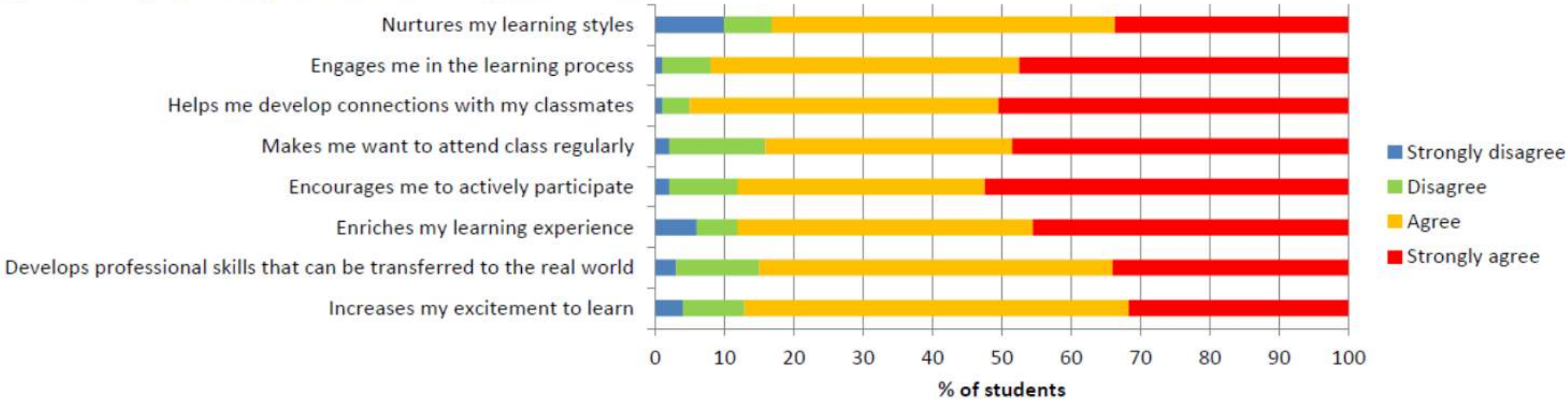
D. Better attendance

data from UNM's Learning Studio

surveys and
learning gains

Positive Student Perceptions

Fig. 7: The classroom in which I am taking this course….



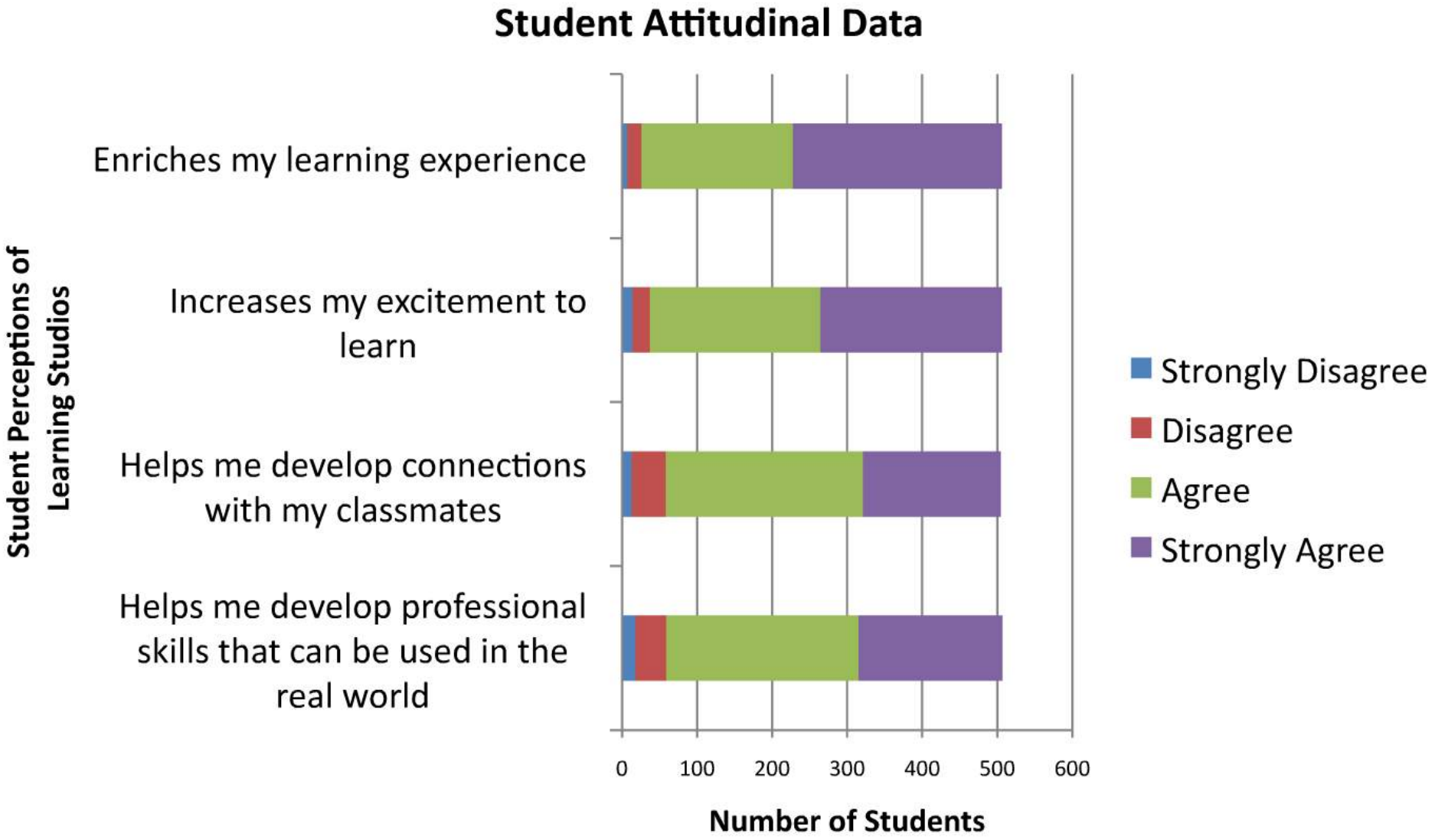
'"The learning studio actually requires me to apply my learning while in normal classrooms, I would just be required to listen to the lecture without any sort of interactions with anyone."

"There are many more opportunities for direct interaction with the TAs and professor. We have to collaborate with our specific teams every class period, as well as our table. It encourages us to form bonds, and we learn from each other."

Source: Dr. Sushilla Knottenbelt, *The Effects Classroom Environment on Student Learning*; Poster, 2014. Department of Chemistry and Chemical Biology, University of New Mexico. STEM Gateway Learning Studio Data.

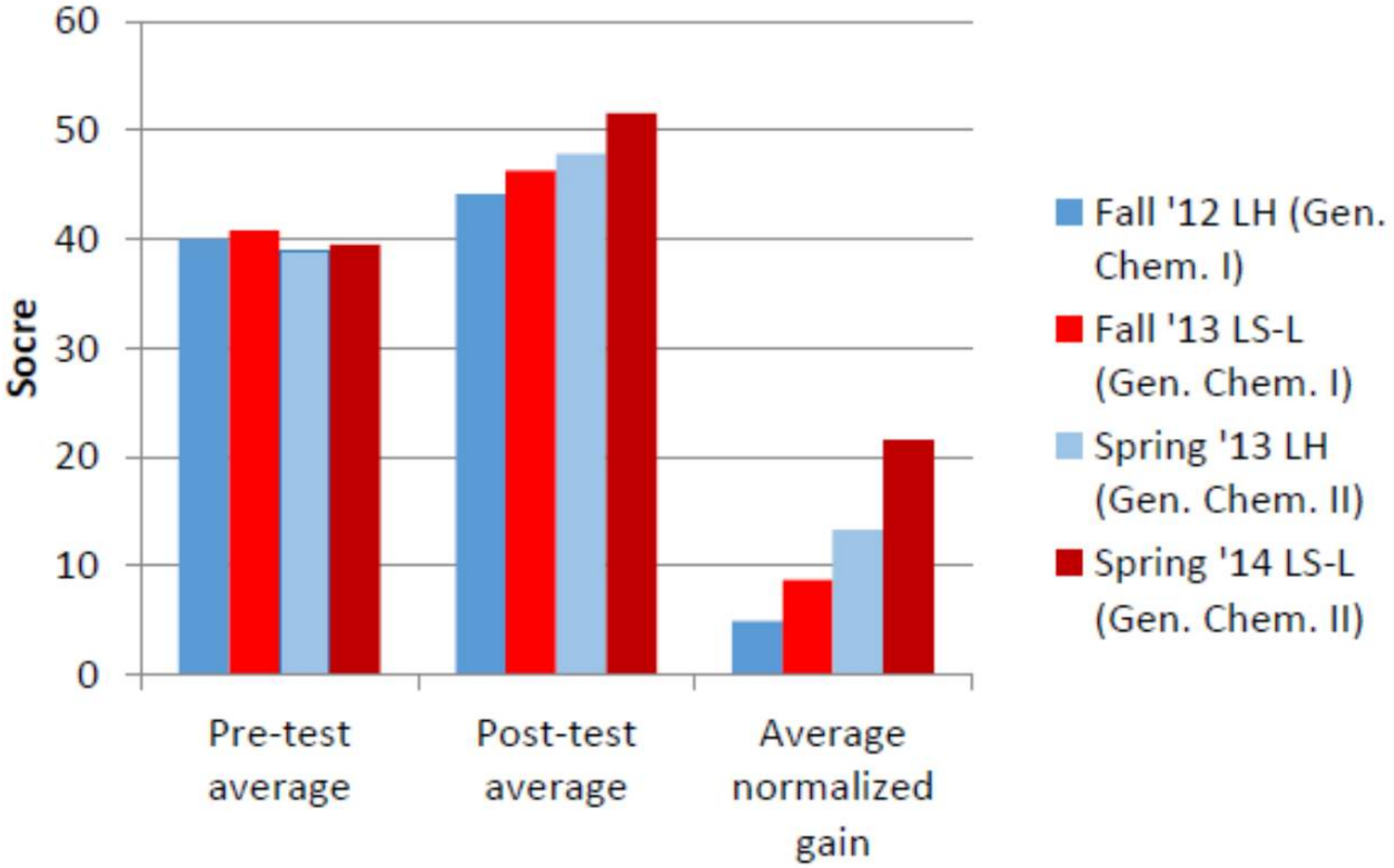
Positive Student Perceptions

...in four courses surveyed...



Data from STEM Gateway Learning Studio Data, Fall 2013 and Spring 2014
N = 507

Greater Conceptual Gains



Source: Dr. Sushilla Knottenbelt, *The Effects Classroom Environment on Student Learning*; Poster, 2014. Department of Chemistry and Chemical Biology, University of New Mexico.

Higher Final Grades

...and Pass Rate increased from 78% to 90%

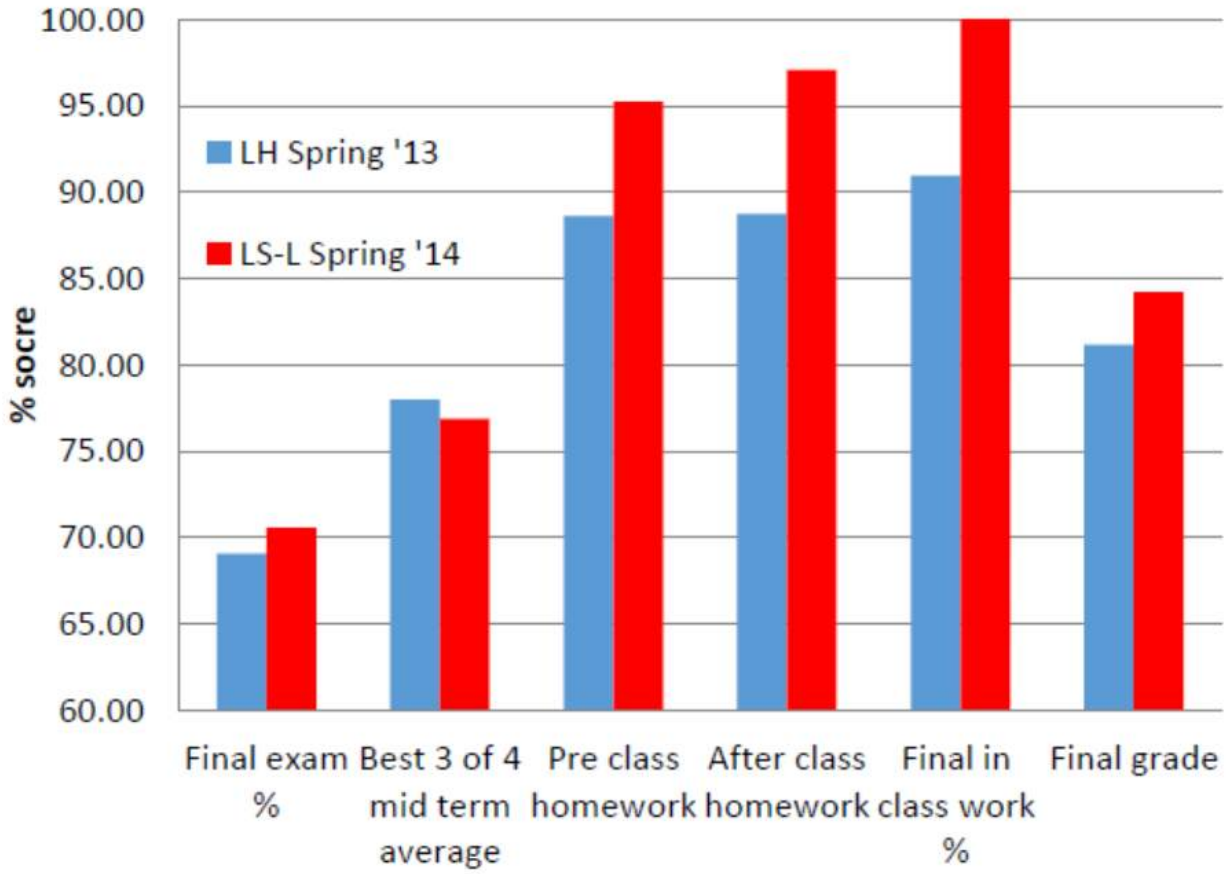


Fig. 6 Components of the final grade in General Chemistry II LH in Spring 2013 and LS-L Spring 2014.

Source: Dr. Sushilla Knottenbelt, *The Effects Classroom Environment on Student Learning*; Poster, 2014. Department of Chemistry and Chemical Biology, University of New Mexico.

What did the Faculty think?

Disagree	Agree	The classroom in which I teach the course…
	✓	Enriches the teaching experience.
	✓	Increases my excitement to teach.
	✓	Helps me develop connections with my students.

Invigorating... energizing... a chance to feel like you're truly facilitating and guiding learning at almost every moment rather than teaching from behind a podium and never really knowing what is being learned.

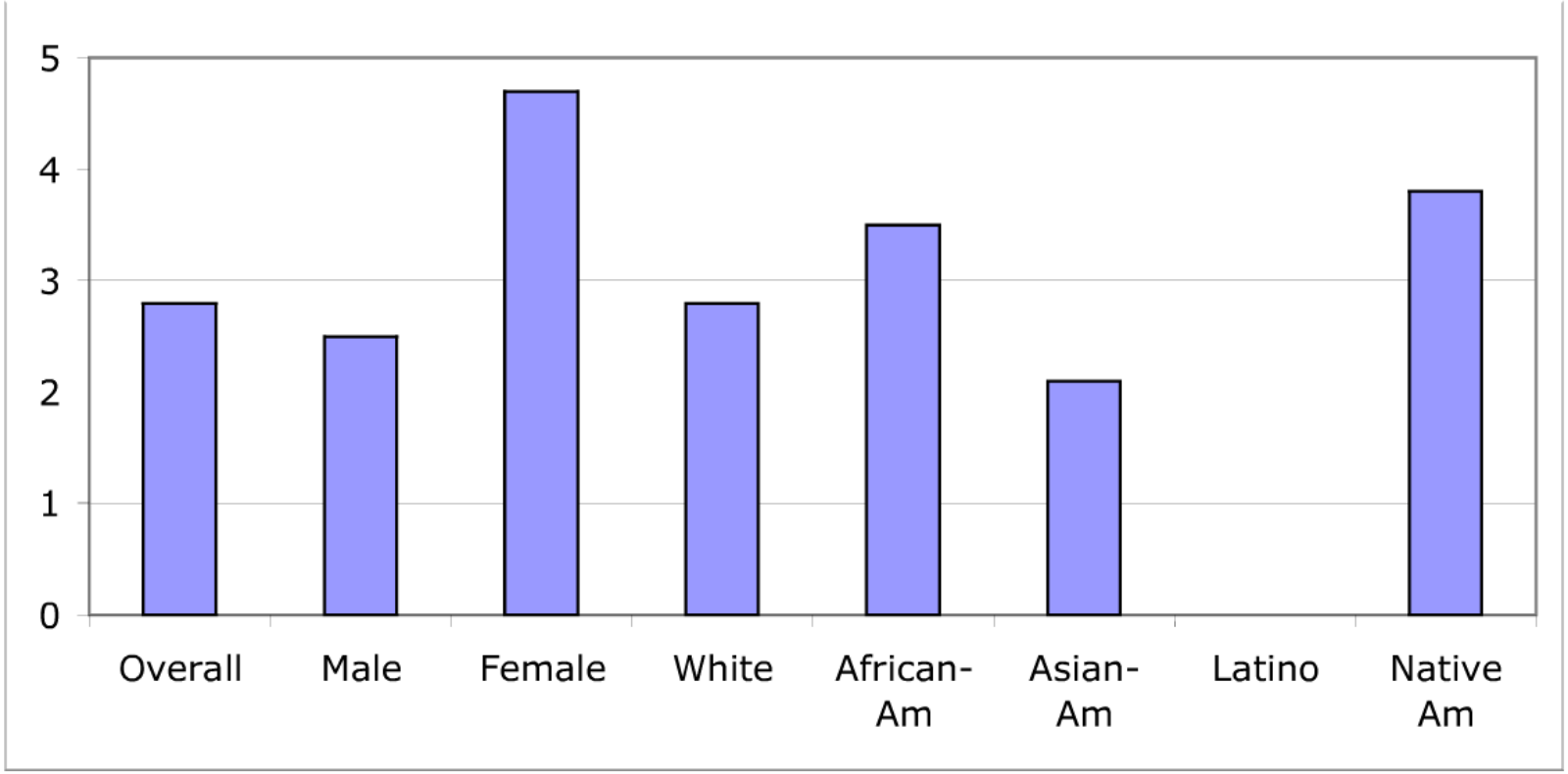
"Much more student centered, with more students actively engaged until the end."

It's a better spatial layout, where **you're not in front**, 'on the stage', but are a member of the classroom group.

Positive Learning Experience in Learning Studios

* Students say more work than regular sections, but worth it if you want to learn.
* Improved understanding of main concepts
* Problem Solving on Tests as good or better than lecture sections
* Attendance > 85% (most classes > 90%)
* Overall failure rate is 1/2 the rate in lecture sections (NCSU, UCF, MIT, & RIT)
* Failure rate for women and minorities less than 1/3 rate in regular sections (NCSU)
* Outside Observers find SCALE-UP students ask more thoughtful questions than students in regular classes

Failure Rates of NCSU - Regular Classes/SCALE-UP



- Overall failure (DFW) rate of early SCALE-UP physics adopters is 50% or better the rate in lecture sections in the same department (NCSU, UCF, MIT, & RIT).

- NCSU reports even better results for underrepresented minorities

NO FRONT OF THE ROOM

"Traditionally, in large lectures, you do what is possible to do in front of 500 people, not because it's what you should do. Now we're asking the question: *What do we really want our students to learn..."*

- Peter Dourmashkin (MIT TEAL learning studio faculty)