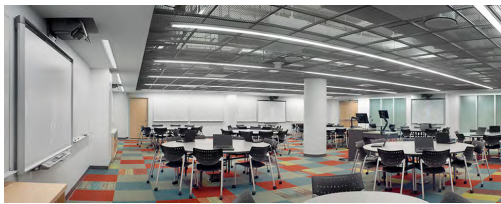


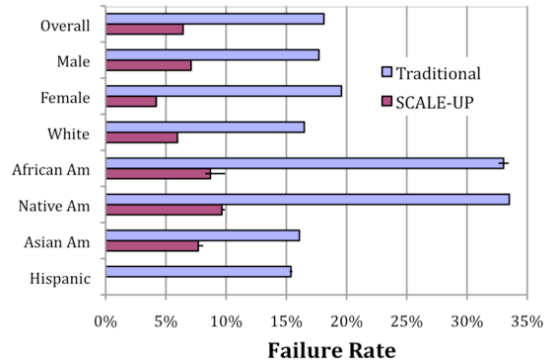
# STUDENT-CENTERED ACTIVE LEARNING ENVIRONMENT WITH UPSIDE-DOWN PEDAGOGIES (SCALE-UP)

North Carolina State University

- The title of this pedagogical reform signals that it gives equal attention to space and instruction.
- The design of the space is based on more than two decades of research into ways spaces can facilitate active learning.
- A substantive research agenda has been a critical and central part of the evolution of SCALE-UP.
- SCALE-UP spaces are designed so teachers can combine separate activities like lecture, lab, and recitation into a single, unified learning experience to meet higher standards for student success as learners.
- Through close interactions with students, teachers get much better feedback on who understands and who does not understand the material.



SCALE-UP Classroom  
Boston University



*“Students were learning the material at a deeper conceptual level...The contributing factors were the hands-on nature of the classroom experience, the collaborative work-format, and the availability of faculty and TA’s for interaction during the class-period....”*

— Abridged from an external review

## ABOUT SCALE-UP

*“This graph represents our research over a five-year period working with more than 16,000 students at NCSU. It is a simple comparison of students taking a version of physics with students taking a lecture form of the same class. Even though the demands on learners in the setting were higher, this analysis documented that these students did substantially and significantly better than their peers. This was so even though there was no difference between the groups at the beginning.*

*For me, the single most exciting piece of data from the research I and others have undertaken is that demographics are washed out. It does not matter anymore if a student was a member of an underrepresented group. This is important data, and I am continuing to pursue this research, including exploring how the learning of students with documented learning disabilities is influenced in the SCALE-UP environment, one in which:*

- *Separate lecture and lab classes are replaced with a single course that meets in a space designed and outfitted specifically for this upside-down pedagogy.*
- *Students study with each other to support their learning of the foundational underpinnings of the material.*
- *The space facilitates working in collaborative teams to apply their newly forming knowledge, practicing 21<sup>st</sup> century skills of teamwork, and problem-solving. Students are becoming agents of their own learning.”*

— Robert J. Beichner, Professor of Physics and Director of the NCSU STEM Education Initiative - North Carolina State University

### RESEARCH & RESOURCES

- <http://scaleup.ncsu.edu/>
- <http://www.pkallsc.org/assets/files/NorthCarolinaStateUniversity-SCALE-UP.pdf>
- <https://serc.carleton.edu/sp/library/scaleup/index.html>

