

# Report on pilot “active-learning” classrooms at SCU



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## Introduction

Research demonstrates the importance of active learning pedagogies on student learning. Educational experiences that include activities such as discussion, project-based work, and analysis in groups promote engaged, self-motivated, and higher performing learners. A 2014 meta-analysis ([Freeman et al., 2014](#)) of 225 studies of student learning in the STEM areas found that active learning increased student performance by about 6 percent on exam scores and concept inventories. Interestingly, active learning also lowered the failure rate as measured by students withdrawing from the course or receiving a grade of D or F.

Active learning pedagogies are facilitated with classroom spaces in which there is the flexibility to reconfigure the classroom and move students easily into groups, where students can display their work, and reorient the relationship between students and instructor, and among students themselves ([University of Minnesota Active Classroom project](#)). In these types of classrooms, students report a higher level of engagement in the learning process and achieve enhanced learning outcomes.

## The Santa Clara pilot active learning classrooms

Three active learning classrooms were designed in the summer of 2012: Varsi 114, Graham 163 and Graham 164. In 2013, three additional classrooms were redesigned: Alumni Science 220, Engineering 602, and O'Connor 204. Features of these classrooms include moveable desks or tables, smart boards, writable walls, and multiple projection display screens.

Faculty and students in those classrooms were surveyed during fall or winter quarter (2012-13 and 2013-14) to determine the perceived impact of the classroom on active participation, connections among faculty and students, the promotion of new and transferrable ways of thinking, the types of learning activities taking place in the classroom, the perceived benefits of specific classroom features, and generally, what worked well and what didn't. From the 2012-13 survey of students, we learned that the classrooms were generally well received. Students perceived them to support the types of learning and engagement typical of active learning environments.

2012-13: Students agreeing that the classroom:	Percent
Facilitates multiple types of learning activities	87%
Promotes discussion	85%
Encourages my active participation	73%
Enriches my learning experience	74%
Encourages me to create or generate new ideas, projects or ways of understanding	69%
Helps me develop connections with my classmates	75%
Helps me communicate effectively	73%
Helps me develop connections with my instructor	67%

Faculty responded similarly to the students, finding the classroom design and affordances promoted more active participation, enhanced student learning, and communication. Their teaching practices aligned with their perceptions: Once a week or more, 68 percent had students working in small groups or on an in-class learning activity; 55 percent had an in-class learning activity that required students to explain course ideas or concepts to others; and 88 percent consulted with individual students during an in-class activity.

Student and faculty comments about the classrooms affirmed the survey responses.



The room works well because the tables and chairs can easily be moved for any situation the class requires. We use small group tables most days, which makes it easy for us to see everyone in the class and have class discussions.  
(Student in response to Varsi 114)

[The room works well] when we are discussing in small groups. When we want the screens to project a website, a presentation, a student's work, an assignment, or anything...  
(Student in response to Varsi 114)



I loved that it had a lot of natural light-helped to keep me energized and in a generally positive mood. I like how big and open it was and the new equipment accommodated different learning styles.  
(Student in response to Graham 163/164)

Moving from lecture to small group discussions and then to full class discussions was easy with the rolling chairs. The chairs also allowed us to easily make a large circle for discussions.  
(Student in response to Graham 163/164)

Not everyone experiences the features in the classrooms the same way. For some, the desks are “too small.” For others, the “chairs are always out of order and are not comfortable.” Some failed to see the benefits of the classroom features for their learning: “The huddle boards were completely useless for our class” or “It was an interesting classroom although it may not have been the best choice for the class I was in.”

In 2013-14, the same generally positive assessments were made for Varsi 114, the Graham classrooms, and O’Connor 204. However, there were some problems identified by both faculty and students in Engineering 602 and Alumni Science 220. The writeable walls were not easily cleaned and their surface provided too much glare when an images or text were projected on them. The furniture in Alumni Science 220 was not easily reconfigurable, diminishing that benefit of the room. Some additional problems with the A/V facilities and IT were identified, along with a problem with temperature control in one of the rooms.

However, the limitations identified for these rooms, faculty and students see potential for the features of these classrooms. One faculty member wrote: “Love the white walls that can be written on—great when wanting to project a student essay and write out student revision ideas...” And from the students: “Having tables to sit at to be able to consult with other students about lecture and discussions;” “Visually stimulating. The bold colors of the chairs, tables, and walls encouraged me to think;” and “When asked to get into groups of 3 to discuss a topic, the chairs on wheels made that easy.”

## Conclusions

Through our surveys and conversations with faculty, it is clear that the classroom environment can and does contribute positively to the teaching and learning experience.

Active classrooms:

- ❖ Are energizing for students and faculty
- ❖ Encourage faculty to make changes in their teaching practices
- ❖ Allow students to experience the class material in multiple ways
- ❖ Encourage students to develop and reinforce important competencies like oral communication or teamwork

Going forward, Faculty Development and the Collaborative for Teaching Innovation will continue to support faculty who are interested in developing more collaborative, small-group, and inquiry-based activities. Media Services and the Instructional Technology Resource Specialists and Classroom support staff will offer more workshops and one-on-one demonstrations to help the faculty make the most out of the technological affordances of the classrooms. The university will work on effective ways to ensure that there is the right fit between the teaching preferences of faculty and the features of a given classroom, and that there is a timely resolution of IT or facility problems.