The Future of Large Lecture Spaces

Academic Futures White Paper

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Background

Large lecture courses are a staple of the undergraduate student experience at CU Boulder. Throughout their undergraduate academic career, 41% of CU students' classroom experience is spent in a large lecture (defined here as courses with 75 or more students). Notably, 53% of courses taken by freshmen and 54% of courses taken by sophomores are large lectures.[1] Over the past year, OIT's Academic Technology Design Team (ATDT) and Arts & Sciences Support of Education Through Technology (ASSETT) have conducted discovery work (two campus-wide surveys, focus groups, informal canvassing, and classroom observations) to better understand the student experience with large lectures at CU Boulder.

Our discovery work found that 48% of students surveyed dislike large lectures. Furthermore, 57% of students indicated that they are distracted more than half of the time in large lecture courses. Numerous causes of distraction were reported, and while no perfect solution exists, student responses suggest a need for more interaction with instructors and peers.[2]

How students learn best

A well-known meta-analysis of 225 published studies on active learning in STEM courses found that students in traditional lecture classrooms are 1.5 times more likely to perform poorly than students in active learning settings (Freeman, et. al., 2014). Active learning is defined as activities that involve students in doing and thinking about what they are doing (Bonwell & Eison, 1991). The first three principles of Chickering and Gamson's "7 Principles for Good Practice in Undergraduate Education" are 1) encourage contact between students and faculty, 2) develop reciprocity and cooperation among students, and 3) encourage active learning (Chickering & Gamson, 1987). This means that students should be able to talk to each other, move around the classroom, form groups, write on boards, reflect, ask questions, and truly participate in developing their learning experience. Practices such as these support the need for innovative learning environments that are inclusive of diverse learning styles, thus promoting a new era of learning.

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[1] Enrollment data provided by Institutional Research in the Office of Data Analytics at CU Boulder

[2] ATDT Large Course Discovery Work Webpage (hyperlink) and Infographic (hyperlink)

Large lecture classrooms inhibit best learning practices

The predominant layout of the large lecture classroom is an auditorium-style room with fixed furniture and an instructor in front as the "sage on the stage." No matter how much effort we put into encouraging faculty to teach using the principles of active learning and collaboration, faculty will resort back to more traditional teaching methods if classroom spaces do not facilitate this approach to learning. Passive transfer of knowledge from an instructor is no longer an effective practice for student engagement. If today's students face the task of solving tomorrow's challenges, their educational experience should support the development of real world problem-solving skills, creative thinking, and collaborative work methods. With this in mind, it is necessary to question the current design of large learning spaces.

How to design large classrooms

While it may be impossible to avoid large class sizes at CU Boulder, we are advocating for large learning spaces that reflect the values of student centered teaching and learning. A holistic approach to designing large learning spaces includes valuing and incorporating student and faculty input, examining policies around the scheduling of classrooms, and training faculty on how to use best teaching practices in newly designed spaces.

One exemplary model is Oregon State's Learning Innovation Center which partners with instructors to imagine the future of learning and designs spaces to support that vision. Large learning spaces accommodating up to 600 students were designed to ensure that "every seat in the classroom is a good seat" and to better showcase course content. Based on proxemics research, these classroom designs place all students within 30 feet of the instructor and display content on each wall, creating an engaging 360 degree learning experience. Large lecture instructors also articulated a need for flexible spaces for small group activities, so breakout areas were built into the hallways around classrooms.

Indiana University's Mosaic Project modifies existing classrooms to better support active learning by ensuring these spaces fulfill three criteria: 1) seating arrangements that allow students to work in small groups, 2) whiteboards or monitors that support student collaboration, and 3) classrooms that allow faculty to move amongst students. Faculty who wish to teach in Mosaic-certified classrooms participate in a cohort to integrate active learning into their teaching practices. Researchers then study student learning in these classrooms to further iterate and improve.

Additional effective models of large learning spaces include the "Scale-Up" initiatives at North Carolina State and George Washington University. The success of the above models rests on the willingness of the university to partner faculty with instructional and learning space design staff to conceptualize classroom spaces that support student centered learning, and guide faculty in utilizing and continuing to improve these spaces.

Investing in the creation of student centered learning spaces demonstrates that the campus values best practices in teaching and respects the needs of our diverse learners. Input and participation from students and faculty concerning the design, improvement, and use of these spaces is pivotal for creating positive change in the student learning experience. Three teams in

OIT at CU Boulder, ASSETT, the ATDT, and Learning Spaces Technology, are poised to lead collaborative efforts in designing effective large learning spaces that promote these values.

References

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