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- Submitted for **Operational Excellence Award**
- **Individual Nominated** – Janice Scannell, Andrew Murray, Natalie Montañez, Erfan Mojaddam, Wayne Kuang, Jason Jung, Steve Johnson, Tim Gotch, James Fong, Ezra Daly, Kelly Chang, Willa Chan, Kevin Chan, Nich Caldwell, Joshua Bryan, Vince Barma

Building Flexible Classrooms by Building New Resilient Processes

For decades, the standard classroom was equipped with basic tools: a board, a podium, and an audio/visual (AV) system for displaying and playing back media. Collective and communal instruction was limited to the space between the four walls, but as COVID-19 ravaged the world, UC Berkeley's Classroom Technology Services team sought to find a solution that would allow for flexibility, agility, and resiliency for instruction in and out of a classroom.

The Classroom Technology Services team designs, installs, and supports over 200 General Assignment Classrooms on campus. A key factor to the team's success is the standardization of installed technology and classroom user experience across all rooms. This method empowered the team to streamline their technology refreshes with the new ability to apply a waterfall project management approach for predictable and timely results for both short and long term planning.

Without the ability to gather feedback from overwhelmed instructors, a precedent to reference, or clear knowledge of a desired functional outcome, the team faced the challenge of designing a new technology standard on a compressed timeline. As such, the team relied on past feedback and institutional knowledge to offer flexible options in an uncertain future. The direction was set for a multi-year project to expand course capture capability from 60 to all 203 classrooms, while also introducing video camera capture and video conference capabilities to all 203 classrooms to enhance the on-campus experience and increase accessibility to course content to our students.

In addition to the design process challenges, the team faced major setbacks in resource availability and supply chain limitations. Adapting to these uncertain environments required the introduction of agile project management practices into the traditional waterfall workflow.

At the inception of the project, the team promptly needed more boots on the ground to install major equipment across the general assignment classroom portfolio in the midst of a public health crisis. The team quickly recognized this challenge and developed multiple paths to overcome it. Initially, external AV integrators were contracted to complete a portion of the installation work, with project team members providing oversight to ensure the work met UC Berkeley standards.

A considerable amount of time and effort was put into management and oversight of the contractors, and the work to install video cameras and video conference capability in 25 classrooms was ultimately completed using this process. However, the time spent in contractor oversight and addressing mistakes led the team to conclude that their time and campus resources could be better utilized in another manner.

Despite its many challenges, the pandemic also created the opportunity for an existing team member who had great interest in learning AV design and installation began shifting roles to help the team meet its project targets efficiently and affordably. This second path to overcome the resourcing challenge proved to be so successful and effective that the staff member has since fully transitioned as a full member of the classroom Design and Engineering team.

Upgrading even one classroom requires components from multiple vendors to be on hand at the same time. When supply chain shortages arose, the team made the best of the situation without progress screeching to a halt. Virtually none of the components arrived on time to allow for the project to flow according to any set schedule. In response, the team relied on its usual methods of adopting an agile approach by reviewing the situation and adapting the installation process. By creating smaller chunks of installation work based on inventory availability, the team was able to keep the project moving forward. As campus operations resumed, the team formally added sprint planning as a procedure to balance the scope of this upgrade project with critical everyday operational work to maintain functionality in existing classrooms.

The ways that the team overcame these two obstacles offer a glimpse into their willingness to try new and different processes, learn from the experience, and quickly adjust based on feedback within a short amount of time. The project, which is still in progress, has accomplished the following:

- added course capture capability to 80 classrooms (from 60 in March 2020 to 140 in May 2022)
- added video cameras and video conferencing capability to 50 rooms, enabling 4-5 fold increase in courses participating in the Course Capture Service
    - 110 in Fall 2019, 103 in Spring 2019 (last full semesters before COVID-19 pandemic)
    - 427 in Fall 2021, 535 in Spring 2022
- provided instructors with the flexibility to teach in any mode they wish in the classroom.

The Classroom Technology Services team works diligently to serve the instructional community on this campus and it does not go unnoticed. Here is a quote from an instructor in Fall 2021, who echoes many of the sentiments other instructors have also expressed in our conversations with them:

"I really liked the improvements in technology (the ability to use zoom in the room, which I used for guest speakers) and the higher quality of course capture. I wish you could do this in all rooms [...] for all courses."