Technology Innovation Labs for Education
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Intro

The Technology Innovation Labs for Education will expand UCSF's current capabilities for creating both digital and physical media and exploring the many applications of maker culture in education, research, and patient care. Specifically, the proposal calls for increasing the physical footprint and functionality of the Makers Lab and creating an adjacent Media Production Lab within the UCSF Parnassus Library designed to meet the needs of the UCSF academic enterprise of today and tomorrow.

We envision a space that maximizes resources and inspires collaboration by combining complementary services. The Innovation Labs will enable faculty, students and staff to create innovative content, explore new ways of teaching and learning, and discover how to apply cutting-edge technologies to their work. We aim to provide the necessary space and support to address existing unmet needs at UCSF. For example, the School of Medicine can scale up their highly successful VR activities in the curriculum; School of Pharmacy faculty can create video lessons to free up class time in the new curriculum for active learning and workplace learning.

The Innovation Labs will rely heavily on collaborations with campus departments to include:

- expand existing collaborations with the Kanbar Center and School of Medicine to permanently house and support immersive technologies (i.e. virtual reality, augmented reality, mixed reality) for health science education and simulation;
- partner with Education Technology Services to coordinate and meet campus video needs;
- work closely with SEP and Center for Science Education and Outreach departments to extend the mission of UCSF to future students;
- foster partnerships with local tech startups, non-UCSF practitioners/researchers, and general public.

Mission aligned to education spaces/environments

The Makers Lab and Media Production Lab will be positioned adjacent to one another, supported by staff with complementary skills and linked by a shared training and experimentation space. The services will be free of charge to the UCSF community and in the do-it-yourself style -- designed to empower users and provide the latest technologies to build meaningful, professional, and effective content.

User Scenarios

- Faculty, students, researchers, and practitioners attend workshops on 3D printing anatomical models generated from CT scans to use as teaching tools, saving departmental funds and creating new teaching opportunities.
- A faculty member consults with a media expert for help recording a 90 minute, voice-over-PowerPoint digital lecture. She learns about best practices, and instead decides to create multiple, shorter videos that incorporate screen recording along with a live-action demonstration using the lab's studio space.
- A clinical fellow who frequently borrows a standard digital video camera to record short explanations for their patients, decides to experiment with an action camera (e.g. GoPro) and a 360 video camera to create content for pre- and post-surgical patients. The fellow tries out the cameras in the Innovation Labs space with help from the Media team and decides to borrow them for their next project.
- Students schedule time in the VR studio to complete their virtual lab assignments.

- Students from across the professional schools work collaboratively on projects to discover applications for emerging technologies (e.g. 3D printing, programmable electronics, VR) in their education, future research and clinical care.
- SEP invites Bay Area high-schools students to attend workshops on the role of 3D printing in the future of health science.

Environmental quality:

- Triple footprint of current Makers Lab to accommodate up to 50 makers and the necessary work spaces, storage, and equipment to support maker activities.
- Flexible and accessible learning/work spaces that cater to individual, collaborative, and team-based learning.
- Multi-purpose instructional space that "bleeds into the Makers Lab" and allows for combining demonstrations and training with hands-on activities in the Makers Lab or Media Production Lab.
- Video recording studio to accommodate video interviews, podcast recordings, etc.
- Dedicated space to accommodate VR technology, including a large screen monitor and VR sensors.

Support and operations:

- Managed and supported by Library staff, who will regularly partner with other campus staff to support curriculum-based activities, coordinate video production strategies, and deliver services that meet campus needs.
- The UCSF Library as well as other internal and external opportunities will fund staffing and technology.

Evidence based learning principles

The Innovations Lab aims to support the development and implementation of effective, evidence-based learning activities. The Labs will:

- Foster interprofessional education through shared workspace, workshops, and collaborative projects using emerging technologies.
- Provide resources to build skills in "maker" technologies through problem-based learning, active learning, and constructionist pedagogy.
- Incubate a strong literacy in DIY culture and open source hardware/software.
- Provide multimedia equipment and software required for producing instructional content for the "flipped classroom" model.
- Emphasize creativity and exploration in a welcoming space that galvanizes the UCSF community to test and consider implications of using technology in the health sciences.

Oversight

- A team of key education staff from across the UCSF academic enterprise will be convened to advise Library staff on the creation and maintenance of the spaces.
- The Labs will share its progress through the IT Governance Committee on Education Technology.