

Teaching Active Participation and Inclusion

My goal as educator is to shepherd our youth toward being better people by building knowledge, skills, and empathy. I encourage students to be creative, to actively participate, and to cherish mutual difference. I like to teach a range of courses: introductory, to bring students into our fields; mid-level, engaging students with skills and each other; advanced, to share and develop cutting edge research acumen. Workshops on teamwork and inclusion address how cooperative work is hard. Team projects require students to deal with each other.

I emphasize project-based learning, constructivism, learning through doing, because I find that it's more rewarding. Knowledge and skills stick a different way in the mind when you use them in making. Project-based learning stimulates thinking about what skills are for, in situated contexts. Projects provoke creativity in formulating problems and plans. I teach students to ask good questions, not just to know right answers.

Teaching is a two-way street. I continuously *learn* through teaching. I learn through teaching, because its situated contexts provoke me to think on my feet about what students need, how to explain, how to impart, and how to inspire. Student participation gives a professor intellectual and emotional challenges, which stimulate growth. I work to keep my teaching alive, to be the student through teaching. I work to keep fulfilling my intention to continuously make the world a better place, and myself a better person, through community.

I support and advise undergrad and graduate student researchers. I involve my advisees as participants and collaborators in all phases of research: (1) design; (2) building probes; (3) collecting data; (4) data analysis; (5) writing papers; and (6) writing proposals. They learn skills across this gamut, in proportion to their effort.

I teach undergraduate 'half capstone' design (aka *Programming Studio*), graduate Human-Centered Computing, and advanced seminars. Half capstone initiates students' transition from skills to project-based learning. I overhauled the curriculum, forming an interdisciplinary course—integrating software design, interaction design, visual design, and experience design—with qualitative methods and agile task analysis. One project requires teams to design and build an engaging multi-player game—using JavaScript, Node.js, MongoDB, WebSockets, CSS, and HTML—so it runs in a web browser. Student response is motivated and creative.

In the process of teaching Programming Studio, my most profound experience (so far) as a teacher emerged. Students struggle to work in teams. Teamwork is new to them. Teamwork is inherently difficult. I found, disproportionately, female students ended up in my office with bad team experiences. I was upset! I am ethically compelled to make my courses serve as places where underrepresented people become inspired, not discouraged, as computer scientists. In reflection, I attribute problems to bias, both implicit and intentional.

In response, I am iteratively creating and facilitating a participatory inclusion workshop, *Teamwork: Gender + Race*. Student response is inspiring. In one workshop, a young woman felt safe enough to report that guys don't want to date her when they find out she is an engineer! In others, I was able to help repair dynamics that excluded a Latinx woman. If we want to live in a better world, we must work each day to build it.

I elicited the input of connected faculty in the design of CSCE 655 Human Centered-Computing, a graduate human-computer interaction methods course, which introduces iterative design, prototyping, visual and interaction design, evaluation, data collection and analysis (quantitative and qualitative), information visualization, computer-supported cooperative work, social media, game design, and ubiquitous computing. The Texas A&M CSE Dept. adopted this HCC course among core graduate degree requirements.

I periodically teach seminars to engage advanced student participation in cutting-edge research. The fields are interdisciplinary. Participants integrate fundamentals with focused prior work. I have taught 9 such seminars. I worked to canonize an Advanced Seminar in Human-Centered Computing and Information. Students can repeat this course; its topic differs in each offering. New instances do not require bureaucratic approval. I share the mechanism with colleagues in human-computer interaction, graphics, visualization, and information.