

This proposal, like its CS21 solicitation and overarching CS10k effort, strives to bring our nation's computer science *education* practices in line with the field's importance to the economy, our culture of innovation, and our adaptability to future challenges. We propose a middle-years computer science curriculum, *MyCS*, designed to pique the interest of early adolescent students and build a foundation of computer science vocabulary, habits of algorithmic thinking, and the skillsets with which all students can "try on" the beauty and joy of computational creation.

Intellectual merit The design of MyCS derives from practices that have dramatically changed the demographics and atmosphere of the computer science major at Harvey Mudd College. This proposal hypothesizes that similar principles will succeed as a foundation for building middle-school students' *computational identities*. Those principles are (1) an intellectually challenging curriculum focusing on computational problem-solving, (2) project-based activities highlighting student creativity and self-expression, and (3) curricular variations spanning breadth/depth tradeoffs. These MyCS variations offer teachers manageable flexibility, a variety of supplemental CS contexts, and a regular "resetting" to square one.

At the core of this proposal is a detailed plan for assessing the change in all stakeholders – most especially the middle-schoolers' – in order to evaluate how MyCS's distinct curricular approaches influence students' self-definition with respect to computer science.

Broader Impacts MyCS benefits from the broad shoulders on which it stands. It extends ScratchEd's curricula and UCLA's Exploring Computer Science – leveraging each one's intellectual depth and designs for diversifying the field. MyCS's primary partner is Pomona, CA's school district, and the project team includes expertise and experience within Pomona's large Latino/a populations. By building computational opportunities of STEM-underrepresented students locally in the Inland Empire, MyCS will refine its curriculum and its practices with an eye to scaling beyond Southern California. Pilot work in Lihue, HI has begun this process.

Recognizing the dramatic differences between middle-school and college-age students, MyCS creates a community of partnering experts who will develop, deploy, and test its curriculum to effect change in students' identification with CS. Middle-school teachers and administrators, parents and counselors, college-level CS and CS students, as well as CGU's School of Education, all form this partnership. Together they will help foster the computational identity of students in the midst of defining themselves, balancing family and society's pressures, and internalizing self-perceptions that will later catalyze their choices of courses, college, and career.

Ultimately, MyCS wants to create for computer science the same standing that teaching, sports, and health care now enjoy: visions of the future that all young people try on as part of deciding who they are and where their identities will take them. Many will find computational creativity a compelling fit. Even the many who pursue other paths will contribute, through their understanding, to a culture that grows future generations of computer scientists. By placing *computational* creativity among the electives of art, cheer, dance, choir, band, and others, MyCS contributes to CS's ultimate inclusion in our K-12 curriculum and, even as it does so, helps democratize a field that requires proactive participation by *all* of our youth.