Expanding Opportunities through Concurrent Enrollment

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ABSTRACT

Efforts to broaden participation in computing through the Advanced Placement (AP) Computer Science Principles (CSP) course in high school have been promising, but not all schools offer AP courses and not all students take them. This project asks whether offering CSP through concurrent enrollment (CE) might reach more students AP does not. In its first year of CSP-CE courses in two states, this research found CSP-CE classrooms, much like AP CSP classrooms, did not mirror the demographics of their schools in terms of gender. However, CSP-CE classes in one state did attract Hispanic and Native American students in proportions comparable to the school populations. Even though schools shifted to distance learning, student success rates were high: upwards of 80% earned college credit. Ongoing research will study future cohorts, as well as factors that influence decisions to offer CS-through-CE. This poster will be of interest to post-secondary and K-12 CS educators, CS Principles teachers, and others interested in broadening participation in K16.

CCS CONCEPTS

• **Social and professional topics → K-12 education →**

Accreditation; CS1

KEYWORDS

Concurrent Enrollment, Dual Enrollment, Advanced Placement, CS Education, CS Principles, Broadening Participation

1 INTRODUCTION / PROBLEM

In spite of efforts by government, industry, and academic groups to broaden participation in computing, students from historically marginalized groups and females still participate in lower proportions in high school CS classes. The Advanced Placement CS Principles course has increased participation of these students. However, not all schools offer AP courses and many students do not enroll in AP when offered. A three-year NSF-funded project is utilizing Mobile CSP (a proven CS Principles curriculum and teacher professional development program) in concurrent enrollment (CE) programs in two states to understand whether offering CS-through-CE can broaden participation. CE allows high school students to take college courses in their schools taught by approved high school teachers.

2 BACKGROUND / RELATED WORK

In 2018, a research-practitioner partnership (Mobile CSP and CE programs at a midwestern university and a community college in the northeast U.S.) formed to pilot CS-through-CE during two academic years. The project sought to address the following research questions: (1) What are the supports and barriers to implementing and sustaining CSP as a CE course?; and (2) Does a CE implementation of CSP broaden participation in computing? This poster shares data and preliminary findings from the first year the CE course was offered (2019-20) to address question 2.

3 OVERVIEW / METHODS / RESULTS

Researchers collected data from public sources and partner CE programs, which were analyzed to describe enrollment, success, and college-going. While nearly half of the population of students in participating schools in both states was female, only 24 to 25 percent of the students in the CSP-CE classes were female. African-American, Hispanic, and Native American students made up 51% of the 6 participating schools in the northeast state, but these students made up just 28% of the students in the CSP-CE classrooms. Meanwhile 16% of students in the 7 schools in the midwestern state were from these groups, and overall the CSP-CE classrooms reflected these demographics. The poster will further describe student participation and achievement in the first year.

4 CONTRIBUTIONS AND FUTURE WORK

This research will offer evidence about CE's potential to broaden participation of underrepresented students in computing. The research will also inform project implementation. Research on what influences school and student participation is ongoing.

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