



Teacher and School Supports to Promote Equitable Implementation of AP CSP in NYC

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ABSTRACT

Research-practice partnerships (RPPs) are a promising strategy for tackling persistent problems of practice and building knowledge about practices that may promote equity in computer science. Education Development Center (EDC) and New York City Department of Education (NYCDOE) are engaged in an RPP to enhance and study the implementation of high school Advanced Placement (AP) Computer Science Principles (CSP) courses in low-performing NYC schools. The objectives of this partnership are: sustained implementation of AP CSP courses in low-performing NYC high schools; greater participation of female students and students from racial and ethnic groups typically underrepresented in CS; and the integration of findings across NYCDOE's K–12 CS4All initiative. The partnership is studying and iteratively refining teacher and school supports, such as professional development (PD) and curriculum resources, school-based supports, and resources for school leaders, developed for and with low-performing schools. We hope to contribute knowledge of the curriculum, PD, and school supports that promote success for all students. The impact of the proposed work has implications for low-performing NYC high schools, and for schools nationwide that offer AP CSP. Administrators, teachers, developers, and policymakers can use these findings to promote AP CSP implementation supports for teachers and schools that show promise for improving student outcomes.

CCS CONCEPTS

• Computer science education • K–12 education

KEYWORDS

Advanced Placement; Computer Science Principles; research-practice partnerships; low-performing schools; broadening participation

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1 Significance

There is widespread recognition of the need for a more diverse workforce in computer science (CS) and CS-related fields. Blacks and Hispanics (9% and 7% of the STEM workforce, respectively) are underrepresented relative to their shares in the U.S. workforce as a whole, and the share of women in the computer occupations has dropped from 32% in 1990 to 25% in 2016 [1]. Of CS degrees awarded in 2016, 76% were to white or Asian students, and 79% were to male students [2]. Responding to these concerns, the AP CSP course was introduced to broaden participation in CS and make the field more attractive to students typically underrepresented in CS.

2 Research-Practice Partnership

New York City (NYC) is the largest public-school system in the U.S., serving about 1.1 million students in over 1,700 schools. In 2015, the NYC Department of Education (NYCDOE) launched the CS4All initiative, to provide CS education to all NYC public school students by 2025. Education Development Center (EDC) partnered with NYCDOE on an NSF-funded partnership (BJC4NYC) to support and scale implementation of an AP CSP course—*Beauty and Joy of Computing* (BJC). Early results are promising; however, differential outcomes emerged. Specifically, the percentages of female, black, Hispanic, and low-income students taking and passing the AP CSP exam are lower than comparable percentages citywide. These students centered in lower-performing schools.

The research-practice partnership (RPP) will support and study the implementation of AP CSP courses in low-performing NYC schools. The partners will iteratively refine teacher and school supports (e.g., curriculum resources, coaching visits), using school, teacher, and student feedback and outcome data.

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