

## **Fostering Computer Science Identity Among Underrepresented Minority Students: An Exploration of Contributing Factors**

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### **Abstract**

It has been projected that the U.S. economy will have a surplus of computer science jobs in the future to keep up with innovation and the evolution of the digital world, and more computer science professionals will be needed to fill these jobs. In the past 15–20 years, efforts have been underway that focus on the recruitment and retention of students in computer science within elementary, secondary, and postsecondary education. However, only in the past 10 years have these efforts been focused on underrepresented students—those who are not White or Asian—who are underrepresented in the field of computer science. In education, more programs should focus on these groups to fill future needs with respect to growth in industry, representation in innovative solutions, and social mobility. Studies have shown that a student with a positive computer science identity is more likely to persist in the field and graduate from higher education with a major in computer science. Therefore, this particular study explored factors before and during college that underrepresented students have experienced that they perceive to have contributed to the development of a positive computer science identity. Five overarching themes emerged during data analysis: a) coping with diversity in the classroom; b) engaging in high-quality co-curricular and extra-curricular activities; c) teachers and faculty who care; d) family support and role models; e) individual student attributes; and f) computer science programs designed with intentionality. Based on these findings, recommendations of practice are provided for K–12 school districts as well as higher education institutions to systemically improve the experience and inclusivity of computer science in education. Finally, a capstone project was completed after this study, which involved creating a Strategic Vision for computer science at the Boston Public School district, with the goal of encouraging more Boston Public School students to see themselves in the field of computer science.