Chapter 2
Strategies for Engaging Hispanic/Latino Youth in the US in Computer Science

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ABSTRACT

In the United States, Hispanic/Latino youth are underrepresented in computer science degree programs and the workforce. This chapter reviews theoretical models and empirical evidence to guide efforts to engage Hispanic/Latino youth in activities and learning environments that have the potential to increase their interest and capacity to pursue and persist in computer science. The authors advocate for a culturally responsive approach to engaging youth in computer science, and highlight a research-based program called Computer Science for the Social Good that has evidence of increasing elementary and high school students' interest and capacity to study computer science. The chapter concludes with implications for research and practice.

INTRODUCTION

Hispanic/Latinos are the fastest growing ethnic minority population in the United States, accounting for over half the growth of the U.S. population between 2000 and 2010, and they currently make up 17% of the population (U.S. Census, 2010). However, they are still underrepresented in computing fields. Hispanic/Latinos make up only 4.6% of computer and information scientists in the labor force (National Science Foundation, 2014). These low numbers are the outcome of an educational pathway that starts early. In high school, Hispanic/Latinos are 16% of AP test takers, but only 1% of the AP Computer Science test takers; those that took it scored far below their peers (College Board, 2011). Although Hispanic/Latinos make up 19% of all US college students ages 18-24 (Lopez & Fry, 2013), the 2013 Taulbee Survey found they earned just 6% of computer science (CS) bachelors degrees, and less than 2% of students who enrolled or completed a PhD in CS were Hispanic/ Latino (Zweben & Bizot, 2014). In addition, they are the group least likely to have access to a computer with internet, and have limited access to opportunities to learn CS in school compared to their white peers (Google, 2015).

These low numbers are of great concern because recent research suggests that Hispanic/Latino students have positive views of computing classes and careers. In a national survey of college-bound Latino high school students, 30% (49% of boys and 13% of girls) said that being a computer scientist/software designer would be a very good profession for them or someone like them (Association for Computing Machinery, 2009). Similarly, a national study of Hispanic and African American teens found that four out of ten chose at least one computer/technology career among their top potential interests; 31% were definitely interested in a career in information technology, and another 39% said they may be interested (Versta Research, 2014). This interest has translated into class enrollment at the college level, but that is not enough to fill the workforce gap. Although Latino students enter computing, engineering, and mathematics majors at relatively similar rates to white students, they take longer to complete the degree (National Science Foundation, 2012) and are far less likely to complete it (Anderson & Kim, 2006).

This chapter will provide an overview of research on the underrepresentation of Hispanic/Latinos in computing fields, including theoretical and empirical perspectives on the institutional, relational and individual factors that influence students' academic pathways. It will include a summary of relevant research and theoretical frameworks that can inform efforts to engage Hispanic/Latino youth in computer science. The focus is not only on how to increase the numbers of Hispanic/Latino youth in computing classes and careers, it is also on how to create learning experiences and institutions that provide opportunities and supports for *all* youth to gain the skills and motivation to influence how technologies are used, what technologies

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