Factors Affecting High School Student Engagement in Introductory Computer Science Classes

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Study Sample & Data Collection

Students in ECS high school classes in Chicago and Washington, DC were invited to participate in an online questionnaire at the end of the 2013 - 2014 school year, resulting in a sample of 232 9th - 12th graders from eight schools.

The sample includes over twice as many male (68%) as female (32%) students who indicated their racial/ethnic identity as Hispanic/Latino (29%), Black/African American (26%), White (20%), Mixed identity (15%), Asian (7%), Other (2%), or American Indian/Alaska Native (less than 1%). Half of the public schools these students attended are considered “selective enrollment” and base admissions on an application and academic requirements, while the remainder of schools students attended do not have these enrollment requirements.

Data collected through the questionnaire focused on 1) Student engagement, 2) Teacher instruction, 3) Student attitudes, and 4) Other student characteristics, including grade, gender, race/ethnicity, and previous computer science-related experience.

What We Found

- Teacher instruction significantly positively affects student engagement in ECS classes, especially teacher facilitation of student autonomy & use of the class structures “partner or small group work” in class.
- When students felt more positive about their CS class, they reported engaging in more intellectual risk taking activities in class.
- The more positively students felt about their CS teacher, the more they reported using small group work.
- Students who reported experience with CS programs outside of class also reported less demonstration of autonomy and lower engagement in intellectual risk taking in class.
- No significant variation was found in engagement among students with different gender or racial/ethnic identities.

Parameter Estimates of Student Engagement Regressions

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