Programming was a challenge for 8 of the 13 students in the AP CSP course.

About Our Student Partners

Over the 2016-2017 school year, 13 student research partners enrolled in AP Computer Science Principles (CSP) at Wolcott School shared their successes and challenges in the course during every-other-week interviews with the Outlier research team.

Keep in mind that while our student partners were enrolled in an AP CSP course using the Code.org curriculum, the challenges they identified could occur in any high school CS course and for any student, not just those with diagnosed learning and attention disorders.

What We Heard: Common Challenges Related to Programming

For many students, it took a long time to find errors or figure out what was missing when their programs didn’t run.

Some students made programming mistakes like mixing up symbols and putting pieces of code in the wrong order.

When writing a program, sometimes students needed to use math concepts and operations that they didn’t understand.

Students were not sure what some commands did, or when they should be used.

I messed up my parentheses… I didn’t do the parentheses for the loop, so I kept getting really weird, wonky outputs and I wasn’t sure what was happening.

I think I wrote a code that was 30-something lines and there was an error at one point and I couldn’t tell where it was… It took me 2 days to figure out.

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How to Help

Addressing Programming Challenges in CS Classrooms

The following recommendations are informed by research-based practices for supporting students who learn differently, combined with the practical expertise of our team learning specialists and study findings.

Circulate and assist students in debugging for errors by modeling necessary steps and providing example approaches (which may also be posted on the wall for continued reference).

Project key mathematical terms and operators on a presentation slide or white board so they are accessible as students work.

Assist students in creating an electronic document (Word, Google) to record variables used in their programs. Students can refer to this document to: a) compare variables side-by-side to identify errors when debugging, and b) copy and paste the variables into the program.

Create a reference sheet listing new code with a short descriptor of the command and the type of variable that should be entered in the command. Encourage students to keep this reference handy while working.


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