Moving Forward:
Closing the Computer Science Learning Gap
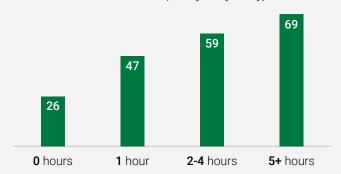
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GIRLS

Computer science (CS) education enables students to gain widely applicable analytical and problem-solving skills and fosters innovative thinking. While women have outpaced men in bachelor's degree attainment[1] since 2000, they make up a much smaller proportion of STEM degrees earned and a declining proportion of earned degrees in computer sciences.[2,3] This summary highlights the state of computer science education in 2020 among girls in grades 7 through 12. It reveals persistent gaps in interest and pursuit of CS learning as reported in previous studies.[4]

HOW LIKELY ARE YOU TO PURSUE A JOB IN COMPUTER SCIENCE SOMEDAY?

by average hours that student spent learning computer science each week at school (% very likely/likely)

0 hours	1 hour	2-4 hours	5+ hours
26	47	59	69

Computer Science Perceptions

Results show that girls in grades 7 through 12:

- **Are less likely to think CS is important for them to learn.** Though most girls (92%) and boys (93%) say adults in their families would be supportive if they wanted to learn CS, fewer girls than boys think it is important for them to learn (31% vs. 49%).

- **Have less interest in learning CS.** Half as many girls are interested in learning CS (25% vs. 50%), and fewer are confident they can be successful learning it (60% vs. 73%). Girls are also less likely to say their friends think it is important to learn CS (19% vs. 29%).

Aspiration

Results show that girls in grades 7 through 12:

- **Are less likely to be encouraged to pursue a CS career.** More than half of boys (52%) compared with 37% of girls say an adult has encouraged them to pursue a CS career.

- **Are less likely to say they will need to need to know CS for their careers.** More than half of boys (53%) and 36% of girls think they are likely to need to know CS for their careers someday.

- **Have lower CS career aspirations** About one-third of boys (33%) and 12% of girls say they are likely to pursue a job in CS.

Availability and Access

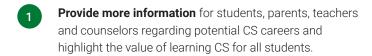Results show that girls in grades 7 through 12:

- **Are just as likely to say they learned computer science at school this year.** About half of both girls and boys say they learned CS at school in the past year, though fewer girls than boys learned CS outside of school (20% vs. 35%). Still, slightly more girls (59%) than boys (51%) say, on average, they spend no time in a typical week learning CS at school.

- **Are less likely to say they are currently enrolled in a dedicated CS course.** Among students who say their school has classes where only CS is taught, fewer girls than boys are currently enrolled in these classes (15% vs. 27%). Just as many girls as boys are enrolled in a class where CS is taught as part of the class (44% vs. 42%).

- **Are less likely to report learning certain aspects of computer science.** Fewer girls (44%) than boys (56%) say they have learned what makes computers work or learned hardware design and development (18% vs. 24%).

- **Are more likely to report being interested in learning or pursuing a CS career if they spend time learning CS.** Among students who report spending no time in a typical week learning CS, 27% are interested in learning it, whereas among those who report spending at least five hours a week learning CS, 74% are interested. Fourteen percent of students who report spending no time learning CS in a typical week say they are likely to pursue a job in CS, while nearly half (46%) of those who spend five or more hours a week say they are likely to pursue a job.

About the Survey

Google commissioned Gallup to conduct a multiyear study of perspectives and access to computer science education in U.S. K-12 schools. Gallup surveyed students, parents and guardians, and teachers in public and private schools via the Gallup Panel and principals and superintendents from U.S. public schools and districts using a purchased sample.

The nationally representative student data were collected between Jan. 29 and Feb. 17, 2020. Results include responses for 1,402 students in grades 7 through 12, including 668 female students and 721 male students. Sample sizes vary by question. See **g.co/cseduresearch** for the methodology in the ***Current Perspectives and Continuing Challenges in Computer Science Education in U.S. K-12 Schools*** report.

RECOMMENDATIONS

1 **Provide more information** for students, parents, teachers and counselors regarding potential CS careers and highlight the value of learning CS for all students.

2 **Expand girls' access to substantial CS learning time in classrooms.** Study results suggest all students are more likely to embrace CS if they spend more time learning it.

3 **Expand opportunities for girls to participate in out-of-school CS learning** that is relevant to their interests, builds confidence and provides foundational CS knowledge.

	Girls	Boys
Computer Science Perceptions		
How supportive would adults in your family be if you wanted to learn computer science? (% Very supportive/% Supportive)	74/18	73/20
How important is it for YOU to learn computer science? (% Very important/% Important)	9/22	22/27
How important do your friends think it is to learn computer science? (% Very important/% Important)	6/13	9/20
How confident are you that you could be successful in learning computer science if you wanted to? (% Very confident/% Confident)	30/30	41/32
How interested are you in learning computer science? (% Very interested/% Interested)	8/17	21/29
Availability and Access		
Did you learn ANY computer science at school in the past year? (% Yes)	49	50
Did you learn ANY computer science outside of school in the past year? (% Yes)	20	35
In a typical week, about how many hours, on average, do you spend learning computer science at school? (% 0 hours)	59	51
Have you, personally, ever learned any of the following computer science concepts? (% Yes)		
• Learning what makes computers work the way they do	44	56
• Robotics using programming or coding	41	47
• Hardware design and development	18	24
Are you currently enrolled in a class where ONLY computer science is taught?* (% Yes)	15	27
Aspiration		
Has an adult in your life ever encouraged you to pursue a career in computer science? (% Yes)	37	52
How likely are you to need to know computer science for your career someday? (% Very likely/% Likely)	15/21	27/25
How likely are you to pursue a job in computer science someday? (% Very likely/% Likely)	4/8	15/17

*Includes students who say there are classes where ONLY computer science is taught in their school.
Note: The sum of percentages included in this report may differ from table results due to rounding.

Endnotes

1 National Center for Education Statistics. (2020). The Condition of Education. Accessed June 3, 2020, from **https://nces.ed.gov/programs/coe/indicator_cta.asp**

2 National Center for Education Statistics. (2019). Number and percentage distribution of science, technology, engineering, and mathematics (STEM) degrees/certificates conferred by postsecondary institutions, by race/ethnicity, level of degree/certificate, and sex of student: 2008-09 through 2017-18. *Digest of Education Statistics*. Accessed from **https://nces.ed.gov/programs/digest/d19/tables/dt19_318.45.asp**

3 National Science Foundation. (2018). National Science Board: Science & Engineering Indicators 2018. Accessed from **https://www.nsf.gov/statistics/2018/nsb20181/report/sections/higher-education-in-science-and-engineering/undergraduate-education-enrollment-and-degrees-in-the-united-states**

4 Google LLC & Gallup, Inc. (2016). Computer Science Learning: Closing the Gap: Girls. Accessed from **http://services.google.com/fh/files/misc/computer-science-learning-closing-the-gap-girls-brief.pdf**