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Moving Forward: Closing the Computer Science Learning Gap

BLACK STUDENTS

Computer science (CS) education enables students to gain widely applicable analytical and problem-solving skills and fosters innovative thinking. This summary highlights the state of computer science education in 2020 for parents and guardians of Black students in grades 7 through 12 as well as Black students in those grades. Black students as a group have seen a substantial increase in AP Computer Science participation in recent years;¹ however, Black students and other historically marginalized groups still make up only slightly more than 20% of all participants in AP Computer Science exams.²

Findings

Black students in 2020 are as likely as white students to have access to some computer science at school and in the community, and they are equally as interested in learning computer science. Black students are more likely than white or Hispanic students to be getting encouragement at school and at home to learn computer science. Black parents and guardians are also more likely than white parents and guardians to see computer science as important for their child's future career. Black students are confident they can learn CS, which was also evident from findings in the 2016 report <u>Computer Science</u> Learning: Closing the Gap: Black Students.³

Computer Science Perceptions

Results show that Black students in grades 7 through 12:

- Are as likely to express interest in CS and more likely to see it as important for all students to learn. Forty-two percent of Black students, 41% of Hispanic students and 36% of white students say they are interested in learning CS. Similar percentages of Black (42%), Hispanic (39%) and white (39%) students think CS is important for them to learn. Nearly half of Black students (48%), 37% of Hispanic students and 32% of white students think CS is important for all students to learn.
- Express confidence that they can successfully learn CS. More than seven in 10 Black students (74%) and 66% of white students believe they could successfully learn CS if they wanted to.
- Have parents or guardians who are enthusiastic about computer science. Black parents or guardians (78%) are more likely than white parents or guardians (68%) to say CS is important for their child to learn. Black parents or guardians are also more likely than white parents or guardians to say it is likely their child will need to know CS for her/his future career (71% vs. 60%).

Aspiration

Results show that Black students in grades 7 through 12:

- Are more likely than white students to say an adult in their lives has encouraged them to learn about CS. Three in four Black students (75%) say an adult has encouraged them to learn about CS; 63% of white students and 70% of Hispanic students say this.
- Are about as likely to say they will pursue a job in CS someday. More than one in four (27%) Black students and two in 10 Hispanic (23%) and white (21%) students say they are likely to pursue CS jobs someday.

Results show that Black students in grades 7 through 12:

- Spend more hours on smartphones, tablets and computers at home. Nearly all Black students (97%) and Hispanic students (95%) spend at least one hour on their smartphones at home, compared with 88% of white students. Black students are more likely than white students to spend time on tablets (44% vs. 31%) and on home computers (94% vs. 84%, respectively). Reported technology use at school is similar among Black, Hispanic and white students.
- Are about as likely as Hispanic and white students to spend at least one hour each week studying computer science at school. Half of Black students say they typically spend an hour or more, on average, each week learning computer science at school. Four in 10 white students (42%) and about half of Hispanic students (52%) spend one or more hours doing so.
- ➡ Have similar access to computer science classes at school and in the community. Nearly half of Black and Hispanic students (46% each) and 52% of white students say their schools offer dedicated CS courses. Nearly three in 10 Black (27%) and white (29%) students say they learned computer science outside of school in the past year, while 24% of Hispanic students say this.
- Regardless of race and ethnicity, students are more likely to express interest in learning computer science with more hours spent learning it. Among all 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, 74% are interested. Additional research is warranted to better understand the effects of exposure on students' CS interest and aspiration.

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)



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 and parent data were collected between Jan. 29 and Feb. 17, 2020. Results include responses for 1,402 students in grades 7 through 12, including 125 Black students and 148 Hispanic students. Results also include responses for 2,092 parents and guardians, including 138 Black parents and guardians. 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

Collaborate to build CS interest and career literacy. Find ways for enthusiastic parents and guardians to partner with teachers to spark and nurture interest.

2

Increase exposure. Study results suggest all students are more likely to embrace CS if they spend more time learning it. Create and implement communications campaigns for students, parents and guardians, and educators when new CS opportunities are offered in or out of school.



Capitalize on out-of-school time. Offer mobile-friendly, remote learning opportunities that put CS education in the hands of students outside the classroom.

Computer Science Perceptions	Black	White	Hispanic
How interested are you in learning computer science? (% Very interested/% Interested)	18/24	15/21	12/29
How important is it for YOU to learn computer science? (% Very important/% Important)	16/26	15/24	16/24
How important is it for ALL students to learn computer science? (% Very important/% Important)	25/23	12/20	10/26
How confident are you that you could be successful in learning computer science if you wanted to? (% Very confident/% Confident)	42/32	34/32	35/28
(Parents and guardians) How likely is your child to need to know computer science for their career someday? (% Very likely/% Likely)	41/30	30/30	35/28
(Parents and guardians) How important is it for your child to learn computer science? (% Very important/% Important)	52/26	32/36	37/30
Availability and Access			
About how many hours per DAY do you use each of these devices at home?			
(% 1 or more hours) Smartphone 	97	88	95
Tablet	44	31	38
Desktop or laptop computer	94	84	83
In a typical week, about how many hours, on average, do you spend learning computer science at school?			
% 0 hours	50	58	48
% 1 or more hours	50	42	52
Are there classes where ONLY computer science is taught in your school? ($\%\mbox{Yes})$	46	52	46
Did you learn ANY computer science outside of school in the past year? (% Yes)	27	29	24
Aspiration			
Has an adult in your life ever encouraged you to learn about computer science? (% Yes)	75	63	70
Has an adult in your life ever encouraged you to pursue a career in computer science? (% Yes)	49	40	54
How likely are you to pursue a job in computer science someday? (% Very likely/% Likely)	10/17	9/12	11/12
(Parents and guardians) How likely is your child to pursue a career in computer science someday? (% Very likely/% Likely)	12/15	8/17	10/19

Note: The sum of percentages included in this report may differ from table results due to rounding.

Endnotes

- 1 CollegeBoard. (2019). AP Program Results: Class of 2019. Accessed from https://reports.collegeboard.org/ap-program-results/ap-computer-science
- 2 Code.org. (2020). Code.org's Approach to Diversity and Equity in Computer Science. Accessed from https://code.org/diversity
- 3 Google LLC and Gallup, Inc. (2016). Computer Science Learning: Closing the Gap: Black Students. Accessed from http://services.google.com/fh/files/misc/computer-science-learning-closing-the-gap-black-brief.pdf