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CODING THE FUTURE:

What Canadian youth and their parents think about coding

First Results from Actua's National Coding Survey
Prepared by Daniel Munro for Actua

HIGHLIGHTS

- **Actua conducted a first-of-its-kind survey of young Canadians' attitudes about coding education and careers, as well as the attitudes of their parents and guardians.**
- **9 in 10 Canadian parents, guardians and children believe that knowing how to use digital technologies, and more than 7 in 10 believe that coding skills, will be important for future careers.**
- **Many young Canadians are interested in coding and opportunities to learn, but interest varies by gender, parents' education and household income.**
- **Only a third of students say that their schools offer opportunities to learn coding and more than half say they would like to see more.**
- **Two-thirds of students say they would be interested in participating in coding activities outside of school, but only 12 per cent say they have actually had opportunities to do so.**
- **There is a strong case for offering coding education in and outside of school, especially to girls and children from lower-income and lower-education households.**

Young people in Canada are enthusiastic users of new technologies—including texting, video-streaming, video games and using social media on smartphones, tablets and computers. But while we know that Canadian youth are enthusiastic users of digital technologies, we know less about their attitudes and interest in education and careers that involve using, understanding and producing digital technologies—and especially their attitudes about coding. We also know very little about the extent to which young Canadians' opportunities to learn coding match their levels of interest.

Actua conducted a national survey to fill in the gaps. We surveyed the perspectives of 1,500 young Canadians and their parents and caregivers about:

- how important they believe coding and digital literacy will be in education and work;
- how they feel about coding, digital literacy and careers that involve these skills;
- their confidence in their coding and digital skills; and
- their sense of whether they have opportunities to develop the coding and digital skills they need to succeed in the economy and society.

Having a clearer picture of youth attitudes towards, interest in, and opportunities to develop digital skills and literacy allows us to better identify where more focused action is needed to change attitudes and to improve opportunities for key segments of the youth population.

ABOUT THIS SURVEY

Actua commissioned Abacus Data to conduct a representative, online survey of 1,500 young Canadians (aged 12 to 18) and their parents and guardians. Responses were collected between January 8 and January 11, 2018 from all regions and across key demographic characteristics, including gender, age, household income and parents' educational attainment.

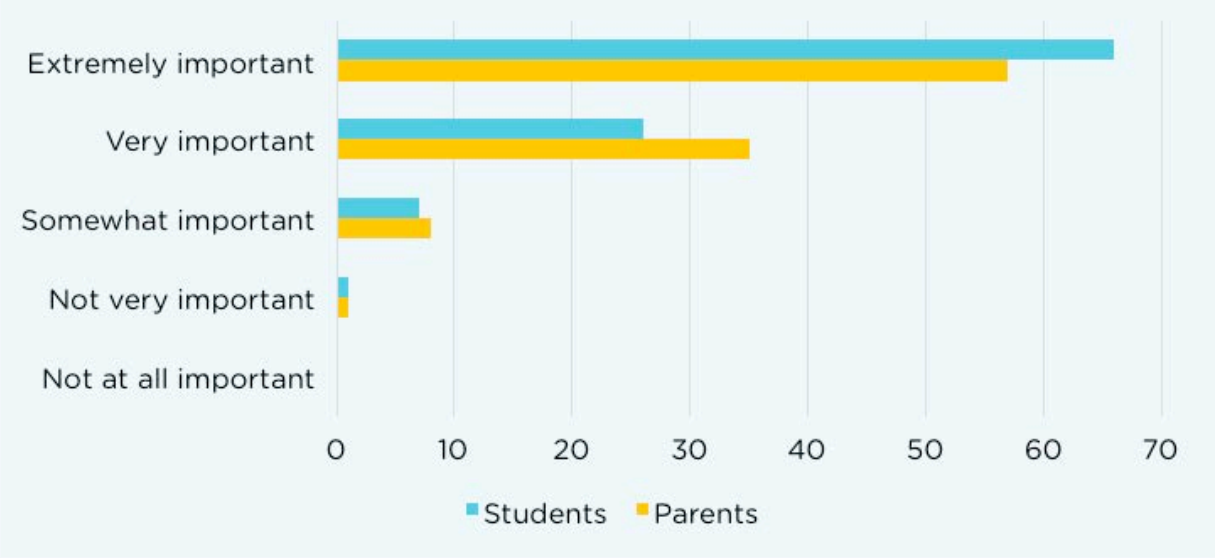
Parents and guardians were contacted by Abacus Data, asked a few demographic questions and questions about their attitudes towards coding and digital literacy. Parents were then asked for their consent to have one of their children complete additional survey questions during the same session. This allows us to link parents' and children's responses for comparison. Overall, we collected responses from 1,500 parents and guardians and 1,500 of children.

WHAT WE LEARNED

Canadians Believe Digital Technologies and Coding are Important for Future Careers

Canadian parents, guardians and children believe that digital literacy and coding will be important for future careers. Overall, **92 per cent of students and parents/guardians believe that knowing how to use digital technologies—like smart phones and computers—will be very or extremely important to future careers.** Young Canadians (66 per cent) are somewhat more likely than their parents and guardians (57 per cent) to say that knowing how to use digital technologies will be "extremely important." Given the increasing digitization of the economy and labour market, it is encouraging to see that Canadians are aware of what will be needed for success.

How important do you think knowing how to use digital technologies will be to future careers? (per cent)



Source: Actua, Coding the Future Survey.

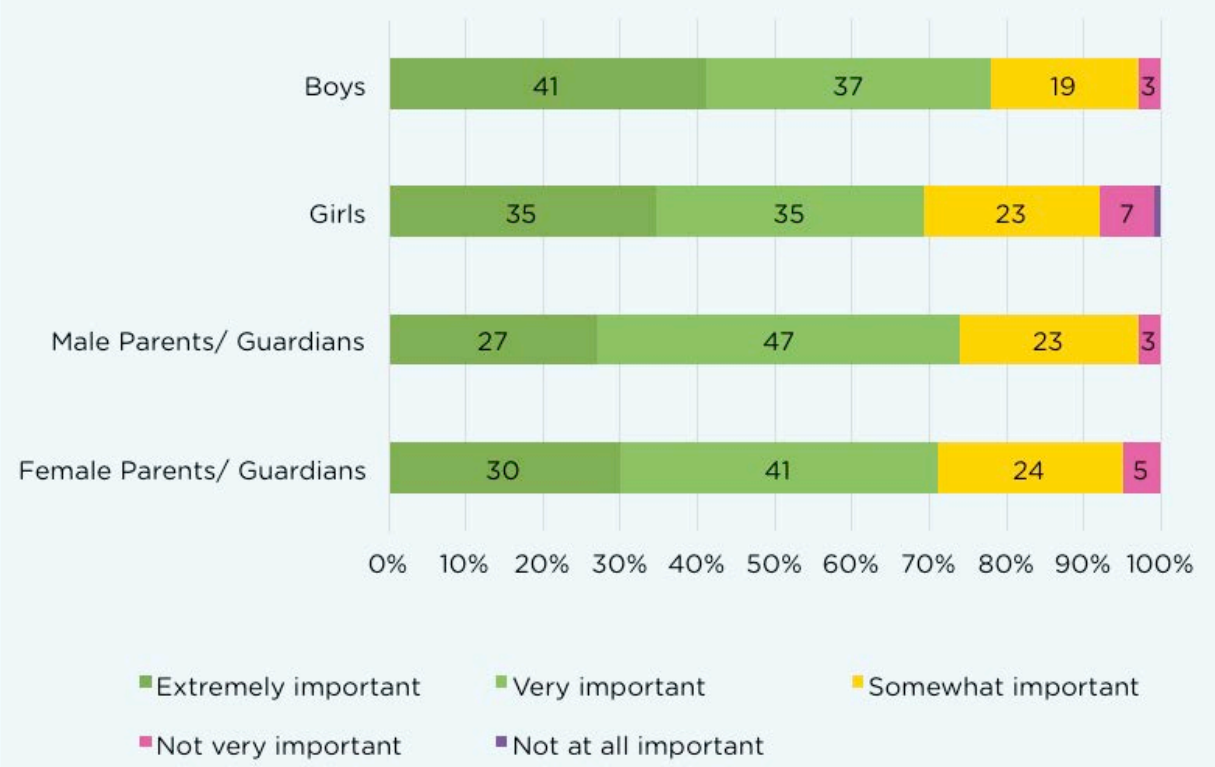
Among parents and guardians, differences in the perceived importance of digital technologies track household income and education. Parents and guardians with a post-secondary education are 13 percentage points more likely than parents and guardians with high school or less to view digital technologies as extremely important for future careers. Similarly, parents and guardians whose household income is over $100,000 are 16 percentage points more likely than parents and guardians with household incomes below $40,000 to regard digital technologies as extremely important to future careers. However, the survey revealed only small differences between children's responses when examined through the lens of parents/guardians' education and income.

Importance of digital technologies to future careers, by parents' education and household income.
(per cent responding "extremely important")

Source: Actua, Coding the Future Survey.

In terms of programing, designing and making content for digital technologies, more than 7 in 10 young Canadians and their parents/guardians believe that these skills will be very or extremely important for future careers. Boys (78 per cent) are more likely than girls (70 per cent) to say that these skills will be very or extremely important, while male (74 per cent) and female (71 per cent) parents/guardians are aligned on their importance.

How important do you think knowing how to program, design and make content for digital technologies will be for future careers?

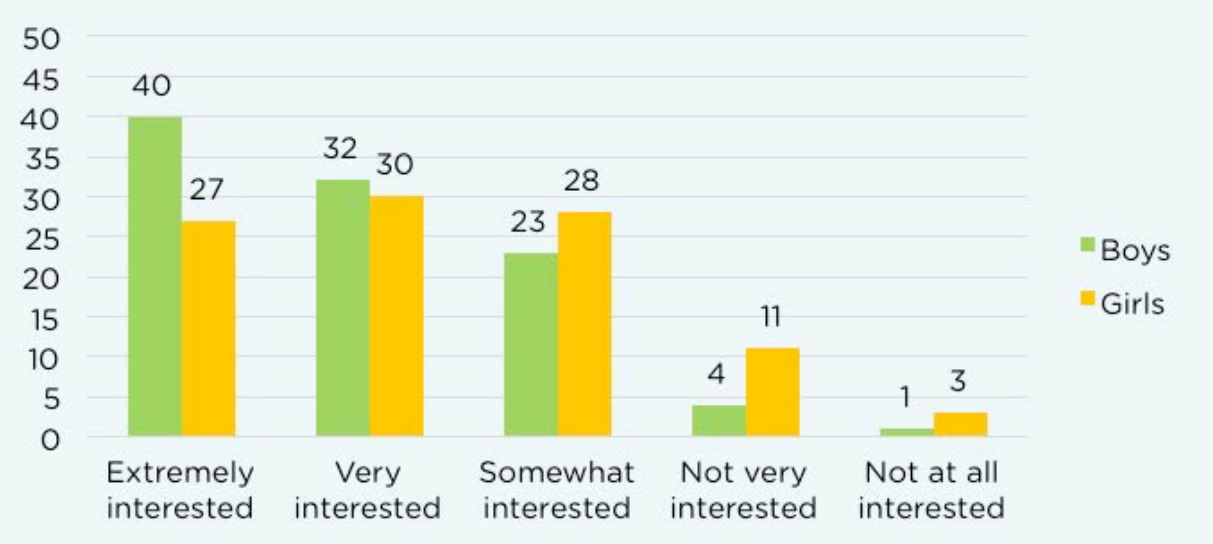


Source: Actua, Coding the Future Survey.

Interest in Careers that Involve Digital Technologies and Coding is High

Although large majorities of Canadian youth and their parents believe that coding and digital technologies will be important for future careers, not all young Canadians are interested in pursuing careers that use digital technologies or involve coding. While majorities of both boys and girls are interested in careers that involve using digital technologies, enthusiasm is much higher among boys than girls. **More than 7 in 10 boys (72 per cent), but less than 6 in 10 girls (57 per cent), say that they are very or extremely interested in careers that involve using digital technologies.** And there is a gap of 13 percentage points between boys (40 per cent) and girls (27 per cent) who say that they are "extremely interested."

How interested are you in careers that involve using digital technologies like smartphones, tablets and computers?
(per cent)

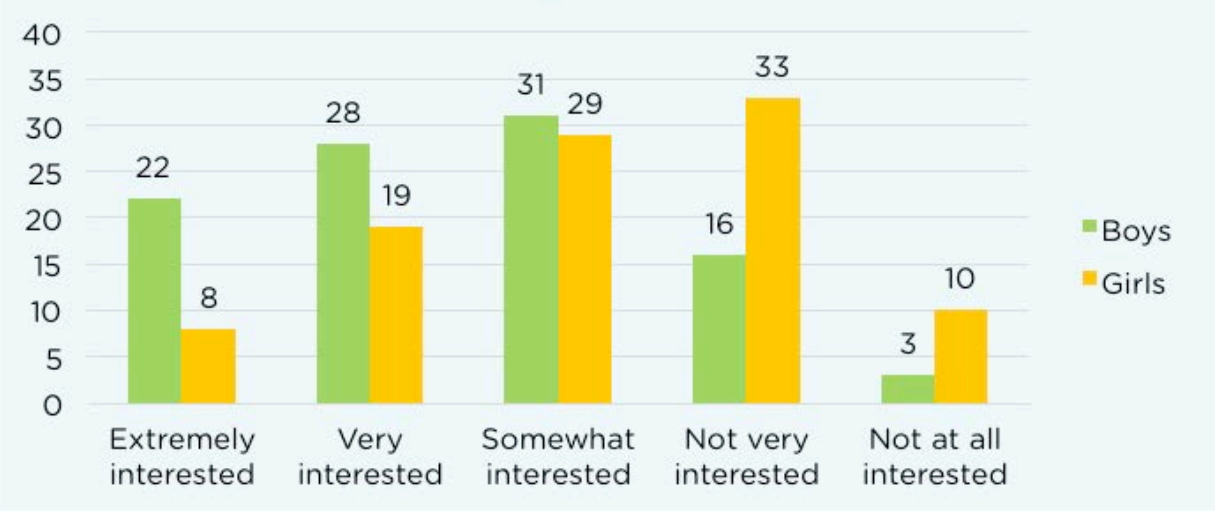


Source: Actua, Coding the Future Survey.

50% of boys surveyed are very or extremely interested in careers involving coding or programming. **Only 27% (1 in 4) girls report the same level of interest.**

There is healthy enthusiasm among young Canadian survey respondents for careers that involve coding or programming more specifically—with nearly 7 in 10 reporting that they are somewhat, very or extremely interested, and 4 in 10 saying that they are very or extremely interested. However, there is a substantial gender gap. Although half of boys (50 per cent) say that they are very or extremely interested in careers that involve coding or programming, only 1 in 4 girls (27 per cent) report the same levels of interest. And boys (22 per cent) are nearly three times more likely than girls (8 per cent) to say that they are "extremely interested" in careers that involve coding or programming.

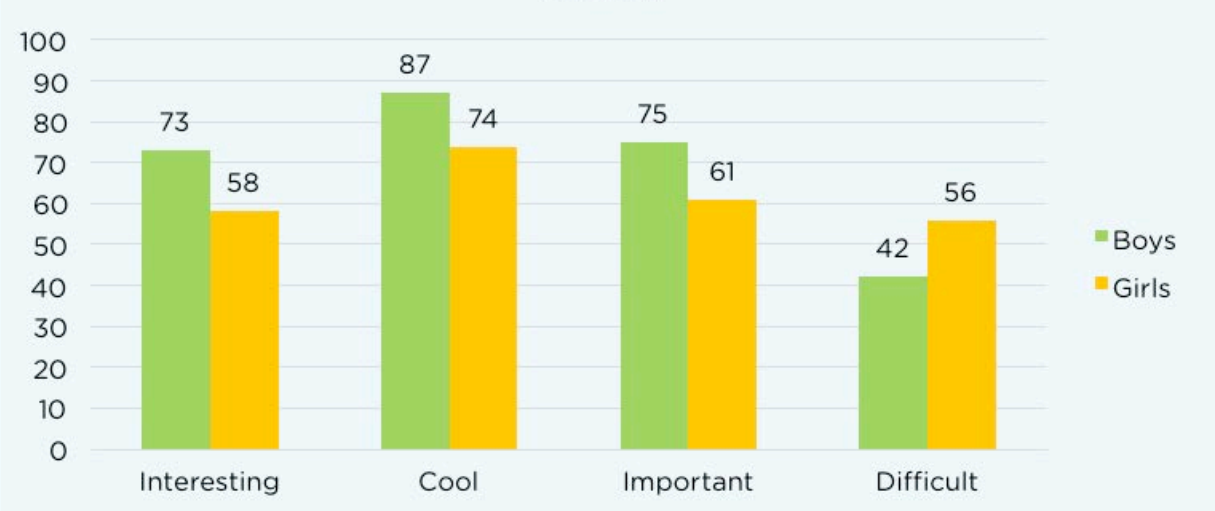
How interested are you in careers that involve coding or programming? (per cent)



Source: Actua, Coding the Future Survey.

Similarly, when asked whether a word or phrase described how they felt about coding and programming, boys exhibited more positive attitudes than girls. **Boys were 15 percentage points more likely than girls to describe coding as interesting; 13 percentage points more likely to describe it as cool; and 14 percentage points more likely to describe it as important. Girls were 14 percentage points more likely than boys to characterize coding as difficult.**

Perceptions of Coding (per cent who say a word describes their attitudes about coding)

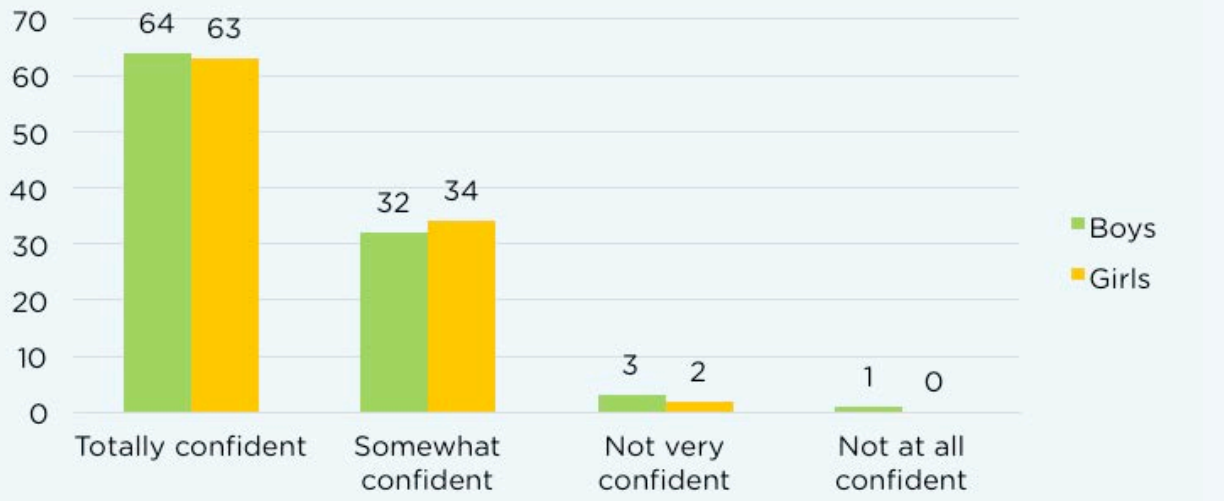


Source: Actua, Coding the Future Survey.

Boys Are More Confident Than Girls in Their Digital Literacy and Coding Skills

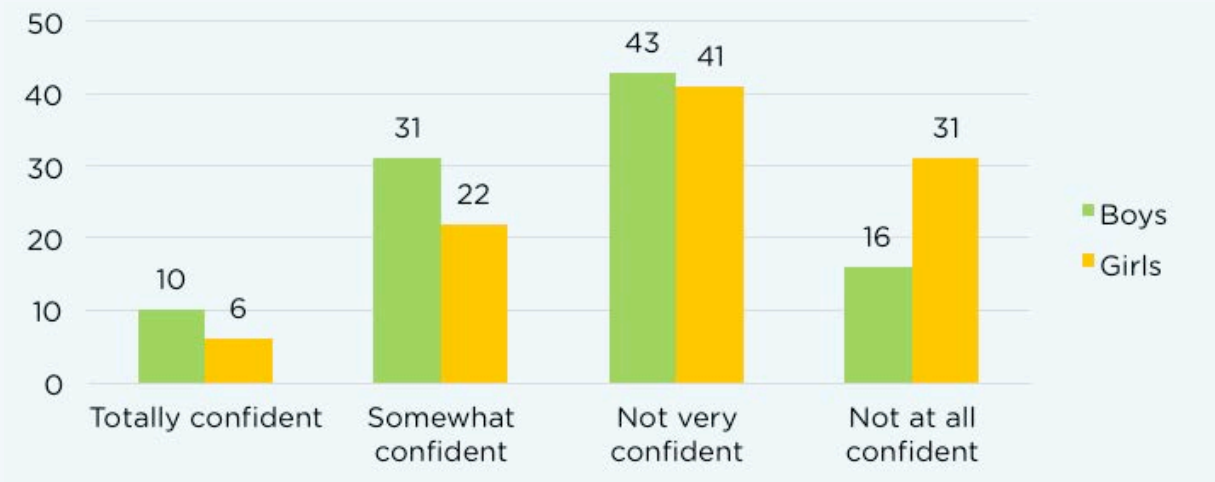
As a group, young Canadians are generally confident in their ability to use digital technologies, but less so in their coding and programming abilities. Nearly all students are at least somewhat confident (33 per cent) or totally confident (64 per cent) in their ability to use digital technologies like computers, smartphones and tablets. And there is no difference by gender. Far fewer students are somewhat confident (27 per cent) or totally confident (8 per cent) in their coding and programming skills—and here there are substantial differences between boys and girls. **While 41 per cent of boys say that they are somewhat or totally confident in their coding and programming abilities, only 28 per cent of girls exhibits these levels of confidence.**

How confident are you in your ability to use digital technologies? (per cent responding "extremely important")



Source: Actua, Coding the Future Survey.

How confident are you in your coding and programming abilities? (per cent)



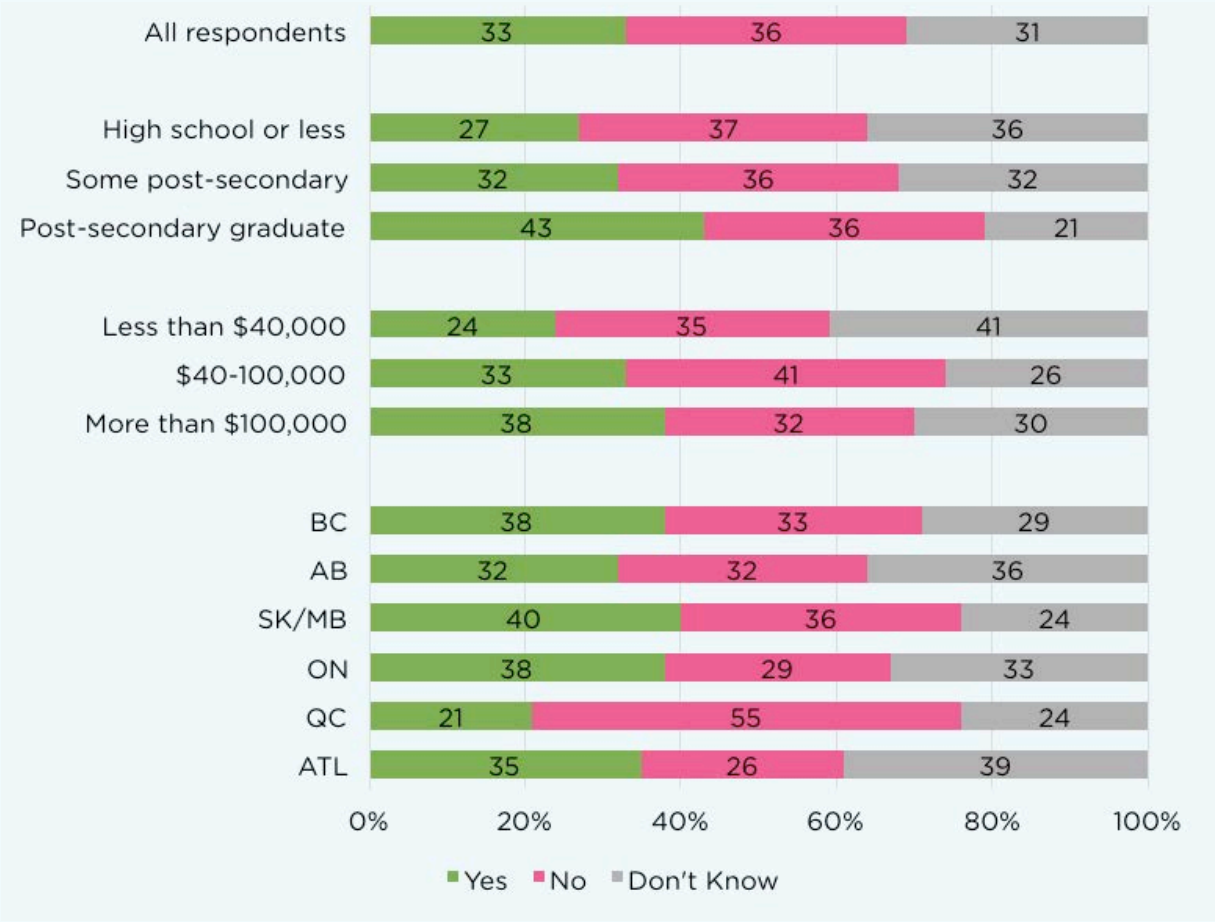
Source: Actua, Coding the Future Survey.

Note that boys' higher self-reported confidence in their coding abilities is not necessarily evidence that they are more skilled than girls. Boy respondents might have the same or similar levels of coding and programming skills as girls, but simply exhibit greater confidence in their (similar) abilities. There are likely opportunities both to bring boys' skills up to the level of their confidence, and improve girls' skills and confidence.

YOUNG CANADIANS WANT MORE OPPORTUNITIES TO LEARN CODING IN SCHOOL

Few young Canadians believe they have sufficient opportunities to learn how to code—whether in the formal school system or through informal learning opportunities outside of school. More than half say that they would like to see more.

To the best of your knowledge, does your school offer classes or units on coding or programming? (per cent)



Source: Actua, Coding the Future Survey.

More than 50% of young Canadians **want more opportunities to learn how to code.**

When asked if their schools offered classes or units on coding or programming, only a third of students said that they did—and there is substantial variation by parents' education, household income and region. Young Canadians whose parents or guardians have obtained a post-secondary education are 16 percentage points more likely to say that their schools offer coding than children whose parents or guardians have a high school education or less (43 per cent and 27 per cent, respectively). Similarly, children in households with an income over $100,000 are more likely than children in households with an income of less than $40,000 to say that their schools offer coding classes or units (38 per cent and 24 per cent, respectively).

Only 1/3 of students said their schools offered an opportunity to learn coding.

There are also large differences across regions. While 4 in 10 young people in Saskatchewan, Manitoba, Ontario and British Columbia say that their schools offer instruction in coding or programming, only 2 in 10 young people in Quebec say that they have access to coding instruction. Overall, only a minority of students in all regions and across all income and parental education groups say that their schools offer coding. More than half (54 per cent) say that they would like to see more opportunities to learn coding in school.

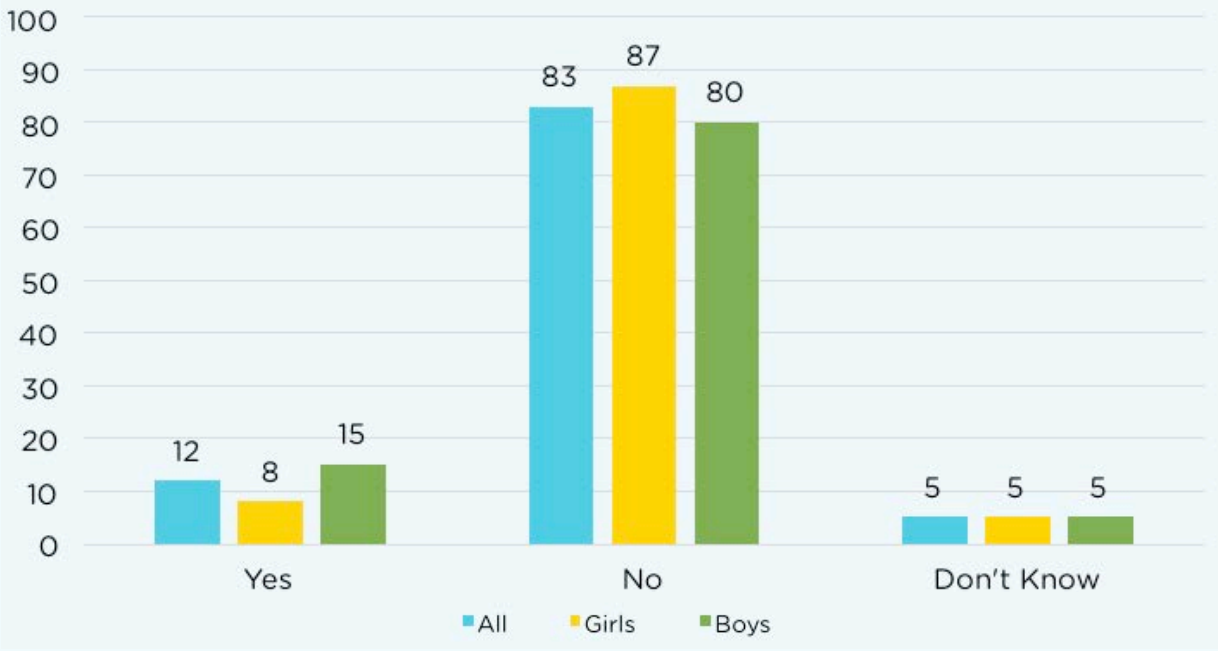
YOUNG CANADIANS ALSO WANT MORE OPPORTUNITIES TO LEARN CODING OUTSIDE SCHOOL

Given the paucity of opportunities for students to learn coding in school, some have looked for opportunities outside school—such as coding camps, workshops and other activities. But according to young Canadians, these opportunities appear to be even more scarce. Only 1 in 10 young Canadians report participating in a coding or programming activity outside of school—with boys (15 per cent) nearly twice as likely as girls (8 per cent) to have had such opportunities.

Boys were twice as likely as girls to have participated in a coding experience outside of school.

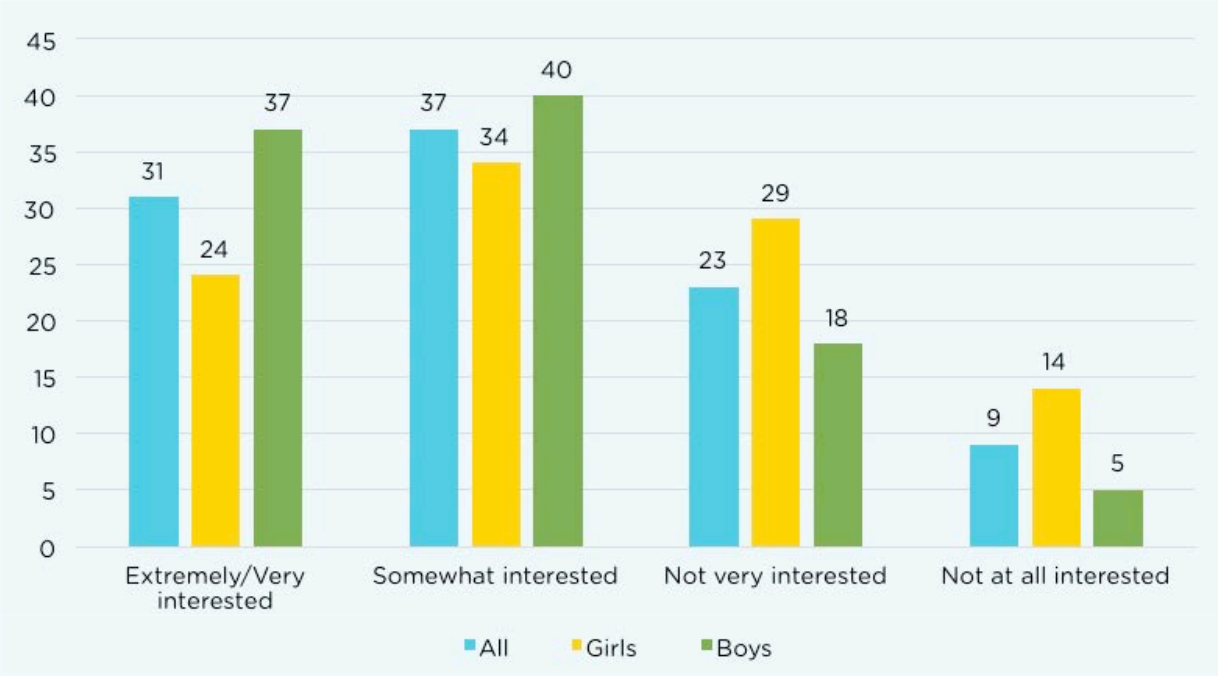
Meanwhile, nearly three times as many students say that they would be very or extremely interested in such opportunities if they were offered. One in 4 girls and more than a third of boys say that they would be very or extremely interested in opportunities to learn coding outside school. Including those who are "somewhat" interested, **more than two thirds of young Canadians would participate in a coding or programming class, camp or workshop outside of school if one were offered to them.** Demand for coding clearly outpaces supply.

Have you ever participated in a coding or programming class, camp or workshop outside school? (per cent)



Source: Actua, Coding the Future Survey.

How interested are you in participating in a coding or programming class, camp or workshop outside school if one were offered to you? (per cent)



Source: Actua, Coding the Future Survey.

CONCLUSION

Young Canadians and their parents and guardians believe that knowing how to code and use digital technologies will be important for future careers. Moreover, many young Canadians are very interested in digital technologies and coding. Yet, opportunities to learn coding—both in and outside of school—lag far behind young Canadians' interest and enthusiasm. And those opportunities appear to be less available to young Canadians from lower-income households, certain regions, and those whose parents have lower levels of education. Clearly, there is a strong case for offering more coding instruction in and outside of school—and especially to girls and young Canadians from lower-income and lower-education households.

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