

# Support K-12 Computer Science Education in New York

Computer science drives job growth and innovation throughout our economy and society. Computing occupations are the **number 1 source of all new wages in the U.S.** and make up over half of all projected new jobs in STEM fields, making Computer Science one of the most in-demand college degrees. And computing is used all around us and in virtually every field. It's foundational knowledge that all students need. But computer science is marginalized throughout education. Only 51% of U.S. high schools teach any computer science courses and only 4% of bachelor's degrees are in Computer Science. We need to improve access for all students, including groups who have traditionally been underrepresented.



**In New York, there are currently 30,643 open computing jobs with an average salary of \$105,768.**

**Yet, there were only 6,861 graduates in computer science in 2019 and only 50% of all public high schools teach a foundational computer science course.**

## Computer science in New York

- Only **14,054 exams** were taken in **AP Computer Science** by high school students in New York in 2020 (4,492 took AP CS A and 9,562 took AP CSP).
- Only 35% were taken by female students (25% for AP CS A and 40% for AP CSP); only 2,559 exams were taken by Hispanic/Latino/Latina students (512 took AP CS A and 2,047 took AP CSP); only 1,365 exams were taken by Black/African American students (207 took AP CS A and 1,158 took AP CSP); only 63 exams were taken by Native American/Alaskan students (8 took AP CS A and 55 took AP CSP); only 24 exams were taken by Native Hawaiian/Pacific Islander students (2 took AP CS A and 22 took AP CSP).
- Only **561 schools** in NY (40% of NY schools with AP programs) offered an AP Computer Science course in 2019-2020 (19% offered AP CS A and 31% offered AP CSP), which is 67 more than the previous year.
- Teacher preparation programs in New York did not graduate a single new teacher prepared to teach computer science in 2018.
- According to a representative survey from Google/Gallup, school administrators in NY support expanding computer science education opportunities: 70% of principals surveyed think CS is just as or more important than required core classes. And their biggest barrier to offering computer science is the lack of funds for hiring and training teachers.

## What can you do to support K-12 CS education in New York?

- Send a letter:
  - To your school/district asking them to expand computer science offerings at every grade level: [www.code.org/promote/letter](http://www.code.org/promote/letter)
  - To your elected officials asking them to support computer science education policy in New York: [www.votervoice.net/Code/campaigns/58463/respond](http://www.votervoice.net/Code/campaigns/58463/respond)
- Find out if your school teaches computer science or submit information about your school's offerings at [www.code.org/yourschool](http://www.code.org/yourschool).
- Visit [www.code.org/educate/3rdparty](http://www.code.org/educate/3rdparty) to find out about courses and curriculum from a variety of providers, including Code.org.

# Code.org's impact in New York

- In New York, Code.org's curriculum is used in
  - 25% of elementary schools
  - 27% of middle schools
  - 24% of high schools
- There are 39,796 teacher accounts and 1,946,495 student accounts on Code.org in New York.
- Of students in New York using Code.org curriculum last school year,
  - 49% attend high needs schools
  - 17% are in rural schools
  - 46% are female students
  - 18% are Black/African American students
  - 18% are Hispanic/Latino/Latina students
  - 1% are Native American/Alaskan students
  - 0% are Native Hawaiian/Pacific Islander students
  - 34% are white students
  - 12% are Asian students
  - 6% are students who identify as two or more races
- Code.org, its regional partner(s) Mouse, and 17 facilitators have provided professional learning in New York for
  - 2,684 teachers in CS Fundamentals (K-5)
  - 319 teachers in Exploring Computer Science or Computer Science Discoveries
  - 234 teachers in Computer Science Principles

## What can your state do to improve computer science education?

States and local school districts need to adopt a broad policy framework to provide all students with access to computer science. The following nine recommendations are a menu of best practices that states can choose from to support and expand computer science. Not all states will be in a position to adopt all of the policies. Read more about these 9 policy ideas at [https://code.org/files/Making\\_CS\\_Fundamental.pdf](https://code.org/files/Making_CS_Fundamental.pdf) and see our rubric for describing state policies at <http://bit.ly/9policiesrubric>.

**State Plan** - New York **has not** yet created a state plan for K-12 computer science. A plan that articulates the goals for computer science, strategies for accomplishing the goals, and timelines for carrying out the strategies is important for making computer science a fundamental part of a state's education system.

**K-12 Standards** - The New York State Board of Regents approved the K–12 Learning Standards for Computer Science and Digital Literacy in December 2020. The introduction to the standards describes how to address digital equity, English language learners, and students with disabilities, and standards within each grade band address concepts of equity, such as bias, accessible technology, and inclusivity.

**Funding** - A 3003/S 2503 (FY 2022), A 9503/S 7503 (FY 2021), A 2003/S 1503 (FY 2020), and S 7504/A 9504 (FY 2019) allocated \$6M annually (for an eventual total of \$30M) to expand computer science education via the Smart Start program. The grantees should incorporate strategies for increasing participation in computer science by traditionally underrepresented groups, such as female students, students with differing abilities, English language learners/Multilingual learners, and/or Black/African American, Hispanic/Latino/Latina, or Native American/Alaskan students.

**Certification** - In New York, teachers with or without existing licensure can obtain a 7–12 certification by completing one of the following: approved state teacher preparation program pathway, academic coursework, or industry experience and pedagogical coursework. Any licensed teacher who teaches computer science before September 2022 will be eligible to continue teaching computer science in the same district for ten years.

**Pre-Service Programs** - The New York State Education Department has approved teacher preparation programs leading to certification in computer science and lists these programs publicly.

**Dedicated State Position** - New York **does not yet** have dedicated computer science positions in state or local education agencies. Creating a statewide computer science leadership position within the state education agency can help expand state-level implementation of computer science education initiatives. Similar positions at the local level could support districts' expansion of course offerings and professional development.

**Require High Schools to Offer** - New York **does not yet** require that all secondary schools offer computer science. The state can support the expansion of computer science courses by adopting policies that require schools to offer a computer science course based on rigorous standards, with appropriate implementation timelines and allowing for remote and/or in-person courses.

**Count Towards Graduation** - New York passed a permissive and encouraging policy to allow computer science to count as either a mathematics or science credit for graduation, but it is a district decision.

**IHE Admission** - New York **does not yet** allow computer science to count as a core admission requirement at institutions of higher education. Admission policies that do not include rigorous computer science courses as meeting a core entrance requirement, such as in mathematics or science, discourage students from taking such courses in secondary education. State leaders can work with institutions of higher education to ensure credit and articulation policies align with secondary school graduation requirements.

## Follow us!

Join our efforts to give every student in every school the opportunity to learn computer science. Learn more at [code.org](https://code.org), or follow us on [Facebook](#) and [Twitter](#).

Launched in 2013, Code.org® is a nonprofit dedicated to expanding access to computer science, and increasing participation by women and underrepresented youth. Our vision is that every student in every school should have the opportunity to learn computer science.

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### Who can you connect with locally to talk about K-12 CS education policy?

- You can reach Code.org's policy contact for your state, Amber Mariano Davis, at [amber@code.org](mailto:amber@code.org).

Data is from the Conference Board for job demand, the Bureau of Labor Statistics for state salary and national job projections data, the College Board for AP exam data, the National Center for Education Statistics for university graduate data, the Gallup and Google research study Education Trends in the State of Computer Science in U.S. K-12 Schools for parent demand, the 2018 Computer Science Access Report for schools that offer computer science, and Code.org for its own courses, professional learning programs, and participation data.