



# Computer Science Education in Iowa

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## Introduction

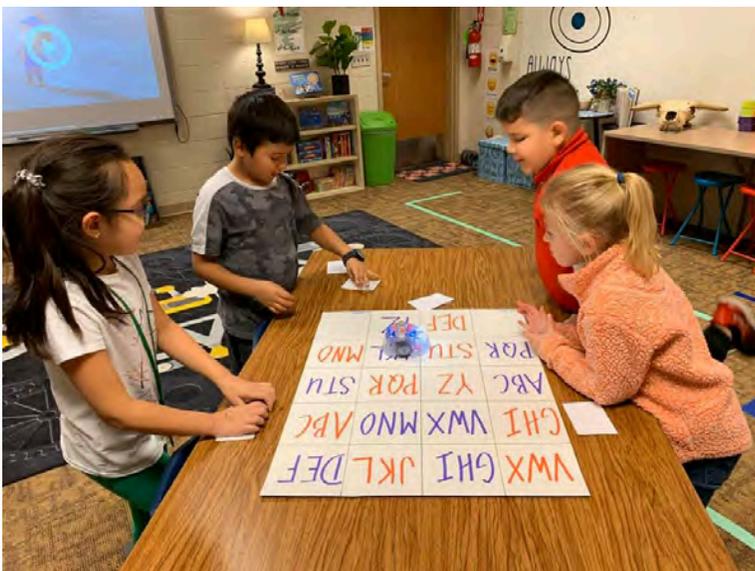
In a technology-driven economy with an exponential pace of knowledge creation, strong computer science education will prepare Iowans for the demands of a rapidly changing world. The workplace is demanding more people trained in computer science. According to Computer Science Education Week, there were 3,196 computing jobs open in Iowa in 2019. In addition, many growing industries such as agriculture and health care increasingly demand knowledge of computer science to harness technology in new ways.

Building a strong foundation in computer science will help prepare Iowa students for personal and professional success and strengthen Iowa's workforce. Iowa students need to learn how to create new technologies, rather than simply using them. Computer science is understanding how and why technologies work, exploring whether and how technology could solve real-life problems, investigating procedures, creating solutions, and learning about computing systems, programming, data, networks, and the effects on society and the individual.

The State of Iowa made a bold move in 2016 in passing Senate File 274, which supported more work to expand computer science education in Iowa. Since then, significant progress has been made:

- \$1.5 million was spent on teacher training through the Computer Science Professional Development Incentive Fund,
- New computer science standards for Iowa's students were adopted, and
- Through the Computer Science is Elementary project, 12 schools were chosen to integrate computer science into the elementary curriculum and to serve as innovative statewide models of how this can be done.

The vision of SF 274 was ambitious: "It is the goal of the General Assembly that by July 1, 2019, each accredited high school offer at least one high-quality computer science course, each accredited middle school offer instruction in exploratory computer science, and each accredited elementary school offer instruction in the basics of computer science."



But there is still more to do to achieve the vision of SF 274 because, while many schools offer computer science education, a significant share do not.

The following report describes the current K-12 school landscape of computer science. These data highlight the need for expanding computer science instruction in Iowa to ensure our students' future success.

## Computer Science Survey Results

In October 2019, the Department of Education surveyed superintendents to learn about their practices in implementing computer science in their district. Overall, 235 of 327 (71.5 percent) of Iowa districts responded to the survey. The number of respondents by question varies as districts were not required to answer all questions.

### Elementary School

Does your district offer computer science instruction in your elementary school(s)?

Response	Number	Percent
No	119	50.6
Yes	116	49.4
Total	235	100

Is the computer science instruction for the elementary school aligned to the computer science standards?

Response	Number	Percent
No	37	35.6
Yes	67	64.4
Total	104	100

Is the computer science instruction for elementary school integrated into other subjects?

Response	Number	Percent
No	36	34.6
Yes	68	65.4
Total	104	100

Is the computer science instruction at your elementary school a stand-alone course(s)?

Response	Number	Percent
No	67	64.4
Yes	37	35.6
Total	104	100

Districts provided the names of their computer science courses/content in their elementary school(s). Examples include: 21<sup>st</sup> Century Skills, Basic Coding, CS Fundamentals, Code.org and STEM/Computer Science.

### Middle School

Does your district offer computer science instruction in your middle school(s)?

Response	Number	Percent
No	85	38.6
Yes	135	61.4
Total	220	100

Is the computer science instruction for the middle school aligned to the computer science standards?

Response	Number	Percent
No	36	29.8
Yes	85	70.2
Total	121	100

Is the computer science instruction for middle school integrated into other subjects?

Response	Number	Percent
No	60	49.6
Yes	61	50.4
Total	104	100

Is the computer science instruction at your middle school a stand-alone course(s)?

Response	Number	Percent
No	23	19.0
Yes	98	81.0
Total	121	100

Districts provided the names of their computer science courses in their middle school(s). Examples include: Technology, Engineering/Coding, CTE – Introduction to Computer Science, Coding, Computer Programming, and Tech, Digital Production, and STEM, Robotics, and Digital Citizenship.

### High School

Is the computer science instruction for the high school aligned to the computer science standards?

Response	Number	Percent
No	87	43.1
Yes	115	56.9
Total	202	100

Is the computer science instruction for high school integrated into other subjects?

Response	Number	Percent
No	60	49.6
Yes	61	50.4
Total	104	100

### District Computer Science Practices

Does your district have a comprehensive K-12 computer science program with an intentional progression?

Response	Number	Percent
No	174	86.1
Yes	28	13.9
Total	202	100

Does your district plan to implement a comprehensive K-12 computer science program?

Response	Number	Percent
No	96	56.8
Yes	73	43.2
Total	169	100

What are your biggest needs in the area of computer science education (check all that apply)?

Need Area	Number	Percent
Instructional resources	26	13.3
Professional Learning	42	21.4
Qualified Staff	84	42.9
Other	44	22.5

Districts provided a written response for their other areas of need. Responses include the following: funding, all of the above, time in the school day/schedule, instructor licensing restrictions and re-align courses.

Does your district have any policies or procedure in place to reach underrepresented groups to enroll in computer science?

Response	Number	Percent
No	159	81.1
Yes	37	18.9
Total	169	100

## High School Course Taking Patterns in Computer Science

The Department of Education collects information about the courses students take each academic year. In 2018-19, there were 303 school districts with a high school. Below are the number of districts with students taking computer science courses. In total, there were 7,811 course enrollments in computer science during the 2018-19 school year.

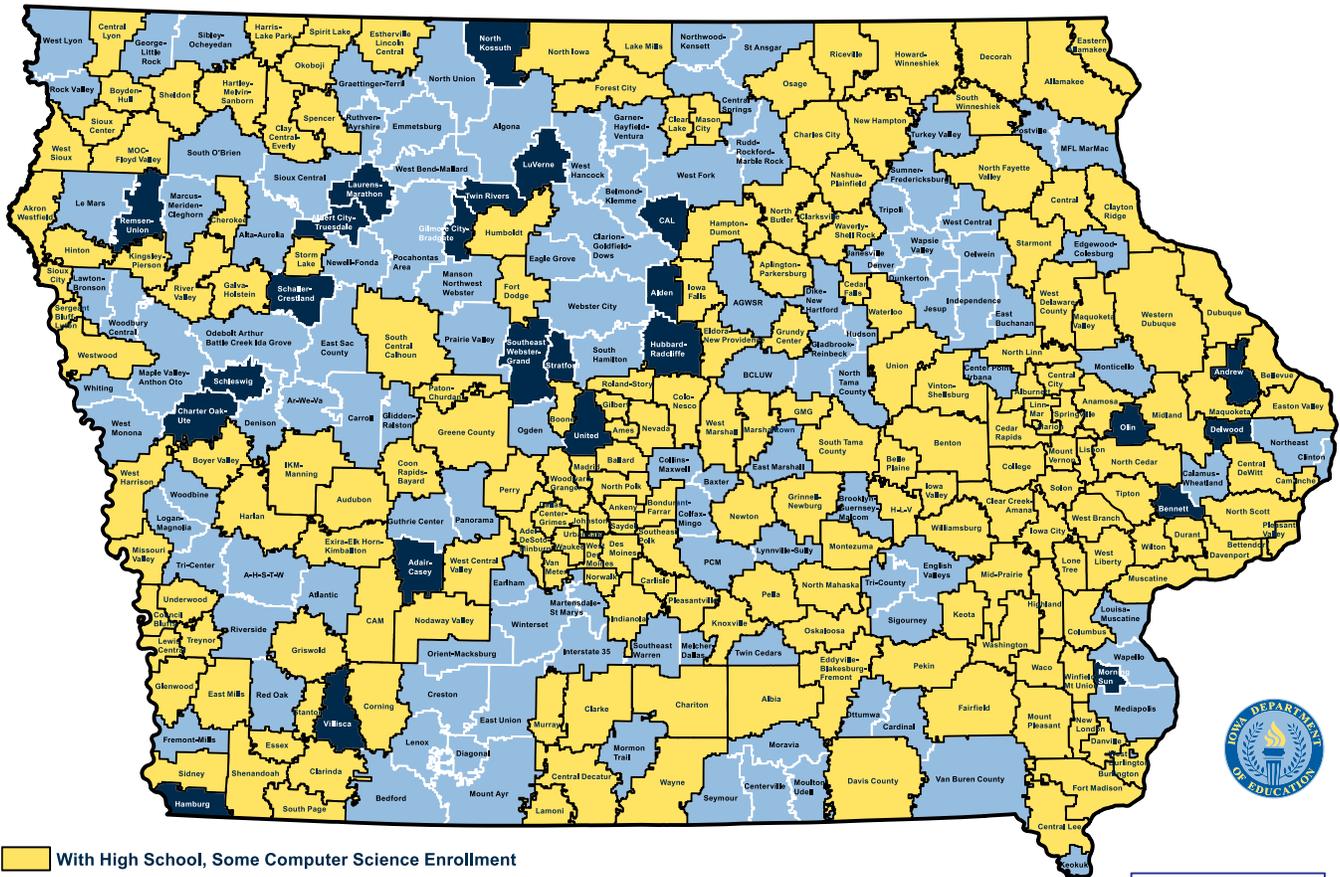
### 2018-19 Computer Science Courses

Response	Number of Districts	Percent
No Students Enrolled in Computer Science	116	38.3
Students Enrolled in Computer Science	187	61.7
Total	303	100

Computer Science is understanding how and why technologies work, exploring whether and how technology could solve real-life problems, investigating procedures, creating solutions, and learning about computing systems, programming, data, networks, and the effects on society and the individual. Computer Science is learning how to create new technologies, rather than simply using them.

Visit the Department website for a list of [Computer Science courses](#) which meet this definition.

# High School Computer Science Enrollment - 2018-19



Division of Learning and Results  
 Map #4202  
 January 10, 2020

- With High School, Some Computer Science Enrollment
- With High School, No Computer Science Enrollment
- Without High School