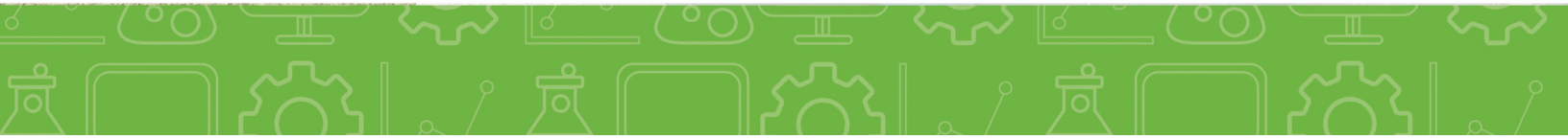
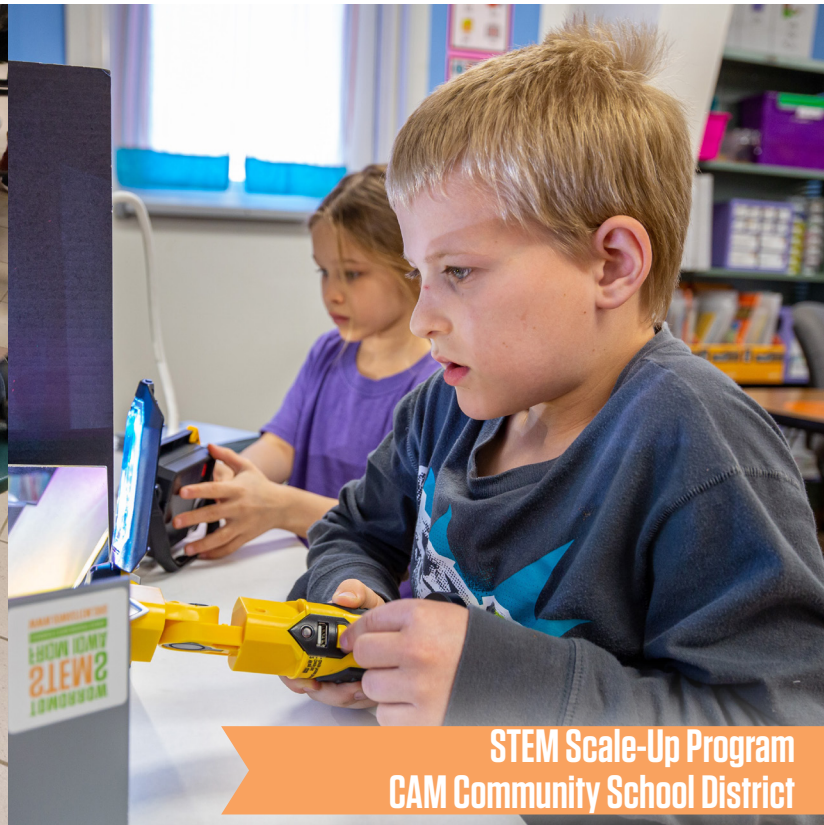


Iowa STEM Evaluation Report

2020-2021



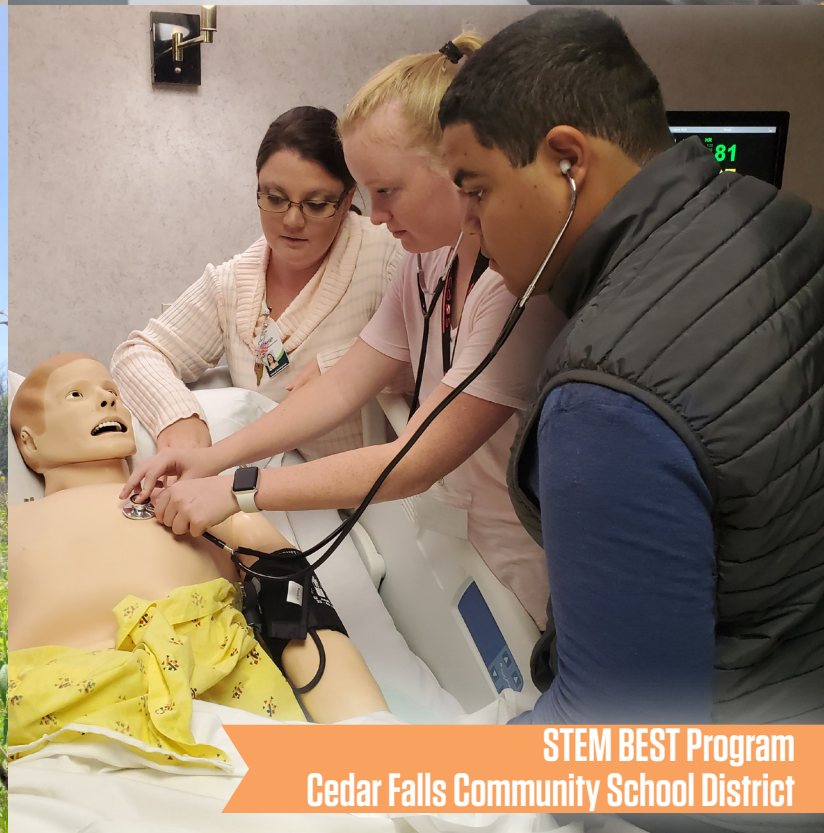
Computer Science is Elementary
Storm Lake Community School District



STEM Scale-Up Program
CAM Community School District



STEM Teacher Externships Program
Pleasant Valley Community School District



STEM BEST Program
Cedar Falls Community School District

IOWA STEM INDICATORS

These indicators are provided by the external evaluation team consisting of University of Northern Iowa's Center for Social and Behavioral Research, Iowa State University's Research Institute for Studies in Education, The University of Iowa's Iowa Testing Programs and Center for Evaluation and Assessment.



2020-2021 HIGHLIGHTS

STEM Education

- Minority students enrolled in STEM coursework increased by +6.9 percentage points in mathematics, +6.8 in science and +1.8 in technology in the last eight years.
- From 2012-13 to 2019-20, the number of certificates and diplomas at 2-year institutions increased by 5%, at 4-year public institution by 50%, and at 4-year private institutions by 20%.
- Upon graduating and enrolling in an Iowa public university, students who participated in the STEM Scale-Up Program were 18 percentage points more likely to major in STEM than their peers.¹

STEM Careers

- 64% of collegians who took part in a STEM BEST Program are in STEM programs.² That's more than twice the national rate.³
- The majority of Iowa's employment (58%), labor output (71%) and state gross domestic product (65%) is supported by STEM.⁴
- In 2020, individuals in STEM occupations earned on average \$70,250 in mean salaries compared to all occupations overall earning \$47,334 in mean salaries.

STEM Interest

- Educators who took part in the STEM Scale-Up Program increased their confidence to teach STEM topics (93%) and are better prepared to answer students' STEM-related questions (90%).
- 95% of surveyed Iowans said STEM education should be a priority in their local school district. Only 58% said STEM education actually is a priority.
- The percentage of students saying they wish to live and work in Iowa upon completing their studies is 8 percentage points higher for those who took part in the STEM Scale-Up Program.

1- Source: *STEM Scale-Up Participants Report produced by Iowa's State Longitudinal Data System (2021)*

2- Source: *TouchPoints Where Are They Now Report (2022)*

3- Source: https://nces.ed.gov/programs/raceindicators/indicator_reg.asp (2019)

4- Source: *"STEM and the American Workforce: An Inclusive Analysis of The Jobs, GDP and Output Powered By Science and Engineering."* (2020)

The STEM Scale-Up Program provides high-quality STEM education programs to PreK-12 youth in school and out of school along with training for educators to implement effectively.

A total of 1,506 educators delivered at least one of thirteen world class STEM Scale-Up Programs in 2020–2021.

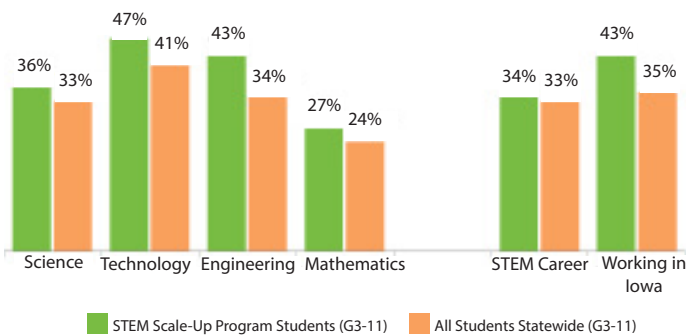
An estimated 71,913 PreK–12 youth participated in one or more STEM Scale-Up Programs in 2020–2021.

Since 2012, more than one million PreK–12 Iowans have participated in STEM Scale-Up Programming.

Of educators taking part in STEM Scale-Up Programming, 93% agreed or strongly agreed they now have more confidence to teach STEM topics and 94% have increased their STEM knowledge.

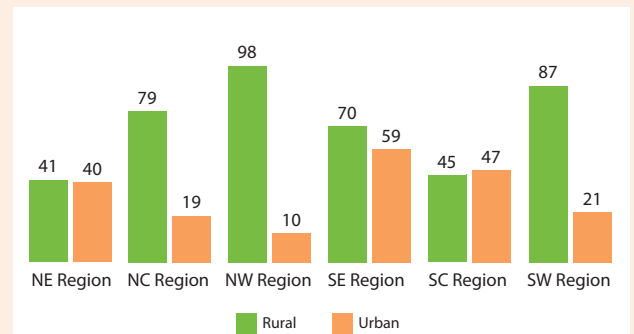
More than half the total annual legislative appropriation to Iowa STEM is devoted to the STEM Scale-Up Program.

STUDENT INTEREST IN STEM



A higher proportion of students who participated in a STEM Scale-Up Program said they were “very interested” in all STEM subjects and in pursuing a STEM career compared to all students statewide.

RURAL AND URBAN AWARDS



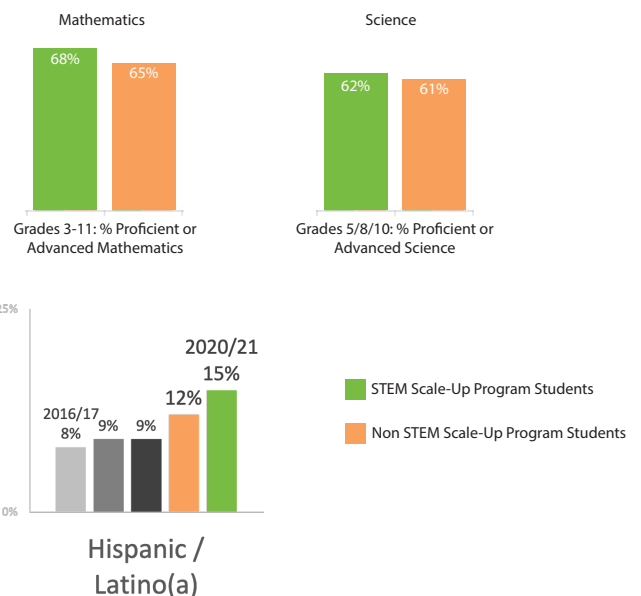
Urban communities include 49 communities in Iowa listed as “urbanized areas” by the U.S. Census Bureau and communities with a population of 20,000 or greater.

STUDENT ACHIEVEMENT AT PROFICIENT OR ADVANCED LEVEL


Students who participated in the STEM Scale-Up Program performed better on statewide tests than students who did not receive STEM Scale-Up Programming. This is consistent among students of all gender and race subgroups.

In 2020-2021, STEM Scale-Up Program participants in grades 3 through 11 scored an average of 3 points higher in mathematics and 1 point higher in science.


In the last five years, the STEM Scale-Up Program has increased participation among students who are Hispanic/Latino(a) from 8% to 15%.



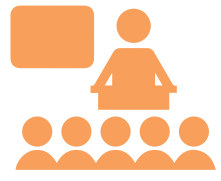
School+business partnerships that provide career-linked learning experiences for students.



Twelve new STEM BEST Program partnerships were established in 2020–2021, involving 12 school districts and 72 community partners. A total of 73 STEM BEST models have been established between 2014-2021.

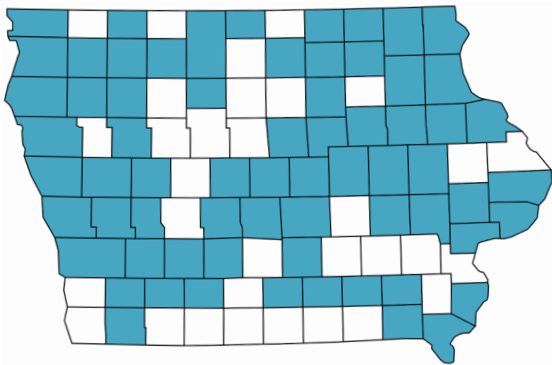


Estimated cost-share dollars contributed in 2020-2021 collectively totals more than \$358,000.



73% of all STEM BEST Program models are serving rural Iowa school districts.

An additional 1,907 students participated in STEM BEST Program from newly established models in 2020-2021.







■ = STEM BEST® model located in the county

67% of Iowa's counties have a STEM BEST® Program.

STEM BEST Program Partnerships



-  **455 Business/Industry Partners** have worked with STEM BEST® models between 2014-2021.
-  **112 Government Partners** have worked with STEM BEST® models between 2014-2021.
-  **60 Education Partners** have worked with STEM BEST® models between 2014-2021.
-  **38 Non-Profit Partners** have worked with STEM BEST® models between 2014-2021.

STEM BEST Program Examples



LEWIS CENTRAL COMMUNITY SCHOOL DISTRICT: This after school STEM BEST Program model engages students in looking at waste and recycling through a different lens. Students utilize recycled plastics and create and design custom made products.



NORTH FAYETTE VALLEY COMMUNITY SCHOOL DISTRICT: The STEM BEST Program model created an off campus space to facilitate student-led projects that were proposed by more than a dozen community partners, including industrial technology, computer technology, business knowledge, communications and media technology, and professionalism.



PELLA COMMUNITY SCHOOL DISTRICT: The STEM BEST Program model assembled classroom teachers and industry professionals to build a STEM curriculum for classrooms in grades 3-12 in the form of demonstration modules and web-based simulations.

Connecting classrooms to careers through the immersion of secondary STEM educators engaged in workplace settings for six weeks in the summer.

Total STEM Teacher Externships 2009 to 2021

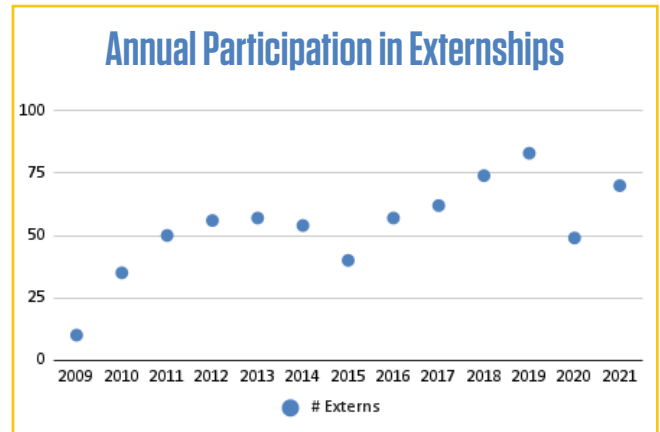
697

Total Workplace Partners 2009 to 2021

203

Total approximate cost share by workplace hosts from 2009 to 2021

\$1,056,600
(\$102,000 this year)



2021 STEM Teacher Externs indicated more confidence with the following aspects of teaching:

- Ability to advise students about job opportunities in their subject area(s)
- Ability to prepare students for the expectations they will encounter in the workplace
- Mastery of subject-area content
- Knowledge about the application of their subject(s) in the workplace
- Ability to use problem or project-based instruction

Of 2021 employers surveyed, most monetized the value of the project(s) completed by the STEM Teacher Extern between \$2,501-\$5,000.

Computer Science is Elementary

12 high-poverty elementary schools in Iowa serve as showcases of outstanding computer science education and implement computer science cross-curricularly.

60% of the schools surveyed reached all students with computer science education at their school.

▲ Student participation increased in most elementary schools between 2019-2020 and 2020-2021.

220+ teachers were reported as providing computer science instruction.

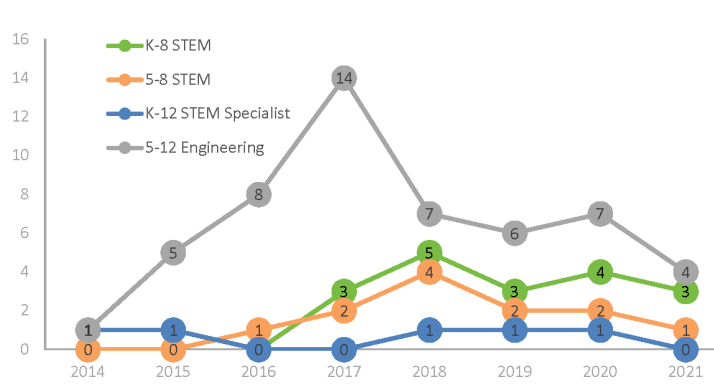
4,700+ students were impacted by Computer Science is Elementary.

Computer Science is Elementary project participants indicated the following areas of impact:

- 🖥️ **Schoolwide fondness** of computer science education
- 🖥️ **Increased computer science education** in classrooms
- 🖥️ **Increased school building engagement** for computer science projects
- 🖥️ **Positive impact on student energy** towards learning
- 🖥️ **Expanded and enhanced** curricular offerings

STEM TEACHER ENDORSEMENTS

Grades K-8 and 5-8 STEM teaching endorsements are now offered at eight institutions in Iowa: Buena Vista University, Central College, Drake University, Dordt University, Grand View University, Morningside College, St. Ambrose University and the University of Northern Iowa. A total of 58 Iowa educators are endorsed in STEM and 86 in engineering.



Since 2014, **262** STEM endorsements have been granted:

- **20** for K-8 STEM
- **12** for 5-8 STEM
- **5** for K-12 STEM Specialist
- **52** for 5-12 Engineering

In 2021, 8 STEM endorsements were granted:

- **3** for K-8 STEM
- **1** for 5-8 STEM
- **4** for 5-12 Engineering

MICROSOFT IMAGINE ACADEMY

A total of **15,088** Microsoft Imagine Academy student certifications have been awarded since 2014.

A total of **1,022** certifications were awarded in 2020-2021.

Plus, **32,032** student exams.

www.iowaSTEM.org/MITA

438 ▶ Microsoft Technology Associate certifications earned since 2014.

265 ▶ teachers are participating.

14 ▶ Microsoft Fundamentals certifications.

150 ▶ high schools and community colleges are participating.

STEM COMMUNICATIONS

SOCIAL MEDIA



Twitter: **3,960** followers
Up **2.5%** from last year



Facebook: **1,654** likes
Up **8%** from last year



Instagram: **661** followers
Up **26%** from last year



YouTube: **6,898** views
55,900 impressions
Up **11%** from last year



Newsletter: **7,309** readers
Up **2.3%** from last year



LinkedIn: **518** followers
Up **12%** from last year

Other social media includes Pinterest.

WEBSITE

www.iowaSTEM.org

99,042 page views
Down **4%** from last year

35,142 new visitors
Up **10%** from last year

53,352 sessions
Up **3%** from last year



141 countries



52 states and territories



285 Iowa cities

MEDIA COVERAGE

Total public relations efforts resulted in **121 placements** (down 38% from last year) in newspaper, television and radio outlets over the course of the year in local, statewide and national media coverage, appearing before potentially **30 million** eyes (down 48% from last year.) Media placement and coverage reflects the disruption caused by the pandemic.

30%

of media coverage included a specific STEM Council example or story in the state. Down 3% from last year.

98%

of media coverage mentioned the efforts of the Iowa Governor's STEM Advisory Council. Down 1% from last year.

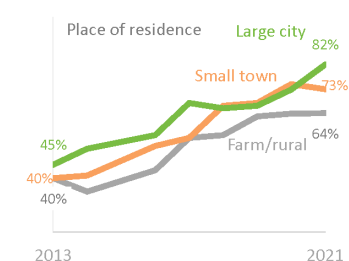
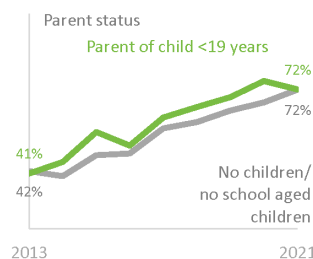
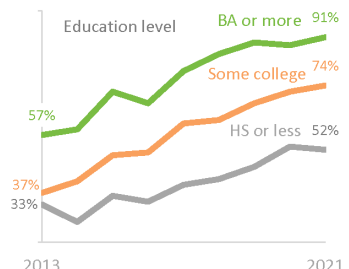
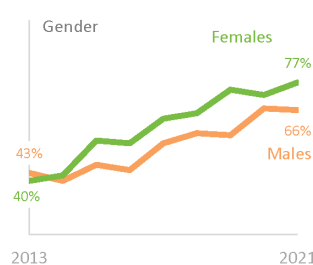
PUBLIC ATTITUDES AND AWARENESS OF STEM

Nearly three-fourths of Iowans (72%) had heard of the acronym STEM. This is an increase of 46 percentage points compared to 2013.

Only 58% said STEM education actually is a priority and another 12% said they didn't know if STEM education was a priority in their local school district.

86% of Iowans support state efforts to devote resources and develop initiatives to promote STEM education in Iowa.

Approximately 5 out of 10 Iowans agreed the quality of STEM education in Iowa is high.



In 2021, 95% of Iowans agreed that STEM education should be a priority in their local school district.

IOWA'S STEM NETWORK

CORPORATE PARTNERS AND INVESTMENTS

\$1.1 MIL

A total of **\$1,109,706** in grants, corporate partner gifts and cost-sharing by other STEM partners was invested in Iowa STEM for 2020–2021.

\$192K

22 corporate partners contributed **\$192,430** to Iowa STEM in 2020–2021. Investors are listed at www.iowaSTEM.org/corporate-partners.

\$45K

A total of **\$45,370** in grants from the Iowa Department of Natural Resources supported Iowa STEM in 2020–2021.

\$871K

Cost-sharing partners, including Strategic America, Regional STEM Hub Institutions, STEM Teacher Externship workplace hosts, STEM BEST partners and STEM Scale-Up Program providers contributed **\$871,906** to Iowa STEM in 2020–2021.

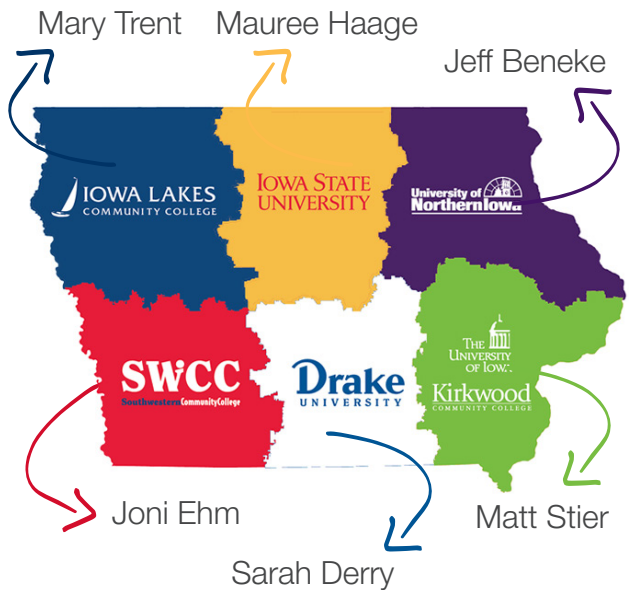
REGIONAL STEM

Regional STEM managers facilitated 13 STEM Scale-Up Programs that impacted 71,913 PreK–12 youth and 1,506 educators in 2020–2021.

Managers held a total of 42 community STEM Festivals across Iowa, engaging more than 22,054 Iowans in 2020–2021.

Managers made a total of 1,325 new connections with businesses, workforce development, economic development and formal/informal education leaders.

Collectively, Iowa's Regional STEM managers have 18,171 newsletter subscribers, 5,991 Twitter followers and 3,002 Facebook likes.



42 have received the Iowa STEM Teacher Award between 2015-2021 + Most awardees believe the recognition has a lasting effect on students', parents' and colleagues' confidence in their teaching



25 programs have earned the Seal of Approval between 2015-2021 + Most report that the recognition validates their program or event and helps in grant proposals or other source funding