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Iowa's Statewide STEM Effort: Building Partnerships

Presented by: Carrie Rankin, Managing Director, Iowa Governor's STEM Advisory Council

STEM in Iowa

- Iowa's high-demand occupations for the period of 2012-2022 are in the STEM fields*
 - Medical/agricultural science, financial systems, advanced manufacturing and information technology
- In 2015-2016, there were an estimated 12,444 vacancies in STEM jobs statewide**
- Iowa's STEM jobs will grow 10% between 2017 and 2027, with median earnings in Iowa STEM jobs at \$32.98/hour **

* Source: Iowa's Workforce and the Economy, IWD, 2015

** Source: Iowa's Workforce Needs Assessment, IWD, 2017

** Source: Vital Signs (Iowa), Economic Modeling Specialists International, 2017

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Who is leading Iowa STEM efforts?

The STEM Advisory Council is a collaboration bipartisan Iowa legislators, educators, business, nonprofits, higher education, students and families

Co-Chairs

- Governor Kim Reynolds
- Accumold President & CEO, Mr. Roger Hargens

47 Council Members

90 Regional Board members

Over 250 contributors statewide

Over 400,000 youth served

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Iowa STEM Regional Network



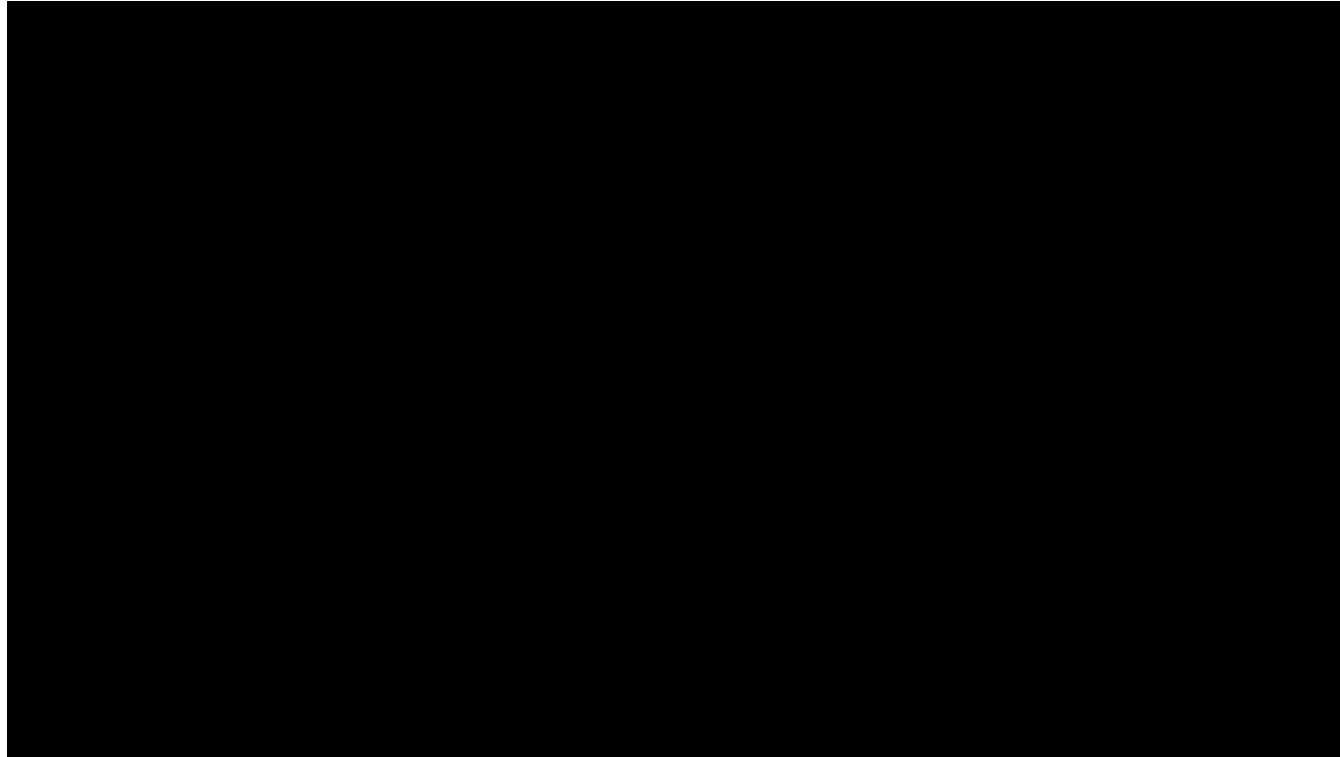
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STEM Educator + Business Opportunities

- Iowa STEM Scale-Up Programs
- Iowa STEM Teacher Externships
- Iowa STEM Businesses Engaging Students and Teachers (STEM BEST®)
- Exhibit at community STEM Festivals
- Volunteer on STEM Council or Regional Board
- I.O.W.A STEM Teacher Award – Sponsored by Kemin Industries

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What is Iowa STEM Scale-Up?



[Iowa STEM Scale-Up Video Link](#)

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Iowa STEM Scale-Up Basics

- Exemplary STEM programs, vetted both nationally and at the state level, chosen and scaled throughout Iowa
- Provide high-quality STEM education offerings to schools, afterschool programs and other settings for grades preK-12
- Programs range from building robots and coding programs to conducting agricultural field experiences and learning about STEM careers, while developing school-business-community partnerships and sustainability.

2018-2019 STEM Scale-Up Menu

- Curriculum for Agricultural Science Education (CASE): Animal and Plant Biotech & Environmental Sci Issues
- Computer Science Principles
- Engineering Everywhere
- Making STEM Connections
- Pint Size Science
- PowerTeaching Math
- Project Lead the Way (PLTW): Computer Science for Innovators and Makers
- Ramps and Pathways
- STEM in Action

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Iowa STEM Scale-Up Basics

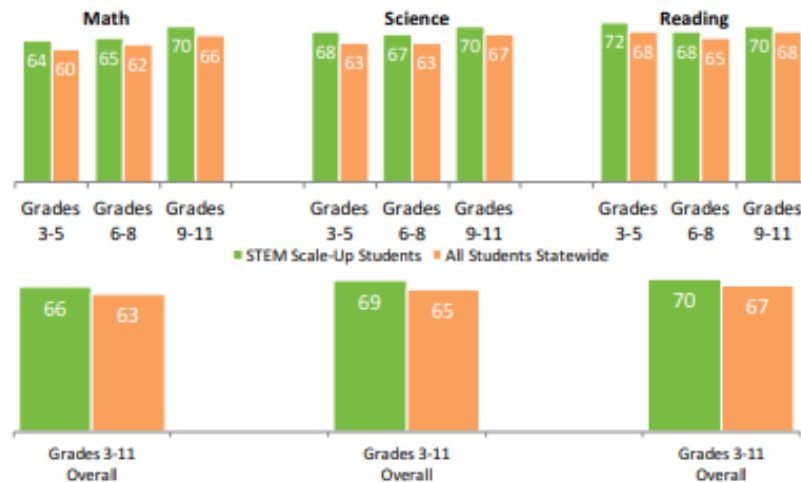
- Programs demonstrate success in increasing student interest, achievement and awareness in STEM across all demographics

STEM Scale-Up participants scored an average of 3 points higher

in National Percentile Rank in math and reading, and 4 points higher in science, compared to all students statewide.

For minority students, the difference is greater:

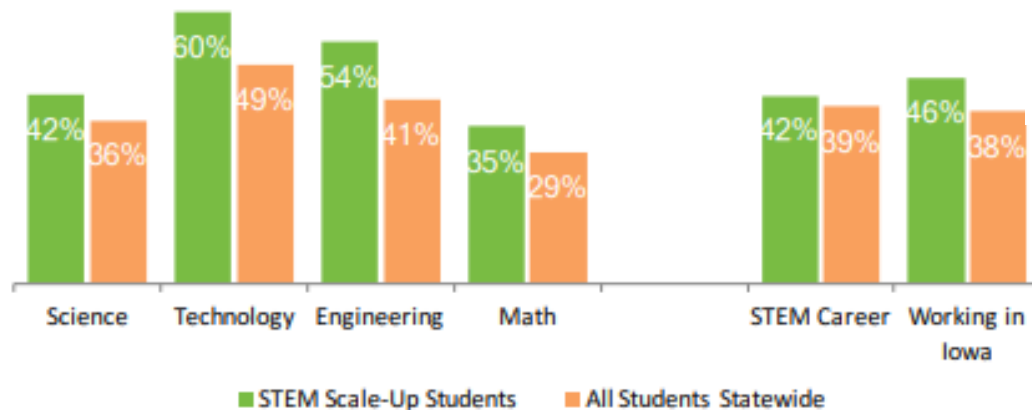
Scale-Up participants scored an average of 6 points higher in National Percentile Rank in math, 7 points higher in science and 6 points higher in reading compared to minority students who did not participate.



Iowa STEM Scale-Up Basics

- Programs demonstrate success in increasing student interest, achievement and awareness in STEM

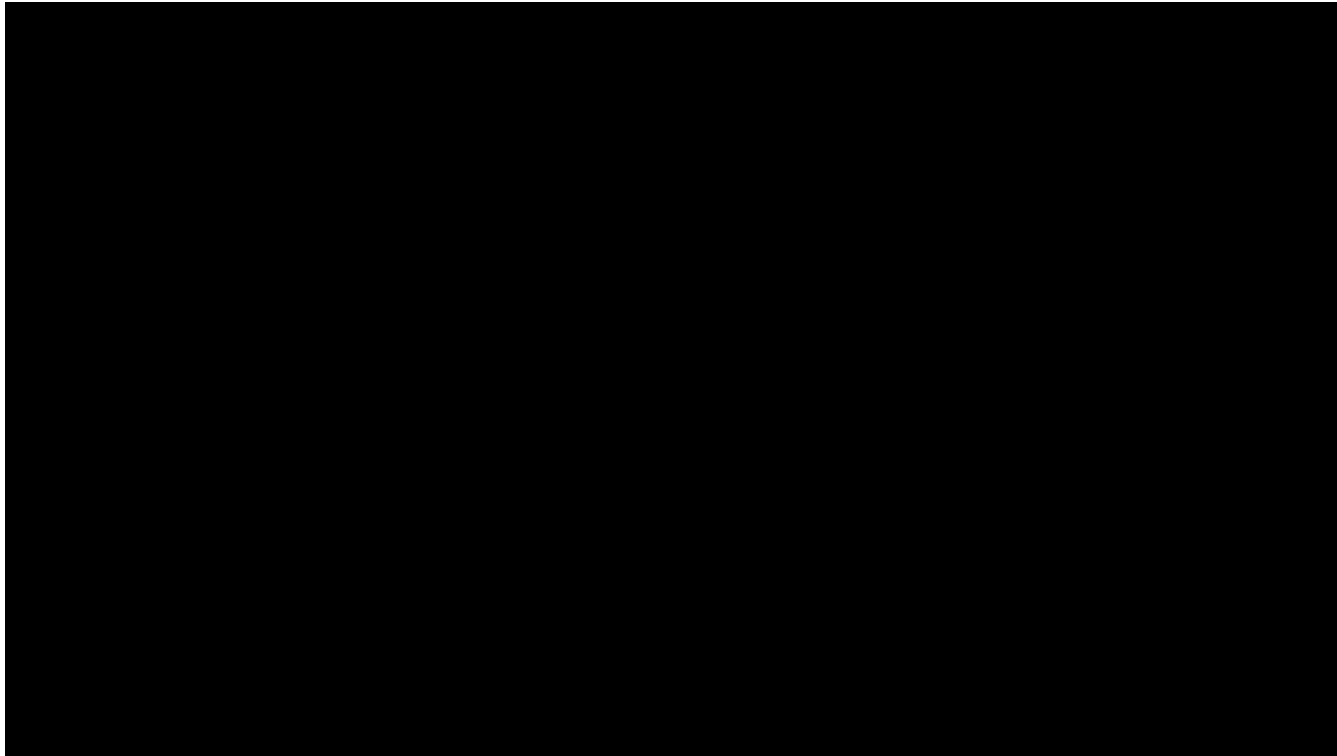
STUDENT INTEREST IN STEM



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

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What are Iowa STEM Externships?



[Monsanto Video Link](#)

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Iowa STEM Teacher Externships Basics

- Build bridges between Iowa workplaces and Iowa STEM educators
- Creates lasting partnership between business/industry and local schools
- Match educated and skilled math, science and technology teachers to a workplace's needs for six weeks in the summer
- Support the local workforce by providing students STEM career information about workplaces in their communities



Making it Happen – Workplace Hosts

Iowa STEM Externship Process

- Business Hosts complete [Summer Commitment Form](#)
- Teachers complete [STEM teacher Externship Application](#)
- Teachers are carefully selected for local hosts based on interest and skills (within 30 mile radius of host site). Hosts have opportunity to interview teacher candidates.
- Iowa STEM Program Directors & Mentors coordinate initial meeting between teacher/host to make final decision to proceed with summer Externship
- Six week Externships typically begin in first two weeks of June, with group orientation, and finish with Externship Forum in early August

Making it Happen – Workplace Hosts

- Total Cost per Extern = \$6,000
 - Host Cost-Share of 50% or higher requested (teacher stipend of \$150/day for up to 30 days).
- Teachers receive 1 hour graduate credit via University of Northern Iowa
- Continual guidance throughout the summer by Iowa STEM Program Directors and Mentors
- Teachers incorporate Externship experiences into classroom
- Evaluation of Externship experience and impact via teacher and student surveys completed

Rockwell Collins



Alene Vandermyde, Science teacher,
Davenport Central High School

Alene researched and designed display technologies that will be applied in future applications and the equipment used to create those innovations. Rockwell Collins supplies the aircraft electronics in cockpits of nearly every airline in the world and its communications equipment account for close to 70% of U.S. and allied military airborne communications.

“Sometimes, teaching how to work in groups or communicating with others, gets placed on the back burner because I was supposed to have taken that quiz a week ago. As I walk through my experience here at Rockwell Collins, I am learning just how important it is to work successfully in a collaborative environment and how important it is to ask for help when you need it.”

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THE FACTS:



of Workplace Hosts agree or strongly agree that “Teacher Externs provided significant contributions.”

Recent Workplace Hosts estimate anywhere from
\$30,000 to
\$250,000
as a range of the monetary value of a Teacher Extern’s contributions.



of Workplace Hosts agree or strongly agree that “Teacher Externs provided beneficial outside viewpoints.”

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of teachers agreed Teacher Externships are more valuable than any other professional development.



of teachers agreed that Teacher Externships tie to what they teach.



of teachers agreed that Teacher Externships improved their own views of math or science teaching.

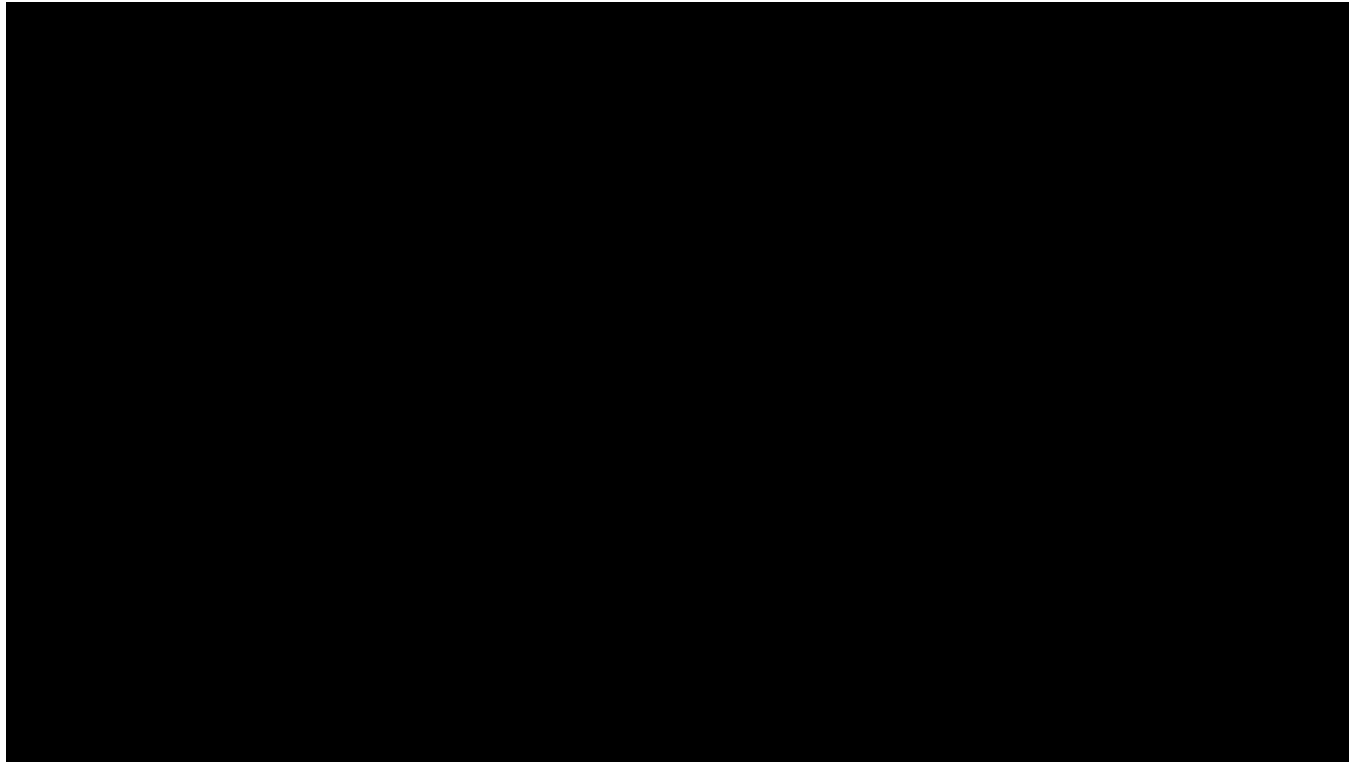


of teachers agreed that Teacher Externships impacted their teaching.

Post-Externship: Significantly more teachers reported a stronger ability...

- to advise students about job opportunities in the subject.
- to use inquiry instruction.
- to supervise student research projects.

What are Iowa STEM BEST[®] models?



[STEM BEST Video Link](#)

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Iowa STEM BEST® Basics



Teachers and industry professionals craft STEM curriculum and projects



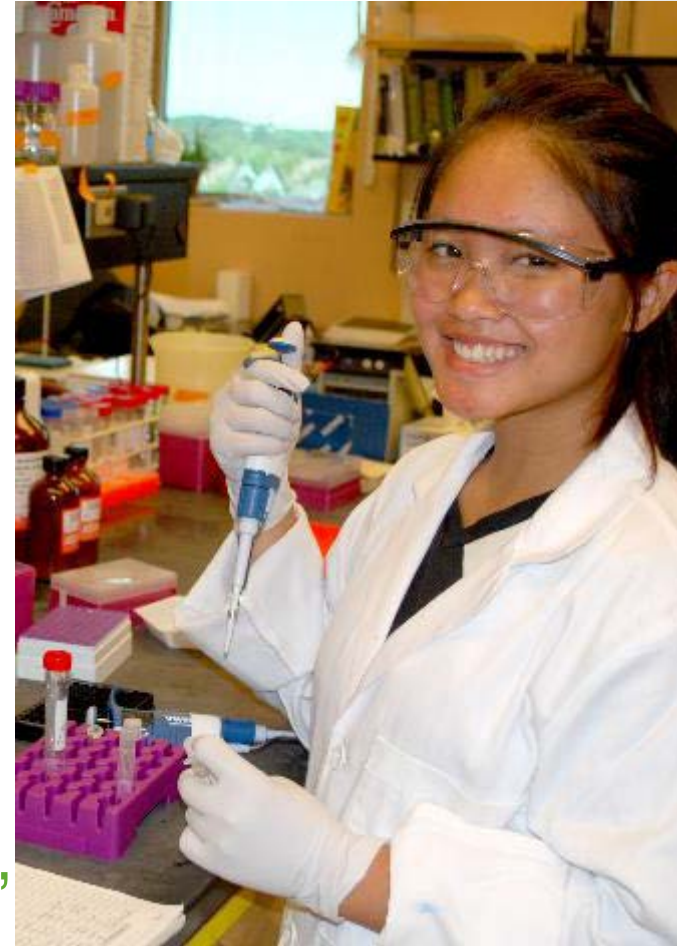
Students solve real-world problems



Students are introduced to career opportunities



50 STEM BEST® programs awarded, Involving 378+ business partners



What are Iowa STEM Festivals?

- Regional events that unite schools, businesses, nonprofits, higher education institutions, out-of-school educators and communities
- A STEM Festival is a free and hands-on, educational experience, engaging preK-12 students and their families to explore STEM opportunities
- Festivals show students at a young age that STEM careers and fields of study are fun, exciting and offer many rewarding opportunities
- Help inspire and prepare youth across Iowa for the STEM careers that await them

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More Information

- Website: <http://www.iowastem.gov>
- Iowa STEM Scale Up Program:
<https://iowastem.gov/Scale-Up>
- Iowa STEM Teacher Externship Program:
<https://iowastem.gov/externships>
- Iowa STEM BEST® Program:
<https://iowastem.gov/STEMBEST>
- Email: rankin@iowastem.gov

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