



Connecting STEM education and industry for Idaho's successful economic future.



Engineering innovative opportunities for educators, students, communities, and industry to build a competitive Idaho workforce and economy through STEM and Computer Science education.

The STEM Action Center Impact



Idaho STEM Action Center, a statewide agency housed under the Office of the Governor, was created on July 1, 2015 through the work of visionary legislators, education leaders, and industry stakeholders. Idaho STEM Action Center develops unique grant, training, professional development and student opportunities aligned to Idaho's workforce needs from early childhood through career.



In Idaho STEM JOBS are expected to grow 16.3% by 2028

Our Impact

2400

were eligible for a STEM DIPLOMA in 2020.

a 67% increase

from 2019

Idaho is

2ND IN THE NATION

in implementing Code.org's

Computer Science education policy

recommendations

IGH SCHOOL SENIORS

PROFESSIONAL DEVELOPMENT Over 45,000 students are impacted annually through our statewide i-STEM program

Idaho's STEM jobs PAY NEARLY TWICE THE MEDIAN WAGE of non-STEM JOBS

STUDENT COMPETITIONS 80% of student competition participants hope to continue in similar programs in the future

Within 10 years, 90%OF JOBS will require DIGITAL SKILLS

COMPUTER SCIENCE

Idaho is a leader in expanding computer science education,

including implementation of a

state plan, K-12 CS standards

and professional development

GRANTS Idaho STEM Action Center awarded 132 grants in 2020 from 4 competitive grant and Professional Development opportunities

of parents believe that STEM CAREERS will play an important role

in the future

Each colored dot represents a different statewide STEM program. Colored pins represent MAJOR impacts.



Our Programs

Creating access to life-shaping STEM learning opportunities for students and educators inspires Idaho's future.



Professional Development – Bringing relevant Idaho STEM topics to educators and providing them with the training and materials they need to engage their students in these vital topics and skills.



Student Competitions – Showcasing project-based student solutions to Idaho-relevant challenges.



Grant Opportunities – Supporting greater access to STEM learning opportunities that support individualized solutions for Idaho's communities.



Awareness Building, Partnerships, and Initiatives – Increasing awareness of the need for Science, Technology, Engineering and Math for Idaho communities, building partnerships with industry and institutions for greater access to STEM learning opportunities, and developing a STEM-literate Idaho.

Professional Development

I-STEM PreK - 12 EDUCATORS

The Foundation of STEM-literacy

High-quality, relevant, and hands-on STEM opportunities for PreK-12 Idaho educators at 6 regional locations throughout Idaho. i-STEM provides content and materials focused on Idaho topics and interests to inspire educators and students, who are important contributors to Idaho's current and future economy. Educators take valuable skills and materials back to their teaching environments from their 4-day institute workshops on topics including: 3-D design and printing, robotics teambuilding and coding, engineering and circuitry, environmental studies and biology, energy production, aviation, mathematics, geology and mining. i-STEM is building the foundation for a STEM-ready Idaho by elevating the student potential through a network of STEM-capable educators.

372 participating Idaho educators expected to impact over 45,000 students during the school year **THROUGH i-STEM** learned activities and materials provided **i-STEM** WORKSHOPS provided instruction on 32 STEM TOPICS



"i-STEM addresses industry's need for good problem solvers coming into the workforce. This is an exciting opportunity to connect our energyrelated topics with project-based learning that these teachers will take back to their students." – Denise Humphreys, Idaho Power











Everyone remembers the educator that made a difference.

The Industry's Excellent Educator Dedicated to STEM (INDEEDS) Award is given to two Idaho educators who create unique opportunities for students to experience the fun and excitement of STEM by integrating real-world experiences and hands-on activities into the classroom, including relevant industry connections. Winners are selected by an industry professional for two categories: K-6th grade and 7th-12th grade. Educators are awarded \$2,000 and another \$2,000 for STEM initiatives at their schools courtesy of sponsors. The awarded educators also attend a STEM-related national conference.



2020 INDEEDS Award winners Gina Kwid of Eagle and Tim Gering of Orofino. Awards were presented virtually at the Idaho Technology Council Hall of Fame & Resilience Showcase.





"In the STEM classroom we get kids to think. They become problem solvers. They become self-sufficient. I love watching the light bulbs go on when they use the engineering design process to work through a problem and they discover the answers for themselves." – Gina Kwid



"What we're doing directly relates to jobs that these kids can get either after a degree or trade school or even going right into the workforce. For instance, we're working with drones, and there are so many jobs even in a rural area for drone operation — with the Forest Service, in farming, entertainment, hunting, fishing, and all those types of things." – Tim Gering

D^E Professional Development

STEM Externships

Summer Externships for Classroom Teachers and Career Counselors

The STEM Action Center, in partnership with the Workforce Development Council, is providing K-12 classroom teachers and college and career advisors the opportunity to extern with local businesses over the



summer. This program places selected externs with companies to work on projects related to their area of expertise and requires educators complete 200 hours of on-site, experiential learning. Externs earn a \$5,000 and professional development credit, if they so choose. The goal of the program is to give educators the opportunity to expand their skill set so that they can better prepare students for life beyond high school.

2 YEARS, 44 EDUCATORS have served externships at 34 different businesses and organizations

In

"Host sites included fields such as technology, market research, engineering, advanced manufacturing, VR, robotics, health care, forestry, food production, environmental research, and broadcasting, to name a few!"

"I hope to always be a part of this program! What an amazing way to be able to grow professionally and partner with our community!" 2020 Extern Participant

> "The training that I have received from both House of Design and ABB Robotics will be able to transfer into my STEM classes to both junior high and high school." -- Kelsey Wright, 2020 Extern Participant



VR4ED

MIDDLE - HIGH SCHOOL

Next-level coding program

Idaho is on the cutting edge in VR technology development. From remote job training, hands-on-health applications, and empathy training to architectural design touring, VR is reframing our world and how we live in it.



The VR4Ed Coding Program is an educator professional

development and student computer science education program crafted specifically for Idaho middle and high schools. Educator training provides familiarity with the program materials, 12 lesson plans to effectively instruct 3D coding on the Blocksmith platform, and an understanding of how to utilize the Virtual Reality hardware to immerse into student-built worlds or games. Educator teams guide their students through a multi-week virtual design challenge, incorporating a pre-determined theme.

Students learn logical processing, coding language, and graphics applying these skills to real-world applications through guided challenges in the Blocksmith VR platform. Participants will be able to enter the worlds they design through the use of VR viewing tools, incorporating industry perspectives into their work, and submiting projects for a virtual showcase.

Ten Idaho communities received a VR4Ed grant in 2020. Four of those awarded communities had a population of fewer than 2500 residents.

Rural Community STEM Engagement

PREK - 12 EDUCATORS

Building momentum for STEM education in small, rural communities

Rural Community STEM Engagement Grants are for public schools, school districts, libraries, and community education organizations within small-medium sized rural communities in Idaho (population < 7,000). The grants are designed for rural schools or organizations who want to introduce local educators to the methods and applications of maker-centered learning, strengthen community partnerships, and activate new community leaders in STEM education. Recipients host a two-day STEM engagement workshop, developed and led by the STEM Action Center, during the summer, that will provide strategies and resources for educators to integrate a maker-centered approach in their programs and classrooms. The grant also provides funding for the Lead Organization and up to five Partner Organizations to implement maker-centered learning projects in the following fall.

- To date, STEM AC has awarded four grants to rural communities in locations throughout Idaho.
- Through the work collectively done by these sites, we are reaching and impacting over 100 educators who in turn engage with thousands of Idaho students.



ISEF HIGH SCHOOL



Virtual Fairs in 2021

Each spring, Idaho STEM Action Center and its partners proudly host three regional high school science and engineering fairs for students across Idaho. These fairs offer students the opportunity to engage in original STEM research projects aligned with their interests and present their findings at the Northern, Western, or Eastern Idaho Science and Engineering Fair. Students exchange ideas and learn with other motivated students in their area at an institute of higher education.

REGIONAL participation has grown by nearly 190% since ISEF's beginning 2017

83% of students gain better problem solving skills after COMPETING IN ISEF

80% of students plan to continue STEM research in the future as a result of participating in ISEF



Representative teams from each region are selected to attend and compete in the Regeneron International Science and Engineering Fair (Regeneron ISEF).

JUDGING CATEGORIES:

- 1. Animal, Biomedical, and Microbiology
- 2. Behavioral and Social Sciences
- 3. Earth, Environmental, and Plants
- 4. Engineering
- 5. Math, Computer Science, and Embedded Systems
- 6. Physical Sciences (Physics, Astronomy, Chemistry, Materials)



Jr. Botball and Botball

JR. BOTBALL - ELEMENTARY

BOTBALL - MIDDLE - HIGH SCHOOL

High-level computer science skills applied to hands-on, tangible projects

Through creativity and collaboration, teams use coding and robotics to perform tasks and solve competitive challenges. Educators engage in professional development to learn robotics skills, teach these skills with materials to students, and coach student competitive robotics teams. Winning teams may travel to statewide and global competitions.

Jr. Botball and Botball Competitions successes

- Team participants see more possibilities for themselves in Computer Science
- An Idaho team won first place in 2018 at the international Jr. Botball Competition
- Student teams in grades 3-6 learn and use the C programming language the same material in a college introductory computer science course.

"Students have tried to think of other ways in which their experience in robotics can help their community. For instance, one student is from a family that runs a dairy. He was thinking of ways in which he could use coding to make his family's business run more efficiently...and he's only 10!" – Magic Valley educator









Idaho Exhibition of Ideas GRADES 5 - 9



IDAHO EXHIBITION OF IDEAS

What happens when you mix student innovation with 21st century skills?

Formally FabSLAM, IDX engages youth in identifying, designing, prototyping, testing, and iterating solutions to real-world problems. Educators first receive three days of professional development and then return to coach students through a multi-week digital fabrication challenge, including proper online documentation of their process and encouraging multiple design iterations throughout the challenge. Teams then present their work at the IDX Student Showcase Event, judged by a panel of industry professionals on creativity, iteration, design, and other criteria. IDX supports critical and creative thinking, problem solving, innovation, and collaboration. Idaho STEM Action Center hosts three competitions statewide.

In the past 4 years:

- · 227 educators have been trained from Idaho schools, libraries, and out-of-school networks
- 489 students and 135 mentors have participated in IDX competitions
- Winner of the 2016 Western Regional student competition was selected to serve on the White House Science Advisory Committee to shape STEM Education

NORTHERN IDAHO

1st Place 2019 J. Russell Elementary, Moscow

WESTERN IDAHO 1st Place 2019 Pepper Ridge Elementary, Boise

EASTERN IDAHO

1st Place Snake River Middle School, Blackfoot





LEVELING THE PLAYING FIELD

Idaho STEM Action Center supports communities, schools, libraries, and other organizations to create STEM learning opportunities with locally-driven, self-determined programming.





Family STEM/Career Grant

This grant aims to improve student and parent awareness of local STEM education and career opportunities by providing support to schools that host STEM career events.

Camp & Out-of-School Grant

This grant provides high-quality STEM learning experiences outside of traditional classroom time to encourage sustained participation in and engagement with tangible STEM/21st century skills and proficiencies, as well as building local communities of learning for STEM. Priority is given to camps serving underrepresented populations in STEM.

Student Competition Travel Grant

Travel funds for students attending national competitions (ISEF, FIRST Robotics, Junior Botball)

Grant and Sponsorship Awards created 25,655 total impacts in 2020 in Idaho STUDENT - 11,873 EDUCATOR - 886 COMMUNITY - 12,896

ONLY 70% of competitive FUNDING OPPORTUNITIES receive grants

Visit stem.idaho.gov/apply for all grant opportunities

EARLY STEM

A Groundbreaking Idaho Initiative

Children have an innate drive to make sense of their world and their ability to construct knowledge alongside



engaged adults. Research has confirmed that the brain is particularly receptive to learning math and logic between the ages of 1 and 4, and that early math skills are the most powerful predictors of later learning. The STEM Action Center is supporting early STEM learning in Idaho through partnerships, projects and professional development opportunities.

FamLAB Project supports work in Idaho to create an ecosystem that encourages and fosters children's learning across settings, especially children from underrepresented populations. Grant funding generously provided to Idaho STEM Action Center by Joan Ganz Cooney Center at Sesame Workshop

Boise State University College of Education and the Children's Center Partnerships an exciting multi-year project to advance STEM learning for ages 0 to 8. Through professional development and instructional coaching, early childhood professionals are learning how to engage children with and without disabilities in inclusive STEM learning environments.

Early STEM Professional Development Workshops allow early childhood practitioners to dive deeper into hands-on inquiry-based learning, the engineering design process, and work to build a community of practice with fellow attendees.

IDAHO ECOSYSTEM NETWORK

The Idaho STEM Ecosystem is a group of stakeholders from Pre K-12 education, higher education, industry partners, state agencies, legislators, associations, non-profit organizations and out-ofschool organizations who work together to design and implement a comprehensive vision of STEM learning for all and to further develop clear STEM career pathways for Idaho's youth through a collective impact. The group focuses on:

- Broadening STEM equity
- Promoting access to, alignment with, and awareness of, STEM education and careers
- Creating successful metrics for STEM education and programming
- Building STEM momentum within the state and nationally

As the Ecosystem backbone organization, Idaho STEM Action Center plans convening meetings, coordinates ecosystem-wide communication, including a newsletter, and shares information about working groups. Additionally, STEM AC hosts the Ecosystem website, is the main point of contact for those wishing to engage in or with the Ecosystem as a whole, and for on-boarding new members. Decisions regarding mission, vision, goals, organizational structure, and other components of the Ecosystem, are based on policies and procedures developed by the members as a whole.



EVENTS

BUILDING AWARENESS IN IDAHO'S COMMUNITIES

Computer Science Education Week (CSEdWeek) held each December is an annual, global program dedicated to inspiring students to take interest in computer science often by coding. The week in December was chosen in honor of Admiral Grace Hopper's birthday, December 9, 1906. Admiral



Hopper invented the first compiler and coined the term, "bug" for an error in a program after removing a moth from a computer.

It is a great time for anyone age 4 to 104 to try at least one hour of computer science activities, and we want teachers and students to participate in Hour of Code (HOC) or some type of CS activity!

STEM AC organizes Hour of Code activities by having special guests such as former astronauts and the Idaho Governor host Hour Code events with students throughout the state. In addition, Idaho-based companies host Hour of Code activities such as developing a video game.

STEM AC also sponsors a social media contest to encourage participating in HOC.

Hundreds of Idahoans converge on the State Capitol for STEM Matters Day each January to explore and celebrate innovations in science, technology, engineering, and mathematics learning. This annual event, organized by the Idaho STEM Action Center, attracts students, educators, elected officials, businesses, and STEM advocates from across the state. The event was held virtually in 2021.

<image>

STEM Matters at the Capitol

CS Ed Week

PARTNERSHIPS AND INITIATIVES

2020 has brought unique challenges to the world. Idaho STEM Action Center has adjusted by providing support for keeping Idahoans safe during the pandemic and new resources for STEM education at home.

STEM@Home

The Idaho STEM Action Center launched STEM@Home — an information clearinghouse for free science, technology, engineering, and math online learning resources. The information is accessed via a STEM@Home tile on the Resource Portal at resources. STEM.idaho.gov. It's easy to find activities, experiments, articles, curriculum, and YouTube videos by age or grade or subject area. Visitors can also submit resources for possible inclusion. Since the STEM@Home launch in March, the resource portal has been accessed by an average 355 users each month.

During Spring 2020 Stem AC's media partner, CBS2, posted live demonstrations three times a week and STEM@Home activities on the other two week days. The events starred weatherman Nate Larson and his two sons in their kitchen. During Fall 2020 there is one STEM@Home FaceBook Live STEM demonstration from the CBS2 studio and three times a week activity posts. These posts have garnered 350,000+ views in year 2020.

Idaho Makers Unite

Idaho Makers for Equity, a state-wide initiative highlighting accessibility and inclusion in education, pivoted to respond to Idaho's urgent public health need due to the COVID-19 crisis. The program connects Idaho makers with individuals in their

communities--health care professionals, other essential workers, and at-risk populations--who need personal protective equipment (PPE).

Since Idaho Makers Unite launched in March 2020, 175 Idahoans have volunteered to sew and 3D print PPE to protect workers on the front lines in Idaho fighting COVID-19.

130 REQUESTS from facilities, organizations & individuals FOR PPE STEM AC provided \$38K IN GRANTS to support materials and shipping PPE PPE Delivered: 13,000 fabric masks, 5,000 face shields, 5,035 mask extenders and 3,200 3D printed masks







PUBLIC-PRIVATE-PARTNERSHIPS - "P3"

Leveraging STEM support to a new level

Idaho businesses generously support their communities with sponsorships, program funding, and in a variety of other ways. Are you supporting an organization that is working to create access to STEM learning opportunities? The STEM Action Center may match up to 50% of a sponsor's donation to that non-profit, school, museum or other qualifying organization and partnered with industry to provide **51** P3 awards during the 2019-2020 school year.

P3 funding brings opportunities such as

- Maker spaces
- Mobile learning experiences
- Community events
- STEM camps
- Robotics teams

P3 funding brings support to organizations such as

- 4-H clubs
- Girl Scouts
- Community museums and libraries
- Big Brothers Big Sisters
- Boys and Girls Clubs and more!

Idaho STEM in action examples:



Lakeland School District, Rathdrum, received a grant for teachers from each of the six Lakeland Joint School District elementary schools to participate in professional development focusing on Dash robots. The Lakeland teachers returned to their buildings and shared their knowledge with colleagues and incorporating the use of the Dash robots into their classrooms.



The Boys and Girls Club of Nampa grant established a STEM Program at the Club. The program includes DIY STEM kits for hands-on, activity-based STEM curriculum. Curriculum includes experiential, environmental education activities as well as a computer science pathway to learn coding.

MUSEUM I DAHO Museum of Idaho, Idaho Falls, hosted the "Animal Inside Out" traveling exhibit, January 23 to September 19, 2021. Visitors explore the intricate biology and physiology of some of the world's most spectacular creatures. The exhibition draws attention to the animal kingdom to inspire a deeper appreciation and respect for animals and the environments they need to survive.

Our leading P3 partners





YOU CAN SUPPORT STEM EDUCATION

Volunteer

- Judge a competition
- Review STEM grant applications
- Provide a tour of your business
- Be a STEM professional guest speaker
- Mentor a student project

Sponsor an Event or Program

- Student competitions
- Professional Development
- Grants
- Public-Private-Partnerships "P3" support your organization of choice and provide STEM AC matching funds
- Host a teacher externship



INVESTMENTS

IDAHO STEM ACTION CENTER AND INDUSTRY PARTNERS INVEST TO BUILD A STEM-LITERATE, WORKFORCE READY IDAHO



July 2019 - July 2020

- Public Private Partnership \$1,914,396
- Professional Development \$1,229,501
- Grant Funding \$415,814
- STEM Sponsorships \$168,903
- Student Competitions \$124,496
- Scholarships \$18,000



MISSION

To raise and distribute funds for STEM education opportunities in Idaho for educators, students, and communities.

Idaho STEM Action Center Foundation is a 501c3 non-profit organization founded to provide an additional giving option for funding and in-kind partners. All funding supports Idaho STEM Action Center programs.



Founded in September 2017

501c3 status in April 2018 Funds raised FY19 \$483K Funds raised FY20 \$825K

CONNECT WITH US



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