IDAHO STEM
ACTION CENTER

Strategic Plan

Fiscal Years 2019 – 2022

June 2018

Idaho STEM Action Center (STEM AC)

FY19 – FY22 Strategic Plan

Introduction, History and Future:

Idaho is facing a crisis: Idaho citizens are not entering the STEM (Science, Technology, Engineering, and Mathematics) pipeline at a rate that will meet the current and future workforce needs of Idaho employers, sustain Idaho's economic development, and advance future prosperity. According to a report published by the Idaho Department of Labor, Idaho is lacking a significant number of individuals needed to fill projected positions ranging from construction and service jobs to those in medical and technology sectors. Many of these projected positions involve STEM-related skills and knowledge. STEM AC has defined STEM to be an integration of multiple STEM disciplines, mirroring the real-life practices of STEM professionals. STEM AC also defines STEM broadly, encompassing the 184 occupations listed by the Idaho Department of Labor that require STEM skills, including the traditional STEM and Career Technical Education (CTE) disciplines, as well as health care, economics, psychology, and accounting.

Numerous research studies, including those conducted by the Georgetown Center for Education and the Workforce, Idaho Business for Education, and the Idaho Department of Labor demonstrate that more than 60% of the projected jobs by 2020 will require a college degree or certificate beyond a high school diploma. STEM AC supports the recommendations of the Idaho Task Force for Improving Education, and the State Board of Education's STEM Strategic Plan, including the state's 60% goal to meet the workforce needs of Idaho business and industry.

STEM AC's enacting legislation (Idaho Code 67-823) focuses on five broad areas: a) student learning and achievement (targeting underrepresented populations); b) student access to STEM, including equity issues; c) teacher professional development and opportunities; d) college and career STEM pathways; and e) industry and workforce needs. This is accomplished by offering grant and professional development opportunities to educators, communities, and students, and measuring outcomes from these activities. Many STEM AC projects require evidence of project-based learning (PBL). PBL has been shown to connect classroom learning to real-world experiences by providing students with opportunities to engage with professionals to pose solutions to real-world issues.

Another major role for STEM AC is to actively engage Idaho businesses and industries. This is currently accomplished through sponsorships of student competitions, integration of collaborative industry-educator projects funded via grants, professional development

guided by industry input, the creation of an online mentorship platform, and through various workforce development initiatives. Additionally, a STEM AC Foundation has been created to engage more effectively with a broader network of businesses.

STEM AC has also been involved in partnering with other state agencies and businesses to bring forth new STEM legislation. In 2016, the Computer Science Initiative was passed (Idaho Code 33-1633). This legislation directs STEM AC to focus on critical training and educational needs to help populate Idaho's growing need for a tech-savvy workforce.

In 2017, STEM AC worked collaboratively with the Office of the State Board of Education (OSBE) to pass legislation which will allow Idaho schools to apply for STEM School Designation (Idaho Code 33-4701). This designation will be formally recognized by OSBE and the Governor's office. The first designated schools will be identified in FY19.

In 2018, STEM AC worked collaboratively with various educational and industry groups to pass legislation (House Bill 648, Idaho Code 33-1634) that would require all Idaho high schools to offer at least one computer science course by 2020. By partnering with educational groups and industry, STEM AC will help ensure that Idaho employers will have access to the workforce they need—a workforce that possesses the skills necessary for successful transition from school to employment. In addition, STEM AC serves as a representative on the Workforce Development Council which ensures that there is significant collaboration without duplication.

Because of these coordinated statewide efforts, Idaho will become a STEM business destination. Idaho will have a citizenry that not only recognizes the importance of STEM, but also possesses the necessary STEM skills for the workforce. A highly-skilled STEM workforce will lead to increased investment and business opportunities throughout Idaho. Educators will have the necessary STEM skills and tools to engage students. Students will possess the 21st century skills that employers require: critical thinking, problem-solving, collaboration, and innovation. The result of this multi-tiered approach will be an increase in the number of businesses throughout the state, and the number of STEM jobs available for Idahoans, which will serve to bolster Idaho's economy and lead to long-term economic prosperity for the state and its citizens.

Mission Statement:

The mission of STEM AC is to engineer innovative STEM opportunities for educators, students, communities, and industry to build a competitive Idaho workforce and economy.

Vision Statement:

It is STEM AC's vision to produce a STEM-competitive workforce by implementing Idaho's kindergarten-through-career STEM education programs aligned with industry needs.

GOAL #1: Coordinate and facilitate implementation of high-quality STEM programs throughout Idaho.

Objective 1A: Create/identify and fund STEM opportunities for Idaho students.

Performance Measure 1: Number of student engagements with STEM AC opportunities

-*Baseline*: During FY17, STEM AC measured over 204,000 student interactions. During FY18, over 400,000 student interactions occurred.

-*Benchmark*: With state funding now stabilized, STEM AC would not expect a significant increase in the number of student interactions.

-This benchmark was established per the requirement of Idaho Code §67-823.

Objective 1B: Identify and facilitate the delivery of high-quality STEM and CS educator professional development.

Performance Measure 1: Number of educators receiving STEM and CS professional development

-*Baseline*: In FY17, a total of 19 opportunities directly impacting over 4,800 educators were established. In FY18, STEM AC incorporated a new, statewide professional development model and more than tripled our offerings. As a result, STEM AC engaged in 12,633 educator interactions from 78 opportunities.

-*Benchmark*: With state funding now stabilized, STEM AC would not expect a significant increase in the number of teacher interactions. In FY19, STEM AC will rank opportunities by quality and shift funds into the most successful program, which could change the impact numbers slightly.

-This benchmark was established per the requirements of Idaho Codes §67-823 and §33-1633.

Objective 1C: Develop new and expand existing high-quality STEM AC grant programs for educators and the community at large.

Performance Measure 1: Total number of grant opportunities offered

-Baseline: STEM AC's long-term benchmark was to increase the existing opportunities to at least five, including CS opportunities for educators, and at least two opportunities for students. In FY17, 12 grant opportunities were made available to Idaho educators, students, and communities. In FY18, 35 STEM AC opportunities included grants.

-New Benchmark: With state funding now stabilized, STEM AC does not expect to see a significant increase in the number of grant opportunities in FY19. In FY19, STEM AC will rank grant opportunities by quality and shift funds into the most successful programs, which could change the total number of STEM AC grant offerings.

-This benchmark was established per the requirements of Idaho Codes §67-823 and §33-1633.

Performance Measure 2: Create and deploy a tool to systematically measure the quality of STEM AC opportunities

-Baseline: In FY18 a 'quality tool' was piloted in four opportunities, which allowed educators to set a quality value (high, medium, low) on STEM AC professional development offerings.

-Benchmark: In FY19, deploy the 'quality tool' throughout all opportunities to ensure high-quality offerings by measuring educator outcomes.

-This benchmark was established per the requirements of Idaho Codes §67-823 and §33-1633.

Objective 1D: Collaborate and leverage other state-level STEM partner organizations such as supporting the metrics in the Idaho State Board of Education STEM Strategic Plan and the metrics in the newly formed Workforce Development Council (WDC) Strategic Plan.

Performance Measure 1: Serve as the lead entity for the STEM School Designation Legislation (Idaho Code 33-4733)

-Baseline: In FY18, an Idaho education committee including STEM AC, educators, administrators, SDE, and OSBE met for three days to determine a process for selecting and designating STEM schools.

-Benchmark: In FY19, the first group of STEM schools will be identified and designated.

-This benchmark was established per the requirement of Idaho Code §33-4733.

Performance Measure 2: Serve as the lead professional development entity for the CS for All Legislation (House Bill 648, Idaho Code [33-1634](#)) working in conjunction with IDLA, OSBE, SDE, and CTE

-Baseline: In FY18, STEM AC served as the lead entity for CS professional development pursuant to the Computer Science Initiative, Idaho Code §33-1633.

-Benchmark: In FY19, STEM AC will systematically track professional development opportunities linked to the CS for All Legislation which focuses primary on preparation of high school teachers to deliver CS courses.

-This benchmark was established per the requirements of Idaho Codes §33-1634 and §33-1633.

Objective 1E: As a technology customer of the Office of Information Technology Services (ITS) in the Governor's Office, STEM AC is using the cybersecurity systems and technical expertise in ITS to fulfill requirements related to Executive Order 2017-02. Staff from ITS briefed the NIST Core Framework, CIS Controls 1-5, and their plan for adoption of the NIST Cybersecurity Framework. STEM AC staff participated in DHR and ITS administered cybersecurity training, as awareness is a critical component of an effective cybersecurity program. As briefed by ITS staff, implementation of the CIS Controls 1-5 will be their responsibility for the systems they operate and, as technological tools applied to the computer systems, largely invisible to STEM AC as a customer. ITS is refining the cybersecurity incident response plan in support of our agency.

GOAL #2: Align STEM education with workforce needs throughout Idaho.

Objective 2A: Engage industry to support STEM education outcomes.

Performance Measure 1: Amount of industry contributions and personal donations to STEM AC to promote and enhance opportunities for K-career STEM education

-Baseline 1: Systematically track contributions that are received directly (cash and cash equivalence).

-Baseline 2: Track in-kind activities provided directly to STEM AC for projects and programs.

-Benchmarks 1 and 2: In FY16, STEM AC received $72,000 in cash donations. In FY17, STEM AC received $205,000 in cash donations. In FY18, STEM AC received just $736,928 in cash donations. In FY18, STEM AC also systematically tracked cash equivalent and in-kind donations which totaled $1,742,217. In total, STEM raised nearly $2.5M in cash, cash equivalent, and in-kind donations from industry and grants for Idaho STEM education in FY18.

> *-How were these benchmarks established?* STEM AC will continue to consistently track various types of contributions. STEM AC has established the STEM Action Center Foundation which should allow the Center to reach its goal of at least $1M cash raised annually and at least $2M total through all the various contributions (cash, cash equivalence, and in-kind).

Objective 2B: Support industry-led initiatives that focus on workforce development and industry needs.

-<u>Performance Measure 1</u>: Number of high-quality educational opportunities focusing on workforce development in high demand fields

Baseline: STEM AC did not support these types of activities in FY16. In FY17, STEM AC supported one workforce development initiative. 32 opportunities were co-sponsored in FY18.

Benchmark: STEM AC will continue to work with industry to co-sponsor programs. STEM AC is continuing to build and foster relationships with industry to create and support educational opportunities based on industry demand and workforce needs. Based on industry interest in this program, it would be assumed that at least 40 opportunities will be co-sponsored in FY19.

> -This benchmark was established per the requirements of Idaho Codes §67-823 and §33-1633.

Objective 2C: Create opportunities for students and educators to partner with local businesses.

<u>Performance Measure 1</u>: Number of mentors and students involved in STEM AC's virtual, project-based mentorship platform

-Baseline: No virtual, project-based mentorship platform existed in FY17. In FY18, STEM AC designed and beta tested a mentorship platform with full-scale deployment slated for Fall 2019.

-Benchmark: Currently, in the pilot test site there are 60 mentors and 50 educators. The goal is to double these numbers annually until there are at least 500 educators and mentors utilizing the portal. Additional data will be collected from the system in FY19. STEM AC will also work with OSBE, WDC, and CTE to determine additional ways to utilize the portal.

-This benchmark was established per the requirements of Idaho Codes §67-823 and §33-1633.

Performance Measure 2: STEM AC will explore ways to facilitate internships, job shadows, externships, and other education-industry interactions

-Baseline: There is currently no platform/mechanism for systematically capturing these education-industry relationships beyond the mentorship platform.

-Benchmark: STEM AC will explore ways to allow for facilitation of relationships beyond the online mentorship portal. The goal is to expand the capabilities of the portal to include additional education-industry partnership opportunities which will occur in FY19-FY20. STEM AC will work with IDLA, OSBE, WDC, and CTE to determine additional ways to expand the capabilities of the mentorship portal.

-This benchmark was established per the requirements of Idaho Codes §67-823 and §33-1633.

Objective 2D: Support and fund CS initiatives, programs, events, training, and other promotions throughout the state for the benefit of school districts, students, parents, and local communities.

Performance Measure 1: Number of community events related to CS

-Baseline: No support was provided in FY16.

-Benchmark: Ten events were supported in FY17. In FY18, 96 initiatives, programs, events, trainings, and other promotions related to CS were supported throughout the state. With state funding now stabilized, STEM AC would not expect a significant increase in the number of CS events.

-This benchmark was established per the requirements of Idaho Codes §33-1633.

Performance Measure 2: Number of high-quality professional development opportunities for educators in CS

-*Baseline*: In FY16, STEM AC supported one opportunity involving 44 educators.

-*Benchmark*: STEM AC had planned to support three CS opportunities in FY17. However, STEM AC successfully supported ten opportunities in FY17, easily surpassing our goal. In FY18, 18 opportunities were supported which will likely be the maximum amount that can be achieved due to level funding.

-This benchmark was established per the requirements of Idaho Codes §33-1633.

Performance Measure 3: Number of student competitions and camps in CS

-*Baseline*: In FY16, CS student competitions and camps were not supported by STEM AC. In FY17, STEM AC supported three competitions and nine camps.

-*Benchmark*: In FY18, STEM AC supported three CS competitions and 29 CS camps. This will likely be the maximum amount that can be achieved due to level funding.

-This benchmark was established per the requirements of Idaho Codes §67-823 and §33-1633.

GOAL #3: Increase awareness of STEM throughout Idaho.

Objective 3A: Communicate about STEM and CS initiatives, programs, events, trainings, and other promotions throughout the state for the benefit of school districts, students, parents, and local communities.

Performance Measure 1: Number of users of STEM AC's online portal for resources and best practices

-*Baseline 1*: No online portal of STEM resources and best practices currently exists. This portal will be created in FY19 and deployed.

-*Benchmark 1*: Benchmarks will be established after FY19 baseline data is collected.

-*Benchmark 2*: Deploy the online portal during FY19 which annually identifies at least five best-practice innovations used in Idaho schools that have resulted in growth in interest and performance in STEM and/or CS by students and teachers.

-This benchmark was established per the requirements of Idaho Codes §67-823 and §33-1633.

Performance Measure 2: Number of outreach opportunities provided or supported through STEM AC funding and/or STEM AC staff

-*Baseline 1*: Track number of community events supported by STEM AC.

-*Benchmark 1*: In FY16, 45 events were supported. In FY17, 140 events were supported throughout the state. In FY18, 143 events were supported. This will likely be the maximum number of events that STEM AC can support due to level funding.

-*Baseline 2:* Track the number of presentations and events attended by STEM AC staff as part of the STEM/CS outreach and awareness effort.

-*Benchmark 2*: In FY16 and FY17, these activities were not systematically collected, although the STEM AC team was very active in outreach activities, attending conferences, and presenting throughout the state. In FY18, the STEM AC Team averaged two unique outreach opportunities per week (110 total) related to increasing awareness of STEM/CS, STEM AC, and/or partnership opportunities with STEM AC.

-This benchmark was established per the requirements of Idaho Codes §67-823 and §33-1633.

Performance Measure 3: Number of monthly communication efforts using the monthly newsletter, website, and social media such as Facebook and Twitter

-*Baseline*: In FY17, ten STEM AC newsletters were published, reaching 4,300 subscribers. This easily surpassed our original goal of 2,000 recipients. This is an average signup rate of 233 new subscribers per month.

-*Benchmark*: It was anticipated that growth would slow and that approximately 40 new users would be added per month, with a goal of reaching 6,000 users by 2021. STEM AC reached a subscription rate of 39 new users per month for a total of 4,768 newsletter subscribers. STEM AC also has as Twitter and Facebook interacting with over 1,600 individuals.

-This benchmark was establish based on industry estimates. The year 1 signup rate of 233 users per month was assumed to plateau. Based on the size of Idaho, a reasonable rate of 40 users per month is still within estimates and is significantly higher than the original goal of 10 new subscriptions per month.

Performance Measure 4: STEM AC will improve effectiveness of STEM AC outreach, opportunities, and operations

-*Baseline*: No mechanism currently exists to capture public engagement, need, and satisfaction with STEM AC programs and opportunities.

-*Benchmark*: Beginning in spring 2019, STEM AC will implement an annual public needs, engagement, and satisfaction survey which will guide FY20 programs and offerings

-This benchmark was established as directed in Idaho Code §67-823 and will help ensure that we are meeting the needs and expectations of our customers.

Objective 3B: Increase access to STEM/CS opportunities for students, educators, and communities that represent traditionally underrepresented populations in STEM and CS.

Performance Measure 1: Number of grants and professional development opportunities which target traditionally underrepresented populations in STEM and/or CS (students from populations including rural, low socioeconomic status, diverse races/ethnicities, and gender)

-*Baseline*: Three grants and two professional development opportunities were provided to support traditionally underrepresented populations in STEM in FY17.

-Benchmark 1: STEM AC now systematically requires all applicants to address their services to traditionally underrepresented populations in STEM in 100% of STEM AC opportunities. Because this is now embedded in all opportunities, STEM AC needs to continue requiring this information in all its applications.

-This benchmark was established as directed in Idaho Code §67-823, STEM AC must support grants and professional development for traditionally underrepresented populations in STEM. In FY 17, STEM AC researched these groups for Idaho and concluded they include students from low socioeconomic status, students from diverse races/ethnicities, rural students, and female students.

Objective 3C: Collaborate with Idaho's State Board of Education, the Division of Career-Technical Education, the State Department of Education, the Workforce Development Council, public higher education institutions, industry, and national partners to enhance communications related to STEM education throughout Idaho.

Performance Measure 1: Number of collaborative meetings hosted and/or attended by STEM AC staff, including STEM Board, to discuss STEM (including CS) with local, statewide and national partners

-Baseline: No concerted effort was made to collect this data in FY16 or FY17. In FY18, STEM AC focused on its coordination role and began systematically planning, hosting, and/or attending collaborative meetings to better understand the needs and activities of statewide partners.

-Benchmark: In FY18, STEM AC hosted and/or attended 300 unique meetings (at least one per business day) with stakeholders, state agencies representatives, schools and districts, out-of-school providers, and national partners to better coordinate efforts between the various groups. To ensure continued collaboration and to prevent redundancy, STEM AC will maintain this level of interaction.

-This benchmark was established per the requirements of Idaho Codes §67-823 and §33-1633.

Performance Measure 2: Increase communication about and awareness of STEM and STEM AC opportunities

-Baseline: No annual, systematic communication plan currently exists.

-*Benchmark 1*: During FY19, STEM AC will develop a communication plan related to STEM and CS that emphasizes the metrics in Goal 3 of this STEM AC Strategic Plan.

-This benchmark was established as directed in Idaho Code §67-823.

External Factors Affecting Goals

1) Infrastructure
   a. Contractors have been hired to help full-time staff fulfill legislative intent for STEM AC programs and projects.
   b. STEM AC needs to continue to leverage existing resources to prevent duplication.

2) Funding and Economic Conditions
   a. Ongoing funding will allow STEM AC to continue to fulfill the intent of both the STEM AC legislation, the CS Initiative, the STEM School Designation legislation, and the CS for All legislation.
   b. Partnering with industry will require industry awareness and confidence in STEM AC, as well as financial confidence in the economy.

3) Statewide Awareness
   a. The STEM AC Team may not be aware of local initiatives and resources in rural and remote areas.
   b. When offering STEM AC opportunities, messaging to ensure statewide interest and diversity will be paramount in guaranteeing that educators and communities from diverse backgrounds are represented.