STEM Action Center
Annual Report to the Education Interim Committee
October 17, 2016

The following report is being submitted to the Education Interim Committee by the STEM Action Center. The report contains the following requested information:

(1) The Board shall report the progress of the STEM Action Center, including the information described in Subsection (2), to the following groups once each year:

(2) The report described in Subsection (1) shall include information that demonstrates the effectiveness of the program, including:

(a) the number of educators receiving high quality professional development;

(b) the number of students receiving services from the STEM Action Center;

(c) a list of the providers selected pursuant to this part;

(d) a report on the STEM Action Center's fulfillment of its duties described in Subsection 63M-1-3204; and

(e) student performance of students participating in a STEM Action Center program as collected in Subsection 63M-1-3204(4).

1. The number of educators receiving high quality professional development:
Two projects support high quality professional development: (1) the professional learning platform that is video-based and online and the (2) elementary STEM endorsement. A total of 17,346 licenses were distributed to educators for the video-based, online platform. There are 332 elementary educators enrolled in the first cohort of the STEM endorsement. A total of 85 educators received professional development for either Exploring Computer Science (a secondary course) or Computer Science Fundamentals (an elementary program). The funding for this was a combination of the code.org grant discussed later in this report and a corporate match. Thirty teachers participating in the 7th and 8th grade Applied Science project received additional professional development.

2. The number of students receiving services from the STEM AC

The numbers of students that accessed resources from the STEM AC are as follows:

- Fairs, Camps and Competitions: 1,113
- Classroom grants: over 9,883
- STEM Certification pathway grants: 6,919
- K-12 math technologies: 180,707
- STEMFest: over 17,000
- Organization grants: 4,519
- Sponsorship: 62,500

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3. A list of providers selected pursuant to this bill:
See Appendix A.

4. A report of the STEM AC fulfillment of its duties described in subsection 63M-1-3204

STEM Action Center (STEM AC) Staff and Roles (63M-1-3204; 1(a), (c)i)
The STEM Action Center (STEM AC) consists of the Executive Advisory Board, an Executive Director (Tami Goetz), Program Director (Sue Redington), Program Coordinator (Jackie Moynihan), Outreach and Engagement Specialists (Kellie Yates and Clarence Ames) and a Marketing and Communication Specialist (Kaitlin Felsted). The STEM Action Center also works collaboratively with several other state agencies to support STEM education and workforce and economic development. These collaborations result in two additional shared staff members: the Utah Department of Workforce Services (DWS; Lynn Purdin) and the Governor's Office of Economic Development (GOED; Vatsala Kaul). Kellie Yates also serves as a liaison with the Utah State Board of Education. A part time Director for the newly formed STEM AC foundation was added this fiscal year. The STEM AC received several grants that provided for staff to implement and oversee the projects and these include three new team members for the Mobile STEM Classroom (Lola Beatlebrox, Bradley Hunsaker and Abby Dowd) and a part-time team member for the STEM for Life project (Yeganeh Lari). Finally, the STEM AC is fortunate to have a full time volunteer that helps with various projects, Ann Barnia.

Private entity engagement (63M-1-3204; 1(d); 2 (e))

MEDIA CAMPAIGN

Private entity support impacts the STEM AC both directly and indirectly. Companies impact the STEM AC indirectly via the Investors Coalition. This is an industry-driven coalition, led by Comcast, which has been deploying a media campaign for the past several years. The media campaign has consisted primarily of a series of television commercials that showcase Utah companies that support STEM education. Comcast has been the creative lead on these commercials and provides the broadcast outlet for the commercials. The Investors Coalition has worked with the Utah Technology Council and its private foundation (this is NOT the recently created Utah STEM Foundation that is aligned with the STEM AC) to accept funds to support the creation of the commercials. The STEM AC leverages the support of the companies with the commercials by featuring them on our website and using them at various outreach events. Private support from companies that is provided directly to the STEM AC is described in other sections. It is important to note that several of the grants that the STEM AC has received are due to the media exposure that has resulted from the work of the Investors Coalition.

The STEM AC is working with Comcast, Adobe and Dell EMC to launch the next phase of the media campaign which is now intended to move from a high level message of "changing hearts and minds" to an action-oriented campaign that will focus on mentoring. The statewide launch of STEM Mentor Exchange (STEM MX) is scheduled to occur in the spring of 2017. STEM MX is a mobile app for teachers, counselors, and parents to find resources, particularly from industry partners. These resources can be varied but the overall goal is to allow teachers, counselors, and parents to learn more about careers, Utah companies, and what it takes for their students to make informed decisions for their academic and career choices. STEM MX will also allow teachers, counselors, and parents to more effectively find supplies, equipment, speakers, internships, summer camps, and organize site visits and other out of school activities. Additionally, STEM courses and programs at our educational institutions will be identified. The STEM MX project is supported through a combination of a grant from Boeing (the grant was awarded to the Davis Education Foundation but was written collaboratively with the STEM AC) and a match of donated technical design services from Dell EMC and Adobe. Comcast has been donating professional marketing services and will continue to contribute to disseminating STEM MX. These in-kind donations are described in greater detail in Appendix B. The STEM AC will work collaboratively with Utah DWS and the USBE to align STEM MX with UtahFutures. The DWS partners are very excited to take advantage of the mobile app platform and we will work as partners to join them for statewide teacher training events.

The STEM MX app is now in the beta testing phase and we are soliciting submission of profiles from teachers, counselors, parents, and industry partners. The online profile submission can be found at http://www.stempartner.com

UTAH STEM FOUNDATION

As directed by the Utah Legislature, the STEM Action Center officially filed for the creation of the Utah STEM Foundation on May 2, 2016. The Utah STEM Foundation's main priority is to help enhance the efforts of the STEM AC, whose mission is to support STEM education and align

education efforts with talent needs. The Utah STEM Foundation will accomplish this by leveraging community partners, creating engagement and industry alignment, and soliciting monetary and in-kind donations.

The Utah STEM Foundation, in alignment with the STEM AC, recognizes that the ability to fund STEM classrooms is an ongoing challenge for most states, school districts, and schools. The cost of equipment and supplies can be prohibitive, access to devices can be limited and the ability to dedicate full-time facilities is not possible. Rural school districts, or schools in communities out of a metropolitan area, are impacted even more due to a lack of the critical mass needed to justify this expenditure and a lack of STEM expertise due to a limited educator talent pool.

One of the first donations to the Utah STEM Foundation was a grant from the Tesoro Corporation. The Tesoro Corporation has granted the Utah STEM Foundation $1.5 Million dollars to initiate a STEM mobile classroom environment for the students in the State of Utah. We look forward to engaging local corporations and individuals to help support this effort to ensure ample exposure to STEM and workforce possibilities for our students. The Foundation is in the process of reviewing the draft of its strategic plan with Board Members.

Organizations that have joined forces to help support the Utah STEM Foundation include:

- Tesoro (as mentioned)
- Larry H. Miller
- Boeing
- Adobe
- IM Flash
- UTA

STEM SCHOOL ASSEMBLY

The STEM AC receives regular requests to provide STEM assemblies to students in both elementary and middle school. Assemblies are a challenge due to the large number of students; it is challenging to engage the students and provide a fun and meaningful experience. The STEM AC has been working with Paul Brewer, a local magician to create an innovative version of a magic show that incorporates STEM themes with a high tech format for delivery. The pilot program is being supported by a $10,000 grant from CenturyLink and over 60 schools have signed up for the assembly. The beta launch for the first STEM assembly will be October 6, 2016 at Rosamond Elementary School located in the Jordan School District. The Utah STEM Foundation is working to secure additional funds in anticipation of high demand.

NORTHERN UTAH STEM EXPO

The Davis, Weber, Ogden and Morgan school districts hosted the Northern Utah STEM College and Career Exposition on November 9, 2015 at the Davis Conference Center. The event was divided into two sessions; a high school session and a community STEM Family Night. 800 high school students, 60 teachers, 16 companies presenting, and 60 companies participating as exhibitors attended during our high school session. A Family STEM Exposition ran from 5:00 – 9:00 PM and was open to parents, junior high students and elementary students of Davis, Weber, Morgan and

Ogden school districts. There were approximately 4,500 in attendance. The STEM Action Center sponsored this event at $5,000 and helped to promote it to the public.

SELF ESTEAM

The Self-ESTEAM conference introduced students to local STEAM community leaders, academia professionals and industry representatives. These leaders, professionals, and representatives had the opportunity to be a part of this conference by presenting session modules and discussing what their company/organization does in terms of STEAM. The event took place at the Salt Lake Library and more than 50 young women across the state were impacted. The STEM Action Center sponsored this event at $1,049.

MAKING INNOVATION CONFERENCE

The Making Innovation Conference was held at Utah State University on September 24-25, 2015. More than 350 educators and industry members attended this event. The mission of the Making Innovation Conference was to gather local and national researchers, educators, policy makers, designers, and makers to present, share, and discuss innovative maker activities and related research that promotes STEM learning. The STEM Action Center team attended and presented on various STEM programs during the conference. The STEM Action Center sponsored this event at $2,000.

UTAH LIFE SCIENCE SUMMIT

BioUtah hosts an annual Utah Life Science Summit at the Hilton Salt Lake City Center at which they have an awards ceremony luncheon for those dedicated to the life sciences industry. This year's event was held on November 5, 2015. The STEM Action Center sponsored the recognition of six high school students at this event for their efforts in STEM related subjects. Sponsorship included trophies, two tables at the front, and logo recognition. More than 400 people attended the event from industry, government, and higher education. The STEM Action Center sponsored this event at $1,500.

UTAH SCHOOL COUNSELOR ASSOCIATION CONFERENCE

The Utah School Counselor Association Conference is an annual conference; this year's event took place on November 13, 2015 at the Jordan Academy for Technology and Careers for Utah School Counselors. The Utah STEM Action Center used this event as a way to promote STEM resources to counselors. More than 500 attendees from industry and education were at the event. The STEM Action Center sponsored this event at $1,500.

NORTHERN UTAH STEM FAIR

The Boys & Girls Club of Northern Utah, with the support of many of the businesses in Northern Utah, came together for a STEM Fair on November 13, 2015 from 9:30 a.m. to 6:00 p.m. for students and families. The goal of this event was to educate kids and families about the many local careers and job opportunities available in STEM and the existing educational and training paths available and accessible. More than 3,700 students were in attendance and the STEM Action Center sponsored this event at $2,500.

YOUTH TECH JAM
Eagle Mountain City (EMC) hosted the 1st Annual EMCity Tech Jam for all kids and youth (ages 9-18) in Eagle Mountain City and surrounding areas on Saturday, December 5, 2015, from 1 p.m. to 5 p.m. At this event, EMC partnered with local developers to teach the participants how to code and develop their first App and Video Game. More than 475 students were in attendance and the STEM Action Center sponsored this event at $2,500.

I HEART TECH
More than 500 underserved students attended I Heart Tech, which was a full day of activities at Adobe in Lehi on December 5, 2015, engaging students in Graphic Design, Web Design, Game Design, Robotics, Digital Publishing, and Code.org. The STEM Action Center sponsored this event at $2,500.

CRAFT LAKE CITY/ENGINEERING BUILDING
Craft Lake City, held at the Gallivan Center from August 14-15, 2015, hosted an Engineering STEM Building where the STEM Action Center interacted with students, parents and industry for two days. More than 20,000 attended the event. The STEM Action Center sponsored this event at $1,500.

SOUTHERN UTAH STEAM FESTIVAL
The Southern Utah University Center for STEM Teaching and Learning, the Orchestra of Southern Utah, Cedar City Library in the Park, Iron County School District, and Southern Utah Sustainable Operations Partnership collaborated to plan a two-day STEAM festival in early 2016. They invited STEM organizations, art organizations, and businesses from across the state to set up booths in the Heritage Center conference center for two days of hands on learning. More 2,200 people attended from the community. The STEM Action Center sponsored this event at $5,000.

SHETECH
SheTech Explorer Day is a conference for high school girls in 9th through 12th grade. More than 1,000 girls attended this event at Utah Valley University's UCCU Center. Students interacted with different companies that have technology at their core to see if it is a right fit for them. This day-long event included hands on activities in science, technology, engineering and math (STEM). The STEM Action Center sponsored this event at $5,000.

MOUNTAINLAND CODE CAMP
On April 1, 2016, at the Xactware Corporate Offices, Code Camp held a programming, design, and entrepreneurship 24-hour contest event. Teams ranging in size from two to four participants compete against other teams to build the best web or mobile app. Code Camp is for high school students throughout the Mountainland region (Summit, Wasatch, and Utah County) who are interested programing and design, just exploring, or aspiring to become programmers. More than 100 students attended and the STEM Action Center sponsored this event at $1,500.

STAND BESIDE HER MENTOR LUNCHEON

On March 4, 2016, at the Hilton Salt Lake Center, more than 300 business, civic, and community leaders came together to celebrate female leadership and honor individuals and corporations who are making positive changes in our communities. Great emphasis was placed on STEM, with several girls having the opportunity to be mentored by STEM leaders. The STEM Action Center sponsored this event at $2,500.

UTAH PUBLIC ASSOCIATION OF CHARTER SCHOOLS
Utah's largest gathering of charter school leaders and educators, approximately 600, came together on June 13-14th at the Davis County Convention Center. The STEM Action Center had a booth, promotion on their t-shirts and the opportunity to network during meals and work on future collaborations with the Charter Schools to increase STEM awareness. The STEM Action Center sponsored this event at $1,500.

JATC AND SLCC BIOTECHNOLOGY SYMPOSIUM
Biotechnology students from Jordan and Canyon's School Districts and from the Salt Lake Community College participated in inquiry based hands on independent projects in state of the art biotechnology facilities. These projects were displayed and presented in poster format in the Health Sciences Building at the Salt Lake Community College. On May 20, 2016, students described their research to academic and industry professionals that judged the posters in a number of categories. They invited local biotech companies and gave them the opportunity to set up tables to share information to help students. More than 100 students were impacted and the STEM Action Center sponsored this event at $2,500.

BEEHIVE SCIENCE AND ENGINEERING ACADEMY STEM EXPO
Utah STEM Expo was attended by students in 6th through 12th grade showcasing their projects and demonstrations. There were projects from science, math, engineering and computer science performed by students from Beehive Academy and other schools. The event took place on April 25, 2016 with more than 4,000 students impacted. The STEM Action Center sponsored this event at $2,500.

OTHER SPONSORED EVENTS:
STEM Fun Run ($870, 150 impacted, SLCSE, October 10, 2015); Governor's Science Medals ($500, 240 impacted, Rio Tinto Stadium, January 13, 2016); UTC Legislative Meet and Greet ($500, 1,400 impacted, Utah Capitol, February 3, 2016); Science Fair and STEM Night ($50, 325 impacted, Horace Mann Elementary School, February 4, 2016); Utah Science Teachers Association ($150, 300 impacted, Utah Valley Conference, February 5, 2016); Bridgerland Applied Technology College ($500, 4,000 impacted, BATC Logan Campus, March 4-5, 2016); Super Science and Math Night ($500, 500 impacted, Windridge Elementary School, May 2, 2016).

UTAH STEM FEST
The Utah STEM Action Center partnered with Utah's Industry to put on the second statewide STEM Fest from February 2-4, 2016 at the South Towne Expo Center. There were 66 sponsors from industry, government and higher education—more than 30 of those were from industry—

totaling $122,700 in cash sponsorships. The STEM Action Center contributed $17,591 of its operational funding to the event, along with over 300 hours in staff time.

More than 17,000 seventh and eighth graders throughout the state attended. The event was opened to the public on Tuesday evening with approximately 3,500 additional attendees for family night. Students were from 28 Utah school districts and nearly 50 charter schools, in addition to several home school students (see Appendix C). Sponsorships were used to fund STEM Fest, along with funding bus scholarships to help lower transportation costs for schools. 51 bus scholarships were awarded for a total of $17,251.20.

A list of sponsors for STEMFest 2016 is included as Appendix D.

There have been many districts that have indicated that they are unable to send students to the STEMFest due to the hectic nature of spring with testing. It has been decided that the STEMFest will be held in the fall of each year rather than the spring in order to allow for greater access to all Utah students. The next STEMFest will be held in the fall of 2017.

STEM INNOVATION AWARDS

The STEM Action Center held the second STEM Innovation Awards in partnership with Utah Technology Council at their annual Utah Innovation Awards luncheon on May 11, 2016. There were more than 400 industry leaders in attendance at the award luncheon.

The STEM Innovation Awards are an opportunity to recognize a student, teacher, counselor, principal and mentor in Utah who excel in science, technology, engineering and math (STEM). Nominations were open to the general public from February to March 2016. The STEM Action Center team and the STEM Action Center Board, through a rigorous process, selected this year's honorees.

- Student: Emily Naylor, Senior at Mountain Heights Academy
- Teacher: Katie Rogers, 4th Grade STEM Teacher at Thunder Ridge Elementary
- Principal: Matthew Lowe, Title I School Site Coordinator at Hurricane Elementary School
- Mentor: Steven Shumway, Professional Development Provider for K-12 STEM Education at Brigham Young University
- Counselor: Zekeriya Temircan, Academic Dean at Beehive Science and Technology Academy

STEM BEST PRACTICES CONFERENCE

The STEM Action Center held the second annual STEM Best Practices Conference on June 21, 2016 from 8 a.m. to 4 p.m. at the Salt Lake Community College Larry H. Miller Conference Center.

The conference was an opportunity to learn about STEM Best Practices from Utah community experts and leaders in the K-12 STEM community. There were 425 registrants from 12 different states, 20 Local Education Agencies (LEAs), 45 cities and 84 schools. Thirteen industry partners supported panel presentations (BioUtah, Intermountain Healthcare, Utah Technology Council,

Utah Career Center, US Synthetic, LanDesk, BioInnovations Gateway, Boeing/Utah Aerospace Pathway, Launchpad, Orbital ATK, Janicki and Xactware) and the following university partners participated as presenters: the University of Utah, Dixie State University, Southern Utah University, Brigham Young University, Utah Valley University, Weber State University and Utah State University.

The following feedback was provided by participants:

- "Lots of good ideas to collaborate with industry!"
- "It was so beneficial to hear what other administrators have done at their schools."
- "It was nice to see what some of the resources are that are available."
- "I appreciate all of the opportunities and help the STEM Action Center provides."
- "Great ways to involve industry in the classroom-got lots of ideas from here."
- " I learned a lot that I will use in my class!"
- "Working with other STEM educators from around the state and building networks. I loved the Keynote as well he was inspirational!"
- "Overall more confidence in talking STEM in my classroom"
- "Thank you! It was a great day!"
- "This conference was very efficient, I liked that it was one day, and that there were so many sessions packed into one day. I also liked the vendors that were there and the museums area. Great job!!"

There were a total of five sessions throughout the day. Each session included five different breakout strands for educators, administrators, industry, informal science education groups, and higher education. In the 5 sessions, each strand had a different theme and topic they would discuss with their breakout audience.

The first and second breakout sessions for educators discussed STEM Action Center opportunities and grants. The third breakout for educators was titled STEM Books: Literature in STEM, which featured local librarians and STEM-related books. Our new and upcoming app STEM MX was discussed in the fourth breakout session, and hands on STEM activities were discussed in the last session.

For the administrator strand, our speakers talked about elementary and secondary STEM schools in the first and second breakout sessions. Session three was dedicated to engineering in elementary schools and supporting STEM students in elementary. In sessions four and five, speakers discussed STEM initiatives and STEM elective courses for secondary schools.

Our industry breakout sessions throughout the day had the theme "skills development and career pathways." Members of 12 different companies spoke throughout the day about their industry-education partnerships which are growing STEM in Utah by working to help students develop the skills and talent necessary to fill the career paths of the future.

Attendees also had the option to spend a session at our "innovation hub" where informal science education groups such as Utah Hogle Zoo, Hawkwatch, Clark Planetarium, etc. had a chance to speak with educators about resources or just simply swap ideas at their tables.

UTAH JAZZ AND CENTURYLINK STEM STUDENT RECOGNITION

The Utah Jazz, in partnership with CenturyLink and the STEM AC, presented six awards to outstanding STEM students during the 2015-2016 basketball season. The students were nominated by a teacher and selected by the STEM AC staff to receive a customized Jazz jersey during half time at a Jazz game. The following students were recognized:

- Andrew Hutchins, BioInnovations Gateway senior
- Jessica Ivie, Copper Hills High School senior
- Ivan Cardenas, Hunter High School senior
- Jonah Rosenberg, Academy for Math, Engineering and Science junior
- Robert Lytle, DaVinci Academy of Science and the Arts freshman
- Melissa Hernandez, Ogden High School senior

CenturyLink donated $10,000 to the STEM AC during half time at the last game of the season. The use of this donation was discussed previously under the STEM assembly section.

TESORO MOBILE CLASSROOM

The STEM AC received a grant for $1.5M over five years to fund the design, purchase, retrofitting, and operation of a mobile classroom. The Utah Transit Authority (UTA) has donated two, 40-foot buses and a ten person van to the STEM AC.

The STEM bus will focus on curriculum content that aligns with math and science standards in STEM-related areas and will emphasize hands on activities that highlight and showcase Utah companies and their technology. The STEM AC is exploring options for one of the busses to showcase technology (e.g., virtual and/or augmented reality) that can also serve to provide training in areas such as welding or other STEM-related trades. The STEM AC is fully engaged with the Informal Science Education Enhancement (ISEE) group to ensure that the STEM bus is synergistic with these informal science education partners that already have mobile education opportunities in their defined subject areas. The bus will be particularly beneficial to Utah rural schools that often do not have the critical mass of students to justify fully equipped engineering or science labs. There are plans to determine if the bus can also help to support professional learning opportunities for educators, particularly those in rural areas.

The retrofit on the first bus is projected to be completed by January or February 2017. A ribbon cutting and a series of promotional events are being planned. There are over 100 requests for visits in spite of the fact that no formal announcement has been made for reserving visits.

UTAH AEROSPACE PATHWAY PROJECT

In March 2015, the Boeing company approached the State of Utah about doing an industry-focused educational program. They asked for a specifically designed curriculum that met their

industry standards. As the project evolved Boeing invited several other businesses, including Harris, Orbital ATK, Hill Air Force Base, Hexcel and Janicki Industries, to be part of this partnership.

The STEM AC worked with the Governor's Office of Economic Development to find two school districts, Granite and Davis, to work with corresponding post-secondary training institutions, Salt Lake Community College (SLCC) and Davis Applied Technology College (DATC). Beginning fall of 2015, high school students in these districts will be able to enroll in this innovative program and have the opportunity to seek employment with these businesses.

The STEM AC worked with the school districts to define the pathway and curriculum that will allow students to take a first semester class that teaches the basics of manufacturing. During the second semester students will get more advanced training at SLCC or DATC. During the second semester students will also get an opportunity to be part of an innovative internship with one of the industry partners. Those students age eighteen and older will have an opportunity for employment immediately following the school year.

This is the first time that major industry partners have stepped up and taken a very active role in a K-12 education partnership. Boeing selected Utah to pilot this program because they knew that Utah would perform well and that this would provide them with a template to use in other states. A press conference on September 4, 2015 was held by Governor Herbert to celebrate this successful partnership.

Replicating and expanding the UAP model to other industries and school districts will reshape the high school experience, especially in underserved populations of students. As this program expands it aims to help all students move into pathways that lead to postsecondary education and meaningful careers. With these common elements in place the high school experience will be transformed into a catalyst that will better ensure college and career success.

There are five critical areas that must be part of future expansion and replication of Career Pathways:

- High school students must be admitted at little or no cost to a local post-secondary institution during their senior year to better understand the higher education world.
- Students must receive meaningful industry experience.
- Professional learning communities must provide a support network between counselors and teachers to identify aptitudes within students to provide enhanced counseling.
- Labor market data must be used to provide guidance and knowledge to help students make educated decisions.
- The models must provide short-term training for adult learners to create opportunities to continue their education.

The STEM AC is using critical elements of the UAP model as it builds out the K-16 Computing Pathways initiative.

R&D role of STEM AC (63M-1-3204; 2 (a)- (c); (f))
The STEM AC continues to integrate third party assessment for many of its projects. The STEM AC has contracted with Utah State University for a third party evaluation since its inception. This has been a well-executed contract with high quality support from Dr. Sarah Brasiel. There has been considerable turnover with the evaluation staff at USU in this past year with the departure of Dr. Brasiel and her successor, Dr. Nadelson. The contract ends December 30, 2016 and the STEM AC staff has taken this as an opportunity to evaluate the current status of evaluation needs for the projects. It is anticipated that the scope will change and the STEM AC and Board feel that it is their due diligence to review current and ongoing needs for evaluation.

The integration of R&D as a core function of the STEM AC has proven to be quite valuable in many ways. The data collected for several of the projects, such as the K-12 math tools, provides useful information to districts for the selection of supplementary educational tools. Resources are limited and it is crucial that districts have the information they need to determine which tools are best suited to their needs. This helps to mitigate the selection of tools that are not of high quality and shown to work. Qualitative survey data is critical as well. For example, research indicates that one of the biggest factors for success in a professional development or learning strategy is educator buy in. Survey data allows the STEM AC to determine if certain platforms (i.e., the video-based, online platform) are being integrated appropriately to gain optimal educator buy in, and thus high rates of adoption.

The STEM AC also works with Local Education Agencies or LEAs (LEAs are defined as school districts or charter schools) to design, implement and oversee grant programs that test promising and best practices in key areas of STEM education and talent development. This allows LEAs and the STEM AC to be more effective in future program support and design.

The parameters of the evaluation (such as metrics and data that is to be collected) are defined by the requirements of the STEM AC's statute, and recommendations by the third party evaluator, the Utah State Board of Education, and LEA partners.

The projects for which there is an emphasis on third party evaluation and assessment include (1) implementation and outcomes of math tools in K-12 classrooms (2) implementation of high quality professional learning that integrates video-based, online professional development tools and materials with face to face professional learning (3) design and implementation of an elementary STEM endorsement (4) implementation of products and materials with the necessary professional development to improve applied science and technology in 7th and 8th grade Career and Technical Education courses and (5) implementation of high school STEM certifications that are industry-recognized and facilitate employment in available STEM careers. The math tools and professional learning projects are long-term with ongoing funding. The elementary STEM endorsement is funded from one-time funds but the program is designed as a three-year program and funding is allocated based upon that implementation and evaluation plan. The one-time funding for the applied science project has lapsed, however the data continues to be collected for the 2016-17 school year. Finally, the high school STEM certification project has closed the

majority of the original grants funded, with a few that have been granted no-cost extensions and two that have received amendments to their projects.

Review and acquire STEM education related technology 63M-1-3204 2 (c)
A core function of the STEM AC, which is a critical component of the R&D process, is the review and evaluation of STEM education-related materials and products. The STEM AC works closely with the State Division of Purchasing office to comply with all required procedures for the solicitation, review and contracting of product providers. The STEM AC works diligently to bring in subject matter experts (from LEAs and the Utah State Board of Education) to review the quality and appropriateness of educational tools.

The STEM AC is entering the third year of the K-12 math digital learning tools project (school year 2016-17) and has completed the solicitation and procurement of products for Year 3. There were several challenges faced with this process, but the State Division of Purchasing team has been very willing to work with the STEM AC to explore solutions.

The completion of the second year of evaluation (2015-2016 school year) will allow the STEM AC, in partnership with the USBE, to continue to use the third party assessment results to select only those products that have yielded meaningful effect sizes for student achievement, yielded high levels of educator and student satisfaction, and provided a reasonable expectation for the ability to keep the tool relevant.

Use resources to bring the latest STEM education learning tools into the classroom
63M-1-3204 2 (f)
The STEM AC focuses on using resources that bring the latest STEM education learning tools into public education classrooms. This can be seen with the continued support for the implementation of math digital learning tools in K-12 classrooms. These tools infuse the use of technology to support the improvement of math skills for students and they also help to support the preparation of students to achieve greater success in postsecondary STEM-related programs. The STEM AC is working with LEAs and data from the third party evaluation to better understand how to incorporate the use of digital learning tools more effectively into the classroom. This will be a focus for year 3 with the math learning tools and will leverage the video-based, online platform that is used for the professional learning project.

The STEM AC has secured several grants over the past year that will allow for the use of innovative practices in the classroom, as well as outside of the classroom. This includes the Tesoro grant for the Mobile STEM Classroom and the Intermountain Healthcare grant that supports the creation of innovative teaching modules in the classroom that build STEM concepts within engaging topics such as outdoor recreation, healthy lifestyles, nutrition and medicine. These modules are being created by cohorts of teachers across the state. They are aligned with the core and standards and will help to bridge concepts to careers in the context of highly engaging topics. The grant also allows for educators to participate in summer field experiences to STEM-related companies that work in areas of healthcare and healthy lifestyles. These summer

experiences better prepare teachers to effectively integrate the latest STEM tools and technology into their classrooms.

Support of STEM-related competitions, fairs and camps, and STEM education activities (63M-1-3204; 2 (d))

The STEM AC funds and oversees three grant programs: (1) Student Fairs, Camps and Competitions (FCC), (2) Classroom grants and (3) Organization grants. These three grant programs are funded from the STEM AC's operational budget.

Fairs, Camps and Competitions

The STEM AC funded 1,113 students for the Fairs, Camps, and Competitions (FCC) micro-grant program during fiscal year 2016. A total of 660 applications (the applications represented individual students as well as teams) were received and a total of $217,740 was allocated from the operational budget to support students in the FCC program. The FCC program supports a variety of STEM-related activities for students. This year the STEM AC offered two solicitations for the Student FCC grants; Fall and Winter. From the Fall solicitation we funded several robotics teams participating in events such as FIRST Lego League, FIRST Robotics, VEX Robotics, FIRST Tech Challenge etc. Students were awarded funding for their school science fairs. From the Winter solicitation students were awarded funding for STEM summer camps. A few popular camps among the awardees were Build Camp, GREAT Summer Camps at the University of Utah and Discovery Space Camp. A spreadsheet with all activities that students participated in is included as Appendix E.

The STEM AC staff, with Board input, has reviewed the impact and inherent risk of the FCC grant program. The STEM AC has identified several areas of risk with the implementation of the program. The students are required to identify mentors on their applications. The funding is provided to individual students and their mentors, which makes it challenging to track the disbursement of the funds and ensure that they are received and appropriately used. It is difficult to administer a competitive grant program to young students and their mentors and/or parents. The emotional challenges that result from funding one student but not another, the cost of oversight for the program, and the challenges related to measuring impact have made it apparent that this may not be an appropriate mechanism to support students. The STEM AC, with its Board, has determined to put the program on hold until a more effective mechanism can be identified. There are several options that have been considered, including working through a school or district as the fiscal agent. The Board has indicated that they feel that the program is valuable and have directed the STEM AC team to find a different, lower risk mechanism.

Classroom Grants

Classroom grants for the 2015-16 school year were varied in scope and subject. Included in this vast array of STEM work were kindergarten students learning about life cycles and the environment by observing a local waterway and noting changes throughout the year. In January, this same kindergarten teacher worked with DWS to have trout eggs brought into the classroom where students cared for the eggs and the eventual hatchings. In the spring these students were able to release their fish into the waterway they had been observing all school year. Another

project involving 1st and 2nd graders provided funds for hands on blocks of each number varied in size depending on the number they represented. These were used to develop number sense, as well as addition and subtraction skills. Middle school students learned about reproduction methods of hydra by physically splitting specimens, then caring for the new specimens created by the experiment. High School art students had the opportunity to use three-dimensional pens to investigate volume and matter associated with sculpture. Teachers that participated in the program feel very positively about the changes they were able to make in their classrooms to make learning more relevant and immediate for their students. The Classroom Grant for educators impacted approximately 9,883 students, with 280 applications received and $77,270 allocated to the grants from the operational budget. A summary of the districts, grades, number of students and brief project descriptions is included as Appendix F.

Organization Grants

The STEM AC funded nine STEM-related organization grants that impacted approximately 4,519 students, with $30,425 allocated from the operational budget. These organizations included the FIRST Tech Challenge, Utah Science Olympiad, Utah State University Computer Science Department, Envirothon, Weber State University Prep, MESA, Bridgerland Applied Tech Center, FIRST Robotics and Refugee Coding Camp.

- FIRST Tech Challenge (FTC) is a low-cost program designed to inspire and increase the interest of young people (ages 14-18) in STEM fields. The FTC offers students the opportunity to design, build and program robots; build experience and confidence with complex STEM-based concepts; document the engineering design process; develop problem-solving and team-building skills; enhance their public speaking skills; and compete and cooperate in alliances during tournaments. Additionally, FTC enables high-school students to solve real-world challenges and offers a life-changing experience to help students realize a STEM career is feasible for them and have the confidence to pursue complex, challenging educational goals.

- Utah Science Olympiad's main goal is to encourage students at early age (starting in middle school) to begin exploring STEM disciplines through participation in a grand tournament of science and engineering events. These events cover a multitude of STEM related disciplines such as genetics, chemistry, anatomy, physics, engineering and technology. The events are hands on and engaging and require students to investigate the world around them.

- The Utah State University (USU) App Camp was designed for students entering 6th-8th grades to learn App Inventor. USU hopes to increase the number of middle school students, particularly girls, in camps that teach them how to program while exposing them to near peer and industry mentors to highlight career opportunities in the tech industry.

- The Envirothon competition helps students develop knowledge and skills necessary to address complex issues and challenges associated with managing natural resources through scientific principles within their communities, their State, and North America. At the same time it gives them a greater sense of confidence and ability to become active, involved citizens. Students gain experience working collaboratively as a team, and learn the aspects involved in land management and community decisions while gaining valuable exposure to a range of STEM disciplines and potential career paths.

- Weber State University's PREP program helps students prepare to take advanced level math courses in high school, enabling them to be qualified for math, science, technology, and engineering majors in college. It hopes to inspire students to pursue a future in STEM professions, which will have a significant impact on the local community and state workforce by providing highly skilled individuals prepared to meet the demands of a technology driven workforce.

- The MESA Regional, State, and National Competitions are designed for middle and high school students. Students are required to complete one engineering project for these events. MESA encourages creativity and problem solving, while keeping students occupied and off the streets after school.

- The Bridgerland Applied Technology Center (BATC) VEX Robotics Competition helps high school and junior high students in Northern Utah become interested in and develop STEM skills in programming, troubleshooting, and team building. The competitions are a great way to introduce high school students to BATC programs and to local employers in STEM fields.

- FIRST Robotics (FRC) is a robotics competition for high school students. FIRST hopes to get students excited about STEM pathways after high school. It has been determined that 90% of all students who participated in FRC, are now either in a STEM career or studying a STEM field in college. Women who participate in FRC are four times more likely to go into a STEM field.

- Cotopaxi is committed to empowering people to lift themselves out of poverty by creating sustainable income opportunities. This led to the creation of the Refugee Coding Camps. The company believes teaching computer science creates a clear pathway to jobs, addressing one of the fundamental needs of a community of more than 60,000 refugees in the state of Utah.

Identification of best practices being used outside the state and learning tools for K-12 classrooms (63M-1-3204 2 (h and i)
The STEM AC team continues to reach out to other states to explore best practices. Annual attendance at the Midwest STEM Forum allows the STEM AC to learn about best practices that are

being employed in multiple states such as Kansas, Indiana, Iowa, Missouri and Wisconsin. The STEM AC has been in conversation with STEM initiative directors in other states including Washington, Massachusetts and Arkansas. Several best practices have been identified, including the strategy that Arkansas has deployed for its computer science initiative. This is a partnership between the Governor's Office and the Arkansas Office of Education. The STEM AC has been in regular conversation with Anthony Owen, the Computer Science Coordinator in the Arkansas Governor's Office to learn what has worked for them, as well as lessons learned. The STEM AC has been working with Patrick D'Amelio, the CEO for Washington STEM, to learn about their method for strategic planning that they have adopted for Washington STEM in the past year. Their new strategic plan is a result of critical "lessons learned" from the past five years of operation. The STEM AC has had conversations with Jeff Weld, the Executive Director of the Iowa STEM initiative to explore their approach to a multi-institutional external evaluation team. Finally, the STEM AC has entered into a partnership with STEMx to become part of the STEMx network. The STEMx network is a multi-state STEM network developed for states, by states. The STEMx network consists of 21 states and has created an accessible platform that is shared by member states. This platform allows for access to data and tools that can be used to support STEM efforts. This will allow the STEM AC to become more connected to efforts from across the country.

Provide a Utah best practices database (63M-1-3204, 2 (j))
The Curiosity Unleashed (STEM.utah.gov) website provides access to Utah best practices and content that targets students, parents, educators and industry partners. The content consists of innovative STEM materials for use in the classroom and at home. These materials range from audio and video-based content to links that showcase best practices by Utah STEM stakeholders as well as materials that are hosted by other high quality websites. The website includes information that showcases the variety of career options, the educational pathways and the Utah professionals that represent these STEM career choices. The website includes information regarding STEM events and activities across the State; a description of these events, along with dates, locations and a point of contact are included. Events are posted monthly on a calendar. This content is presented as a searchable library that allows a user to find resources of interest. Contests for students will be hosted, in partnership with industry partners, that allow students to provide input to the website and become more involved in STEM. The annual Best Practices Conference provides an opportunity to share and collect best practices.

The STEM AC has also been working with industry (specifically Comcast, Dell EMC, Adobe and Boeing) to build a mobile app called STEM MX. The app is modeled after the matching services that exist in the public domain that utilize a profile-based submission platform. An algorithm then takes the profiles for "need" and matches them to the profiles submitted for "supply" and determines the best matches based upon keywords and phrases. This mobile app gives educators, counselors and parents an effective and easy way to connect to industry mentors and resources in the STEM community. Educators will be able to access industry mentors for help with STEM-related projects (e.g. helping to teach a difficult STEM subject in the classroom, soliciting industry participation in STEM events, fairs and competitions, etc.). Counselors will have the ability to submit a profile that describes certain careers and STEM areas in which they are deficient in their knowledge and find an industry mentor to educate them. Parents will be able to submit a profile

that can help them find resources such as summer camps, scholarships or STEM-related programs or events.

The beta version has been released as a pilot and we are currently soliciting profiles from educators, counselors, and parents, as well as industry partners. This will result in a near comprehensive database. The STEM AC will work with Comcast to promote the use of STEM MX through media broadcasts and other outlets available with Comcast.

This platform solves the problem of exhausting or overtaxing industry partners. It allows for an industry mentor to toggle between active and inactive for their profile depending upon their current or projected workload. It is anticipated that this control over volunteering will be attractive to industry partners and encourage participation. This match-based platform also facilitates a more targeted approach to finding information. An issue that arises with keyword or phrase searches in a traditional website is that you only get information based upon what you know about the topic. A profile-based option allows for a user to be completely lacking in content knowledge in an area and still find useful resources and mentors.

The STEM AC is working closely with the Utah DWS and USBE to collaborate on the Utah Futures website. The STEM MX mobile app provides an additional mobile opportunity for them to access and allows for a very robust data set to be used in both the Utah Futures website and STEM MX. The STEM AC, DWS, and USBE will work together to share training sessions for educators and counselors.

Keep track of how the best practices database is being used and how many are using it 63M-1-3204 2 (k) i and ii – The STEM Best Practices database is defined as the STEM website that is used to collect resources in STEM stakeholder community. The following information has been tracked based upon use of the website: during the 2016 fiscal year the STEM Action Center website had 106,517 page views, 33,325 new users, and 47,271 sessions. These numbers have all increased compared to FY2015. The social media accounts for the Center include Facebook (1,020 followers), Twitter (685 followers), Instagram (150 followers), LinkedIn (122 followers) and Google+ (16 followers).

The objective of our web assets is to inform and promote STEM opportunities to community members and foster an online network dedicated to STEM education. The STEM Action Center's web assets have seen significant growth from fiscal year 2015 to fiscal year 2016.

The STEM Action Center has a combined total of 1,993 followers across all social media platforms, a 111 percent increase from last fiscal year's cumulative 943 followers. An average of 22 posts/tweets a month promoted events and services, and highlighted STEM news across the state and nation. Our social media accounts drive traffic to our main website, STEM.utah.gov and event-affiliated websites such as stembestpractices.com. Social media is a valuable tool for promoting events. Traffic increases before and after events as more and more individuals rely on social media for information. Using the STEM Best Practices conference as anecdotal evidence, we find reach

increases by approximately 3,000 people in both the month prior to, and the month after the event.

The STEM Action Center website is a resource for students, parents, educators and industry to learn about activities and efforts across the State. During the 2016 fiscal year, the website (STEM.utah.gov) also had modest gains in page views, users, and sessions, from the last fiscal year. The data shows the STEM AC is continuing to build a community that relies on the website often. New visitors increased 33 percent during the 2016 fiscal year, while 63 percent of visitors are new. With a low bounce rate, which indicates visitor retention, visitors are browsing through to find out more about the STEM Action Center. The top three pages include our programs for educators, and grants.

Join and participate in a national STEM network (63M-1-3204 2(l))
The STEM AC joined STEMConnector, a national organization that supports the STEM community not only at a national level, but regionally as well. This membership expired and we are now considering a different approach. STEMConnector provided excellent networking opportunities at various events, as well as considerable national exposure. The STEM AC has built a positive relationship with STEMConnector and will continue to work with STEMConnector and the Million Women Mentors initiative.

However, the STEM AC has decided to join STEMx, another national level organization that has evolved to be more service-oriented, with less focus on membership (thus, less overpriced membership dues). This organization is also led by states and their STEM initiatives, which is more appropriate for the STEM AC.

STEM School Designation (63M-1-3204, 2 (n))
The STEM AC, working with the USBE, has generated a comprehensive plan for a STEM School Designation program. This plan was included in the FY 2015 annual report. The Utah State Board of Education and the STEM AC Executive Board have approved the criteria. The first solicitation for applications was released in early September of 2015 and recently closed. There were 37 schools that submitted a notification to apply, with 24 schools actually completing the application. 19 of those schools were awarded STEM School Designations. A summary of the awardees is included as Appendix G and a sample designation proposal is included as Appendix H.

Support best methods of high quality professional development for K-12 STEM Education (63M-1-3204 2 (o))
OVERVIEW:
The STEM AC has been working collaboratively with the USBE to design and deploy a high quality professional learning platform to LEAs. The statute requires that a video-based, online platform be used for the deployment of professional development. The statute also allows for hybrid learning activities, such as face-to-face professional learning opportunities.

The funding for the professional learning program was awarded in July of 2014.

School year 2014-15: The first year was focused on soliciting applications from LEA's to request the licenses that provided the video-based online platform(s), which were selected through a Request for Proposals (RFP) process described in following sections. There were two product providers selected for the project: School Improvement Network (SINET) and their product Edivate and Scholastic in partnership with the Teaching Channel. The LEAs were required to describe the focus or intended use of the licenses in their existing professional learning plan. The STEM AC provided guidance when approached, but intentionally allowed the LEAs to lead out on their own design and implementation plan. The intent was to allow the LEAs as much local control and oversight. For instance, an LEA could choose to target all new educators, or science and math educators. It was their decision to determine which educators were provided access the professional development opportunity.

License distribution and training for use of the video-based online platforms was conducted by the product providers over the remaining portion of the school year. The product provider, SINET, created 50 new STEM-based videos for viewing by the educators. The purpose of the videos was to help to guide educators with best practices in content-based pedagogy or instructional methods. Once the videos were viewed the teachers were encouraged to target the use of new practices in their classroom and videotape themselves. The resulting video was to be uploaded and viewed by the educator and their coach, accompanied by self-reflection, to help provide ongoing instructional development for the educator.

Usage was tracked and reported by the product provide and reported in the 2015 annual report. It was fairly low during the first year due to the time required for license distribution and educator training. The primary reason for low usage was that the majority of LEA's only began to access the video-based on line platform by January of 2015. The STEM AC tracked feedback from LEAs to identify issues that were preventing the project from being successful. A number of issues were identified including: the need for a more defined implementation plan for how the LEAs would ensure high fidelity adoption of the platform, diversification of professional learning opportunities, and additional support from product providers.

School year 2015-16: The 2015-16 school year represented the first full year of implementation for Edivate. The LEAs submitted their applications with a total request of 16,016 Edivate licenses at the beginning of the year and 37 LEA's participating. The product providers worked with LEAs to develop a more robust implementation plan around the use of the platform.

The overall purpose of the more robust implementation plan was to assist each participating LEA to:

- Establish a full, detailed strategic professional learning vision and implementation plan.
- Identify goals and objectives of the implementation
- Create metrics and measures of success for the implementation

- Align the use of Edivate tools and resources in support of the overall vision and goals for professional growth.

The School Improvement Network (SINET) created an additional 50 STEM-based instructional videos for the platform.

The second product provider, Scholastic in partnership with the Teaching Channel, was dropped from the program during the 2015-16 school year, due to a failure to deliver the required training to educators. The agreement was terminated under the terms of the contract. The Scholastic product and program was soon after acquired by a different company and operating with a different business scope altogether.

The STEM AC worked closely with SINET, the sole product provider for this project, to focus on increasing usage or adoption of the platform. There were numerous strategies deployed by SINET but it became clear by the middle of the school year that usage was still not increasing to an acceptable level. The STEM AC team spent a considerable amount of time reaching out to partners in LEAs to determine the reasons behind the slow adoption of the platform. The research indicates that the ability of an educator to view and self-reflect on their own teaching is one of the more effective strategies to improve practice in the classroom. Thus, it appeared that other challenges existed.

The feedback was extremely helpful and allowed the STEM AC, working with LEAs, the USBE and SINET, to identify key issues to focus on for the 2016-17 school year. These included (1) an excess of licenses requested from LEAs; for many LEA's the videos are being watched in a group setting and thus multiple licenses are not necessary (2) low usage of the licenses which translates into a lack of adoption by the teachers (3) a focus on watching classroom management videos rather than the STEM videos that were created (4) insufficient oversight by the product provider (5) teachers were reluctant to upload videos of their own teaching for self-reflection and evaluation (6) training had been provided primarily for administrators at school and district levels, which did not provide adequate opportunities for teachers to become familiar with the product and (7) technical issues for uploading of teacher self-videos. A complete matrix is included as Appendix I that outlines the issues and challenges that have been identified, the solutions that are being applied to those challenges and how the STEM AC, working with LEAs, SINET and USBE, will track the degree of success with each solution.

<u>Specific strategies to address the above issues</u>

Lack of adoption

The STEM AC worked diligently with LEAs to determine why the video-based, online platform was not being adopted at higher usage rates during the 2015-16 school year. The STEM AC determined that the intent of including a more robust implementation plan was good. There needed to be a starting point and allowing for more local control was well received. However, the feedback from LEAs indicated that there was a lack of communication in requirements and guidelines for usage. The LEA's felt they were addressing their goals because their goals were very loosely defined and included things like "give teachers access to online PD," which didn't define user expectations and

limits. The STEM AC also determined that it was time to move to a hybrid approach, with a blended strategy of the video-based, online platform and face-to-face interactions. This hybrid approach is allowed by statute, however it was determined early on, in partnership with the USBE, to begin with the required video-based, online platform initially to keep the implementation simple.

The STEM AC was proactive and worked with the math, science and STEM specialists at the USBE to draft and release a Request for Grants for the 2016-17 school year that allowed LEAs to submit a grant request in which they could apply for additional funds to support the adoption of the SINET platform. The grant solicitation included the following criteria: (1) the requirement to use the Edivate platform (2) the requirement for the use of SMART goals with specific measurement metrics to address the lack of defined goals relating to STEM professional development (3) clearly defined goals relating to STEM-specific professional development (4) usage and participation requirements for grant components other than watching videos within the Edivate platform.

The applications were due April 29, 2016. Applications were reviewed and awarded by May 20, 2016 to allow for a timely deployment for the 2016-17 school year. There were 144 applications submitted and 78 were funded. The feedback from LEAs is overwhelmingly positive, particularly in regards to being able to define local needs and solutions regarding STEM learning for educators. Specifically, district leaders are excited about the defined opportunities for SEEd (middle school science) standards exploration and application.

There were 15,212 licenses requested as part of the grant application. STEM AC negotiated with SINET and they agreed to donate 7,312 licenses due to low usage from the previous full year of implementation.

A summary of LEAs that were awarded and short descriptions of the goals of the grants is included as Appendix J. These grants allow for LEAs to integrate the Edivate platform into a comprehensive professional learning strategy. The STEM AC feels that this approach remains aligned with statutory allowances and will result in success of the professional learning program.

Change in approach to videos

As stated earlier, preliminary data received from the independent evaluator indicated that 90% of the videos watched in the 2015-16 school year were regarding classroom management. The STEM AC, working with the USBE and SINET, have determined that the use of videos will be more valuable if they target defined needs within the grants, or in other words, are less generic in STEM and more intentional with regards to addressing key needs by LEAs.

To this end, the STEM AC is working with USBE, SINET, and LEAs to create a series of videos that focus on these areas:

(1) Teaching Strategies for the New Science Standards (SEEd): The STEM AC in concert with STEM subject-area specialists from USBE have identified content and exemplary educators for the creation of a library of videos to provide middle and junior high school educators with high quality professional learning associated with the new Utah science standards for grades 6-8.

(2) STEM Equity and Micro-Messaging: The STEM AC has been working on a three-year project with funding from the National Science Foundation (NSF) and the National Alliance for Partnerships in Equity (NAPE), in partnership with Utah Valley University and Park City School District. The data from this study (and similar studies in other participating states) indicate that negative micro-messaging to students regarding their abilities and inclusion in STEM significantly impacts their decisions to pursue STEM-related education pathways. The project provided micro-messaging training to teachers and counselors. The results after one year demonstrated significant increase in enrollments of girls in key STEM classes. Hill Air Force Base has provided a grant to the STEM AC to scale this STEM Equity project to Ogden and Weber school districts. The STEM AC will work with NAPE and SINET to create a series of STEM Equity videos for micro-messaging training. This will provide an even greater opportunity to scale the training to all LEAs.

(3) Math videos for digital K-12: it has come to the attention of the STEM AC that further professional development would be beneficial to K-12 educators to support the integration of the digital learning tools for math.

(4) Middle School Math Instruction: Videos will be created that address the needs of middle school math teachers with the new standards by identifying exemplar educators, concepts, and pedagogical strategies that will benefit the larger math community. These videos will be distributed via the Edivate platform. These videos will focus heavily on multiple representations of math concepts --moving from the concrete to the abstract-- which will result in foundational knowledge, better preparing students with mathematical thinking skills. As this is very different from previous mathematics instruction, these videos will be an excellent way to model how to take students from concrete examples to abstract representations of a concept.

(5) Learning Experiences versus "stand alone" videos: The feedback from LEAs also indicated that adoption would be higher if the videos were embedded in learning experiences. Learning experiences integrate videos with self-reflection, activity-based reinforcement of teaching concepts and simulated applications of targeted pedagogical concepts. The STEM AC is working with SINET, LEAs and the USBE to re-purpose the existing 100 STEM videos and classroom management videos to create a series of learning experiences. These will have more targeted and defined outcomes and it is anticipated that this will help to increase effective adoption of the platform.

Greater oversight from the STEM AC

Distinct points of oversight include a minimum of monthly check-in between STEM AC and participating LEAs, including at least one face-to-face visit in the first half of the school year, monthly usage reports being made available to grant site administrators for better on-site usage monitoring, participant input on custom content, designated reports due twice per year to maintain funding, and providing all required documents and reports up-front so expectations are clear from the beginning of implementation. Another document created determined the task/time equivalents for tasks completed within Edivate that are not timed. This way, users get credit for the time they use Edivate, not just for watching videos but any other tasks, such as observing

another teacher and filling out a reflection report. Bi-weekly meetings, in person or via phone have also been instituted between STEM AC and SINET to address any questions or issues that come up from LEAs.

Comprehensive Assessment Plan
The STEM AC, in partnership with the third party evaluators and SINET, now feel that sufficient challenges have been identified and addressed in the first full year of implementation (2015-16) and that it will now be feasible and effective to move forward to a more comprehensive evaluation strategy (beyond usage) for 2016-17. The STEM AC has requested a summary of the additional quantitative and qualitative data that will be tracked by the product provider. This is still yet to be submitted, but once it is received, the information will be shared with the third party evaluator to finalize an assessment plan for the 2016-17 school year.

Recognize a high school student's achievement in STEM Fairs, Camps and Competitions (63M-1-3204, 2 (p))
There were several activities that recognized achievement in STEM by schools and students. The STEM AC, in partnership with Comcast and the Utah Technology Council, recognized student achievement with the second annual STEMi Awards.The STEM AC, working with CenturyLink and the Utah Jazz, recognized outstanding students in STEM during half time at eight Jazz games last season. Finally, the STEM AC worked with BioUtah for a second year, to recognize five STEM students at their annual innovation awards event. All of these events are discussed in greater detail in previous sections.

The STEM AC has worked with KUTV on more than 40 STEM stories over the 2016 fiscal year ranging from STEM Fest, to student awardees, to STEM company spotlights. You can find these features on the KUTV website at http://kutv.com/features/stem. There are numerous press releases and media spotlights that are included as links with this report as Appendix O.

Develop and distribute STEM information to parents of students being served by the STEM AC (63M-1-3204, 2 (r))
The STEM MX mobile app, previously discussed, will provide access to resources for parents. This app is in the beta test phase and will be launched officially in the first quarter of 2017. The STEM AC also reaches out to parents when they attend student STEM events, such as the DIY fair. Parents are encouraged to sign up for the newsletter and to follow the STEM AC on social media, where they can find out about STEM events across the state and student grant opportunities. The second annual STEM Fest attracted more than 3,500 family participants on open family night.

A specific section on the website is dedicated to parents, where they can learn the significance of STEM and also keep up to speed on the latest events.

Support targeted high quality professional development for improved instruction in education, including improved instructional materials that are dynamic and engaging and the use of applied instruction (63M-1-3204, 2(s) i - iii)

The STEM AC provides oversight to three projects that address high quality professional development for the improvement of hands on, applied and engaging instruction materials. The STEM AC has been working in partnership with the Career and Technical Education (CTE) staff at the USBE to select and implement new materials and classroom tools into 7th grade Introduction to CTE (now known as College and Career Awareness) and 8th grade Exploring Technology. These tools focus on computer sciences and programming, information technology, and engineering. Four products were selected to support hands on instruction (see Appendix A) in the CTE courses. Product providers conducted hands on instructional support during the 2014-15 school year for their project-based platform. The platform varied for each provider that allowed districts to integrate the hands on activities in the most effective way for their programs and students. Full implementation was completed during the 2015-2016 school year. A full evaluation report is included as Appendix P.

The STEM AC worked in partnership with the math and science specialists at the USBE, as well as partners in higher education, to design and implement a new Elementary STEM Endorsement. This endorsement consists of a sequence of six courses that will provide elementary educators with a more in depth understanding of critical STEM topics and innovative ways to implement applied or hands on instruction in their classrooms. The focus of the endorsement is the use of technology or engineering-based applications for science and math. The endorsement program completed its first full year, with 332 teachers enrolled and approximately 310 teachers having completed the courses. The feedback from teacher cohort group leaders was solicited through an emailed survey and it is included (in summary) in the third party independent evaluation (Appendix P).

Finally, the STEM AC is working with the USBE and selected product providers to deploy video-based, online professional learning tools for K-12 STEM educators. The professional learning platform is discussed in detail in previous sections.

Ensure that an online college readiness assessment tool be accessible by public education students and higher education students. (63M-1-3204, 2 (t) i and ii))
The STEM AC, working in partnership with the USBE and Utah Education Network, determined that EdReady did not meet Utah's college readiness assessment needs. LEAs' interest in using EdReady was also insufficient to justify renewing the contract. The digital math tool ALEKS, a McGraw-Hill product, is designed to help students prepare for college math and shows to be a promising supplemental tool in helping students gain greater proficiency in their college math skills.

ALEKS assesses grade level proficiency in high school students. These assessments provide students with a clear understanding of what they have mastered, and what they still need to learn. These results can easily be compared to college proficiency standards to determine if they are at performance levels in math that meet admission requirements. ALEKS also gives students access to developmental math curriculum online that allows them to improve in areas that have been identified as deficient for college admission.

The Board may prescribe other duties for the STEM AC in addition to the responsibilities described in this section (63M-1-3204, 3)
The STEM AC has been involved in additional activities that include the following:

STEM AC STRATEGIC PLANNING
The STEM AC, working with its Executive Advisory Board, continues to evaluate its overall strategy for supporting talent development as well as strategies to coordinate and collaborate with higher education. The Center's strategic plan is included as Appendix K. The strategic plan is supported by the creation of accountability and effectiveness matrices for each of the legislative projects that receive funding. These tools help us track the statutory requirements of the funding, the actions that the STEM AC has taken to align with statutory requirements, the outcomes of the actions, and how the funding aligned with those actions. The accountability matrices are in the process of being updated and will be available upon request once the update is complete.

INTERNAL STEM AC AUDIT
The STEM AC received approval from the Executive Advisory Board in April of 2015 to conduct an internal audit of process and effectiveness. The intent of the audit was to identify weaknesses in operation, accountability mechanisms and effectiveness of program oversight. The audit report is near completion and the STEM AC will review recommendations and observations and respond to them with corrective action.

WORKFORCE ALIGNMENT STRATEGY
The STEM AC has been working in collaboration with the Utah Department of Workforce Services (DWS) via a shared liaison position. The liaison has been actively involved in helping to guide the STEM AC in projects with the healthcare industry, as well as work-based learning efforts with the National Governor's Association and other state partners. The DWS liaison has also been instrumental in overseeing and building out capacity on the STEM Certification grants.

The STEM AC Executive Director and the STEM AC DWS liaison have been working to identify federal grants that align with key initiatives in workforce alignment. The STEM AC strives to be responsive to stakeholder needs and is exploring ways to continue to support the trades as they align with STEM education and workforce alignment. The STEM AC has funded several grants with the High School STEM Certification project (see following section for more details) that target areas for trades education and training. These include the Bear River Consortium (Cache, Box Elder and Rich school districts; $600,000; automated manufacturing), the Corporate Connections in Manufacturing Consortium (Carbon, San Juan, Emery and Grand County school districts; $375,000; manufacturing), the Pathways to Manufacturing consortium (Granite, Salt Lake City, Murray, Jordan, Canyons and Tooele school districts; $500,000; manufacturing), SOAR (Ogden school district; $340,000; advanced composite manufacturing), Phase One of Tooele County School District (TCSD) and Tooele Applied Technology College (TATC) Alignment Project (Tooele school district; $339,000; welding and manufacturing) and AM STEM (Washington County school district; $339,000; advanced manufacturing, construction technology and emergency medical technician). This represents a total investment of $2,485,000 STEM AC funds to projects that focus on trades-related efforts. The Utah Manufacturing Association (UMA) was a partner on two

of these grants. Further, the STEM AC Executive Director Tamara Goetz was instrumental in helping Davis Applied Technology Center secure Utah Cluster Acceleration Partnership funds to design and implement the first industrial injection molding training program in Utah. Additional actions include exploring a possible liaison role with Utah Manufacturing Association, engaging more effectively with the Women in the Trades organization,

Finally, the STEM AC is working to support key talent needs in the state as part of its workforce alignment strategy. The UAP project, described previously, is one example. The K-16 Computing Pathway Initiative that is described below is another example of this strategic alignment.

HIGH SCHOOL STEM CERTIFICATION PATHWAYS

This program is defined by statute, **63M1-3211**, and provides funding to support high school STEM pathways. The two requirements of this grant program are (1) industry-recognized credentials must be supported and (2) the pathway must support a STEM job that is in high demand. The STEM AC, working with a sub-committee of partners in K-16 education and the Utah Department of Workforce Services, reviewed grant submissions and awarded 12 grants. The grants could be early implementation (short-term in design) or comprehensive development (long-term in design, requiring more planning) plans. The overall intent was to support the creation of new pathways or enhance and build capacity of existing pathways.

The grants were awarded to individual LEAs or consortia consisting of several LEAs. The areas of STEM focus included manufacturing, information technology, life sciences and healthcare.

The majority of these grants have closed out and submitted their final reports. Several have requested no-cost extensions or have been amended to address changes in scope.

A report conducted in February of 2016 is included as Appendix L. A full, final report is in the process of being completed. Initial outcomes indicate that 6,919 students participated in the certification pathways, 4,791 students having completed certificates. There were 639 students that completed internships.

K-16 COMPUTER SCIENCE PATHWAY

There are two synergistic approaches to growing Utah's CS/IT talent: (1) meet short-term needs with accelerated training or "up skilling" and (2) a long-term sustainable approach working with education and business partners to build a pathway or a "pipeline."

This initiative will focus on building a K-16 pathway that will allow for stackable credentials within the pathway that are facilitated by clearly defined exit and re-entry points to access credentials. The proposed initiative will focus on key issues that are barriers to access student to CS education and career opportunities.

The STEM Action Center (STEM AC) has been working with K-16 education partners to identify the needs in the pathway. These include innovative outreach, engagement and awareness activities (with a focus on underrepresented populations), robust and industry-relevant content

for courses, classroom engagement with industry partners (this can include time spent in elementary classrooms as well as instruction in secondary courses), a sufficient number of secondary teachers, work-based learning opportunities, and effective articulation with postsecondary partners that increases retention of students in undergraduate programs.

Vance Checketts, Vice President of Utah Operations for Dell EMC, hosted a first-ever "working meeting" or task force meeting that will provide an opportunity for industry partners to commit to helping the STEM AC and education partners begin to build the K-16 computing pathway in their schools, districts, and institutions of higher education. The meeting was held on September 13 from 8:30 am to 12:00 pm at the new Dell EMC location on Frontrunner Boulevard in Draper, UT. There were nearly 40 in attendance representing Adobe, 3M, Landesk, Comcast, Ancestry.com, Vivint, Microsoft, Google, Oracle, IMFlash, Goldman Sachs, eBay, Hill Air Force Base, AT&T, Inside Sales, OCTanner Utah Technology Council, Womens Tech Council, and Beehive Startups.

The resulting commitment from corporate partners will be leveraged to support a potential bill that will be carried forward in the 2017 legislative session. The intended fiscal request with the proposed bill will help to fund a statewide K-16 Computing Pathway program.

The STEM AC is currently targeting small pilot grants with one-time carry over funds to leverage with the legislative funding request. The STEM AC will leverage other resources that it has secured to the computing pathway including the CREATE Lab content (which will be described in greater detail hereinafter).

An additional resource that will be leveraged heavily in the K-16 computing pathway project is the current code.org grant that the STEM AC was awarded in partnership with the USBE. The code.org grant is a two-year project that provides ongoing educator professional learning for the key courses in the computing pathway, including: Exploring Computer Science (ECS; 9th or 10th grade), AP Computer Science Principles (AP SCP; 11th or 12th grade), and AP Computer Science (AP CS; 11th or 12th grade). Additional training provided for by the grant includes: (1) Fundamentals of Computer Science, which provides professional learning for elementary teachers to bring Hour of Code and Code Studio to their classrooms; and (2) Computer Science in Science, which is new to the pathway and helps science teachers integrate relevant computer science concepts that align with state science standards into their science classes.

The grant provides for half of the stipends compensating teachers for participation. The STEM AC received a grant from the Hill Air Force Base to match the other half of the high school stipends ($30,000) and the USBE has matched half of the elementary stipends ($17,000). The STEM AC's work with code.org has resulted in an invitation by the White House to participate in a computing roundtable and to share the efforts in Utah with partners to build out a K-16 pathway.

HIGHER EDUCATION COLLABORATION

The STEM AC has been working strategically with higher education partners on several projects, including CREATE labs and the STEM Equity Pipeline.

(1) STEM Equity Pipeline: The STEM AC has been working with Utah Valley University, the National Alliance for Partnerships in Equity (NAPE), and several Utah LEAs to implement a multi-year project that is funded by the National Science Foundation. The overarching purpose of the STEM Equity Pipeline project is to use root cause analysis to determine the reasons why enrollments for underrepresented populations are unacceptably low in STEM education and career pathways. A pilot was conducted with Park City School District (PCSD) in their middle, junior, and high schools. The first year of root cause analysis was followed by data-driven changes during year two. Year three enrollments for girls in select STEM courses increased dramatically. Data is being collected for Hispanic and Latino students for year four enrollments. The data from this project is available upon request.

The STEM Equity Pipeline root cause analysis work is being scaled to Ogden and Weber School Districts with support from a grant from Hill Air Force Base. This will launch during the 2016-17 school year.

(2) CREATE Labs: The STEM AC received a grant (along with the city of Atlanta) from the CREATE Lab at Carnegie Mellon University (CMU), which is funded by the Infosys Foundation, to establish a CREATE Lab satellite. The overarching purpose of this grant, with the creation of the satellite, is to provide support to implement engaging coding and robotics projects that integrate across the arts, humanities, social sciences, and environmental sciences. The projects specifically target elementary and middle school students. The grant provides resources for four projects and intensive training for project partners to incorporate the projects into the classroom. The pilot for the satellite project includes Utah Valley University and Southern Utah University, along with the school districts in their service areas. The partners recently attended a workshop at CMU to develop a strategic plan for implementation. The CREATE Lab project will be provided as an option for engaging, cross-disciplinary content for the K-16 Computing Pathway Initiative described in the previous section.

Outreach and Engagement

The STEM AC conducts the following outreach and engagement activities as a means to provide project support to teachers and promote STEM AC resources.

- Visits with district superintendents: The STEM AC is working to ensure that all superintendents are familiar with the STEM AC and its resources, and are supportive of their district's participation in STEM AC projects. The Executive Director has had one on one visits with the superintendents of 21 districts to date. These visits took place on site in superintendents' offices, with their administrative teams.
- Site visits to STEM AC projects: The STEM AC team conducted site visits for several projects during FY 2016. These projects included the 7th and 8th grade Applied Science and classroom grants.
    - (1) Applied Science: These visits took place around the state. Positive feedback as well as concerns were discussed at each site. Positive feedback included comments from teachers, administrators, and even students using the materials and curricular components of each of the products. Teachers talked about their lack of knowledge in a former content area being overcome with materials provided for cutting edge

biotechnology topics. Administrators enjoyed having more hands on opportunities for students to participate in. Students commented that they liked doing projects and learning things along the way rather than doing typical school work. While praise varied greatly, the face-to-face teacher visits made clear that after using the products for some time, teachers wanted opportunities to meet with other teachers using the same product to discuss how to use and implement various product materials and/or features.

- (2) Classroom grants: Classroom grants for the 15-16 school year varied in scope and subject. Team members were able to observe multiple projects on-site, including the classroom grant projects mentioned on page 14 in this document. During the 2015-2016 school year, 23 classroom visits for classroom grants were made.

- (4) High School STEM Industry Certification Program: Site visits for this program were completed in December 2015 and January 2016. At each awarded site, a monitoring tool was used to address project scope and progress and to identify any concerns or needs for MOU amendments. Budget discussions were also held to provide an updated forecast of expected expenditures.

- (3)Road trips: The STEM AC team conducted a multi-week "road trip" across the state to provide additional professional development to teachers for the use of the digital math tools and the professional learning platform, Edivate. At the beginning of August 2016, the STEM Roadshow consisted of five events around the State of Utah. These events designed to get the year off on the right foot, providing teachers with opportunities to collaborate, share successes, find solutions to challenges, and receive professional development related to products provided by the STEM Action Center's Math and/or Professional Development grant programs. Across all five locations (Cedar City, Manti, Price, Salt Lake City, and Park City) 471 participants attended sessions providing training and collaboration opportunities related to mathematics technology, and 112 participants attended training for products provided by Professional Development grants. In total 524 participants from 158 schools in 28 districts and 31 charters attended.

  One teacher in particular shared that in his opinion, it was the most worthwhile professional development opportunity in which he had ever participated. He was particularly excited about the ideas and suggestions he had received that would help him track student progress, target instruction to meet student needs, and integrate technology into his classroom more effectively.

- Sponsorship of events for students: The STEM AC uses a portion of its operational funds to sponsor STEM-related events. A total of 26 events were sponsored for the FY2016 with an estimated 63,320 students impacted and a total of $64,470 allocated. The sponsorship recipients are listed in Appendix M.

- The STEM Action Center distributes a monthly newsletter that has a reach of over 3,000 Utahns, with more than 1,000 unique sign-ups at the STEM.utah.gov website since its creation in December of 2014. The newsletter receives an average open rate of 21.6%.

Acquisition of STEM education related instructional technology program – Research and development of education related instructional technology (63M-1-3205)
The STEM AC completed its second full year of training and implementation to support the digital math learning tools project (2015-16 school year). A total of 180,707 students had access to the licenses associated with the math digital learning tools. The program covered 29% of all Utah students in grades K-12, with 78 districts and charter schools participating (523 schools total). There were 9 learning tools that were tested during the second year.

There were numerous "lessons learned" from the first full year of implementation (2014-2015), and the STEM AC was very intentional about applying solutions to those issues that emerged over the first year. A matrix is provided in Appendix N that describes the "lessons learned" from 2014-15 school year and solutions that were applied to the identified challenges. The spreadsheet also describes "lessons learned" from the second full year of implementation (2015-16) and the solutions that are currently being applied and tracked.

In year one districts applied for grants, and we learned that in some cases there was no support or buy in from principals and technology directors. Though in year two it was a still a district application, school principals were required to sign a letter of commitment promising to ensure that students would have access to technology for at least 45 minutes per week to use the math software provided. We also required signatures from the IT Director at each LEA to ensure they were aware of any technology provided by the grant and that they would have adequate bandwidth and infrastructure prior to year two implementation.

In year one product providers also had difficulty distributing licenses and arranging professional development. To mitigate these issues, all applications in year two were required to list "on-site" contacts. Receiving buy-in from stakeholders at all levels had an enormous impact. Product providers were able to distribute the majority of awarded licenses and facilitate professional development right at the beginning of the school year. The contract in year two also required product providers to distribute license and arrange professional development before they received payment, which may have encouraged them to put forth extra effort to ensure timely completion of these activities. We also made sure that usage expectations were clearly communicated to administrators and math coordinators.

Due to limited funding we decided to focus on providing the product to schools where there was evidence that teachers would use the products and receive support from administrators. Awarded schools that had zero usage over the course of year one were not provided with technology in year two, and no new schools were added to the project.

The third party evaluator for the STEM AC has been working with the USBE to access end of year test scores (SAGE) for the 2015-16 school year to align with use of the digital learning tools. The

data was provided to the STEM AC on Friday September 25th, 2015 for the first year and we anticipate a similar delivery or release date for the 2015-16 school year SAGE data. The evaluator will provide a full report by and it will be included as an addendum to this report once the SAGE data is received and adequate time has passed for completion of the report.

Third party evaluation report on performance of students participating in STEM Action Center programs as collected in Subsection 63M-1-3204(4).

The third party evaluator for the STEM AC, as described in the preceding section, has been working on the completion of a full annual report that will include the end of year test scores (SAGE) and their alignment with use of the math digital learning tools and professional learning and applied science projects. The STEM AC will provide the full annual report as an addendum once it has been submitted by the evaluator. It is anticipated that Utah State University, the third party evaluator, will be submitting the final evaluation report by mid-November, 2016.

Additional:

SB93 Computer Science Initiative - 2016 Legislative session

The STEM AC is required to submit an update on the activities of SB93. The Computer Science Initiative is to provide incentives to current educators to earn a Computer Science endorsement. Within that effort, districts may elect to use funds for professional development training for teachers, travel reimbursements for relative conferences, conference registration fees, tuition fees, and other approved computer science related expenses.

During the first of September there was a CTE Directors meeting where SB93 was introduced and questions were answered. Currently, on the CTE home page there is a link to the information and the grant application with due dates and other information.

Alliance for Science and Technology Research for America (ASTRA)

The ASTRA STEM on the Hill State STEM and Innovation Report Card 2016 indicated that there has been a slow, but steady increase in student interest in STEM careers since 2013/2014. While it is not easy to determine if the investment by the State in STEM has been directly responsible for this increase in STEM, it cannot be ruled out as having influenced Utah students and their interest in STEM. The other data point that is of concern, but validates the direction of several STEM-related projects in Utah, is the fact that this increase in STEM careers in not seen with girls. The STEM AC, and its partners, will use this as a positive motivator to continue to provide access to STEM activities and programs to Utah girls.

ATTACHMENTS:

Appendix A: Selected Product Providers
Appendix B: Investors Coalition Report
Appendix C: STEMFest District and School Participants
Appendix D: STEMFest Sponsor List
Appendix E: Fairs, Camps and Competitions

Appendix F: Classroom Grants Summary
Appendix G: STEM School Designation Summary
Appendix H: STEM School Designation Application Sample
Appendix I: “Lessons Learned” Summary – Professional Learning
Appendix J: Professional Learning Grant Awards Summary
Appendix K: STEM AC Strategic Plan
Appendix L: High School STEM Certification report
Appendix M: Sponsorships Summary
Appendix N: “Lessons Learned” Summary – Digital Math Tools
Appendix O: STEM Press Releases and Media Highlights
Appendix P: Third Party Independent Evaluation (to be submitted)

Attachment A
Selected Product Provider List

HB Project	Vendor	Alignment
Math Software: Grades K-12	- Ascend Education (Ascend Math) - Carnegie Learning (MathiaX & Cognitive Tutor) - Curriculum Associates (i-Ready) - McGraw-Hill (ALEKS) - MIND Research Institute (ST Math) - Think Through Learning (Think Through Math)	✓ Contains individualized instructional support for skills and understanding of core standards ✓ Is self-adapting to respond to the needs and progress of the learner ✓ Provides opportunities for frequent, quick and informal assessments ✓ Includes an embedded progress monitoring tools and mechanisms for regular feedback to students and teachers
Professional Development Software	- School Improvement Network	✓ Access to automatic tools, resources and strategies ✓ Work in online learning communities ✓ Includes video examples of highly effective STEM education teaching ✓ Covers a cross section of grade levels and subjects ✓ Includes videos of Utah STEM educators ✓ Contains tools to help implement what has been learned ✓ Allowance for face-to-face learning in a hybrid model
Applied Science (CTE) Software: Grades 7-8	- Pitsco - The STEM Academy - ITEEA - Project Lead the Way	✓ An applied science curriculum for students in grades 7 and 8 ✓ Includes STEM applied science curriculum with instructional materials ✓ Includes STEM hybrid or blended high quality professional development that allows for face-to-face applied learning ✓ Includes hands-on tools for STEM applied science learning.

STEM Utah Industry Coalition

Report to the STEM Action Center

Aug 5, 2016

The STEM Utah Industry Coalition was organized in 2013 to support the newly created STEM Action Center, and to advance STEM education in meeting Utah's growing workforce needs. The Coalition is organized and functions with the assistance of the Utah Technology Council. All totaled the industry cash and in-kind support for the STEM Action Center approaches $4.5 million.

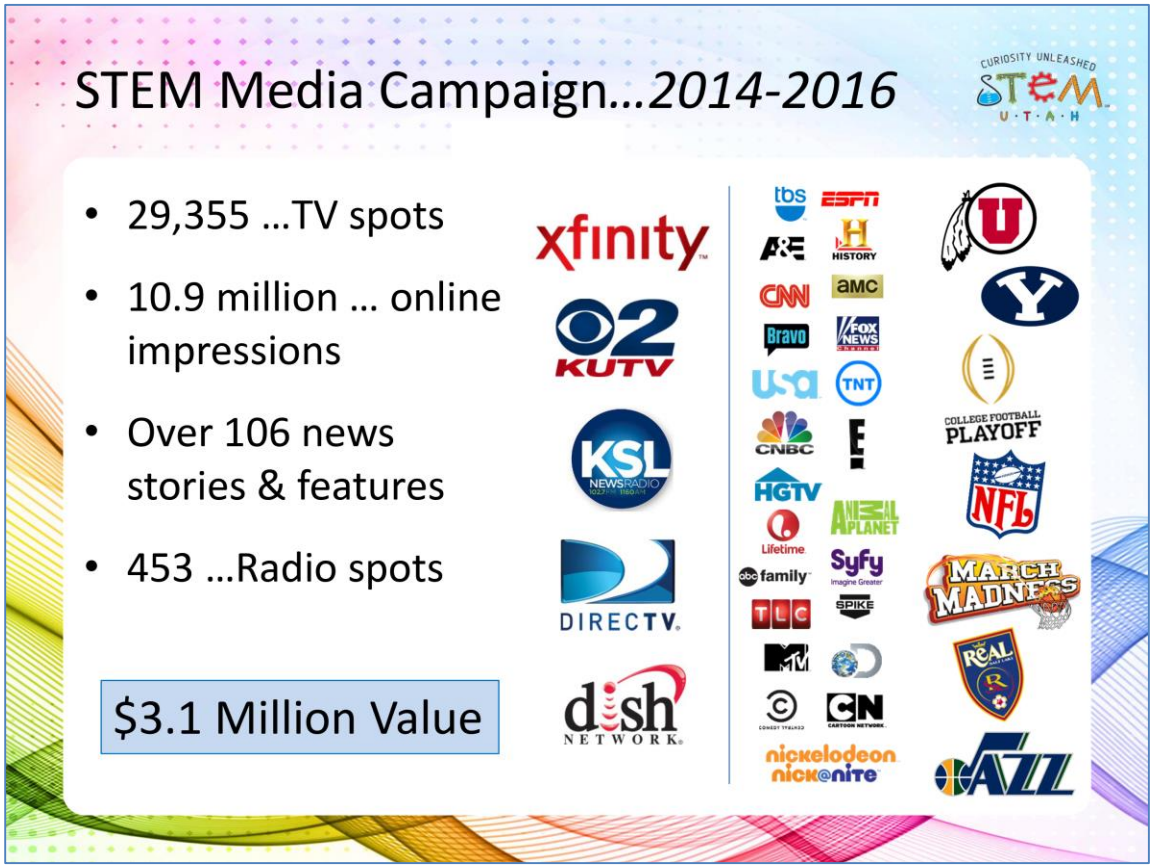
STEM Utah Media Campaign "Curiosity Unleashed"

In January, 2014 the Coalition launched the STEM Utah media campaign, "Curiosity Unleashed", to encourage STEM education. Since that time over 30,000 TV & Radio spots, 11 million online impressions and 100 news stories have been broadcast across the state. STEM education…not cell research…is now top of mind when you walk into schools, or talk to parents and educators.

The campaign has also included:

- The state-wide STEM Assembly broadcast over KUEN and online, 2014
- The STEM Fests in 2015 & 2016 that were attended by over 50,000 students and hundreds of industry presentations.
- The STEMie Awards in 2015 & 2016, in collaboration with the UTC/Stoel Rives "Utah Innovation Awards"; recognizing STEM education excellence in a student, teacher, principle, counselor, and volunteer.
- Science on the Slopes at the Solitude Ski Resort in April 2016 is association with; Ski Utah, STEM Action Center, US Forest Service, KSL Radio, Utah Avalanche Center, and Tree Utah.

Media Campaign Value in Cash & Trade from Coalition Partners:



- **Campaign breakout for August 2015 through July 2016:**
  - **Media summary**
    - TV spots…Cable networks, KUTV & KMYU 10,090
    - Radio spots 453
    - Online video ad impressions 1,363,715
    - News stories on broadcast TV, radio & live event coverage 19
  - Cash & In-Kind contributions:
    - **Total for Fiscal year 2015-16** **$631,608**

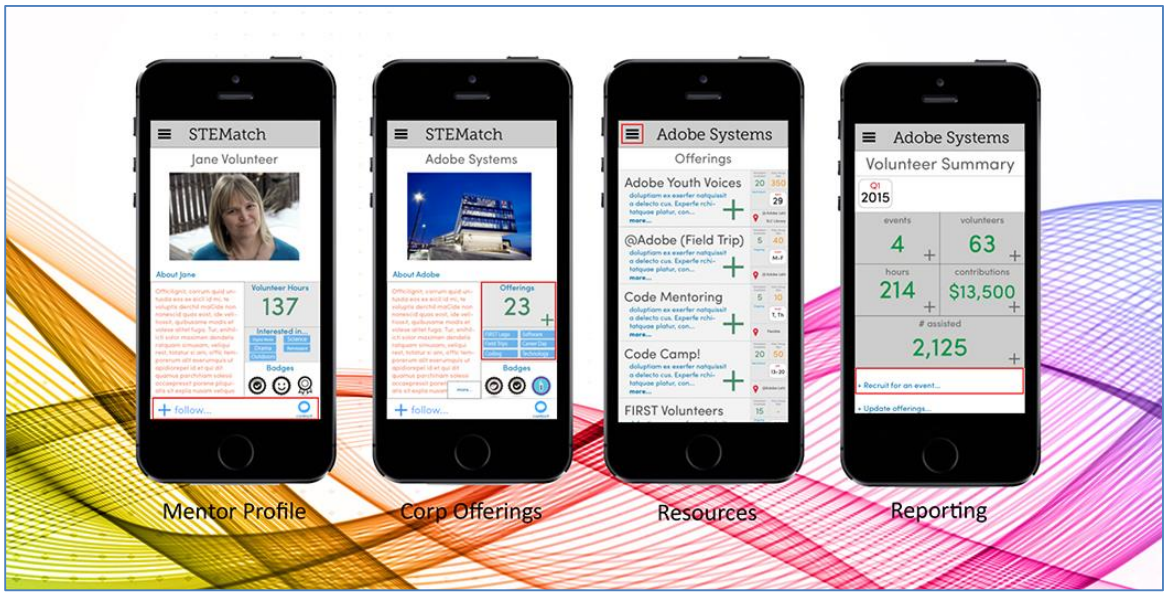
STEMatch Mobile App

The need to connect educators with industry has never been greater, especially with the rapid advance of technology. Educators are challenged to prepare students for the jobs of the future, but industry also has a responsibility to help.

As technology advances and jobs change, many companies have educational resources or encourage their employees to volunteer as mentors or sponsors at the schools in their community.

Several Coalition partners have reported frustration in finding meaningful opportunities to serve. And on the other hand educators are frustrated in finding the right resources and mentors from industry. As a result the STEM Utah Coalition is developing a mobile app called STEMatch.

The app is being developed by a volunteer team of over 20 engineers and professionals from EMC^2, Adobe, Boeing, Comcast, Pluralsight, and the law firms of Workman Nydegger and Callister Nebeker & McCullough.



Educators will be able to search for industry support from a wide range of subjects, leaning opportunities and resources; and likewise industry volunteers will be able to search for opportunities to serve and mentor in their fields of expertise.

A beta version of the app is projected for release in late Q4/2016 with a first release in Q1/2017.
Go to http://www.stempartner.com for a preview.

The actual retail cost of bringing a mobile app of this scope to market, which is being donated in cash and trade by Coalition partners, is estimated at around: $650,000.

Direct Industry Grants to the STEM Action Center:

- **Creation of the STEM Action Center Foundation:**
  - Lee McCullough of Callister Nebeker & McCullough has provided pro-bono his services to create the STEM Action Center Foundation.
  - **Value:**

- **Tesoro:**
  - The Tesoro Foundation has provided a $1.5 million grant to create STEM Buses; mobile STEM classrooms that will tour the state in 2017

- **IHC:**
  - $200,000

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School
Baird Academy
Lakeridge Junior High School
Lakeridge Junior High School
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American Fork Junior High
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American Fork Junior High
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Frontier Middle School
Frontier Middle School
Frontier Middle School
Frontier Middle School
Frontier Middle School
American Fork High School
Willowcreek Middle School
Willowcreek Middle
Mountain Ridge Jr.
Mountain Ridge Junior
Homeschool
Willowcreek Middle School
Pleasant Grove Junior High
American Fork High School
River Rock Elementary
Lone Peak High School
Freedom
Freedom
Freedom
Boden School of Wisdom and Knowledge
Homeschool
Foothill
None
Homeschool
Home school
Homeschool
Box Elder Middle School
Box Elder Middle
Box Elder Middle School
South Cache 8/9 Center
South Cache 8/9 Center
Utah State University

Mount Jordan Middle School (1)
Mount Jordan Middle School (1)
Mount Jordan Middle School (2)
Mount Jordan Middle School (3)
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Albion Wednesday
Eastmont Middle
Eastmont Middle School
Indian Hills Middle School
Indian Hills Middle School
Indian Hills Middle School
Eastmont Middle School
Indian Hills Middle School
American Preparatory Academy Draper 3
Union Middle School
Union Middle School
Union Middle School
Hillcrest High
Hillcrest IB
Draper Park Middle School
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Pine Ridge Academy
Helper Middle School
Fairfield Junior High
Legacy Jr. High
Bountiful Jr. HIgh
West Point Junior High
North Davis Jr. High
Bountiful Jr. High
Legacy Jr High - MESA Club and Honors Students
Centennial Junior High
Centennial Junior High
Centennial Junior High
Centennial Junior High
Centennial Junior High

Davis County Home School Co-op
Mueller Park Jr.
Syracuse Junior High School
Layton High School
Syracuse High School
Syracuse High School
South Davis Junior High
homeschool
Mueller Park Jr. High
Central Davis Jr. High
Roosevelt Junior High School
Roosevelt Junior High School
Canyon View Jr. HighSan Rafael Junior High
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Bryce Valley High School
Grand County High School
West Lake Jr. High School
West Lake Jr. High
West Lake Jr. high
West Lake Jr. High
Entheos Academy
Wasatch Jr. High
Evergreen Junior High
Evergreen Junior High
Evergreen Junior High
youth services
YESS/Uni
Thomas Jefferson Junior High
Thomas Jefferson Junior High
Thomas Jefferson Junior High
Kearns Junior High School
Kearns Junior High School
Kearns Junior High School
Matheson Jr. High
MHA
Elk Ridge Middle
Montessori at Riverton
Oquirrh Hills Middle
Copper Mountain Middle School
River's Edge
Sunset Ridge Middle School
None
students from cache and logan school districts
Fillmore Middle
Morgan Middle School

Morgan Middle School
Morgan Middle School
Morgan Middle School
Morgan Middle School
American International School of utah
American International School of Utah
Christ Lutheran School
Mt. Nebo Jr. High School
Mt. Nebo Jr. High
Mt. Nebo Jr. High
Goble Family Homeschool
Goble Family Homeschool
Goble Family Homeschool
Goble Family Homeschool
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Goble Family Homeschool
Spring Lake Elementary
Spring Lake Elementary
Spanish Fork High School
Spanish Fork High School
Spanish Fork High School
Westside Elementary
Spanish Fork High School Maple Mountain High School Salem Hills High School Payson High School Springville High
PJHS
Payson Jr. High
North Sanpete Middle School
North Sanpete Middle School
North Summit Middle School
Mount Ogden Jr. High
Highland Junior High
Highland Junior High
Mount Ogden Jr. High
Charter School
Monticello Academy, a Charter School
Monticello Academy
PrivateRowland Hall
Spectrum Academy, Pleasant Grove
Spectrum Academy, Pleasant Grove
Blessed Sacrament
North Davis Preparatory Academy
North Davis Preparatory Academy
North Davis Preparatory Academy
Private School Rowland Hall Middle School
Canyon Grove Academy
John Hancock Charter School
Early Light Academy
Summit Academy Bluffdale Junior High

Private (SLC)
Beehive Science and Technology Academy
Beehive Science and Technology Academy
Beehive Science and Technology Academy
Mountainville Academy
Summit Academy Charter School
Summit Academy Charter School
Vanguard Academy
Vanguard Academy
Vanguard Academy
Vanguard Academy
North Star Academy
American Preparatory Academy
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Ascent Academies of Utah - West Jordan
Ascent Academies of Utah - West Jordan
Ascent Academies of Utah - West Jordan
Ascent Academies of Utah - West Jordan
Ascent Academies of Utah - West Jordan
Ascent Academies of Utah - West Jordan
American Preparatory Academy Draper 3
Channing Hall Charter
Channing Hall Charter
Ascent Academy of Lehi
Winter Homeschool
Utah Connections Academy
Utah Connections Academy
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We are a homeschool co-op of jr high and high school aged youth.
Freedom Prep Academy
Spectrum Academy
American Leadership Academy

American Leadership Academy
Maria Montessori Academy
Carlin Combined Schools
homeschool
Madeleine Choir School
Blessed Sacrament School
Spectrum
Homeschool
Carden Memorial School
Homeschool
North Davis Preparatory Academy
North Davis Preparatory Academy
North Davis Preparatory Academy
Legacy Preparatory Academy
Grace Lutheran School
Grace Lutheran School
The McGillis School
Homeschool
Homeschool
Syracuse Arts Academy
Syracuse Arts Academy
Arches Academy
Mother earth academy
St. Marguerite Catholic School
Legacy Preparatory Academy
Layton Christian Academy
Daniels Academy
Clearfield Job Corps
Renaissance Academy
Renaissance Academy
Good Foundations Academy
Dixon Middle School
Dixon Middle
Homeschool
My Tech High/Provo eSchool
My Tech High
My Tech High
My Tech High
Dual Immersion Academy
Glendale Middle School
SLCSE
MBG
homeschool group
Northwest Middle
North Sevier Middle School
Gunnison Valley MIddle School
South Summit High School

Uintah High School
homeschool
Utah Online School
Utah Online School
Utah Online School
Utah Online School
Utah Online School
South Ogden Jr. High
South Ogden Jr. High
South Ogden Junior High
South Ogden Junior High School
Quest Academy Charter School
Quest Academy Charter
Jackson Family Homeschool
TH Bell Jr. High

ı School

STEMFest 2016 Sponsors

Think Through Math
McGraw Hill
The Leonardo
IMFlash
Elements of Evil
Salt Lake County
BioEYES Utah
Utah State Office Education
Oracle
US Synthetic
Natural History Museum
Utah Valley University
UCCU
LanDesk
Alison Sturgeon
Orbital ATK w/ Clark Planetarium
Rocky Mountain Power
Discovery Gateway
Red Butte Garden
Hawkwatch International
Salt Lake County Library Services
Utah Virtual Academy
Staker Parson Companies
Junior Achievement of Utah w/ Nelson Labs
Operating Engineers JATC of Utah
Goldman Sachs
Hogle Zoo
Itineris Early College High School
Mad Science
L-3 Communications
Microsoft
Associated General Contractors of Utah
Lassonde Entrepreneur Institute
Utah Education Network
Loveland Living Planet Aquarium
Utah Odyssey of the Mind
Utah Educational Savings Plan

Craft Lake City
UCC Trades

FIRST Utah (Lego League, Tech Challenge, Robotics Challenge)

Governor’s Office of Energy Development
Boeing
Brigham Young University
University of Utah
Department of Workforce Services
Hughes General Contractors
Paul Mitchell School
Neumont University
Salt Lake Community College
NUNTMA
Imagine That 3D
The Tessera
SpyHop
Larry H. Miller Dealerships
Build Camp
New Horizons Maritime Center
Salt Lake Community College, Biotechnology Department
LSI
Jordan High School
EMC
School Improvement Network
Utah Highway Patrol
Bicycle Collective
Texas Instruments
Utah STEM Action Center
MIND Research Institute

Applicant name	ID Number	Name of person/entity being reimbursed	Reimbursment Address
A. Allred	A-4000401755	Canyon Grove Academy	588 W 3300 N
A. Evans	A-4740153726	Ascent Academy West Jordan	5662 W 8200 S
A. Fox	A-4391839152	Desert Hills Middle School	936 E Desert Hills Dr.
A. Hyer	A-2054285097	NUAMES, VEX Robotics	2750 N University Park Blvd
A. Pham	A-9539452158	AMES	5715 S 1300 E
A. Sung	A-6755908925	Department of Medicinal Chemistry: Balagu	261 B Connor Road
A. White	A-4819401878	InTech Collegiate HS	1787 N Research Parkway
A. Yun	A-4777948900	Lan Yu	2939 Cardiff Rd
B. Lara	A-4850472737	Entheos Academy	4710 W 6200 S
B. Romney	A-4610790051	InTech Collegiate HS	1787 N Research Parkway
B. Turner	A-4687284299	Iron County 4-H Robotics	2041 W 460 S
C. Davies	A-0592126134	Tyler T Croft	902 Healey Blvd
C. Edgington	A-5813226770	Melinda Edgington	509 Tonpah Way
C. Hafen	A-0342883132	Rebecca Hafen	186 E 100 N
C. Humphrey	A-3851971449	Holly Humphrey	4246 Chestnut View Dr
C. Kane	A-8493370610	Jennifer Kane	178 S 1050 W
C. Larsen	A-9744707637	Westfield Elementary	380 S Long Drive
C. McBride	A-3518479214	Salt Lake Center for Science Education	1400 W Goodwin Ave.
C. Morrill	A-3466042441	Jill Morrill	4805 W 4600 S
C. Murray	A-3570053143	LeShell Murray	382 E 650 S Cir.
C. Russon	A-5603456422	Cindy Cannon	832 Northcliffe Dr
C. Rust	A-6272364614	Wayne Rust	355 W 470 S
D. Blaine	A-7913487386	Jennifer Blaine	162 E Fish Hatchery Rd.
D. Call	A-2326470128	Manila Elementary	1726 N 600 W
D. Ivie	A-6389567880	Entheos Academy	4710 W 6200 S
E. Case	A-9066888519	Sheri Prucka	P.O. Box 3087
E. Delany	A-6130164148	Nicole Delany	10048 Jordan Park Circle
E. Dowell	A-7971524349	William Dowell	4115 Juniper Ln.
E. Ong	A-5873526730	Jacob Ong	729 W Rolling Sage Way
E. Reed	A-6104789071	InTech Collegiate HS	1787 N Research Parkway
G. Arveseth	A-5387214404	South Hills Middle School	13508 S 4000 W
G. Gardiner	A-5433706266	Matt Gardiner	234 S 100 W
G. Manninen	A-3462941357	Sheri Prucka	P.O. Box 3087
G. Scott	A-3372695266	Salt Lake Center for Science Education	1400 W Goodwin Ave.
H. Miller	A-8963086620	Brett Miller	3438 Eden View Dr.
H. Segura	A-4907395379	Anneli Segura	1130 North Sonata Street
H. Pu	A-5957455917	InTech Collegiate HS	1787 N Research Parkway
H. Rousseau	A-5176851066	Uintah High School	1880 W 500 N
I. Allred	A-7479739195	Canyon Grove Academy	588 W 3300 N
I. Packer	A-6237024449	Ed Packer	122 W Fayelle Ave.
J. Burnett	A-7379139626	InTech Collegiate HS	1787 N Research Parkway
J. Butner	A-1798748784	Jonathan Butner	1555 Ramona Ave.
J. Garzella	A-2196252450	Juan Diego Catholic High School	300 E 118000 S
J. Heap	A-8055846119	Tamarah Hinkle	1401 Snow Hill Lane
J. Hudson	A-4615472660	Blue Peak High School	211 S Tooele Blvd.
J. Killpack	A-2065680939	InTech Collegiate HS	1787 N Research Parkway
J. Muna	A-9401732269	Hunter High School	4200 S 5600 W
J. Price	A-3055260214	Dennis Worwood	P.O. Box 181
J. Shuckra	A-2272377101	Amy Shuckra	1871 Hollywood Ave.
J. Tanner	A-9727013392	Renee Tanner	572 S 300 E
J. Tew	A-3148729729	Westfield Elementary	380 S Long Dr.

J. Wells	A-6808895737	Weber School Foundation	5320 S 500 E
K. DeGroote	A-4860924783	Michael De Groote	6458 White Cony Circle
K. Fisk	A-1115964313	Michelle Fisk	6866 Manorly Cir.
K. Gambill	A-6548392805	Westfield Elementary	380 S Long Drive
K. Goss	A-8645838529	Dustin Topham	10189 N 4800 W
K. Jeffries	A-2104627049	Jordan Jefferies	2897 E 3580 S
K. Jones	A-1354280588	Jessica Wilstead	1857 S 30 W
K. Parkinson	A-4194054158	Charles Hindman	328 W 1550 S
K. Wang	A-3282120742	Department of Medical Laboratory Sciences	3875 Stadium Way Departme
L. Jang	A-9524623032	Salt Lake Center for Science Education	1400 W Goodwin Ave.
L. McAvoy	A-2799766096	InTech Collegiate HS	1787 N Research Parkway
M. Barnett	A-3125507447	Nicole Barnett	8017 S Big Spring Dr.
Mary Evans	A-2182385199)	Hillcrest High Scholl TSA	891 E 7905 S
M. Green	A-6529810060	Crimson View Elementary School	2835 E 200 S
M. Heritage	A-5342801440	Entheos Academy	4710 W 6200 S
M. Holmes	A-8053115061	Green Acres Elementary	640 E 1900 N
M. Luckart	A-5368923932	Entheos Academy	4710 W 6200 S
M. Nelson	A-2874421241	Mathew Nelson	914 S 2300 E
M. Obray	A-3557750000	Riverton High Science Olympiad	12476 S Silverwolf Way
M. Reyes	A-2983470040	Salt Lake Center for Science Education	1400 W Goodwin Ave.
M. Singh	A-4999006569	Shiho Pingali	2162 S 1900 E
M. Smith	A-8525865952	Ascent Academy West Jordan	5662 W 8200 S
M. Dew	A-4500496199	InTech Collegiate HS	1787 N Research Parkway
N. Bigelow	A-6364122727	David Bigelow	4775 W 500 S
N. Boateng	A-0621530707	InTech Collegiate HS	1787 N Research Parkway
N. Dawson Coe	A-6000117312	Beehive Science and Technology Academy	830 E 9400 S
N. Ivie	A-6429841117	Entheos Academy	4710 W 6200 S
N. Keen	A-8315547596	Iron County 4-H Robotics	2041 W 460 S
N. Lyday	A-3182947238	Da Vinci Academy	2033 Grant Avenue
N. Nekonerds	A-4587058305	NUAMES, VEX Robotics	2750 N University Park Blvd
N. Tadesse	A-3361052853	Girmai W. Tadesse	2744 W 2175 S
R. Howell	A-7845527778	Hillcrest Highschool Robotics	7350 S 900 E
R. Isakson	A-5806513069	Diana Isakson	4894 W 4750 S
S. Delgado	A-4494035272	AMES	5715 S 1300 E
S. Dudleston	A-9504027478	Melissa Dudleston	789 E Lost Ridge Dr.
S. Donley	A-2697798675	Green Acres Elementary	640 E 1900 N
S. Loosli	A-9448208754	Aaron Loosli	125 W 400 N
S. McFarland	A-0039718581	Mary Ann McFarland	1457 W 1970 N
S. Martinez	A-1985546704	Jose Martinez	1503 N 2100 W Apt. E206
S. Miller	A-1000434095	Riverside Elementary School	2500 Harvest Lane
S. Owens	A-6879994327	InTech Collegiate HS	1787 N Research Parkway
S. Young	A-0437817470	Terry Andersen	3013 S 1355 W
T. Durham	A-6641948399	Sandy	1065 S Windsor St.
T. Larson	A-8484389137	Judge Memorial Catholic High School	650 S 1100 E
T. Quah	A-6243543406	Tai Sin Quah	1567 N EastHills Circle
T. Ross	A-9548478417	Syracuse TSA	665 S 2000 W
V. Garg	A-8066868644	InTech Collegiate HS	1787 N Research Parkway
V&K Ragula	A-4731510408	Sanch Datta	4540 S Jupiter Dr.
W. Roeca	A-5449348378	Salt Lake Center for Science Education	1400 W Goodwin Ave.
Y. Projansky Ono	A-8708895399	Sarah Projansky	1220 Second Avenue
Z. Ong	A-3447843926	Yaling Brenda Ong	729 W Rolling Sage Way
Total			

City	Zipcode	Amount awarded	Students Impacted	Date of event
Pleasant Grove	84062	$899.00	4	
West Jordan	84081	$982.76	10	
St. George	84790	$2,500.00	17	
Layton	84041	$1,619.84	7	4/22/2016
SLC	84121	$500.00	1	5/15/2016
SLC	84113	$500.00	1	
Logan	84341	$175.45	1	
SLC	84121	$380.00	4	3/31/2015
Kearns	84118	$1,205.00	7	1/16/2015
Logan	84341	$341.42	1	
Cedar City	84720	$1,393.30	11	
Alpine	84004	$1,607.00	8	
Ivins	84770	$116.47	1	
Ivins	84738	$293.08	1	
South Jordan	84009	$475.00	1	
Hurricane	84770	$230.00	8	
Alpine	84004	$941.93	9	
SLC	84116	$328.00	4	
West Haven	84401	$1,474.91	5	
Cedar City	84720	$160.00	7	
Salt Lake City	84103-3341	$500.00	1	
Lindon	84042	$500.00	1	
Mantua	84324	$1,399.00	12	
Pleasant Grove	84062	$1,350.00	10	1/30/2016
Kearns	84118	$1,380.00	9	1/16/2015
Park City	84060	$1,545.00	6	
South Jordan	84095	$500.00	1	6/20/2016
Eden	84310	$500.00	1	
Saratoga Springs	84045	$1,371.82	7	
Logan	84341	$107.68	1	
Riverton	84065	$1,433.00	1	
St. George	84770	$150.00	1	
Park City	84060	$2,086.00	7	
SLC	84116	$500.00	1	
South Jordan	84095	$300.00	1	3/4/2016
Salt Lake City	84093	$500.00	1	
Logan	84341	$200.00	1	
Vernal	84078	$1,600.00	7	
Pleasant Grove	84062	$899.00	6	
Murray	84107	$55.40	1	
Logan	84341	$266.28	1	
SLC	84105	$398.00	1	
Draper	84020	$2,500.00	20	
St. George	84770	$150.00	1	7/10/2015
Tooele	84074	$750.00	5	
Logan	84341	$141.49	1	
West Valley	84120	$2,500.00	1	3/31/2015
Ferron	84523	$1,898.00	12	11/7/2015
Salt Lake City	84108	$500.00	1	
Kaysville	84037	$762.88	6	
Alpine	84004	$941.93	8	

Washington Terrac	84405	$1,521.89	4	
West Valley City	84128	$388.24	1	
Cottonwood Height	84121	$100.00	1	3/17/2015
Alpine	84004	$941.93	8	
Lone Peak	84003	$2,500.00	8	3/17/2015
St. George	84790	$448.00	1	
Washington	84780	$969.89	7	
Perry	84302	$1,450.00	12	
Ogden	84408	$500.00	1	
Salt Lake City	84116	$500.00	4	
Logan	84341	$122.34	1	
West Jordan	84081	$500.00	1	
Sandy	84094	$1,750.00	7	3/16/2016
St. George	84790	$1,050.00	12	
Kearns	84118	$980.00	5	1/16/2015
Ogden	84414	$487.79	1	
Kearns	84118	$1,192.00	7	2/28/2015
Salt Lake City	84108	$1,358.28	6	
Riverton	84065	$1,469.12	17	
Salt Lake city	84116	$460.00	4	
Salt Lake City	84106	$1,363.14	8	
West Jordan	84081	$982.76	9	
Logan	84341	$123.71	1	
West Haven	84401	$1,474.91	5	
Logan	84341	$50.00	1	
Sandy	84094	$1,545.00	9	
Kearns	84118	$750.00	6	1/16/2016
Cedar City	84720	$1,585.91	9	
Ogden	84401	$109.00	1	3/15/2016
Layton	84041	$2,246.00	7	
Syracuse	84975	$160.00	1	2/18/2016
Midvale	84047	$2,500.00	1	
West Haven	84401	$1,474.91	5	
Salt Lake City	84121	$500.00	1	3/17/2016
Washington	84780	$150.00	1	
Ogden	84414	$1,125.27	7	
Pleasant Grove	84062	$475.00	1	
Provo	84604	$475.00	1	6/27/2016
St. George	84770	$68.41	1	3/18/2016
Washington	84780	$1,220.00	12	
Logan	84341	$236.85	1	
Perry	84302	$1,030.00	12	
Salt Lake City	84105	$500.00	1	
Salt Lake City	84102	$2,500.00	14	
Bountiful	84010	$500.00	1	4/2/2016
Syracuse	84075	$1,200.00	7	11/5/2015
Logan	84341	$500.00	1	
Salt Lake City	84124	$2,500.00	7	
Salt Lake City	84116	$275.00	4	
Salt Lake City	84103	$100.00	1	
Saratoga Springs	84045	$1,002.22	11	
		$91,221.21	**496**	

Reimbursment Amount	Complete
$899	Yes
$972.76	Yes
$2,500.00	Yes
$196.22	Yes
$175.45	Yes
$154.63	Yes
$1,393.30	Yes
$1,284.07	Yes
$116.47	Yes
$277.50	Yes
$475.00	Yes
$230.00	Yes
$941.93	Yes
$70.00	Yes
$1,414.91	Yes
$150	Yes
$500.00	Yes
$500.00	Yes
$1,378.00	Yes
$1,545.00	Yes
$389.09	Yes
$1,268.82	Yes
$76.90	Yes
$1,321.53	Yes
$150.00	Yes
$2,086.00	Yes
$373.75	Yes
$500.00	Yes
$200.00	Yes
$1,600.00	Yes
$899.00	Yes
$26.69	Yes
$159.49	Yes
$398.00	Yes
$2,500.00	Yes
$335.88	Yes
$60.59	Yes
$500	Yes
$762.88	Yes
$873.34	Yes

$1,457.57	Yes
$374.97	Yes
$877.73	Yes
$180.00	Yes
$969.89	Yes
$1,450.00	Yes
$500.00	Yes
$334.21	Yes
$122.34	Yes
$500.00	Yes
$1,050.00	Yes
$487.79	Yes
$1,316.11	Yes
$998.71	Yes
$169.91	Yes
$1,363.14	Yes
$972.76	Yes
$60.07	Yes
$1,414.91	Yes
$50.00	Yes
$1,545.00	Yes
$1,585.91	Yes
$2,246.00	Yes
$2,500.00	Yes
$1,414.91	Yes
$150.00	Yes
$998.57	Yes
$475.00	Yes
$1,136.43	Yes
$112.51	Yes
$932.47	Yes
$445.00	Yes
$2,500.00	Yes
$500.00	Yes
$2,494.12	Yes
$275.00	Yes
$100.00	Yes
$1,002.22	Yes

$64,719.45

SCHOOL	GRADES	# OF STUDENTS	PROJECTS
Alpine	3	100	Greenhouse ($915.12)
Charter School	11	134	Sensing instruments for use with calculators (1783.20)
Alpine	6	30	Conductors and membranes (declined $1250.69)
Granite	7,8	350	3D Printer (1500)
Charter School	7 and 8	83	Math 2d and 3d floor plan supplies
Charter School	9 thru 12	70	Robotics Class
Charter School	K, 3,4	80	Trout in the Classroom
Charter School	11	54	Cell structure lab supplies
Washington	6,7	450	Lego Robots for Math
Charter School	7,8,9	138	3D Printer ($1500.00)
Alpine	5	150	3D printer
Davis	1	85	Enegery transfer project materials (no books)
Alpine	6	34	Ev3's for coding
Charter School	8	55	Paintball markers and Chronometers
Charter School	1	80	Illuminated Orbiter
Cache County	K5	530	Sumblox math manipulatives
Washington	9 thru 12	32	3D printer
Granite	7	203	Microscopes and speciments for Asexual reproduction
Granite	8,9	210	Microbiota Ecosystems, incubators and microscope adapters
Logan City	9 and 10	480	Chemistry of life lab supplies
SLC	9 thru 12	35	DNA Photometer
Weber	2	28	Chromebooks for daily coding activities
Nebo	6	26	Ev3 for Mars rover tasks
Cache County	5	93	Mag-lev track
Nebo	4th-6th	200	busing to Wetlands Classroom
Washington	8th	400	Heat transfer: popcorn
Cache County	5th	92	Maglev vehicles

South Sanpete	9th-12th	32	quadcopters
Alpine	6th	130	Webcams
Tooele	7th - 8th	40	MESA industry field trip
Jordan	9th	28	AP Enviro aquaponics system
Cache County	6th	100	Microscopes and slides
Mountain West Montessori	8th	60	music and Oscilloscpe
Provo City	9th-12th	594	hotplates for sci experiments
Granite	5th	25	Lego Mindstorms building and coding
Tooele	8th	62	VEX components
Box Elder	10th - 12th	150	infrared camera
North Summit	1st - 4th	300	Maglev vehicles
Salt Lake City	k-6	50	Weather balloon, busing
DaVinci Academy	9th-12th	100	Physics lab supplies
Early Light Academy	6th	104	Space Shuttle Room
Alpine	4th	100	Spheros, coding
North Summit	1st - 4th	300	Hydraulics
Jordan	7th - 9th	600	Shaker table
Ogden Preparatory School	8th-9th	50	Xcontroller
Granite	7th - 9th	1000	3D printer, coding with Arduino
John Hancock Charter School	K-6	160	EIE kits and supplies
DaVinci Academy	8th - 12th	20	x-Carve (to modify robots)(1500)
Alpine	5th	70	Student news show
Provo City	1st	90	Sound & light, Rocks
Salt Lake City	7th & 8th	25	Sea Perch
Alpine	K-6	700	WeDo robots
Jordan	4th-6th	50	Lego Mindstorms building and coding
Provo City	9th-12th	180	Hydroponics
Jordan	5th	125	Cubelets
Provo City	4th	90	EIE kits and supplies
Alpine	6th	55	Mars Rover materials

Granite	3-4, 5-6	180 - 500	Ozobots, coding
Provo City	Preschool	36	Movement and friction
Alpine	10th - 12th	20	VEX pragamming components
Jordan	4th	120	Sphereo/coding

Name of School	District	Website	Designation Level
Beehive Academy	Charter School	www.beehiveacademy.org	Platinum
Crimson View Elemen	Washington	cves.washk12.org	Platinum
DaVinci Academy	Charter School	davinciacademy.org	Gold
Draper Park Middle Sc	Canyons	draperpark.canyonsdistrict.org	Bronze
Foothill Elementary	Alpine	http://foothill.alpineschools.org/	Silver
Green Acres Element	Weber	greenacres.wsd.net	Bronze
Hurricane Elementary	Washington	hes.washk12.org	Gold
Itineris Early College H	Charter School	www.iechs.org	Bronze
Manila Elementary Sc	Apline	manila.alpineschools.org	Silver
Mount Jordan Middle S	Canyons	http://mountjordanmiddle.canyons	Bronze
Mountainville Academ	Charter School	mountainvilleacademy.org	Silver
Neil Armstrong Acade	Granite	www.armstrongacademy.org	Gold
Overlake Elementary	Tooele	http://tooeleschools.org/schools/el	Silver
Quest Academy	Charter School	www.questac.org	Silver
Sunset Elementary	Washington	sses@washk12.org	Bronze
UCAS	Charter School	ucas-edu.net	Bronze
Union Middle School	Canyons	unionmiddle.canyonsdistrict.org	Bronze
West Point Elementar	Davis	http://www.davis.k12.ut.us/Domain	Silver
Woodruff Elementary	Logan	http://woodruffwildcats.weebly.com	Gold

STEM Mission

other technology aided education tools. We serve around 300 students in grades 6 through 12. BSTA offers STEM into a cohesive learning paradigm based on real-world applications. We would like to focus on teacher appropriate social and cognitive skills and master their academic goals.

embedded in the science course curriculum rather than offered as extra-curricular opportunities, making STEM 21st Century Learning Skills to prepare students for college, career, and life." As we purposefuly implement 21 st and life.' Our STEM emphasis is intended to provide engaging instruction and experiences to meet student students experiment, program, build, and solve problems, they learn and apply STEM skills, which help them is already STEM oriented. Itineris has already implemented several successful programs to assist students in the programs that are open to all students of the grade levels the program is appropriate for.

embedded in the science course curriculum rather than offered as extra-curricular opportunities, making STEM our students because we recognize that every child is capable of learning based on their individual needs. We are engagement, and a problem?solving process common to the science, technology, engineering, and math (STEM) for STEM related careers and helping them prepare for their futures now. This will be completed in three ways: provide students a challenging, technology-rich environment, enabling young citizens to become leaders prepared in life. Our world is ever evolving and it is difficult to fully understand what education, and the job market will look unconventional educational opportunity for high school students who are greatly motivated. UCAS is committed to embedded in the science course curriculum rather than offered as extra-curricular opportunities, making STEM love and passion for STEM. It is our desire to help and encourage students to seek post-high school education STEM skills that will allow them to have access to all STEM paths in their future education and careers. We are

Utah STEM School Designation

2015-2016

Application Packet

Pre-Application Deadline:
October 1, 2015

Application Deadline:
December 18, 2015

Utah State Office of Education

STEM Action Center with the Governor's Office of Economic Development

Utah STEM SCHOOL DESIGNATION – School Application Overview

1. **School Information**
   Name of School: Beehive Science and Technology Academy
   Address: 830 East 9400 South Sandy, Utah 84094
   Phone: 801-576-0070
   Website: beehiveacademy.org
   Public/Charter/Private: Charter

2. **Lead Contact for STEM School Designation Application**
   Name: Hanifi Oguz
   Email:principal@beehiveacademy.org
   Position: Principal

3. **Members of the STEM Schools Designation Application Team**
   Name, title, email for all members. Should include representation of administration, teacher, STEM partners, and stakeholder groups (such as community council, parents, etc.)

Hanifi Oguz	School Principal	hanifi.oguz@beehiveacademy.org
Zack Temircan	Academic Dean	zack@beehiveacademy.org
Germaine Barnes	School Safety Coordinator	germaine.barnes@beehiveacademy.org
Carol Firmage	Humanities Dept. Chair, English Teacher	carol.firmage@beehiveacademy.org
Halis Kablan	STEM Coordinator, Science Teacher	halis.kablan@beehiveacademy.org
Michael Defronzo	Mathematics Teacher	michael.defronzo@beehiveacademy.org
Pedro Martinez	Senior Engineer, IM Flash- Industry Partner Representative to BSTA	pmartinez@imflash.com

Utah STEM School Designation Criteria
Pilot Year Model

4. **What level are you applying for? (Bronze, Silver, Gold, Platinum)**
   Note: If you are applying for Gold or Platinum, you will be required to schedule a site visit for the STEM AC evaluation team in late January / February.
   Gold

5. **In 250 words or less, please describe the STEM vision for your school.**

Beehive Science and Technology Academy (BSTA) is a STEM-focused, charter school which uses iPads and other technology aided education tools. We serve around 300 students in grades 6 through 12. BSTA offers courses and extended day activities that promote STEM, including computer science and advanced math courses, STEM expo projects and other STEM related activities. BSTA also prepares students for prestigious STEM competitions such as Robotics, Lego Robotics, MathCounts, Math Matters and state science fairs. College prep courses are offered with particular emphasis on STEM related industries so that Beehive students graduate ready to move on to their next level of education.

The main objective is to develop students who possess critical thinking skills, mathematical reasoning, and complex problem-solving abilities, and who will be equipped for college matriculation and work-ready careers in the areas of Science, Technology, Engineering, and Math. Project-based learning is at the center of BSTA's STEM learning and certification programs, leading to increased student engagement, collaborative work ethic, and real-world culminating projects that showcase students' understanding and acquisition of academic vocabulary, math conceptual mastery, problem-solving/reasoning skills, and computational fluency-automaticity.

Every student in the school is issued an iPad that are used extensively in each classroom, as well as for major projects. Each year, all students participate in the Utah STEM Expo hosted by BSTA. iPads are particularly used for this event as students have to design a project, film it, put it on BSTA's YouTube channel, and then demonstrate it in front of thousands of visitors.

Utah STEM School Designation Criteria
Pilot Year Model

1. **Curriculum: Problem-Solving Rigorous Learning**

STEM Curriculum is selected based on Utah Core Standards. The curriculum has an articulated interconnectedness between science, technology, engineering and math. Curriculum and instruction are coordinated between the various aspects of STEM. Projects form a substantial part of the curriculum.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
1a. Interdisciplinary Instruction Helps Students Make Interdisciplinary Connections *There are collaborative team(s) comprised of teachers who teach different disciplines. Students identify ways that disciplines are interrelated, reinforced, and complement one another.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Teachers ask students to think about how the content of the lesson relates to other STEM disciplines. - Students are asked to apply what they learned in another subject to a lesson, assignment, or activity at least once per month.	- Teachers ask students to think about how the content of the lesson related to ALL other disciplines. - Students are engaged in an integrated unit that articulates interdisciplinary connections one or more times per week.

Narrative: 1a: Exemplary – 3 points

BSTA strives to make interdisciplinary connections for students across the curriculum a common practice, at least once per week. Students are expected to understand how subjects are interrelated and complementary in the following ways:

Grade Level Collaborative Teacher Teams (CTT) and Department CTTs meet on alternating weeks, one meeting each week. All teachers at BSTA participate in CTTs. At Grade Level CTT meetings, teachers discuss Learner Centered Problems (LCP) and collaborate on strategies to improve student proficiency in the LCPs and other specific areas. This includes much collaborative curriculum planning across all content areas in our school, including the elective courses. This process has been expanded due to our two-year school improvement plan, "Assessment To Achievement," which BSTA volunteered to participate in. This year, CTTs are placing a large emphasis on writing skills, ratios and percents, and statistics in high school grades, across all subject areas.

Utah STEM School Designation Criteria
Pilot Year Model

Departmental CTTs collaborate to create instructional rubrics which are used in all departments. Students are assessed weekly on writing specific skills in each content area. Each department built its own rubric for an assessment based on a model rubric created in the math department. Students are provided with a similar rubric before they begin writing, and students self-assess their writing as a way to build metacognitive skills. The rubric becomes a means of instructing the students about what is expected of them.

Math, language arts, science, art, music, and history classes all have planned curriculum overlaps. For example, a project created to assess students in Secondary 1 Math had students create and use exponential equations, tables, and graphs to represent the half-life of Carbon 14 in a sample. Students also quantified the data to represent the South African ebola outbreak which began in 2014. Using tables, graphs, equations, and a written essay of their findings, students formed conjectures and made projections about future outbreaks of the disease.

In music classes, students discuss the history, politics, and other inspirations behind specific music genres and the time periods in which they were popular, including but not limited to the anti-war music of the 1960's and the Punk Rock Movement of the 1980's. Students form conjectures as to the motivation for these and various other musical genres of the world.

English language arts, math, and social studies teachers collaborated on a unit of literature using *Flatland* by Edwin Abbott, a mathematician/theologian in the late 1800s. *Flatland* is a satire about Victorian society, which uses characters who are represented by geometric shapes-- "the more angles your shape has, the greater your social status." The novel is thought provoking and rich in geometric descriptions and mathematical vocabulary. Abbott describes an entirely self-absorbed society that is either unwilling or unable to accept new science or ideas that are beyond their views of normality. Student assignments included an essay to tell what shape they would have been and why, again drawing on their metacognition to self-analyze and quantify themselves in historic comparison to characters in Victorian society.

Utah STEM School Designation Criteria
Pilot Year Model

1. **Curriculum: Problem-Solving Rigorous Learning**

STEM Curriculum is selected based on Utah Core Standards. The curriculum has an articulated interconnectedness between science, technology, engineering and math. Curriculum and instruction are coordinated between the various aspects of STEM. Projects form a substantial part of the curriculum.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
1b. Problem-Solving Learning *Learning is student-led, interdisciplinary, and engaged in real-world content and multiple solutions for student cooperation utilizing STEM knowledge and skills. Problem-solving learning at this school requires a thorough process of inquiry, knowledge building, and resolutions. Curriculum includes projects, often interdisciplinary and ranging from short- to long-term, which are focused on solving an authentic problem.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Problem-solving learning (short-term) is evident in lessons/activities at least once per month in the STEM curriculum. - Problem-solving learning in projects (long-term) is evident in the STEM curriculum at least three times per year. - Students are required to do research for problem-solving learning at least three times per year.	- Problem-solving learning in short-term projects is evident in lessons/activities at least once per week in the STEM curriculum. - Problem-solving learning in long-term projects is evident in the STEM curriculum at least five per year and three per year in other disciplines. - Problem-solving learning in long-term projects at the school draw from multiple courses or subjects.

Narrative: 1b: Exemplary – 3 points

At BSTA, students are engaged in utilizing their STEM knowledge and skills in solving problems and completing projects both short and long-term.

School Name: Beehive Science and Technology Academy (BSTA)

Utah STEM School Designation Criteria
Pilot Year Model

BSTA hosts the Utah Stem Expo at the South Towne Expo Center each spring and has done so since 2013. Students create projects in math, science, computer programming, and this year also in the arts. Students select their project in September and spend the year working on it. They complete write-ups about their selection, record video demonstrations that they post on Youtube, and preview their assignments for parents at open houses and public events long before the Expo. These are NOT typical science projects, but in-depth research and development opportunities. In the past, students have built hovercrafts, created hydrogen gas that could help power gasoline engines, and numerous other projects. Future projects include building an Aim's Room (please visit our Stem Expo in the spring.)

In 2015, BSTA became a pilot school for College Prep Mathematics (CPM), a rigorous, problem-solving based mathematics curriculum. CPM lessons rely on cooperative or group activities in which students are given problems to solve, which are taught weekly at all grade levels. Teachers facilitate discussion, direction, and investigation by students. Later lectures address the students' problems, attempts, and successes during the problem solving sessions. Direct instruction fills in students' gaps in understanding by defining terms, symbols, and algorithms to formalize the concepts.

A recent example of a problem based math lesson Was "Newton's Revenge" in which it was rumored that a roller coaster was unsafe because people were getting hurt when they raised their hands by hitting them on the ceiling of a tunnel the coaster traveled through. Students in the eighth grade created scatter plots and a trend line (on Desmos) to examine the data and make a projection about how tall a person would need to be to reach the ceiling from a seated position. They concluded that the roller coaster was safe for people less than eight feet tall.

Computer science and programming classes use problem solving instruction to teach flow-charting as a way to solve problems.

Science Classes use the Discovery Education Science Techbook, an online content portal that provides students with access to content in text, audio and visual formats.. Students have access to an interactive glossary, videos, reading passages, charts, virtual labs, simulations and assessment tools. Each concept is based on the 5E Model (Engage-Explore-Explain-Elaborate-Evaluate). The above mentioned materials are distributed in a manner under these 5E tabs to help students build up on inquiry learning. This learning model is especially useful to enhance mastering the subject matter, developing scientific reasoning, and cultivating interest and attitude about science.

In the engineering class, students design and build many projects. During this process students use a decision making matrix for solving problems that result while designing and constructing projects. Last summer a few students and teachers collaborated to design and build a 10'x12' storage shed for the school. Together they designed a roof truss system and solved the many problems that arose in this real world endeavor.

School Name: Beehive Science and Technology Academy (BSTA)

Utah STEM School Designation Criteria
Pilot Year Model

1. **Curriculum: Problem-Solving Rigorous Learning**

STEM Curriculum is selected based on Utah Core Standards. The curriculum has an articulated interconnectedness between science, technology, engineering and math. Curriculum and instruction are coordinated between the various aspects of STEM. Projects form a substantial part of the curriculum.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
1c. Student Cooperation *Students learn from each other and work well together.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Students collaborate and work as teams in STEM disciplines at least once per week. - Student products in STEM disciplines reflect group learning interactions at least once per month. - Students are engaged in giving and receiving constructive feedback to peers in STEM learning cooperative settings at least three times per year.	- Students collaborate and work as teams in all disciplines at least once per week. - Student products in all disciplines reflect group learning interactions at least once per month. - Students are engaged in giving and receiving constructive feedback to peers in all course cooperative settings at least three times per year. - Students use appropriate technology as available for collaborative work, communication, research and data collection/analysis, in projects and other assessments daily.

Narrative: Exemplary -- 3 points

Students at BSTA of various ages are collaborative, learn from each other, and work well together on projects and in various STEM capacities.

In Science classes, students regularly work in groups to complete projects from the large, overarching annual STEM Expo projects to smaller weekly classroom projects, and daily activities. Group work is the norm in science classes. Students routinely create models (e.g. solar system models or moon phases model).

The math department uses College Prep Mathematics (CPM), a rigorous, problem-solving based mathematics curriculum weekly. CPM lessons rely on cooperative and/or group activities in which students work in teams to solve problems at all grade levels. Math classes use CPM activities at least once per week. Teachers facilitate discussion, direction, and investigation by students. CPM includes Desmos, a computerized charting and graphing tool, which students

Utah STEM School Designation Criteria
Pilot Year Model
use alongside TI and Casio graphing calculators. Once per quarter, math students demonstrate their work on specific problems to their whole class who then offer constructive feedback. (Please use this link to view a short video of a cooperative math activity)

Social Studies classes have weekly group current event discussion projects.

Creative activities are designed in many classes to form new teams at the start of a new unit.

Google classroom is used in many classes to connect students together as they collaborate digitally to solve problems and create projects.

Utah STEM School Designation Criteria
Pilot Year Model

1. **Curriculum: Problem-Solving Rigorous Learning**

STEM Curriculum is selected based on Utah Core Standards. The curriculum has an articulated interconnectedness between science, technology, engineering and math. Curriculum and instruction are coordinated between the various aspects of STEM. Projects form a substantial part of the curriculum.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
1d. Connections to the Real-World and Current Events *Students make connections between what they are learning and real-world experiences, current events, and/or their daily lives.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Instruction regularly helps students to better understand current events and/or issues. - Students are required to apply knowledge learned in the classroom to conceptual or theoretical real-world scenario at least three times per month in STEM disciplines.	- Instruction consistently helps students to better understand current events and/or issues, including those specific to Utah, the United States, and international communities. - Students are required to apply knowledge learned in the classroom to conceptual or theoretical real-world scenarios at least three times per month in all disciplines.

Narrative: Exemplary -- 3 points

At BSTA, students are connected to the world and its events daily through many different disciplines.

Social Studies classes watch news clips and have current event discussion/projects regularly.

Math class problems are often taken from real world events. A recent project in Secondary I Math had students use data from the 2013 Ebola outbreak in South Africa. Students made tables, graphs, and wrote equations. They found that the numbers being infected each month followed an exponential curve. They wrote equations and made projections about the future spread of the disease.

School Name: Beehive Science and Technology Academy (BSTA)

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Pilot Year Model
Financial Literacy classes teach students to prepare for the workforce with mock job interviews, balance a checkbook with simulated checking accounts, manage credit cards, understand insurance, estate planning, investments and how to budget money for a successful life.

In music classes, students discuss the history, politics, and other inspirations behind specific music genres and the time periods in which they were popular, including but not limited to the anti-war music of the 1960's and the Punk Rock Movement of the 1980's. Students form conjectures as to the motivation for these and various other musical genres of the world.

Digital photography classes teach the art of catching the moment in a photograph in collaboration with reporting on current events.

English classes have discussions and regular journal entries relating to current events to incidents that have taken place in the literature that they are studying.

Science classes use Discovery Education and its Virtual Labs to investigate real world connections to the science curriculum.

In their science classes, students use their Utah STEM Expo projects to make connections to daily life and/or industry use. Students relate their project to every-day activities or an industry in their Youtube video showcasing their STEM Expo project and in preparing their project website.

School Name: Beehive Science and Technology Academy (BSTA)

Utah STEM School Designation Criteria
Pilot Year Model

1. **Curriculum: Problem-Solving Rigorous Learning**

STEM Curriculum is selected based on Utah Core Standards. The curriculum has an articulated interconnectedness between science, technology, engineering and math. Curriculum and instruction are coordinated between the various aspects of STEM. Projects form a substantial part of the curriculum.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
1e. Engineering Design Process *The teacher supports students' use of an engineering design process (prototype, test, evaluate, and revise).*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Engineering design process is the focus of science and CTE classroom curriculum at least twice per year. - One problem-solving learning project per year requires development of a product/outcome utilizing the engineering design process in most STEM classes.	- The engineering design process is the focus of science and CTE classroom curriculum at least four times per year. - The engineering design process is referenced in all classes as a possible strategy to addressing a problem.

Narrative: Exemplary -- 3 points

The teachers at BSTA support students as they learn the engineering design process.

CTE classes use specialized equipment and Vex robotics with an emphasis on the engineering design process.

Gateway To Engineering classes teach students the engineering design process.

Computer science classes teach the engineering design process.

Computer gaming development classes teach the engineering design process.

School Name: Beehive Science and Technology Academy (BSTA)

Utah STEM School Designation Criteria
Pilot Year Model
Art classes teach the engineering design process with 3D printers to make Christmas Ornaments. Students learn the engineering design process using 3D pens, scanners, and printers in Robotics Clubs and Competitive Teams.

1. **Curriculum: Problem-Solving Rigorous Learning**

STEM Curriculum is selected based on Utah Core Standards. The curriculum has an articulated interconnectedness between science, technology, engineering and math. Curriculum and instruction are coordinated between the various aspects of STEM. Projects form a substantial part of the curriculum.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
1f. Standards and Core Course Sequence *The school takes standards (Utah Core Standards, 21st Century Skills (http://www.p21.org/), etc.) into account in school scheduling/curriculum design/instruction.*	*N/A* *Standards-based instruction aligned to the Utah Core Standards is central to instruction. Schools need to have this element in place to be eligible for STEM School Certification.*	N/A *Standards-based instruction aligned to the Utah Core Standards is central to instruction. Schools need to have this element in place to be eligible for STEM School Certification.*	- Utah standards are the central component of all lessons for all classes. - Educators frequently review disciplinary standards for their subject area(s). - The curriculum is vertically aligned within programs, as well as to the current Utah Core Standards. - *Secondary schools:* The school provides a thoughtful rationale for the core course sequencing.	- Educators frequently review disciplinary standards for subject area(s) specific to their teaching assignment and other subject areas. - Educators utilize additional standard sets, such as 21st century skills, computer science standards, etc., to inform instruction. - Teacher teams vertically plan STEM instruction within schools. - *Secondary schools:* Students have opportunities to take STEM-based courses beyond the traditional grade-level requirements.

Narrative: Exemplary -- 3 points

School Name: Beehive Science and Technology Academy (BSTA)

Utah STEM School Designation Criteria
Pilot Year Model

BSTA uses Utah Core Standards: Honors Level, National standards, Common Core Standards, and 21st Century Skills in scheduling and designing its instruction.

Students attended the *Day of the Dead Pre-Med Conference* in October 2015 at the University of Utah School of Medicine. This conference gave our high school seniors insight into the application process for medical school and a glimpse into what awaits medical students as a study and a career. Highlights included a visit to the cadaver lab.

Students attended *Science Day* at the University of Utah in November 2015. There they attended workshops offered by the University's best professors and local STEM industry leaders.

Math classes incorporate the Utah Core Curriculum (UTCC), The Common Core State Standards (CCSS) for Classroom Practice and the National Council of Teachers of Mathematics (NCTM) Principles and Standards which are the foundation for the design of the College Prep Mathematics (CPM) program being used. Most math teachers are members of at least one of the Councils. All teach well beyond the scope of the Core curriculum.

A+ classes follow the MATHCOUNTS curriculum and include arithmetic, algebra, counting, geometry, number theory, probability, and statistics. The focus of MATHCOUNTS curriculum is in developing mathematical problem solving skills.

Utah STEM School Designation Criteria
Pilot Year Model

1. **Curriculum: Problem-Solving Rigorous Learning**

STEM Curriculum is selected based on Utah Core Standards. The curriculum has an articulated interconnectedness between science, technology, engineering and math. Curriculum and instruction are coordinated between the various aspects of STEM. Projects form a substantial part of the curriculum.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
1g. Cognitively Demanding Work *Students use thinking and process skills. This includes considering alternative arguments or explanations, making predictions, interpreting their experiences, analyzing data, explaining their reasoning, and supporting their conclusions with evidence.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Student learning products exemplify at DOK 2-3 level at least once a month. Classroom instruction is predominantly student-centered, and all students are asked to extend and refine their acquired knowledge to routinely analyze and solve problems, as well as create unique solutions. - All students are asked to support their conclusions with evidence. Students are asked to explain their reasoning. - All students are asked to consider and/or define alternative explanations.	- Student learning products exemplify at DOK 3-4 level one or more times per month. Classroom instruction is predominantly student-centered, and all students are asked to have the competence to think in complex ways and apply the knowledge and skills they have acquired. Students are asked to create solutions and take action that further develops their skills and knowledge. - All students are asked to support their conclusions with evidence. Students are asked to explain their reasoning. - All students are asked to come up with alternative explanations or arguments. All students are asked to make hypotheses or predictions.

Narrative: Exemplary 3

- BSTA Teachers create and use SAGE Formative Tests regularly (bi-monthly) to challenge and assess students with 40% to 50% of the questions at or above DOK 3.

School Name: Beehive Science and Technology Academy (BSTA)

Utah STEM School Designation Criteria
Pilot Year Model

- Computer Programming and Game Development Classes apply Webb's Depth of Knowledge Levels to Bloom's Cognitive Process Dimensions to develop challenging curriculum at or above DOK 3.
- BSTA Collaborative Teacher teams implement Evidence Based Instructional Strategies (EBIS) to raise the bar of student accomplishment. BSTA has chosen to implement strategies that will enforce metacognitive skills across all content areas .
- Each student at BSTA works all year to complete a project that will be displayed at The Utah Stem Expo in the spring. This is so much more than just a science project. Students select their project in September, complete continuous studies and research, create websites, youtube videos, and finally build their projects to display at the Expo. Some of the past projects included: a hovercraft and a device to create hydrogen fuel from water to enhance fuel consumption.
- Science classes start with advanced depth of knowledge projects in the early grades. A middle school project, "Track the Moon" shows how sixth grade students learn about the moon's orbit.
- The following clubs held after school are further examples of work students do that is cognitively demanding:
- Lego League
- Chess Club
- Future City Design
- Turkish Olympiad
- Math Counts
- Math League
- Digital Media

School Name: Beehive Science and Technology Academy (BSTA)

Utah STEM School Designation Criteria
Pilot Year Model

2. **Leadership**

The school leadership has created clear definitions and a vision of STEM teaching and learning as it applies in the local school and as informed by state, national, and global efforts. Collaboration exists between community, industry and other education partners. Efforts are made to connect to national and global efforts.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
2a. Career Exposure *Students participate in post-secondary education exposure activities, such as college tours, and in career-readiness experiences, including internships and mentoring. In some cases, experiences may be customized for each student.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Career field experiences are offered to students at least two times per year for authentic learning. - Careers are directly incorporated into the STEM instruction at least once per month. - *Secondary Schools:* Internships or on-site STEM participation exist for some of the students. - *Secondary Schools*: All students participate in job-shadowing, field experiences, or other on-site experiences in STEM fields at least once each year.	- Outside-the-classroom learning includes field experience and authentic, contextual learning that directly connects to the in-class curriculum. - Partners help students and teachers understand what is expected of a student planning to enter a career in the partner's field.

School Name: Beehive Science and Technology Academy (BSTA)

Narrative: Exemplary -- 3 points

BSTA prepares all students to be college and career ready with a rigorous and broad curriculum, grounded in the core academic discipline, but also consisting of other subjects that are part of a well-rounded education. Academic preparation alone is not enough to ensure postsecondary readiness but it is clear that it is an essential part of readiness for college, careers, and life in the 21st century. Thus, BSTA college programs are designed to support the students starting in the ninth grade the areas of academic planning, four-year high school plans, and post high school planning. Students will learn specific information about themselves through self-knowledge, education and occupation exploration in college and career ready classes, such as College Advisory Class and ACT/SAT Preparation Class. The broad goal of teaching these classes is to help students begin to figure out who they are while they decide what they want to become.

BSTA's college advisory program provides students the opportunity to explore careers, get familiar with personal skills to have a successful career, and learn about colleges, the scholarship process, and the application process. Moreover, BSTA offers college mentorship and leadership program for students. The CMLP (College Mentorship and Leadership Program) is a multi-faceted program, designed to prepare students to be admitted to top colleges. Students are able to improve their academic and personal skills. The purpose of the CMLP program is to give an extra edge to our students so they can be eligible for more resources during their college life. The program also has a major ingredient of guidance to secure the character and personality part of college admission and provides highly motivated and enriching activities. Along the way, students will be guided through scholarship and awards applications for colleges such as the Congressional Award.

BSTA organizes field trips and college trips to expose and prepare its students for various career opportunities. College recruiters and representatives from other careers like the Air Force, IM Flash, etc., come to BSTA each year to talk about their respective careers and scopes. BSTA also arranges and encourages students to do internship programs to experience different jobs in the field. Students go with faculty to various college fairs, and STEM fests to expose them to STEM careers. BSTA invites many colleges and companies to the BSTA sponsored Utah STEM Expo to talk to students about their job opportunities.

Utah STEM School Designation Criteria
Pilot Year Model

Leadership

The school leadership has created clear definitions and a vision of STEM teaching and learning as it applies in the local school and as informed by state, national, and global efforts. Collaboration exists between community, industry and other education partners. Efforts are made to connect to national and global efforts.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
2b. College and Career Readiness Skills *Students use the skills of communication, creativity, collaboration, leadership, critical thinking, and technological proficiency.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	*STEM lessons/activities require students to exercise skills they will use in the workplace:* - Lessons/activities require students to demonstrate leadership and responsibility. - Lessons/activities require students to present information effectively and are aligned with the Utah ELA standards for communication. - Lessons/activities require students to exercise time management and organize their work. -	*ALL lessons/activities require students to regularly exercise skills they will use in the workplace:* - Lessons/activities require students to demonstrate leadership and responsibility. - Lessons/activities require students to present information effectively, and are aligned with the Utah ELA standards for communication. - Lessons/activities require students to exercise time management and organize their work.

Narrative: Exemplary -- 3 points

BSTA students are asked to do activities, projects and assignments that help prepare them for the workplace by employing time management and organizational skills. They regularly do projects that require collaboration, creativity and communication in all of their classes. All students are required to prepare a STEM project and present it on Youtube, at the Utah STEM Expo, and at other public events. Students are provided a guidebook with each step outlined, a required due date, and a grade.

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In non-STEM subjects, students also do numerous projects and presentations using Apple TVs in each classroom. There are many apps and programs used by all teachers and students as they interact with each other virtually using their iPads. Each student has an interactive student calendar in their CoolSIS account, which allows them to organize themselves, keep track of their grades and have access to course documents. Teachers assign projects and assignments in CoolSIS, which is automatically added to students' calendars.

Communication is one of our school wide goals. Two of BSTA's DRSLs are effective communication skills (see artifacts) and 21st century technology skills. There is a poster in each classroom in the school listing these goals, and each teacher incorporates these skills into their teaching.

Each year, BSTA organizes the STEM YouTube video contest in connection with their STEM Expo project. All students are required to participate. Students upload their videos to YouTube, and then watch the videos of their friends and classmates, after which they leave encouraging and inciteful comments. Students also participate in other public events and interact with people while they present their projects. These many different opportunities greatly improve their communication skills both to their peers and the general public.

Utah STEM School Designation Criteria
Pilot Year Model

2. **Leadership**

The school leadership has created clear definitions and a vision of STEM teaching and learning as it applies in the local school and as informed by state, national, and global efforts. Collaboration exists between community, industry and other education partners. Efforts are made to connect to national and global efforts.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
2c. STEM Instructional Team Leaders Support Instruction *A portion of school's staff, in addition to administrators, has time designated for instructional leadership and actively supports instruction (e.g., leads professional development, models instruction, gives feedback on instruction, etc.). School leaders ensure that staff members have opportunities to grow in their roles as STEM school teachers and leaders.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- A STEM leadership team is in place to ensure continuous STEM program improvement. - Teacher teams address expectations of school set by the leadership team. - Teams meet regularly to discuss school goals and progress, research, best practices, and opportunities for improvement. - School leaders ensure that teachers have opportunities to see exemplary practice. - Teachers know that it's okay to try new practices. School leaders support teachers when they fail with constructive procedures and feedback. - Utah Effective Teaching Standards and Utah Educational Leadership Standards are **involved in planning and framework** for leadership development—see http://www.schools.utah.gov/CURR/educatoreffectiveness/Standards.aspx - School leader(s) encourage and support teachers to seek out additional professional learning opportunities beyond school/LEA.	- A STEM leadership team is in place to define and monitor and evaluate entire school. - Leadership teams meet regularly to discuss research, best practices, successes, and opportunities for improvement toward STEM School goals. - School leaders model instructional practice, **demonstrate and support staff development in high-quality instruction**. - School leaders model and support risk-taking and autonomy for staff. - School leaders model and support staff innovation and/or attempting new strategies. - Utah Effective Teaching Standards and Utah Educational Leadership Standards are **directly referenced and central to planning, development, and evaluation** of leadership efforts—see http://www.schools.utah.gov/CURR/educatoreffectiveness/Standards.aspx

Narrative: Exemplary -- 3 points

BSTA staff and administration work together to ensure teachers have the opportunity to enhance their abilities as STEM leaders. Teachers are encouraged and recognized for seeking out learning opportunities for professional development. They also know that if they try something new and it fails, the administration will be supportive and helpful in giving feedback for success in future tries.

We have a STEM Coordinator to lead STEM teaching in the school. Our STEM committee involves three administrators, three teachers and one parent. The committee meets quarterly to discuss STEM education and its implementation. It also meets as needed when a STEM related activity or event is organized. Teachers are encouraged and recognized for seeking out learning opportunities for professional development. The Smart School suggestion came from staff, and school administration worked with the school board to find the matching $240,000 to start the technology program in the school. BSTA has piloted the Assessment to Achievement program, the Globolaria Game Design program, the Smart School Technology Program, Edivate, PLTW, and the STEM Math program from the STEM Action Center. Administrators and coaches model teaching and scenarios to staff during the in-service days and various professional development events. Staff evaluations and professional development opportunities are designed according to the Utah standards.

Utah STEM School Designation Criteria
Pilot Year Model

Leadership

The school leadership has created clear definitions and a vision of STEM teaching and learning as it applies in the local school and as informed by state, national, and global efforts. Collaboration exists between community, industry and other education partners. Efforts are made to connect to national and global efforts.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
2d. Staff Has Sense of School Ownership and Participates in Decision Making *Staff members behave in a manner that exhibits their responsibility for and commitment to the success of the school. The staff contributes to and has a say in decisions regarding the school. The staff works with independence and self-direction.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- The school leadership engages staff in strategic planning. - The school leadership has an articulated process for staff to give input and feedback. - Decisions are made by greater than 50% of the school's staff.	- The school leadership engages ALL staff members in strategic planning. - The school leadership has an articulated process for staff members to give input and feedback, and responds to feedback in an open setting. - Decisions are made by ALL school faculty and staff members.

Narrative: Exemplary -- 3 points

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The administration at BSTA endeavors to make all staff and their families feel welcome and a part of the BSTA family. This makes for better success in the classroom, and commitment to the success of the school. When a new faculty or staff member is hired, he or she is welcomed and told they will now be an essential part of the effort to prepare students for the future. They are greeted with the idea that they will always be a part of the Beehive family, no matter how long they stay. Each year there are several opportunities for staff and their families to come together and interact—Fall Festival (in October), a holiday dinner, and picnics in the spring, etc.

At least once a month, a school-wide faculty meeting is held where everyone is given a chance to voice their opinions on items that concern the whole school. Even where decisions are made by the administration, faculty and staff are made aware of those decisions and asked for input. The month's birthdays are also celebrated as well as any accomplishments recently made.

There is no micromanaging at Beehive. The faculty is allowed to work independently and with self-direction in their various subjects. Each individual has a different teaching style, and at BSTA everyone is allowed to use that style to become the most inspiring teacher he or she can be. At the end of the year, all staff come together and do a year end wrap-up meeting. Together, everyone evaluates the year and its various programs. At these meetings, evaluations are made as to the effectiveness and success of each one. Changes and adjustments are made to make each school year an improvement. Then before school starts during our in-service days, teachers have lengthy discussions in which implementation plans are discussed. Various staff surveys are also held to get input. A technology survey, and a professional development survey are just two of them.

Utah STEM School Designation Criteria
Pilot Year Model

3. Assessment

Assessments are ongoing, authentic and cross-curricular. They are project-focused and performance-based. Rubrics for projects are provided and articulate with the goals of the assessment. Formative assessment informs summative assessment and teaching efforts.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
3a. Student Learning Outcomes (SLOs) Process *Demonstration that school utilizes SLO process to measure student outcomes and teacher instruction.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- STEM courses utilize SLOs to measure progress toward targets for at least two expected student learning outcomes. - Students are actively informed about mastery expectations and progress.	- 80% of courses utilize SLOs to measure progress toward targets for at least two expected student learning outcomes. - Qualitative assessments exist around student learning outcomes.

Narrative: Exemplary--3 points

Students are continually actively informed of their progress at BSTA as is demonstrated by the following:

Students and parents are informed of progress in all classes through Coolsis, an online grading tool, which is available on student iPads, and for parent mobile devices.

Students and parents are informed of progress throughout the year with eight report cards sent home by mail, as well as up to date information on CoolSIS.

Teachers are expected to respond to parent emails within 24 hours, which aids in prompt communication about a student's progress.

Parent-Teacher Conferences are held twice during the year to allow for more communication about student progress. Meeting with teachers by appointment is also available any time.

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Testing is used in tracking student progress at different levels. The SAGE interim and Summative tests aid in tracking student progress throughout the year. These test results guide teachers in planning their teaching and in setting goals. Individual student reports are used to inform students of their level and to set their own goals. SAGE Formative testing is used in a more frequent manner to guide and keep track of student learning.

In high school, a student's level is measured with standardized testing. ACT Explore in 9th grade, ACT Plan in 10th grade and the ACT in 11th grade are administered once a year to help with college admission planning.

Assessment to Achievement program guides teachers in using measurable data to guide them in their teaching. The School Transformation Team (STT) meets regularly to plan and guide the Collaborative Teacher Teams (CTTs) in their strategies and teaching methods to improve assessment outcome.

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Utah STEM School Designation Criteria
Pilot Year Model

3. **Assessment**

Assessments are ongoing, authentic and cross-curricular. They are project-focused and performance-based. Rubrics for projects are provided and articulate with the goals of the assessment. Formative assessment informs summative assessment and teaching efforts.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
3b. Use of Assessment to Inform Instruction *The teacher uses information on current student understanding to inform and plan future instruction.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- All teachers use multiple indicators of success (e.g., performance assessments, observations, monitoring student dialogue) at least once a week to inform their decisions about instruction (reteach concepts, try an alternative instructional strategy, organize the students differently, provide an alternative example). - Most teachers go back and reteach concepts based on student understanding. - Teachers consistently use observation and monitor student dialogue to assess student learning.	- All teachers use multiple indicators of success (e.g., performance assessments, observations, monitoring student dialogue) almost every class session to inform decisions about instruction (e.g., reteach concepts, try an alternative instructional strategy, organize the students differently, provide an alternative example). - Teachers use observation and monitor student dialogue to consistently assess student learning, and share their data in teacher teams at least once a month.

Narrative: Exemplary--3 points

The teachers at BSTA use current student understanding to plan their instruction in the following ways:

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Utah STEM School Designation Criteria
Pilot Year Model
Teachers are using SAGE Interim/Summative data to help them make decisions about students' performance and plan their future instruction.

MAP testing is used for certain students to aid teachers in decision-making.

Teachers submit curriculum maps at the beginning of the year to the administration. While they are following their curriculum maps throughout the year, teachers make changes according to the students' pace in learning.

Grade level meetings and department meetings help teachers in discussing and deciding strategies for student group learning levels and to track their progress.

Assessment to Achievement goals that have been set are used in classes to track student learning and success. Resources provided through the Assessment to Achievement system help teachers make decisions based on data.

Khan Academy is an online system used by the Math department to track individual students' math progress. Reports generated based on students' responses guide teachers in determining the need to reteach certain concepts.

SAGE Formative is used by some teachers to assess and track students' success based on topics and state standards. Reports generated based on students' responses guide teachers in determining the need for reteaching concepts.

Discovery Education Techbook is used by the science department to provide content and assessment to students. This system helps teachers keep track of students' understanding of science concepts. Reports generated based on student responses guide teachers in determining the need for reteaching concepts.

Utah STEM School Designation Criteria
Pilot Year Model

4. **Professional Learning**

STEM-focused professional learning is fully implemented. Professional development aligns with Utah's requirements for professional learning (Utah Code 53A-3-701) and aligns with Utah Core Standards and Utah Effective Teaching Standards. Learning communities and learning networks are integrated into efforts for personal growth and school wide growth.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
4a. Staff Engagement in Relevant Professional Learning Opportunities *The staff participates in internal or external growth and development activities that are beneficial and relevant to their work. Staff members are willing to try new practices and adjust what they do for the greatest benefit for students.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Professional development meets **ALL** of the criteria established in Professional Learning Standards articulated in Utah law 53A-3-701 passed in 2014 http://le.utah.gov/~code/TITLE53A/htm/53 A03_070100.htm - School leader(s) make sure teachers have access to STEM professional learning at least once per school year. - Staff members occasionally try new strategies (e.g., instructional, management, stakeholder outreach). - Staff members have clear opportunities to give input about professional development needs and outcomes received at the school.	- Professional development meets **ALL** of the criteria established in Professional Learning Standards articulated in Utah Code 53A-3-701, passed in 2014 http://le.utah.gov/~code/TITLE53A/htm/53A03_070100.htm - School leader(s) make sure teachers participate in professional learning at least once per month. - Staff members regularly try new strategies (e.g., instructional, management, stakeholder outreach). Some PD experiences or staff collaboration time are structured to focus on new practices.

Narrative: Exemplary--3 points

Beehive Science and Technology Academy has implemented a comprehensive approach to the professional development of our administration and teaching staff by ensuring professional learning occurs within learning communities committed to continuous improvement, individual and collective responsibility, and

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goal alignment. Our administration is affiliated with the *Accord Institute for Educational Research*. The Institute organizes workshops, trainings, seminars and conferences to spur professional growth for teachers, administrators, and other school staff. The support and training BSTA has received is as follows:

Provides guidance on promoting STEM practices at school sites and how to organize and hold STEM/STEAM Fairs, festivals and expositions.

Training to teachers on how to create curricula on A+ Math and present this curricula to students. Mr. Oguz and Mr. Zack Temerican, the Principal and Vice Principal of BSTA, attend the trainings offered by the Accord Institute monthly. Some topics have included data driven instruction, inquiry based science curricula, and how to refine skills in problem solving, adaptive reasoning, and proofing.

We conduct an annual survey with our staff, which asks what additional professional development opportunities staff desires and also any STEM related training they feel would be beneficial. These surveys are conducted in late spring and help determine professional development topics for the summer and fall.

Our teachers participate in professional learning at least two times per month ranging from three to eleven hours of learning monthly per teacher. This is accomplished through many avenues. We utilize a professional learning website titled, *Edivate*. On this site, each of our teachers set their own learning goals and then obtain these goals through opportunities offered in reviewing videos of other teachers on topics of their choice. Reviewing research and participating in online discussions with other educators are a few of the methods used. Administration gets monthly reports to ensure teachers are making progress toward their goals, and we collaborate often providing educational videos, academic articles and examples of new practices.

We have organized teacher learning communities, which meet twice monthly to discuss new practices, data driven curricula and concepts gained in book studies organized by our administration.

Beehive staff is participating in “Assessment to Achievement,” which is a two year opportunity focusing on effectively using relevant data to improve student outcomes. This training is sponsored by USOE and Ed Direction and ten staff members are being trained directly. They then train our remaining staff. Teams increase their own expertise in analyzing data gained from student outcomes and using these skills to inform instructional and program decisions and improve student achievement. Participants will collaborate as school teams to analyze the data and implement school-wide strategies. These teacher teams attend over ten full days of training per year. Our staff is specifically focusing on “Metacognition” with our students teaching them to think about how they think. Our staff is utilizing specific tools such as rubrics to encourage comprehensive writing.

Our staff continues their professional development through continuing education. Our two computer and IT teachers are prime examples. Ms. Guney completed her MS in Computer Science and Software Engineering from Colorado Technical University in November 2014. Ms. Temerican also completed her MS in Computer Science and Software Engineering from Colorado Technical University in March 2015. Both teachers are members of the “Computer Science Teacher

Association-CSTA. Other training attended was in January, 2015 Globaloria for Game Design and in October, 2015 Microsoft Game Programming. These two teachers routinely provide training on our professional development days for our entire staff on apps and available software for classroom use. Mr. Kablan, our Science chair, ensured all three of our Science teachers attended AMS Summer Materials Camp sponsored by the University of Utah. The purpose of this training was to demonstrate how to properly use materials science in STEM Education. Mr. Kablan also attends meetings with the STEM Action Center quarterly. He attended the Northern Utah Stem Expo in order to collaborate with participating schools. He heads our Robotics Team and attended the FTC Kickoff, which is the start of the competition season.

4. Professional Learning

STEM-focused professional learning is fully implemented. Professional development aligns with Utah's requirements for professional learning (Utah Code 53A-3-701) and aligns with Utah Core Standards and Utah Effective Teaching Standards. Learning communities and learning networks are integrated into efforts for personal growth and school wide growth.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
4b. Professional Development Resources *Resources (both time and funding) are available to help teachers and staff develop and further their skills.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- School leadership ensures that professional development opportunities are identified and shared. - School leadership makes sure that professional development is high quality. - School leadership supports staff interests in STEM professional learning. - Leaders designate financial and human resources to support staff professional development.	- The leadership obtains grant(s) and/or brings in resources beyond school funding streams to support professional development. - Leaders evaluate the impact of professional development.

Utah STEM School Designation Criteria
Pilot Year Model
Narrative: Exemplary--3 points

The 2015-2016 school year is the second year grant funding was obtained to continue utilizing software to assist our teachers with their professional development goals. The software utilized is “Edivate.” Each teacher has a “learning plan” with stated goals, which are monitored monthly. One hundred percent of our staff is utilizing this tool to set professional learning goals and work towards increasing their knowledge and skills to achieve these goals. The teachers meet twice per month on an established schedule and TLC groups of three to four teachers to discuss knowledge gained and strategies for improvement. These meeting days we provide a substitute teacher to help cover classes so the teachers can meet and learn from each other.

Last year we received a grant for $2500 from Century Link to train our computer teachers. They attended training on game development with these funds.

The USOE and Ed Direction is sponsoring a grant for training titled, “Assessment to Achievement,” which we applied for and received. This is a two-year training of ten staff members on how to analyze data properly regarding student achievement and then implement instructional strategies to improve student performance. In addition to this training, the teams meet weekly to discuss the strategies and provide additional resources to fellow teachers to utilize in their classes.

The school is receiving training funds from a Title I grant for professional development of our staff. A portion of our Title I funds is also used for training of our teachers and support staff.

Beehive received a USOE grant titled “Mentorship Grant” in which the funds are used to provide support of our teachers by a “Mentor” teacher with over twenty years of experience.

The Utah State Charter School Board provides Beehive Academy with an annual training grant of $1850. These funds have provided an opportunity to bring in outside trainers to provide quality instruction to our teachers. One example of this was training provided August 4, 2015 on student engagement.

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We have partnered with STEM related businesses such as IMFlash to help teachers make curriculum relevant to current uses in professional careers. Our students are visiting their company and representatives are coming to the school to do presentations several times a year.

Beehive Academy values our staff and their knowledge and experience as one of our greatest assets to improve student achievement. We have a strategic plan for professional development through personal learning plans in Edivate, providing relevant training on STEM teaching methods and content knowledge through professional development training days. TLC's or Teacher Learning Communities are provided scheduled time for twice monthly meetings with coverage for a substitute teacher in some classes as needed. Teachers are provided an experienced teacher as a mentor to help them develop their curriculum to become more effective for our diverse population of students. Most importantly, we are learning how to use student data to improve our teaching methods and curriculum in the most thorough training any of us has experienced through "Assessment to Achievement."

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4. **Professional Learning**
STEM-focused professional learning is fully implemented. Professional development aligns with Utah's requirements for professional learning (Utah Code 53A-3-701) and aligns with Utah Core Standards and Utah Effective Teaching Standards. Learning communities and learning networks are integrated into efforts for personal growth and school wide growth.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
4c. Staff Reflects On Their Work *The staff considers the strengths and weaknesses of their practices and ways they can improve.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Staff members explicitly identify times to consider the strengths and weaknesses of their work. - Staff members document monthly reflections about how to improve their work.	- Staff members develop strategies for improving their work in collaboration with colleagues and administration. - Staff members document weekly reflections about how to improve their work.

Narrative: Exemplary--3 points

Beehive Science and Technology Academy staff members complete thorough self-evaluations annually. In these evaluations, our teachers reflect on the curricula used and what can be improved to meet the diverse learning styles of our student population. Additionally, the teachers reflect on teaching methods and regularly share an activity utilized, which engaged all students during their TLC meetings and staff meetings held weekly. These are reflected in grade level, department and staff meeting notes. The teachers have been analyzing their methods during their "Assessment to Achievement" training and making adjustments accordingly in classroom lessons in order to emphasize teaching our students about their own metacognition in learning STEM curriculum. Personal teaching reflections are a part of the teachers' learning plans in Edivate. Currently, these are discussed monthly with administrators and if further support is

needed, it is arranged. Teachers are evaluated and provided feedback up to three times annually by administrators who utilize the Duubl site. This allows for a very comprehensive evaluation of their lessons, classroom management, content knowledge, and application of information to real world examples.

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5. **Teaching**

Teaching is conducted with a focus on STEM concepts, processes and thinking. Teachers coordinate lessons, ideas and planning among one another with a mechanism in place for doing so in both formal and informal ways. Incentives exist for supporting one another. Correlations among various aspects of STEM are articulated and explicit. The faculty demonstrates content competency in all areas of STEM and have relevant endorsements. Efforts are made to support content sharing.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
5a. Code of Behavior and Values *The staff emphasizes and demonstrates code of behavior and values for themselves and students. The staff listens to, supports, and engages constructively with colleagues.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- The student handbook articulates a code of behavior, values, and treatment of one another with trust and respect. - The code is visibly displayed. - Staff and students talk about the code of behavior and values in classes.	- Staff and students talk about it in and outside of class (in hallways and after school activities). - Students use and are assessed on core values in their learning. - A program for recognition of student conduct exists. - STEM career behaviors and skills are embedded into the code of behavior and values.

Narrative: Exemplary--3 points

At BSTA, the staff demonstrates a high level code of behavior and values for themselves and their students. All the staff are supportive of each other, listen to problems and try to encourage and assist whenever possible. Examples of the beliefs and values are as follows:

Beehive Science and Technology Academy Student Handbook outlines the expected code of behavior for students along with consequences and the discipline procedure that will be followed. These rules are covered during the orientation presentations before school starts. At the beginning of the year, these rules are also read with the students during Silent Sustained Reading (SSR) times and any questions by the students answered to clarify the rules.

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The Discipline Record System (DRS) on Coolsis is used by the staff to record positive and negative behavior demonstrated by the students. Consequences like loss of privileges, lunch detention, after school detention, etc. are in place for negative points. Rewards like free dress days, certificates, etc. are in place for positive points. Coolsis sends an email and/or smartphone notification to parents for any positive or negative behavior incidents.

The Beehive Science and Technology Academy Employee Handbook describes the code of conduct expected from the staff.

In order to spread kind behavior habits among students, Hope Squad initiated the Kindness Counts program. Any student can report an act of kindness observed during school through Edmodo. Last year, if the count reached 700 acts within a certain time, a field day was promised to the students. The goal was achieved in a short time, and the field day was a great success.

Kindness counts cards are handed out to students by teachers to recognize positive or kind behavior. These cards can be taken to Ms Barnes (Discipline Coordinator) to get prizes in addition to positive points entered on Coolsis.

Students learn to be responsible by following steps for Utah STEM Expo project assignments. Each step with separate due dates helps students plan and manage their time responsibly. Students upload their project videos to YouTube and embed them to their websites. In each of these steps they are responsible for the content of their digital products.

Time management and taking responsibility for their products are expected in every class for any assignment or project.

These values and skills help build up their STEM career behaviors and skills.

The Character Education and Life Skills course is one hour per week in each grade of middle school. The objective of the Life Skills Class is to encourage students to take responsibility for their actions, to familiarize them with good character traits, to introduce them to role models, and to help develop good citizens with high moral values.

In Computer Game Design course, students learn about Ethics in Game Design.

Beehive Science & Technology Academy has the following beliefs and values:

- All students will strive for academic growth, with an emphasis on literacy, science, math, and technology skills.
- Excellence is achieved in a variety of academic, creative, and personal ways.
- Each student is a valued individual with unique physical, social, emotional and intellectual needs.

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- Teachers, administrators, parents, students and the community share the responsibility for advancing the school's mission.
- Students will model appropriate behavior in a safe and supportive setting to achieve future success in a diverse global community.
- Student learning is supported by a commitment to continuous improvement and research-based pedagogy.
- Extracurricular programs and activities promote holistic student development.
- Vigorous college preparatory programs help students graduate as competitive candidates for the world's top learning institutions.

School Name: Beehive Science and Technology Academy (BSTA)

Utah STEM School Designation Criteria
Pilot Year Model

5. Teaching

Teaching is conducted with a focus on STEM concepts, processes and thinking. Teachers coordinate lessons, ideas and planning among one another with a mechanism in place for doing so in both formal and informal ways. Incentives exist for supporting one another. Correlations among various aspects of STEM are articulated and explicit. The faculty demonstrates content competency in all areas of STEM and have relevant endorsements. Efforts are made to support content sharing.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
5b. Teacher Differentiation of Instruction Based on Learning Needs *The teacher customizes instruction based on abilities, learning styles, and developmental levels of the students.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Course pacing of content covered is modified to accommodate for differences among students. - Teachers ensure that rigor is maintained while making lessons accessible for all students. - Teachers adapts curriculum to better fit student learning styles. - Teachers use a range of pedagogical strategies.	- Teacher differentiation incorporates students' real-life applications for outside learning. - Students are able to self-select the differentiation. - Teachers regularly and systematically share information about students' learning differences.

Narrative: Exemplary--3 points

Teachers at BSTA are constantly reviewing student abilities, learning styles and developmental levels of their students and adjusting instruction as needed. They use test results, daily checks and a variety of methods to confirm the students are learning the material.

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Pilot Year Model
Assessment to Achievement Action Plan is devised in a way to provide differentiation within the classroom as outlined on the attached “Action Plan for Improving Teaching and Learning at Beehive Academy”.

Assessment to Achievement methods have helped teachers to check the students’ learning and thinking skills. Many different learning styles are also discussed and addressed through grade level and department meetings biweekly.

In group projects in US History Class, students are given choices of producing different types of material to fulfill the requirements of the project. For example, in the “Protesting the Taxation Acts-Presentations” they have to choose from a writing a commercial, jingle, poem or making a poster as detailed in the artifacts.

In group projects in 6th Grade Language Arts class, students have to choose a role like Artist, Scribe, Researcher and Presenter, to prepare their group project as exemplified on the attached “African Monster Webquest”, where they have to follow a rubric to guide them to excellence.

The Smart School Program at Beehive Academy provides all students with iPads that they can use for school. In an effort to provide differentiated education, teachers use different apps and online platforms. A few online platforms to name are Google Classroom, Khan Academy, Discovery Education and Edmodo. Additionally, teachers can make app requests to use in their classes as can be seen in the attachment.

Department meetings, grade level meetings and faculty meetings are times when teachers can share and discuss differentiation among a variety of student groups. In the attached example, the agenda items are ELL students and Title 1 students.

Utah STEM Expo, which is a major project for students to accomplish in science classes, gives the students the option of selecting their projects from a list of science, math, computer science, art and technology projects. Then, they put their selections through the online project selection form to let the teachers know of their choices.

Professional Development is an important focus at Beehive Academy, where teachers can improve their skills by working in groups/teams. An example is the TLC meetings that are scheduled biweekly with small groups where teachers utilize Edivation to improve skills. Here is a link: https://www.pd360.com/

In the CMLP (College Mentorship and Leadership Program), students are setting goals in personal development, public service, physical fitness and exploration/expedition to obtain certificates and medals from the Congressional Award after completing certain hours in their goals. Please follow the link to get more information about the award: http://congressionalaward.org/program/program-areas/

School Name: Beehive Science and Technology Academy (BSTA)

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5. **Teaching**

Teaching is conducted with a focus on STEM concepts, processes and thinking. Teachers coordinate lessons, ideas and planning among one another with a mechanism in place for doing so in both formal and informal ways. Incentives exist for supporting one another. Correlations among various aspects of STEM are articulated and explicit. The faculty demonstrates content competency in all areas of STEM and have relevant endorsements. Efforts are made to support content sharing.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
5c. Staff Spreads Practices *The staff shares with others practices they enact in their classrooms and school.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- STEM practices and strategies are shared across all staff members in the school. - The staff at this school shares information and strategies with other schools interested in STEM practices.	- Staff members at this school provide PD/training/ consultation to each other and to other schools interested in STEM practices. - Staff members at this school share instructional materials with each other and with other schools interested in STEM practices.

Narrative: Exemplary--3 points

Teachers and staff collaborate and share with each other the successful practices that are used in the classroom. These practices are shared in grade level and department meetings, and informally in classrooms and the staff room.

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Pilot Year Model

Teachers are meeting in small groups every two weeks to focus on professional development through the online system called Edivation. These meetings are focused on learning and using new teaching methods, improving instruction and overcoming challenges in the teaching profession. https://www.pd360.com/

In-service training days before school starts in the fall and professional development days throughout the year help teachers improve in their profession as well as learn new ways and tools to improve their teaching.

Assessment to Achievement program brings all teachers together to work towards a common goal in improving BSTA's education in certain areas. Goals set through the program and tools provided help teachers collect data about their students and set new goals towards their learning.

Utah STEM Expo is designed to invite other schools to bring their students to demonstrate their STEM projects. Beehive Science and Technology Academy students participate in many other events to demonstrate their STEM projects to increase awareness in STEM education. Beehive Academy is willing to share the STEM experience with other schools and communities. An invitation was sent out to all the science teachers in the community through USOE and some schools showed up with students and projects.

The science department encourages students to participate in STEM activities as well as present in different events. Some events that our students have presented in are: Utah Scouting Expo, Utah State Fair, Healthy STEM 5K, Charter Day on the Hill, Utah STEM Fest. Recently, we were contacted by the PTA president at West Kearns Elementary to take some students to their STEM Night to present their projects.

Utah Council for Citizen Diplomacy brought some International visitors to Beehive Academy to observe STEM focus for our students.

USOE invited Beehive Academy to share practices at a Title I Directors meeting.

Similarly, there have been many invitations and/or presentations by our staff about our STEM applications in different meetings and conferences.

Lastly, a science specialist from Arkansas State Department of Education contacted Beehive Academy Principal, Mr. Oguz and obtained materials and advise about how to run a STEM Expo for Arkansas Schools.

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Utah STEM School Designation Criteria
Pilot Year Model

5. **Teaching**

Teaching is conducted with a focus on STEM concepts, processes and thinking. Teachers coordinate lessons, ideas and planning among one another with a mechanism in place for doing so in both formal and informal ways. Incentives exist for supporting one another. Correlations among various aspects of STEM are articulated and explicit. The faculty demonstrates content competency in all areas of STEM and have relevant endorsements. Efforts are made to support content sharing.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
5d. Common Planning Time and Individual Planning Time are Incorporated into the Schedule *Planning time specifically devoted to supporting collaborations among school staff, and planning time provided specifically for staff to prepare individually for instruction, in any way that*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Teachers have a set time to collaborate and work individually at least monthly together to plan integrated lessons, share/co-create STEM activities, and plan learning outcomes. Regular, collaborative planning time allows teachers within grade levels to give each other advice and ideas about instruction, and work through problems together.	- Teachers have a set time to collaborate and work individually at least weekly together to plan integrated lessons, share/co-create STEM activities, and plan learning outcomes. - Regular, collaborative planning time allows teachers within and across grade levels to give each other advice and ideas about instruction, and work through problems together.

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they choose.				

Narrative: Exemplary--3 points

Teachers at BSTA have planning and collaboration time built into their schedules to support each other and work through problems that occur in their classrooms. Twice a month, TLC groups meet together to discuss instruction methods and improve practices. Grade Level groups meet once a month to collaborate and give each other advice and work through problems together. STTs meet together once a month to track progress of CTT groups and discuss ways of improvement of goal applications throughout the school. CTT Groups meet together twice a month as part of a department meeting to analyze classroom data and discuss ways of implementation of goals set through Assessment to Achievement.

All of these meetings and minutes are required to be typed/uploaded to the shared documents on Google Drive for everyone to have access to them. This enables the administration to be able to keep track of these meetings. At the same time, all staff members have access to these minutes to share and collaborate with the rest of the staff.

There are several examples of meeting agendas and minutes attached in the artifacts.

Utah STEM School Designation Criteria
Pilot Year Model

6. **Student Engagement and Equity**

There is solid evidence for engagement of all demographics in the local community. Efforts are connected and follow a coherent, research-based plan. Efforts show a deep understanding of STEM equity issues and needs. Students are regularly involved in planning and conducting learning activities. Students are regularly engaged in the actual doing of science, mathematics, and project-based learning.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*

School Name: Beehive Science and Technology Academy (BSTA)

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6a. Support for Social and Emotional Needs of Students *The staff considers the range of students' needs. These include social, emotional, and academic needs.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- The school has a student induction process, program, or activities that support incoming students. - Teachers reach out to family and talk with students to understand students' social and emotional well-being. - Regularly scheduled strategies and procedures have been implemented across the entire school that focus on relationships and on developing and fostering global literacy (e.g., student advisory class, class meeting, or homeroom).	- The school has a student induction process, program, or activities that supports new students' transitioning to the school in ALL grade levels. - Teachers meet regularly to discuss students' social and emotional needs. - A scheduled part of the school day extends instruction or focuses on supporting relationship building. - Annual resources are allocated to develop, revise, and sustain strategies and procedures across the entire school (e.g., student advisory class, class meeting, or homeroom). - Students, teachers, parents, and external partners provide input into strategies and procedures (e.g., student advisory class, class meeting, or homeroom).

Narrative: Exemplary--3 points

Beehive Science and Technology Academy welcomes new students from the moment they indicate an interest in the school. We conduct numerous open houses where we discuss all of our programs and certifications students may receive from our STEM curriculum. There are tours of the school and students are on hand demonstrating their STEM projects and meet new prospective students and answer questions about the school. We offer a shadow program where the students can shadow a Beehive student for a day. Prospective students will be assigned a student volunteer who will welcome them to the school and explain how our classes benefit them and introduce the new student to teachers and staff. There is an orientation night for all students and their parents, which many new and returning students attend. We have a "meet and greet" time beforehand with refreshments, which is popular. Each new student is offered a "buddy" to help them navigate school and classes until they feel comfortable and this often results in friendships.

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BSTA has a “home visit” program in which parents sign up for an evening that is convenient. A teacher and an administrator will come to their home for approximately thirty minutes and meet with the family and the student. This is very successful in establishing a trustful relationship with our families. We usually average between 65 to 70% of our families who sign up for a home visit.

BSTA has a required “Character Education” class, which all 6th grade students take. This is designed to foster good character and habits in our students. They discuss current issues that are critical for success such as integrity, being aware of how one treats others, and demonstrating respect for self and others. Students find service projects to participate in such as food drives, collecting socks or toilet paper for the shelters and collecting pennies to donate. Additionally, in the school the students conduct kind acts such as giving inspirational notes to other students and staff.

Beehive addresses the issue of suicide prevention and anti-bullying with two programs. The first is a “Hope Squad” of students who are extensively trained to talk with troubled students and then report it if they feel the student is in need of counseling or help. These students simply ensure no student feels alone or unnoticed. The Hope Squad wears specialty tee shirts so others may see them and know they can speak to them. These were students nominated by all students as caring and trustworthy. The Hope Squad sponsors another program titled, “Kindness Counts.” They and staff recognize acts of kindness by giving positive comments and rewards.

We offer a homeroom class we call SSR (sustained silent reading). This is where student announcements occur and when we have contests for service drives students participate as a group. But more importantly, students read aloud a book together for about ten minutes and then they also read their own books silently the remainder of the class, thus improving reading skills and instilling the joy of reading.

Beehive Academy offers free after school tutoring and clubs. Our students can get homework assistance from teachers Tuesday through Thursdays and a few teachers offer it on Fridays as well. Our students have an opportunity to participate in clubs such as Robotics, Lego Club, Minecraft, Chess, and Game Design. They work in teams under the supervision of a teacher and parent mentors. Often members of the community assist too.

We offer numerous opportunities for student advising including an ACT Prep class as part of the 11th grade curriculum. The students are prepared through careful analysis of content and test strategies to do their best when they take the ACT.

Beehive has a program titled College Mentorship and Leadership Preparation or CMLP. Students apply and are chosen to participate and are placed into small groups of five or six under the advisement of a mentor teacher. These teachers model leadership and help students develop their skills through open discussions and activities. The students go on college tour trips both in state and out of state and are provided with options to consider. They earn service hours and work towards a Congressional Award.

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Each high school student is counseled individually by our College Advisor and Vice Principal. They are given information on scholarships, grants and entrance requirements for colleges and universities.

6. **Student Engagement and Equity**

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Pilot Year Model
There is solid evidence for engagement of all demographics in the local community. Efforts are connected and follow a coherent, research-based plan. Efforts show a deep understanding of STEM equity issues and needs. Students are regularly involved in planning and conducting learning activities. Students are regularly engaged in the actual doing of science, mathematics, and project-based learning.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
6b. Belief That All Students Can Learn *The staff takes steps to ensure all students have opportunities to master content.*	*N/A* *Belief that all students can learn is central to instruction. Schools need to have this element in place to be eligible for STEM School Certification.*	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- The school works to provide equitable access to rigorous, high-level courses. - All students' specific and identified needs are being met. - Specific considerations are made in STEM classrooms that support all students, including populations underrepresented in STEM fields. - Teachers receive professional development on underrepresented populations in STEM fields to inform instruction.	- The school works to provide equitable access to rigorous, high-level courses. - Special programs have been designed to encourage underrepresented students to develop interest in STEM careers. - Special programs have been designed to encourage underrepresented students to develop interest in STEM careers.

Narrative: Exemplary--3 points

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Firstly, Beehive Science and Technology Academy is a public school with a minority charter. This means we are intended to attract students from under-represented communities. Currently we have over 32 different cultures represented in our school.

Our students have access to an advanced Math Program called A+ Math. Beehive Academy CTE Pathways deliver relevant and rigorous academic and technical experiences in Computer Science and Engineering.

Programming/Software Development

Digital Media

(Utah) Pre-Engineering

Web Development and Administration

Database Development and Administration

The Advanced Placement program offers college level courses at high schools across the United States and Canada.

BSTA has offered the following AP Courses;

AP Biology,

AP Calculus AB,

AP Chemistry

AP Studio Art: 2D Design,

AP US History,

AP Physics

AP Computer Science

AP English

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Concurrent enrollment is the process in which high school students (only Juniors and Seniors) enroll at a university or college to attain class credit for high school and/or college.

BSTA and SLCC (Salt Lake Community College) have signed an agreement to become partners so that BSTA students can take college courses from SLCC without paying tuition at SLCC. All credits transfer to Utah Universities.

One-to-one Student Education Occupation Plan (SEOP) meetings once or twice a year.

11th Grade ACT/SAT Prep. Courses and camps are part of our regular course curriculum.

College Mentorship and Leadership Program (CMLP)-This program pairs a small group of students (5-7) with a teacher mentor. These groups meet regularly for community service projects, leadership development activities, study and discussion groups and to support the ACT/SAT preparation. These students also participate in the Congressional Award Program in which they must have an excellent GPA, certified public service hours and demonstrated leadership at school and in the community. The students apply and are awarded medals based upon their achievements. Last year our Valedictorian was awarded a Gold Medal and it was presented by Congress in Washington D.C.

Our BSTA staff attends in-school presentations with our industry partners such as IMFlash. The students learn about STEM careers directly from those involved in the industry as do the teachers. Often they then visit the business location to tour and discuss STEM related careers (Artifact 6b.5). Recently, we presented training to our teachers based upon “Vital Signs-Reports on Condition of STEM Learning in the U.S.” We read the report and held open discussions with the staff. In fact, these discussions helped us formulate one of our goals in our five-year plan to implement strategies to increase the enrollment and participation of minorities at Beehive Academy. (Artifact 6b.6)

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6. **Student Engagement and Equity**

There is solid evidence for engagement of all demographics in the local community. Efforts are connected and follow a coherent, research-based plan. Efforts show a deep understanding of STEM equity issues and needs. Students are regularly involved in planning and conducting learning activities. Students are regularly engaged in the actual doing of science, mathematics, and project-based learning.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
6c. Student Participation in Decision-Making	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Students participate in the development/revision of the code of behavior and values. - Students are encouraged to give feedback at any time (via a suggestion box, etc.). - There are structured opportunities for students to provide feedback.	- Students participate in high-level school decision-making, such as disciplinary regulations, course planning and development. - School has a system in place to ensure that there is representative voice in student decision-making.

Narrative: Exemplary--3 points

At Beehive Academy Student opinion is valued in developing the direction of our school. An "Annual Student Survey" is conducted in which students provide stakeholder feedback on curricula, school environment and activities and many other topics. (Artifact 6c.1) Our student body elects a "Student Council" that participates in planning activities, discussing ideas for school improvement, class offerings and numerous other topics. The council is mentored by a teacher and

parent liaison. All grade levels are represented by at least one member. (Artifact 6c.2) Students are invited to attend the PTA meetings as well as parents to discuss issues regarding school discipline, uniform policies, fundraising activities and other related topics. (Artifact 6c.3)

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6. **Student Engagement and Equity**

There is solid evidence for engagement of all demographics in the local community. Efforts are connected and follow a coherent, research-based plan. Efforts show a deep understanding of STEM equity issues and needs. Students are regularly involved in planning and conducting learning activities. Students are regularly engaged in the actual doing of science, mathematics, and project-based learning.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
6d. Extracurricular Activities *Students have the opportunity to participate in sports, clubs, and STEM activities that take place outside of regular school hours.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Programming is connected to the school day curriculum. - The school offers extracurricular activities that are engaged in by **some** of the students. - Some of the students participate in STEM competitions on-site/online STEM exhibits, and/or in state and national STEM forums.	- STEM experiences are directly connected in in-class learning. - The school offers extracurricular activities that are engaged in by **most** of the students. - **S**tudents participate in STEM competitions on-site/online STEM exhibits, and/or in state and national STEM forums.

Narrative: Exemplary--3 points

Beehive Administrators and staff have close connections with the Utah STEM Action Center and meet on a regular basis to ensure our approach to STEM education is current and effective. The STEM Action Center is a featured guest at our annual STEM Expo. In the past, a member from the Center has given a welcome speech to all participants. Each year our students attend the STEM Expo sponsored by UVU and the STEM Action Center. Our students participate in

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Pilot Year Model
Math Matters Competitions, MMA American Mathematics Competitions, and Salt Lake Valley Science and Engineering Fair, Lego League-Robotics Competition (2016-- Utah Champions representing Utah at the International Competition in St. Louis, Missouri in April, 2016) and Robotics competitions. (Artifact 6d.1)

BSTA offers after school clubs three to four days a week most of which support STEM. Some of these clubs are “Coding Club” where students learn to write software code, Mathcounts, Future City, Robotics, and Film Club to name a few. Our students choose a club to attend, and we have over 78% of our students that participate in one or more clubs. (Artifact 6d.2)

Each student at Beehive creates a STEM project annually, in which they research the science, complete a written description of the project, obtain the materials and complete it by demonstrating and filming it for our YouTube channel. Additionally, students use their technology skills to design a website for their projects. The students then demonstrate their projects at our STEM EXPO at the end of the year for over 4000 visitors and dignitaries. (Artifact 6d.3)

Science classes at each grade level do weekly labs that incorporate kinesthetic learning styles. Students learn the experimental inquiry process and work to understand scientific concepts. The school utilizes an exceptional level of technology with the use of a 3D scanner and two 3D printers to design and make models of their work. (Artifact 6d.3) BSTA offers after school clubs to all students for one hour three days per week. There are no fees to participate and most of our students participate in one or more of these clubs. (Artifact 6d.4)

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6. **Student Engagement and Equity**

There is solid evidence for engagement of all demographics in the local community. Efforts are connected and follow a coherent, research-based plan. Efforts show a deep understanding of STEM equity issues and needs. Students are regularly involved in planning and conducting learning activities. Students are regularly engaged in the actual doing of science, mathematics, and project-based learning.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
6e. Representative Population *School maintains student population with a focus on reflecting a population representative of the community/area the school serves.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- The school engages in outreach, support, and focus on underrepresented student populations.	- The school actively recruits student populations reflective of the diversity and gender of the local community. - School population is fully representative of the diversity and gender of the local community.

Narrative: Exemplary--3 points

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Beehive Science and Technology Academy is identified as a "Minority Charter" by the Utah State Department of Education. We have a comprehensive plan for outreach to all minority communities. This is accomplished through our marketing plan whereby flyers are sent to community centers representing minority communities, and brochures are distributed to women's technology and business groups. Our cooperation and partnership with both in and out of state universities is designed to encourage the discussion of our school for students desiring STEM related degrees for the younger siblings of university students. For the 2014 School Enrollment, we had 66.79% males and 33.21% females. Our ethnicity representation was 3.44% Asian male and 1.15% Asian female; .76% Black male, 6.11% Hispanic male and 3.82% female. There were .38% Pacific Islander male and .38% female, 55.73% White male and 27.48% female. Those in the multiple ethnicity category were .38% male and female. In 2015 the reporting method changed to eliminate percentages in favor of actual numbers. For the 2015 School Enrollment, we had the following ethnicity representation: 10 Asian males and 9 Asian females, 6 Black males and 2 females, 19 Hispanic males and 12 females. There is 1 Pacific Islander male and 1 female, American Indian: 1 male; 182 White males and 95 females. Those in the multiple ethnicity category were 4 males and 2 females.

As we all know statistics are not always representative of actual information. For instance, we have numerous students from India who do NOT identify themselves as Asian on applications. We hold an international celebration day annually in which students prepare information, food, dances, etc. from their native cultures and we represent over 32 different cultures in our school including Russian, Bosnian, Polish, Egyptian, Syrian and Iranian to name a few. These however, do not "fit" the categories listed for minorities but we feel nevertheless they ensure diversity.

Our diverse learning community includes our population of students with special needs (Special Education). Approximately 20% of our students have Individual Education Plans compared to the State of Utah average of 12%. An additional 5% have 504 Plans to support their special needs. We can speculate and deduce the cause for our increased population based on parent feedback, physician referrals and information gained in our application process and orientations but it seems the three primary reasons are: our small class sizes at capped at 25, our use of technology to support learning, as well as the STEM focus in our curriculum. Our Title I funding percentages are available on the CNP website and BSTA has participated in the NSLP for four complete school years beginning in the 2012-12 School Year.

Percentages for free and reduced lunch qualifying students are as follows: 2012-2013: 21.43%, 2013-2014: 34.01%, 2014-2015: 25.17%, 2015-2016: 23.99%. One challenge we have as a school is that despite our efforts to have parents complete this form to identify qualifying status, we routinely have only 30-34% who complete the form any given year. Of those completing it nearly 92% qualify for the Free and Reduced Lunch Program. As stated before, a significant portion of our families are immigrants and do not desire government assistance. Some may fear it adversely affecting their visa applications. Nevertheless we truly represent the community our students are coming from according to economic status.

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6. **Student Engagement and Equity**

There is solid evidence for engagement of all demographics in the local community. Efforts are connected and follow a coherent, research-based plan. Efforts show a deep understanding of STEM equity issues and needs. Students are regularly involved in planning and conducting learning activities. Students are regularly engaged in the actual doing of science, mathematics, and project-based learning.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
6f. Student Autonomy *Students have independence in and ownership of their learning. Students set goals for their learning and make choices about how to accomplish them.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Some lessons/activities required students to take initiative and be self-directed. - The majority of STEM lessons/activities require students to manage their own work and bring it to completion. - Students make meaningful choices about their learning (e.g. choosing a topic) experiences.	- Most lessons/activities required students to take initiative and be self-directed. - Most STEM lessons/activities require students to manage their own work and produce results. - Teachers seek input from students about their personal interests to incorporate into lessons. - Students make choices that significantly shape their learning experiences (e.g., choose style of

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				learning). - Teachers allow students to lead the class. - Teachers seek input from students about their personal interests to incorporate into lessons.

Narrative: Exemplary--3 points

Beehive Science and Technology Academy utilizes a learning management format for it's students. We are an ISchool so students access their curriculum on their school issued Ipads through various learning management systems such as Google Classroom, our school management software--CoolSis and Discovery Education Learning. The students will often access the required reading, videos, lesson activities, group blogs, discussions and quizzes through this format. There is still direct instruction in the classroom to support the students in need of the visual and auditory direction from the teacher to gain the knowledge. This allows for students to work at their own pace with supports to advance to higher levels and be challenged, or spend more time on a difficult concept.

- Many assignments students receive offer choices of topic, method of research, and type of presentation. One example of this is the "Short Project North American Explorers."

- The school offers free after school tutoring for one hour and students may attend as needed on a voluntary basis. At times teachers will require students to attend who need support. Students will electronically submit work for grading or complete tests and quizzes electronically approximately 65% of the time.

- Not long after the beginning of each school year, students are given a STEM project handbook in their science classes. This lays out each stage they have to complete for their STEM project, which culminates in the STEM Expo in the spring. Included in the handbook are the specific due dates for each stage. (Artifact 6f.2) They are graded based on meeting their due dates, the quality of the project, the ability to research and describe their projects, and the video and website created. This is just one example of the type of STEM projects in our school. Another example of how cross curricular cooperation in STEM is utilized at Beehive is as follows. A math teacher and language arts teacher had students complete a project based upon the book "Flatland" by Edwin Abbott. This book is a satire set in a Victorian era society. The characters are all represented by geometric shapes and their social status in society is based upon how many angles they have.

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In math class, students worked on their societal placement by utilizing descriptive geometric vocabulary and visualizations. Then in their language arts class, the students compared societies from the Victorian era to the ones they created. This is an example of the students driving the curriculum within a literary framework. These are just two examples of how our curriculum is designed to allow students to complete projects, which are self monitored.

- Teachers seek input from students about their personal interests to incorporate into lessons.

- Students make choices that significantly shape their learning experiences (e.g., choose style of learning). Most of our students with special needs have an accommodation to complete written work with the assistance of technology (usually work typed in a word processing program) unless the lesson itself is designed to improve writing skills specifically. We found this to be useful for all our students as we prepare them to utilize the supports technology offers our students in the business world. Students are given opportunities in their courses to choose projects and work partners, topics to research, whether they want to read an electronic copy or a book, and many other choices. BSTA addresses the need for all learners to choose the style that best meets their needs in terms of offering in person instruction, videos, discussions, debates, blogs and other verbal methods, labs, hands on games, 3D scanners and printers, Legos, robotics, engineering classes to build machines, and activities designed to keep students moving around the room to address kinesthetic learners to name some of these methods.

- Teachers at BSTA all have in class presentations, speeches, debates, recitals, and small team activities designed to develop each student's public speaking and presentation skills. Often students are encouraged to create videos during projects to help them critique their own ability for improvement. This is also a technique we use to help our teachers--some of whom film their teaching for our professional development tool "Edivate." It enables a live critique at points during the video from administrators and peer mentors. Some of these videos are saved and uploaded to Edivate's video library.

Teachers seek input from students about their personal interests to incorporate into lessons. BSTA conducts an annual survey of our staff, students, and parents as a method of gaining insight for our School Improvement Plan. We value the critical feedback in order to ensure we are addressing concerns and communicating our efforts. One example provided is Mr. DeFronzo's class survey on whether they preferred a paper or electronic final. Another example Is Ms. Firmage's Final Exam, which surveys her students about what literature should be kept in the curriculum.

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6. **Student Engagement and Equity**

There is solid evidence for engagement of all demographics in the local community. Efforts are connected and follow a coherent, research-based plan. Efforts show a deep understanding of STEM equity issues and needs. Students are regularly involved in planning and conducting learning activities. Students are regularly engaged in the actual doing of science, mathematics, and project-based learning.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*

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6g. Students Reflect on Their Learning *Students reflect on the strengths and weaknesses of their learning approaches and ways they can improve them; students accept changes.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Most classes employ the use of self-assessment for students to reflect on their learning specific to content and skills for each unit/problem solving learning project. - Students identify and document strengths and weaknesses at least twice a year in collaboration with faculty.	- All classes employ the use of self-assessment for students to reflect on their learning specific to content and skills for each unit/problem-solving learning project. - Students identify and document strengths and weaknesses more than four times per year in collaboration with faculty. - School maintains a portfolio of student reflections to inform students' continued self-assessment over the course of their high school career.

Narrative: Existing--2 points

Beehive Science and Technology Academy routinely has students reflect on their thinking and their learning. One example of this is the "Sixth Grade Science Core Curriculum Benchmark Student Self Assessment" (Artifact 6g.1). An additional example is the documentation for a reflective assignment email from Daniel Bryant to Germaine Barnes dated January 19, 2016. This outlines a reflective assignment regarding the "Sandwich Algorithm" (Artifact 6g.2). A third example of a reflective assignment is the "Semester Feedback Form" in which students were asked to reflect and give feedback on activities from their language arts class for the semester (Artifact 6g.3). Mr. Harlow's student survey is a mixture of personal and subject matter but helps students provide feedback on their knowledge and personal relationship with the teacher (Artifact 6g.4).

The next example of students providing feedback regarding the curriculum is the U.S. Literature Final Exam in which students were asked to write a persuasive essay on which piece of work they read during the semester that should be kept in the curriculum and why using evidence from the text. Students were then asked to prepare a five-minute speech from their essay (Artifact 6g.5). Additionally, all teachers are using rubrics with our students in which they "self evaluate" their work in their classes. This process is being utilized as a method for students to review their work and compare it to the levels of expected achievement in the rubrics. The students' questions of how they can improve are then answered (Artifacts 6g.6-7).

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Beehive faculty conduct quarterly self-assessments with students in reflective writing assignments. Students complete these prior to the end of the grading periods and during formal assessments. Students are asked to reflect upon their learning, skills, knowledge and understanding of the curriculum presented. The teachers utilize this feedback to reflect upon their teaching methods, curriculum maps and lesson plans. Additionally, there is a comprehensive student survey conducted annually in which students reflect and comment on teachers, lessons, courses offered and many other concepts regarding the academic environment. The system utilized for our grading and behavior is "Coolsis." This software allows students to observe their calendar, schedule, assignments, grades, classroom behavior, and attendance. This enables the student to reflect upon their completed work and grades and then identify and discuss with their teachers their strengths and weaknesses and develop goals for improvement. The students then discuss these goals and choose electives, which may offer supports needed such as "study table" or "remedial math." The other support they may choose is free after school tutoring (Artifact 6g.8-9). Beehive Academy encourages our students to reflect upon their own academic needs and choose solutions tailored to those needs.

Beehive Academy maintains a few portfolios of student reflections to inform students' continued self-assessment over the course of their high school career. One portfolio pertains to each students' STEM education and includes the steps completed in their STEM portfolio. This portfolio contains the students' choice of project, materials list, video of the project, and the website created by the student highlighting their project (Artifact 6g.10).

The next example is a 4 year portfolio, which is completed by all high school students in collaboration with our student advisor and vice principal. This portfolio includes all course credits required to graduate and meet the Utah State requirements (Artifact 6g.11).

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7. Community

There is an established community of practice regarding STEM learning and STEM teaching. Events, activities and opportunities for involvement help students, teachers, parents and community members learn about and support STEM education in the school.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
7a. Family Involvement *Families are aware of/participate in student activity and achievement.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Staff members keep students' parents/guardians up to date about classroom instruction and their student's learning. - Some teachers use technology to regularly communicate student progress to parents/guardians. - Opportunities exist for parents to be involved in presentations and/or assisting in the classroom.	- Staff members keep students' parents/guardians up to date about classroom instruction and their student's learning and seek structured feedback. - All teachers use technology to regularly communicate student progress to parents/guardians. - The school actively engages in strategies to increase parent engagement.

Narrative: Exemplary -- 3 points

Beehive Academy uses *CoolSIS*, which is a leading school information system. Teachers easily enter their graded assignments and organize their courses. Here, parents also have access to everything as soon as teachers and administrators enter their information. Parents and students can access CoolSIS through the web, smartphones, and tablets. *CoolSIS* keeps all stakeholders up-to-date with the student's grades and behavior incidents by sending push notifications to the parent's smartphone. Moreover, *CoolSIS* can send text messages about any progress made by the student. *CoolSIS* helps teachers and administrators to build connections with their students and parents.

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Beehive parents are involved in various ways with their child's schooling. One way is to become involved with the Parent Teacher Organization (PTO). The PTO at Beehive operates under a broad purpose of securing educational advantages for students. Parents who become involved in the PTO have opportunities to participate in many school activities including conducting fundraising, parent-teacher conferences, reviews and amendments to the school improvement plan, and providing input and holding regular events for families. Also, parents provide input into the end of each year's status report; they approve the capital and operational budget requests, solicit input from and hear the concerns of constituents about school programs, review the results of all relevant state and district administered surveys, provide counsel to the Board of Education on issues and policies, participate in the selection process when there is a vacancy for the position of a board member at the school, advocate for the school, serve in an advisory capacity to the principal, and request local position exchanges.

Beehive has a parent, teacher and community communication liaison to coordinate the communication efforts. Regular emails are sent to keep parents informed of all that happens at Beehive.

Eight printed report cards are mailed throughout the year to keep parents informed about their student's academic progress.

Student and parents communicate through email, Edmodo, Google Classroom and other online platforms.

Home visits are conducted to involve parents.

Parent orientation nights, back to school nights, and bi-annual parent teacher conferences are held each year. Many other one-on-one meetings between parents and teachers also occur.

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7. Community

There is an established community of practice regarding STEM learning and STEM teaching. Events, activities and opportunities for involvement help students, teachers, parents and community members learn about and support STEM education in the school.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
7b. Service Learning *Students participate in service learning or volunteer activities to give back to partners in the community.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Students engage in service-learning opportunities that are aligned with school curriculum and instruction at least once per year.	- Students and some partners engage in service learning opportunities that are aligned with school curriculum and instruction two or more times per year. - Student leadership is evidenced in the planning and implementation of service learning.

Narrative: Exemplary -- 3 points

The students and staff at BSTA participate in various community outreach programs each school year. Some of the ways BSTA members have given back to the community are:

Community event programs: A food drive to support the local food bank, CMLP (College Mentor and Leadership Program) volunteer hours, National Honor Society charity drive, Student council charity drive, and Hope Squad.

Food drives: Beehive students and parents collect canned food, toys, coats, clothes or other donations for the needy. Teachers (e.g., character education, social science) give to charity projects for students to experience service to the community and to enrich students' knowledge.

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The model combines inquiry into poverty with charitable activities and helps foster connections between students and the human beings they aim to serve.

Some of the charity work done during the holiday season is as follows: students answer a letter to Santa from a needy child; Beehive students send a care package to deployed troops, veterans, or wounded soldiers; students write a thank you letter and include some food to active soldiers; the students donate children's books, novels, and other reading materials to shelters, libraries, and schools.

In addition, Beehive Academy has a college mentorship and leadership program in which students have to do some sort of community volunteer activities to fulfill the community service requirement. For example, they have volunteered to run/walk for an event, like 5K –Utah, participated in a clean up of a local park, school, or church, volunteered on Thanksgiving Day with their whole family to serve a meal in a local shelter, hosted a food-packaging event at our school to help hungry children, offer peer tutoring, attended college leadership conferences that UVU organizes to guide high school students about how to be successful and become a good leader in the community.

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7. Community

There is an established community of practice regarding STEM learning and STEM teaching. Events, activities and opportunities for involvement help students, teachers, parents and community members learn about and support STEM education in the school.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
7c. School Establishes and Maintains Community Presence *School actively engages the community and participates in community involvement activities.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- The facility is open to students before and after school hours to help build the school community and provide opportunities to continue academic work. - School supports community-based events with facilities. - STEM teams communicate frequently and consistently with the community.	- The school works with community organizations to support community initiatives (e.g., staff and students volunteer, school and community organizations work together for a common cause). - Opportunities exist to showcase student work through community events via on-site or online exhibitions.

Narrative: Exemplary -- 3 points

Beehive Academy conducts and attends many community events to participate in the local community. For example, BSTA hosts the annual Utah STEM Expo, and Math Matters. BSTA students participate in the Scouting Expo, Utah State Fair, the Regional Science Fair organization, Comic con, FLL, Robotics, Healthy STEM, Charter day On the Hill, and School Choice every year. Students learn to establish goals, delegate responsibility and give directions to their peers on executing tasks successfully while attending and organizing such events.

The UTAH STEM Expo is an excellent opportunity for middle/high school students to demonstrate their STEM explorations in and out of the classroom and extensions of the inquiry process posed in their projects and demos. The Expo itself offers a venue for students to showcase the fruits of their STEM studies and

hard work, a venue for professionals to show how STEM is used to better our communities, and one for spectators to participate in hands-on experiments. The Expo event connects our school to the community, our students to professionals, and generates interest and excitement for science, technology, engineering and mathematics.

Mathmatters is a math contest for all 5th and 6th grade students in Utah. Every year, 300 students participate in this great math event and receive prizes.

8. **Facilities**

Spaces are available for collaboration and project work. Facilities have been adapted or designed for STEM learning. Facilities reflect a focus on STEM learning efforts. Facilities reflect student design and input in the use of the facilities. Materials and equipment follow safety protocols. Obvious efforts have been made to make resources available to students for use in learning, design and project efforts.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
8a. Technology Use *Students use technology as intended for learning purposes.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- The teacher uses current and emerging technologies in instruction of most classes. - Teachers teach students specific skills using a range of technologies (computers to AutoCad, etc.). - Products of 21st century technology tool use by students are visible throughout the school through several grade levels. - Teachers and students receive ongoing access and opportunities to expand their proficiency in technology use at	- The teacher uses current and emerging technologies in instruction of ALL classes. - Products of 21st century technology tool use by students are visible throughout the school through ALL grade levels. - Teachers and students receive ongoing access and opportunities to expand their proficiency in technology use at least once per month. - Teachers challenge students to identify and use the tools they need to solve problems. - Technology is used to engage in global learning opportunities and communities that extend beyond

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			least once per year.	the state of Utah.

Narrative: Exemplary -- 3 points

Teachers at BSTA use current technology to teach students in STEM and all other subjects. Beehive Academy is a smart school with all students and teachers having IPADs and related technologies available. There are two PC labs and one MAC lab at the school. All the classrooms are equipped with digital projection, Apple TV and integrated sound systems, and the school has upgraded its wireless network to increase network highway traffic. Wireless switches and adaptors are installed all around with the capability available for up to 1000 devices. The Internet connection was increased to a gigabyte dedicated fiber optic line through UEN. All teachers have been extensively trained to use technology in their instruction. The total number of training days for technology use is more than 10 days. Teachers work and support each other in using technology for instruction in their professional learning communities. Google classroom, Educreations, Kahoot, Khan Academy, Discovery education, Ted talks, Evernotes, Goodreads, Garage Band, Flashcards, My homework, and Duolingo are some of the technology tools utilized by students and teachers.

Some students take online courses at BSTA. Teachers also use technology to improve themselves as they are part of the Edivate learning community. Here they interact with teachers around the country. Students use YouTube to interact with their STEM projects and through their Google sites with the global community.

Artifacts: Apps list, Ipad Policy, Smart Technology document, Survey result, Edivate, Youtube video and student website sample student work of technology use.

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8. **Facilities**

Spaces are available for collaboration and project work. Facilities have been adapted or designed for STEM learning. Facilities reflect a focus on STEM learning efforts. Facilities reflect student design and input in the use of the facilities. Materials and equipment follow safety protocols. Obvious efforts have been made to make resources available to students for use in learning, design and project efforts.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
8b. Allocation for Physical Resources to Support STEM Learning for Students *The allocation and use of resources and space are present to create flexible community learning environments to meet the needs of project-based learning.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Spaces are available for collaboration and project work. - Facilities have been adapted or designed for STEM learning. - Materials and equipment follow safety protocols.	- Spaces are available for collaboration and project work, and are regularly used by all students and teachers to facilitate learning. - Facilities reflect student design and input on use of the facilities.

Narrative: Exemplary -- 3 points

There are spaces allocated at BSTA for students to collaborate and work on projects. After school there are three computer labs for students to use during tutoring/club times four days a week. These areas include 2 robotics rooms, 1 Lego robotics room, and 1 Vex robotics room is allocated to robotics related group activities. The media center is available to students for project work and collaboration. Students are able to communicate, interact and collaborate through their IPads and apps like Edmodo and Google Classroom. There is a science lab that is open to students for projects and collaboration. The discipline and safety coordinator at the school works with teachers to ensure that they are trained in and follow safety protocols. Students maintain a student store, have bulletin boards to present their materials, and use various rooms for their activities. Student clubs and activities are provided with the necessary facilities. Students have decorated and painted the common use areas and some classrooms.

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Artifacts: Photos of these areas, List of project collaboration rooms. Student council minutes.

9. **Strategic Alliances**

Alliances exist between the school and strategic partners. Parents and parent groups are involved in the school process and decision making. Business, industry, and other community partners work together to promote STEM learning and career awareness. Long-term partnerships are formed and supported through ongoing efforts. Partnerships are evaluated at least annually, and additional partnerships are formed to support emerging needs and opportunities. Teachers have ongoing relationships with industry partners and engage in externships.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*

9a. Partners Support Instruction and Provide Resources
Partners from industry, institutes of higher education, career and technical centers, etc. participate in and/or support instruction to meet a variety of academic goals, which often includes connecting students with professionals.
	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Community members are actively engaged in the vision and work of the school (e.g. curriculum, co-teaching, field experiences).
			- Partners help teachers understand what is expected of a student planning to enter a career in the partner's field.
			- Business, community, and post- secondary partnerships are involved in all STEM classes at least once per school year to:
			  - Develop lesson plans or problem-solving learning projects with teachers.
			  - Provide professional learning.
			  - Provide field experience or site-based learning opportunities.
			- Partners provide resources to support student learning outcomes.
				- The school actively seeks input from partners and integrates suggestions into school-wide strategies
				- Partners recruit other STEM partners to support the school with resources.

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Narrative: Exemplary -- 3 points

Beehive Academy partners with various industries, organizations and institutes of higher education. Parents and the school parent organization (PTO) are active partners in these efforts. In PTO and school community platforms, these efforts are extensively discussed, and available resources and funds are channeled to the appropriate participants. More funding and other strategic alliances and partnerships are constantly explored. The school community council allocated 40% of the land trust funds to STEM education in the school. PTO members and parents are actively looking out for sponsors for the Utah STEM Expo and other STEM educational activities, like Robotics, Lego, etc. They look out for financial support as well as getting the field experience to our school and engaging partners with the school.

The STEM Action Center is our strategic partner in our STEM education. They sponsor the Utah STEM Expo. Our school procured the Edivate STEM professional development tool, a CTE grant of PLTW for eighth grade students, STEM Math software, a Smart School Technology grant, Robotics grants and various student grants to participate in STEM competitions. We received a STEM grant for the art teacher to teach 3D art.

IM Flash sponsors the Utah STEM Expo and they are our strategic partners in our STEM education. They contributed to our STEM designation application by sending an expert to serve on the committee. We have a strategic agreement with them to expose our students to high tech jobs. Yearly, 4 activities are arranged with two expert speeches and 2 field trips to the IM Flash facility. Further internship opportunities are constantly being explored.

CTE Career Pathways programs in four different areas of technology are implemented with the support of the USOE.

Salt Lake Community College has an agreement with Beehive Academy to provide concurrent enrollment courses in various fields to our students. Students are able to get the university 1-year completion certificate and associate degree with a nominal $10 per credit fee. Many of the advanced STEM courses are offered to them.

Through CMLP (College Mentorship and Leadership Program), many leadership programs are developed with Utah Valley University, the University of Utah, and Westminster College.

Sandy City and the Sandy Area Chamber of Commerce are our strategic partners in our STEM education, and we are continuously utilizing their resources.

Through CTE- College and Career Awareness class, parents and experts from different STEM fields are invited to share their experiences with our students.

Our Robotics and Lego Robotics programs are supported by parents and industries who provide expertise and financial support.

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9. **Strategic Alliances**

Alliances exist between the school and strategic partners. Parents and parent groups are involved in the school process and decision making. Business, industry, and other community partners work together to promote STEM learning and career awareness. Long-term partnerships are formed and supported through ongoing efforts. Partnerships are evaluated at least annually, and additional partnerships are formed to support emerging needs and opportunities. Teachers have ongoing relationships with industry partners and engage in externships.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
9b. Partners Help Establish and Maintain Community Presence *Partners increase knowledge and visibility of the STEM school.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Several partners actively showcase student work in their business or elsewhere in the community, and/or support publicity around student STEM learning. - Partners engage in school-related functions with students.	- Partners attend and/or host community events to support the school or showcase student work

Narrative: Exemplary -- 3 points

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The Utah STEM Expo is hosted by Beehive Academy and is supported by many organizations and companies. They bring STEM job expertise to the community, and financial support and field knowledge to share with our community. The Utah STEM Action Center, ALS Environmental, US Synthetics, T. D. Williamson, Inc., Sandy City, Utah Association of Public Charter Schools, Accord Institute for Education and Research, Westminster College, University of Utah, Department of Physics and Astronomy, Weber State University, University of Utah College of Science, University of Utah College of Engineering, IM Flash Technologies, Utah National Guard, Utah Computer Science Teachers Association, Sandy Area Chamber of Commerce, Cowabunga Bay, Utah State University, and the U.S. Navy are some of our sponsors and supporters. Many public schools and charter public schools also collaborate and support the event.

Students also attend various STEM related events like, Utah STEM Fest, Robotics competitions, Healthy STEM and other local and national STEM events.

9. **Strategic Alliances**

Alliances exist between the school and strategic partners. Parents and parent groups are involved in the school process and decision making. Business, industry, and other community partners work together to promote STEM learning and career awareness. Long-term partnerships are formed and supported through ongoing efforts. Partnerships are evaluated at least annually, and additional partnerships are formed to support emerging needs and opportunities. Teachers have ongoing relationships with industry partners and engage in externships.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
9c. Staff Establishes and Maintains Partnerships *Staff creates and develops partnerships with organizations external to the school.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Some staff members at this school create external partnerships with the school, such as with colleges, universities, businesses, or institutions. - Staff members work collaboratively with the school's external partners.	- Most staff members this school create and maintain external partnerships with the school, such as with colleges, universities, businesses, or institutions.

Narrative: Exemplary--3 points

Beehive Academy partners with various industries, organizations and institutes of higher education. Parents and the school parent organization (PTO) are active partners in these efforts. In PTO and school community platforms, these efforts are extensively discussed, and available resources and funds are channeled to the appropriate participants. More funding and other strategic alliances and partnerships are constantly explored. The school community council allocated 40% of the land trust funds to STEM education in the school. PTO members and parents are actively pursuing the sponsors for Utah STEM Expo and other STEM education activities, like Robotics, Lego, etc. They look out for financial support as well as getting the field experience to our school and engaging partners with the school.

The STEM Action Center is our strategic partner in our STEM education. They sponsor the Utah STEM Expo which Beehive hosts each year. Our school procured the Edivate STEM professional development tool, a CTE grant of PLTW for eighth grade students, STEM Math software, a Smart School Technology grant, Robotics grants and various student grants to participate in STEM competitions. We received a STEM grant for the art teacher to teach 3D art.

IM Flash sponsors the Utah STEM Expo and they are our strategic partners in our STEM education. They contributed to our STEM designation application by sending an expert to serve on the committee. We do have a strategic agreement with them to expose our students to high tech jobs. Yearly, 4 activities are arranged with two expert speeches and 2 field trips to the IM Flash facility. Further internship opportunities are constantly being explored.

CTE Career Pathways programs in four different areas of technology are implemented with the support of the USOE.

Salt Lake Community College has an agreement with Beehive Academy to provide concurrent enrollment courses in various fields to our students. Students are able to get the university 1-year completion certificate and associate degree with a nominal $10 per credit fee. Many of the advanced STEM courses are offered to them.

Through CMLP (College Mentorship and Leadership Program), many leadership programs are developed with Utah Valley University, the University of Utah, and Westminster College.

Sandy City and Sandy Area Chamber of Commerce are our strategic partners in our STEM education, and we are continuously utilizing their resources.

Through CTE--College and Career Awareness class, parents and experts from different STEM fields are invited to share their experiences with our students.

Our Robotics and Lego Robotics programs are supported by parents and industries. They provide expertise and financial support.

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10. **Advancement and Sustainability**

A five-year plan includes each of the criteria for an effective STEM school. Strengths and weaknesses are identified. Plans are in place to address weaknesses with evidence and research supporting the plan. Strengths are examined for the purpose of continued improvement. Future efforts and trends are examined, and ongoing renewal is planned for.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
10a. Development of a Five-Year Plan on Goals and Benchmarks for Community Strengths *The school has a five-year plan that includes evaluation of each of the criteria for a STEM school. Examination of strengths takes place for the purpose of continued improvement.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- The plan was created by multiple stakeholders and includes at least two strengths to build upon.	- The school plan includes plans for sustainability and improvement regardless of changes in leadership or staff with LEA support.

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Narrative: Exemplary--3 points

Beehive Academy has strong engineering, technology programs, project-based STEM learning opportunities and technology aided education for its students. BSTA included these last two strengths in its five year plan to sustain and further improve and refine them. Beehive Academy has a STEM committee consisting of three administrators, three teachers and one industry partner representative. The STEM committee worked on developing a draft for the five year STEM improvement and sustainability plan with strategies, action plans and the necessary funding elements in place. The draft improvement plan was shared with all staff and discussed in an all-faculty meeting where feedback was gathered. The draft plan was also shared with school board members, school community council, PTO (Parent-Teacher Organization) members and student council members. All of these entities discussed the plan and gave their feedback to the STEM committee. The plan was then developed with all stakeholders, and responsible parties' interests in mind. It will be implemented regardless of the changes in leadership or staff as it is a plan shared and accepted by all stakeholders and supported by the school board.

10. **Advancement and Sustainability**

A five-year plan includes each of the criteria for an effective STEM school. Strengths and weaknesses are identified. Plans are in place to address weaknesses with evidence and research supporting the plan. Strengths are examined for the purpose of continued improvement. Future efforts and trends are examined, and ongoing renewal is planned for.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
10b. Development of a Five-Year Plan on Goals and Benchmarks for Improvement *The school has a five-year plan that includes evaluation of each of the criteria for a STEM school. Examination of weaknesses takes place, with evidence and research supporting the plan.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- The plan was created by multiple stakeholders and includes at least two weaknesses to address.	- The school plan includes plans for sustainability and improvement, regardless of changes in leadership or staff with LEA support.

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Pilot Year Model

Narrative: Exemplary--3 points

Beehive Science and Technology Academy (BSTA) will increase the student population of females and minorities having access to STEM education at the school. BSTA will work closely with university and industry partners to provide internship and field learning opportunities for all students, and will focus on increasing the participation of underrepresented group participation in STEM education. Increasing relevant activities, internships and field learning opportunities for its students are a high priority. These two goals are part of its five year sustainability and improvement plan. Beehive Academy has a STEM committee consisting of three administrators, three teachers and one industry partner representative. The STEM committee developed a draft five-year STEM improvement and sustainability plan with strategies, action plans, and necessary funding elements. The draft improvement plan was shared with all staff and discussed in an all faculty meeting and feedback was gathered. The draft plan was also shared with school board members, school community council, PTO members and student council members. The plan was discussed in a student council meeting and at an all community meeting. The plan was developed with all stakeholders and all the responsible parties interests in mind, and will be implemented regardless of the changes in the leadership or staff as it has been accepted by all stakeholders and supported by the school board.

School Name: Beehive Science and Technology Academy (BSTA)

Year 1				Year 2				Year 3			
Issues	**Corrective Actions**	**Tracking**	**Documentation**	**Issues**	**Corrective Actions**	**Tracking**	**Documentation**	**Issues**	**Corrective Actions**	**Tracking**	**Documentation**
The contract wasn't negotiated and signed until December 2014.	A 5 year contract was written for the use of this product. The amount of licenses requested each year determines the annual award amount. Therefore, the award amount is different every year.			Schools had issues uploading videos	SINET promised to provide greater technical support to teachers in year three.	The STEM Action Center will monitor this closely from day one of the 2016-17 school year.		By 9/30/2016 some licenses had still not been distributed to multiple schools.			
The application was brand new and provided minimal information. Schools were asked to provide the total amount of licenses requested without a sound implementation approach to be included with that.	Detailed action plans were created between SINET and school administrators for quality implementation.			Evaluators recieved teacher videos via an emailed link. Videos could only be accessed the first time the link was clicked, and there was no way to match videos by teacher, thus pedogogical changes could not be assessed. SINET never did find the missing videos, and this part of the evaluation did not take place.	SINET promised to resolve these issues and provide evidence that their product is working as intended.	Videos will be shared with evaluators through a different document, not via the Edivate platform.		By 9/30/2016 the STEM Action Center received notice that some LEA trainings weren't scheduled until the end of November.			
Distribution of licenses was a slow process and scheduling trainings was an arduous task given the timeframe.				At the end of the year, when data was recieved from SINET, usage was very low.	The STEM Action Center worked with SINET and district administrators to create detailed implementation plans.	The STEM Action Center will monitor this closely from day one of the 2016-17 school year.		Inability to track the viewing of user-uploaded content	Kerry Day from SINET was tasked with researching this solution.		

There was low buy in from teachers and administrators.	SINET hired 2 implementation specialists that worked solely on this project. These two specialists divided the workload and helped support the administrators in creating their implementation plans and getting trained on the product.			There was low buy in from teachers and administrators.	The STEM Action Center provided funding for robust, district driven Professional Development plans as long as they commited to using Scinet's product effectively as part of that plan.	The STEM Action Center will monitor this closely from day one of the 2016-17 school year.		20 minutes of monthly usage required for each license distributed	Created a task/time equivalent docuemnt for items in Edivate that did not get measured in time. For example- uploading a document to be shared with a group was determined to be eqaul to 5 minutes of usage. The number of items uploaded is tracked, so this provides a reasonable time equivalent for usage requirements.		
				LEAs were unwilling to share problems/concerns because they were worried about future funding		STEM AC has asked for monthly information about the status of the projects at an LEA level as part of their required reporting. Phone calls and face-to-face visits are requested by all LEAs with STEM AC staff.		In spite of detailing how Edivate would be used in application documents, some LEAs are not sure where to start with using Edivate to assist in STEM related PD	SINET has proposed creating series of learnign activities to guide users into STEM materials. These series would primarily focus on utulzing the cusotm conet aready created for this project as well as other matiersl in teh Edivate content library. Missing componenets would be created using teh funds designated for 16-17 custom content. A scope of work and budget outline is expected from SINET to STEM AC by Oct. 14.		

Application #	LEA	STEM Priority	How will Edivate be used?
GA--0545	Davis School	Mathematics	This project introduces a
GA--0786	C.S. Lewis	Science,	Edivate will be used to instruct
GA--1076	Syracuse Arts	Science	Edivate will be used to participate
GA--1160	Monticello	Renewing	
GA--1740	Piute County	Science	The entire staff will be trained on
GA--2639	North Sanpete	Science,	Annual Compliance
GA--3001	Alpine District,	Science	All participating teachers will be
GA--3504	Endeavor Hall	Science,	Edivate will provide teachers with
GA--4063	Washington	Science	Teachers will use Edivate as they
GA--4384	San Juan School	Science	I want to use Edivate as a means
GA--4544	Carbon School	Renewing	
GA--4644	Jordan School	Science	The platform will be used to post
GA--4896	Canyon Grove	Science,	Our school is focusing efforts to
GA--4984	Tooele County	Science	The SINet courses will be used to
GA--5485	Rockwell	Science AND	-We would like to incorporate
GA--5530	Nebo School	Renewing	
GA--5789	Alpine School	Science AND	The grant will include 8 schools in
GA--6365	District/LEA:Sou	Science AND	1. Teachers will utilize Edivate to
GA--7152	Washington	Renewing	
GA--7321	Early Light	Science	The charter schools included in
GA--7959	South Summit	Science,	Edivate is an essential component
GA--8287	Channing Hall	Science	A central priority of Channing
GA--8961	Pacific Heritage	Mathematics	The Edivate platform will allow
GA--9032	Summit	Science,	All educators will use Edivate
GA--9526	Moab Charter	Renewing	
GA-0225	John Hancock	Science,	JHCS is dedicated to providing our
GA-0456	Box Elder	Science AND	Educator EffectivenessNew
GA-0484	Summit	Science,	All educators will use Edivate
GA-0976	City Academy	Science,	The Edivate platform will be
GA-1164	Iron County	Mathematics	Iron County School District seeks
GA-1205	Rich	Renewing	
GA-1635	Utah Schools	Renewing	
GA-1749	Millard County	Science	The Edivate platform will be used
GA-1811	South Sanpete	CTE:	The Edivate platform will be used
GA-1825	Salt Lake Center	Renewing	
GA-2095	Tintic School	Renewing	

GA-2129	DaVinci	CTE:	1. Provide Personal PD Goals tied
GA-2204	Providence Hall	Renewing	
GA-2640	Murray City		-Math curriculum development
GA-2855	North Sanpete	Science	The Edivate platform will be used
GA-3251	Davis School	Renewing	
GA-3564	Alpine School	Renewing	
GA-3656	Canyons School	Renewing	
GA-3755	Jordan School	CTE:	The platform would be used to
GA-3767	Mountainville	Science,	Obtain new and innovative
GA-3965	Tooele County	Mathematics	Edivate will be used as a platform
GA-4185	Provo City	Mathematics	The Provo City School District has
GA-4377	Weilenmann	Science AND	Weilenmann School of Discovery:
GA-4598	Hillcrest Junior	Science	Edivate will be used individually by
GA-5236	Pinnacle	Renewing	
GA-5279	Ogden School	Mathematics	7th grade, 8th grade, Secondary I,
GA-5492	Channing Hall	CTE:	The Channing Hall CTE program is
GA-5806	Salt Lake City	Science	f.Edivate will be utilized multiple
GA-6008	Beaver County	Science	A one-day training with all staff.
GA-6115	Uintah River	Science,	We will use Edivate for specific
GA-6197	Weber School	Science AND	The platform will be used to post
GA-6651	Southeast	Science	Edivate will be used to assist 6th
GA-6970	Ogden School	CTE:	Edivate licenses are for the
GA-7029	DaVinci	Science	Edivate will be used as the
GA-7216	Whitehorse HS	Renewing	
GA-7718	Box Elder	Science	As SEEd lesson plans are
GA-7732	Salt Lake City	Mathematics	Edivate platform will be utilized in
GA-7852	Iron County	Mathematics	Iron County School District seeks
GA-7968	Channing Hall	Mathematics	A central priority of Channing
GA-8095	Iron County	Renewing	
GA-8272	Ogden School	Science	All of our 6-8 grade science
GA-8387	Noah Webster	Renewing	
GA-8416	Canyons School	Science	Science teachers in Canyons
GA-8448	Utah Virtual	Science,	As a virtual school we have
GA-8537	Quest Academy	Science	Edivate General Grant: Quest
GA-8745	Iron County	Science	We will be using the science
GA-8758	Park City School	Science,	Edivate will be used to support our
GA-8839	Granite School	Science	The Edivate platform will be used

GA-9173	Cache County	Renewing	
GA-9598	Spectrum	Science	The Edivate platform will be used
GA-9643	Beehive Science	Science,	Edivate will be utilized for
GA-9799	Uintah School	Science	Edivate will be used as a resource
GA-9803	Merit College	Science,	To develop horizontal and vertical

Expectations and Outcomes	Assessment
Teachers will be able to instruct students in C	Teachers will be given a pre- and post-
All teachers at C.S. Lewis Academy will be	Administrators at C.S. Lewis Academy
Teachers will become knowledgeable about	1-School administrators will monitor
All science teachers will become effective in	Administrators at the district level will
Complete compliance training# of teacher	# of employees completing annual
	Our expectation is by August 2017, each
By the end of the year students at Endeavor	The plan will be assessed using teacher
The expected outcomes of this grant are that	This professional development will be
Expectations for this grant are to provide	1) This plan will be assessed for
Teachers will incorporate the new SEEd	This project will be vetted by a number
Canyon Grove Academy's goal is to improve	
The expectation for this professional learning	Quantitative data will be collected
RCHS would like to allow more in-class support	There will be a member of our
By utilizing Edivate to promote the work of	1. Qualitative evaluation:Survey on
1. 100 percent of SUCCESS Academy teachers	1.Pre-program surveys will be given to
The assessment for teachers and students will	The overall effectiveness of the grant
The implementation of new science standards	Data is provided in the Edivate platform.
Channing Hall has four main expectations from	â€¢Repeat the previous yearâ€™s survey
The Desired Teacher Outcomes from this	Every nine-week grading term, each
The desired outcome for STEM teachers after	The effectiveness of our plan, as well as
John Hancock Charter School intends to use	JHCS will use the science SAGE scores
Administrators will use the Edivate platform	Administrators will monitor and evaluate
The desired outcome for STEM teachers after	The effectiveness of our plan, as well as
We expect that the Edivate platform, as a	1.Individual teacher use of the Edivate
The Tools and Technology guiding principle for	Effectiveness of this professional
Through the use of the Edivate platform, as	Assessing the grant's effectiveness will
The evaluation of the South Sanpete PD 360	The evaluation of the SS PD 360 Project

INSTRUCTIONAL STRANDDuring: Each teacher This plan will be monitored in several

Math Teacher- Improved tier one MathAssessment will be done through a
The evaluation of the CUES PD 360 The evaluation of the CUES PD 360

Careers and Technical Education (CTE) has new This plan will be assessed by Jordan
Teachers will access professional learning At the beginning of the school year,
The expectation for this professional learning Quantitative data will be collected
â€œEvery Child Deserves to Sit in Our Best How will this plan be assessed for
Expectations an OutcomesWhile the proposal AssessmentWSD would assess this
Teachers will be able to identify practices and The effectiveness of this project will be

Outcomes for teachers would be to increase How will this plan be assessed for
Expectations and OutcomesChanning Hall has We will assess our progress in April 2017
The purpose of this proposal is to prepare 6- Short-term effectiveness for the PD will
The BCSD is a one-to-one district. All science The monitoring of teacher participation
We would like to see an increase in student As principal, I will monitor staff
SCIENCETeachers will incorporate the new A variety of outcomes are expected for
Outcomes to be measured will include the A rubric will be developed to measure
This CTE focused grant is designed to boost How will this plan be assessed for
Our measurable outcomes will be the science Administrators and facilitators will

â€¢Form a consortium between Box Elder, â€¢A team of district-level curriculum
Participating 7th, 8th, and Sec I math teachers Short-term effectiveness for the PD will
The Utah Effective Teaching Standards (UETS) The effectiveness of this professional
Channing Hall has three main expectations The Math Support Team will do a final

Outcomes for teachers would be to increase How will this plan be assessed for

1. Improve daily science instruction through The effectiveness of the professional
We will measure the effectiveness of The program will be assessed via
Edivate General Grant: *Administration will Edivate General Grant and Science
Iron County School District 6-8th grade science Qualitative data will be collected
6th-8th grade science teachers will access the The plan will be assessed for
The overarching goal of the NSSI professional Both quantitative and qualitative

The desired measurable outcomes Beehive

The desired outcome of this opportunity is

We use a concept called fusion in our

This plan will be assessed as

The effectiveness of this PD will be

Every Term STEM courses should have a

Core Impact	Projects (*Strategic Objective*)	Operation	Outcomes (aligned metrics)	Funding Source
Math Proficiency	K-12 Math (*Enhance*)	**2016-17 Fiscal Year** 1) Acquisition of SAGE test scores from USOE for 2015-16 school year (Sept, 2015) 2) Final analysis and report of math outcomes (Nov, 2016) 3) LEA applications received and awarded for 2016-17 school year (Aug, 2016) 3) Product provider contracts completed for 2015-16 school year implementation (July, 2016) 4) License distribution and teacher training completed (Aug, 2016) 5) data collection begins (Sept, 2016) 6) data collection ends (May,2016) 8) Final analysis and report of math outcomes (TBD)	• Students receive individualized, supplemental instruction in math to meet their needs (license distribution, usage) • Teachers receive real time data to inform instruction (completed training, teacher surveys) • Students improve their math performance on assessments within the products (SAGE scores) • Increase math achievement on state assessment, closing achievement gaps (SAGE scores) • Improve high school math readiness • Increase student interest and engagement in math (student surveys)	$3M (OG)*

High Quality Instruction	Professional Development (*Enhance*)	1) Solicit LEA grants; review and award selected grants (completed July 1, 2016) 2) Monitor grants during 2016-17 school year 3) Determine the number of Edivate licenses that are included in LEA grants 4) Finalize School Improvement Network contract for Edivate licenses (Aug 2016) 5) Implement LEA grants (Aug 2016) 6) Determine next steps for videos, learning experiences and other supporting resources (TBD) 7) Create and implement a comprehensive assessment strategy around new grants	• Increase teacher effectiveness in STEM-specific content areas • Increase teacher content knowledge • Increase teacher recruitment and retention • Create a video library of best practices in instructional methods by Utah teachers • Create learning experiences	HB150; $4.6M (OG)*
	STEM Endorsement (*Enhance*)	1) First cohort completes endorsement	• Increase teacher effectiveness • Increase teacher content and	HB150; $1.5M (OT)

		(2017) 2) work with third party evaluator to track outcomes	pedagogy knowledge • Increase teacher and retention in STEM disciplines	
Applied STEM	Middle School Applied Science (*Enhance and Partner*)	1) Funding completed and all projects closed out 2) Continue to track outcomes in classrooms	• Increase rigor, relevance and cross-disciplinary content in applied science curriculum materials and courses • Increase STEM content mastery • Increase teacher effectiveness • Increase collaboration between STEM educators	HB150;
	High School STEM Certification (*Enhance and Partner*)	1) Completed monitoring site visits to all projects and create final report (July 2106) 2) Identify and work with LEAs that need a no cost extension (June 2016) 3) Close out all grants that did not request a no cost extension (June 2106) 4) Solicit pilot grants for Computer Science Pathway initiative (Oct 2016)	• Increase job readiness of high school graduates • Increase student access to certificate programs • Improve alignment of certificate programs with employment demands • Increase secondary and post-secondary partnerships	HB150; $1M (OT)

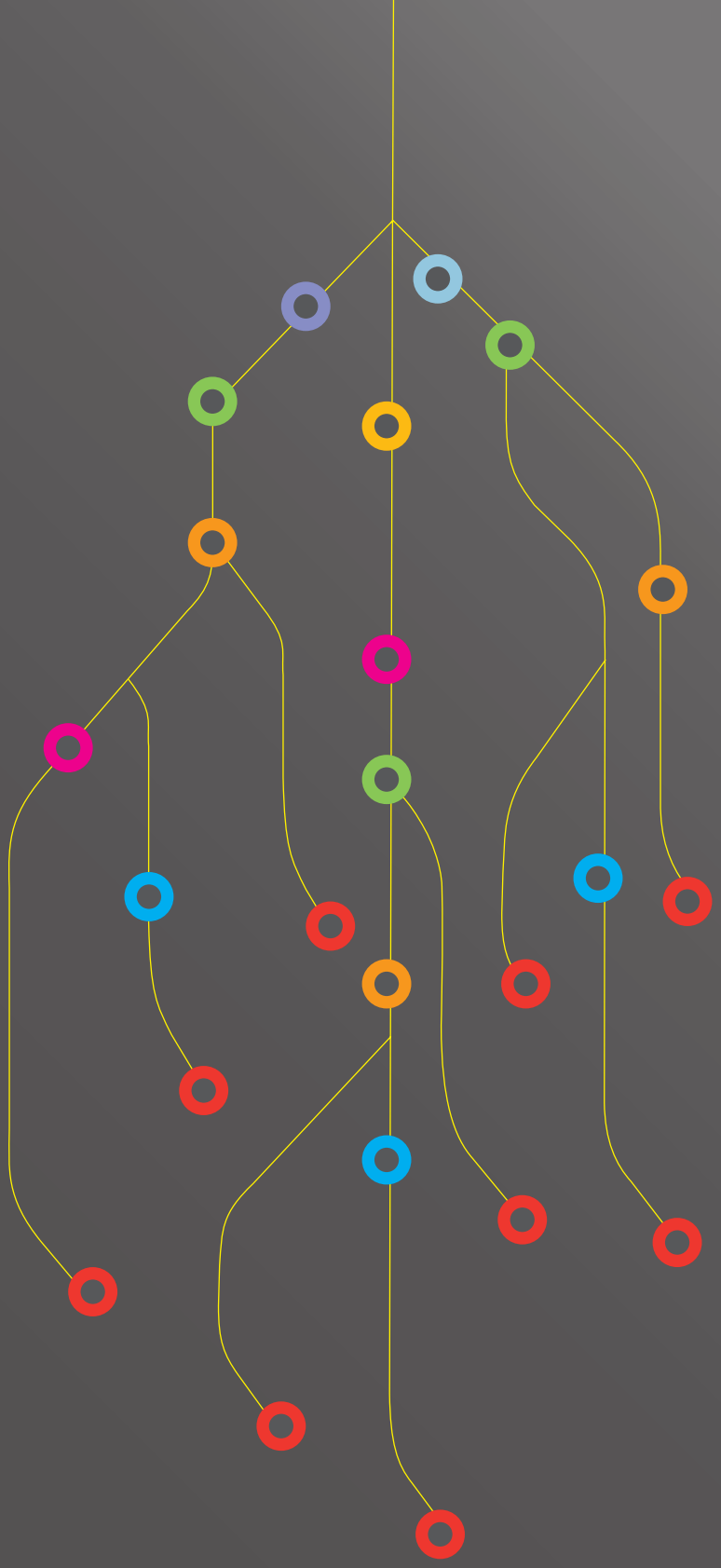
		5) Review and award pilot grants (Nov 2016) 6) Monitor pilot grants and track outcomes		
Outreach, Engagement, Recruitment	Classroom and Summer Camp Grants *(Motivate and Promote, Enhance and Partner)*	1) Completed grant solicitations for classroom and organization grants 2) Track the number of students and teachers impacted by the grants 4) Document XX press releases related to classroom grant or summer grant projects (June 2016)	• Increase access to STEM programs • Improve student achievement through applied learning activities • Increase student engagement and interest in STEM programs • Increase awareness of education and career pathways • Increase partnership opportunities	STEM AC#; amount varies
	Fairs, Camps and Competitions *(Motivate and Promote)*	1) Temporary cessation of FCC grants (June 2016) 2) Determine if more effective way to administer grants	• Support student participation in camps, fairs and competitions • Increase student engagement in STEM areas	STEMAC#; amount varies
	Communications and Marketing (*Motivate and Promote*)	1) Media campaign (STEMatch) 2) Website 3) Event sponsorships 4) Conferences hosted by Center (STEMFest	• Increase awareness of STEM and STEM based activities (track traffic to website and social media portals) • Increase public understanding of STEM subjects	STEMAC

	and Best Practices) 5) Social media 6) STEMi recognition awards 7) Engagement with national organizations (STEMx, Education Commission for the States, National Conference for State Legislatures and STEM Connector) 8) Statewide mentoring network 9) School assemblies	• Promote advocacy of STEM • Serve as a clearinghouse to facilitate partnerships and access to STEM activities (track and document sponsored events) • Provide a venue for creating opportunities for STEM dialogue (document number of STEM AC hosted and sponsored events) • Promote more effective leveraging and use of resources • Connect stakeholders to STEM opportunities • Promote national presence for Utah STEM (document number of presentations/recognitions at national events) • Provide resources to parents (track volume of distributed materials) • Engage students (track the number of participating students in student-related events such as school assemblies)

Advocacy	Fund Raising (*Partner*)	1) Investors STEM Coalition 2) Involve industry partners in Center activities 3) Establish foundation board	• Increase corporate support of STEM (track corporate engagement) • Creation of additional program opportunities	STEMAC
Collaboration	Grant Participation (*Partner*)	1) Formation of grant coordination sub-committee 2) Grant clearinghouse/database creation 3) Grant submission and award	• Increase funding for STEM from federal, state and private extramural sources (track funding) • Increase partnership opportunities (track number of partnerships and grant awards, both direct to the STEM AC and through partnerships) • Improve leveraging and use of resources (track indirect increase in resources for STEM AC and stakeholders)	STEMAC

* OT and OG, One Time and On Going, respectively
# STEM AC, STEM Action Center operational funds

NOTE: The math proficiency, high quality instruction, applied science, classroom, summer camp and fairs, camps and competitions all have third party evaluation mechanisms in place to determine effectiveness and impact.



STEM ACTION CENTER
U · T · A · H

HIGH SCHOOL INDUSTRY CERTIFICATION PROGRAM

Mid-year Evaluation Report by
Sarah Brasiel and Clarence Ames

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Recommended Citation:

Brasiel, S. and Ames, C. (2016). High School STEM Industry Certification Program: Mid-Year Evaluation Report. Logan, UT: Utah State University, Department of Instructional Technology and Learning Sciences.

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KEY FACTORS FOR SUCCESSFUL CERTIFICATION PROGRAM

Background The STEM Action Center's High School STEM Industry Certification grant program began with a College and Career Subcommittee meeting in August 2014 to determine important considerations to include in the request for applications. The STEM Action Center released the application information in September 2014, and they gave districts time to develop partnerships with universities, applied technology colleges, and local industry partners. A majority of the programs were in their planning phase during spring 2015 and some began training the instructors summer 2015. Most of the programs have been going strong this fall 2015 and spring 2016.

This preliminary report is based on conversations with grantees about where they are at with their implementation, some of the success stories that represent what is going well and some of the challenges and barriers they are facing. This information can inform the work of all grantees as a way to learn about what others are doing. This information can also guide the STEM Action Center in understanding the state of the current grant program and to inform any future funding opportunities related to this area of increasing the number of students prepared for STEM workforce careers and post-secondary STEM education.

Cache Valley Districts & Bridgerland ATC

- Engineering Pathway
- IT Pathway
- Health Science Pathway

SOAR into STEM Ogden & Ogden Weber ATC

- Rocketmade Launchpad certificate
- Busy Busy Launchpad certificate
- Velocity Launchpad Cert.
- Y Draw Launchpad Cert.
- Start-Up School
- Start-Up Derby
- Job Developer training
- Marketing training

Davis and Morgan District & Davis ATC

- Robotics industry certification
- Automated Manufacturing certification

Tooele County School District & Tooele ATC

- Information Technology

Success Academy & Washington & Iron County School District with Southwest ATC, Dixie State, & SUU

- Computer Information Technology Pathway
- IT: CompTIA A+ Certification
- Computer Programming Pathway
- IT Pathway
- Web Development Pathway
- Graphic Design Pathway

AM STEM at Dixie ATC

- Manufacturing Pathway
- Welding Pathway and certifications
- IT Pathway and certifications

STEM Series (Launchpad with Success Academy & AM STEM Students)

- Life Sciences

Summit Academy STEM IT

- IT
- Construction Technology
- Advanced Manufacturing
- CNA Healthcare Services
- EMT

Nebo Advanced Learning Center

- Computer Programming Pathway
- IT Pathway
- Pre-engineering Pathway
- Digital Media Pathway
- Biomedical/Healthcare Pathway

Southeast Consortium

- Engineering pathway (to increase capacity-Aerospace, Mechanical and Electrical)
- IT software pathway (to add functionality)
- Advanced composites pathway (new)

Wasatch Front Consortium

- Manufacturing

Granite District

- Manufacturing

It is important to note that the STEM Certification or Pathway programs listed are the ones that have either been made possible with this grant program funding or have been strengthened or extended in some way through the grant funding. These districts may offer additional certification programs not listed, but they are operating with other funding sources.

STEM INDUSTRY CERTIFICATION PROGRAM

Needs Assessment

Before beginning a program or initiative it is beneficial to begin with a needs assessment. To do a needs assessment one should start with a knowledge of what components are needed for successful implementation of a program. Then a survey can be given to key stakeholders (administrators, parents, teachers, and students) to understand their perception of whether those components are in place or not. This can help to identify needs and target funding to the areas of greatest need. In addition to surveys, data could be collected through a review of documents, interviews with stakeholders, and/or observations. The High School STEM Industry Grant program came out of a a need in the state, but what was not clear were the specific needs within each district. Therefore, some districts conducted their own needs assessment to best focus their efforts with the funding from the state. Below are examples from two grantees about how they included a needs assessment component to guide their work.

STEM Series (Launchpad with Success Academy and AM STEM Students)- *Rocketmade software developers were frustrated by college seniors with Computer Science degrees from Dixie State, but no useful skills or practical experience. They designed this program in coordination with Washington County School District, as an afterschool program located at an industry company site. The goal is to get young talented programmers working in an office while going to college, but the pipeline needs more people in it. They decided that high school provided an opportunity for students to learn in an after school context.*

Davis and Morgan District *– Teachers were offered a three-day training at the Davis ATC, and twelve teachers took advantage of this opportunity. They learned based on a survey that teachers did not know much of anything about what programs and industry certifications were available to their students at the DATC. The premise was: How can teachers teach something they do not know or understand with this case being the promotion of industry and UCAT certificates. Also when students were surveyed about STEM, they had very little knowledge of what STEM meant. A decision was made to focus on pathways and professional development. They believed that they first needed to understand STEM, contemporary STEM, and what opportunities are in STEM. Even the CTE directors had a misunderstanding of what DATC offers in terms of certifications. They learned that they do not offer many. What they do offer is completion certificates. The challenge of this grant was to connect to actual industry certification. While the CTE pathways are great on the website for the district from USOE resources, most students and teachers do not know about them. Mesa advisors are now using the CTE pathways.*

STUDENT ENGAGEMENT

In the past, CTE course were perceived as a place where students might get dirty or where students who were not planning to go to college went to learn job skills. There is a need to rebrand CTE and these STEM Industry certification programs so that they more accurately portray the diverse doors of opportunity they can open for all students. In talking with grantees they mentioned several factors and strategies for recruiting more female students and other students who normally may not have selected to participate in the STEM industry certificate program.

Cache Valley Districts and Bridgerland ATC – *Box Elder and Bear River high school report a variety of students enrolled. Some are AP Math, some from auto shop. One teacher in Box Elder had a ladies lunch with female engineers to talk to female students, but so far that has not impacted enrollment. There are not a lot of female students in the program, probably 5 of the 100, but if you expand out to engineering classes, in the feeder classes there are more girls. Current enrollment of girls matches industry ratio, but the concern is that there is a 50/50 ratio in AP Calculus of boys to girls, so the numbers could be better. BATC has hired some female instructors which has increased female enrollment at BATC. The first intern to be at Nucor Steel is a female BATC student. They are seeing that they lose the girls from STEM in junior high. Half of the robotics or other STEM team in elementary school is female. Then in junior high they are losing girls from these programs. A student is on track to graduate with a 900-hour robotics certificate and an associates degree who drives 30 minutes to BATC. One student is a wrestler who was academically unmotivated and now is the top student in the robotics program.*

STEM Series (Launchpad with Success Academy and AM STEM Students)- *There are more girl applicants to the design track, 2 to Y Draw certification and 1 to Busy Busy certification. They recruited the first wave of participants from a code camp mailing list. This year at the college they are doing a girls/women only hour of code which they hope will recruit more females into this career path.*

Nebo Alternative Learning Center – *The district holds a girls only field trip during hour of code week. If students complete a pathway they get to wear a white chord at graduation. Often students ask what it is and that word of mouth recommendation gets them students, but it is not enough. The grant funds have paid for a full time STEM coordinator to bring STEM Activities and some equipment to students in elementary and middle school and training for teachers.*

SOAR Into STEM (Ogden and Ogden Weber ATC) *- All of the afterschool STEM League and FTC robotics clubs boast a diverse set of participating students from multiple socioeconomic backgrounds, races and genders.*

POSITIVE RELATIONSHIP WITH INDUSTRY PARTNERS

A key area of focus for this grant program was to have a partnership with industry. This work is easier for some districts than others due to existing relationships with industry. However, for an industry certification program to be successful, this relationship is vital to open up internships and job opportunities to students. It can also provide valuable information to high schools about the kinds of job skills that are needed, and an opportunity to learn from industry experts. Next are a few examples of the ways grantees are building relationships with industry and post-secondary partners.

Tooele County School District and Tooele ATC- *Carlisle SynTec has one student doing an engineering internship. Carlisle SynTec is paying his salary (minimum wage), and they have increased his hours since he did so well. He did the engineering class and welding at his high school. He was all over the place on his transcript and now he has stepped up and is improving in school. The Granite Welding Advisory group has met at the Tooele School District offices twice which engaged the Tooele ATC and industry which has been good for the program. Lincoln Electric gave the Tooele District a discount on virtual welders and donated jackets, gloves, etc. for students in the welding pathway and certification program.*

Success Academy and Washington and Iron County School District with Southwest ATC, Dixie State, and SUU *– The program leaders are involved with an occupational advisory committee and have monthly meetings with Dixie Tech in St. George, and Tech Up in Cedar City.*

Nebo Advanced Learning Center *– Nebo has a positive relationships with the following local industries and businesses: Nestle, Dannon, IM Flash, US Synthetics, Exact Wear. US Synthetics and IM Flash in conversations with Nebo about how to train teachers for these 21st century work skills.*

Cache Valley Districts and Bridgerland ATC - *Hill Field is planning on hiring 2,000 engineering technicians, and those positions provide a good income. The pathway program takes 2 years. There is a 1-year certificate and a 2 year certificate. If students do not complete the certificate in high school, they can take the rest at BATC and then move on to USU. AutoLiv was recruiting from Indiana and California, but the people they hired did not like Utah, so they have been a great partner providing internships to students in this certification program. AutoLiv will hire interns after the 900 hour certification is complete but wants them to finish the more advanced 1500 hour certificate, so the students have to come back for hours while doing their internship before being hired full time, but Autoliv will provide tuition reimbursement. Other industry partners interested in hiring students with certificates: JBS Meat Packing Plant, Schriebers, Proctor and Gamble, Gossners, and Pepperidge Farms. The BATC has a Free start program where any high school student can get summer tuition for free after graduation.*

Davis and Morgan District *- The convergence of the UAP Aerospace pilot in Davis district has allowed the region to become strong partners with OrbitalATK, Janicki, Boeing, Hexcel, Harris, and Hill Air Force Base relative to advanced composites training and industry-recognized certification. Boeing, a key player in these grants, suffered disappointing results in the Seattle area for 4 years straight. The economic base of the Wasatch attracted them to work with CTE and other educational partners with high-rate success in just months. The re-focus on health science certifications allowed for students to expand opportunities at partnerships with Lakeview Hospital and local physical therapists. The region has also just begun discussion with Layton City and Code.Org regarding a similar proposal to the UAP pilot, but for IT certifications.*

STEM Series (Launchpad with Success Academy and AM STEM Students)- *Several companies are involved in teaching different components of the program. Rocketmade taught mobile development. Why Draw taught marketing skills and social media. Provo location taught mobile development. Rocketship taught engineering. Go launchpad.org is the website that recruits students and industry partners for this tech apprenticeship program. Students fill out the application online. Students are ranked on qualifications and experiences (1,2,3). A section of each application group (1,2,3) is shared with each industry partner to select for participation in the apprenticeship program. Initially industry partners were paid. But after the first round of Launchpads only the person managing the Launchpad.org website and recruitment of students and industry partners was paid by the grant.*

Ogden School District*- Ogden district formed a partnership with several local industries and post-secondary training institutions in order to ensure the alignment of the pathways with current workforce needs. Partners include engineers and technicians from Orbital ATK, Boeing, L-3 Communications, Williams International, Hill AFB, Purch, Petersen Inc, BAE Systems, Parker Aerospace, and Northrup-Grumman. The greatest gap that needed to be addressed was in Engineering , Computer Science and Composites Technology. The industry-education teams reviewed current offerings and determined that there was appropriate coursework in the district and OWATC to get the high school students to an entry-level certification that could then lead into further stackable credentials with on-the-job training and/or additional coursework at OWATC or WSU.*

MARKETING & K-12 RECRUITMENT

Not all parents and students are aware of the benefits offered by STEM pathways or certification programs offered by districts. In fact, there are many industry jobs that students have not been exposed to and have not considered as options for their future. Therefore, to engage students in thinking about pursuing a STEM pathway or taking courses that are part of a STEM industry certification it is helpful to have a recruitment strategy and marketing materials that can be shared with students and their families that highlight the value of these programs. Several of the grantees have focused on this marketing and recruitment effort with part of their grant funding in order to make sure their program is sustainable with students continuing to enter the pathway or certification developed through this program. A few examples are highlighted next.

Davis and Morgan District – *The grant funded 50 students per high school and also for Morgan district to attend the district-sponsored STEM Expo (see http://www.stemexpoutah.org/ and http://kutv.com/archive/northern-utah-stem-career-and-college-expo). Another 50 students are being awarded scholarships for industry certifications through DATC programs. These were competitive scholarships awarded based on student goals in long-term program completion. There were additionally a series of STEM-related field trips where transportation was funded by this grant program. STEM promotional events and marketing campaigns in STEM were held region-wide.*

STEM Series (Launchpad with Success Academy and AM STEM Students)- *A larger part of the grant pays a person to develop and manage the launchpad.org website that recruits students and industry partners for this tech apprenticeship program.*

Cache Valley Districts and Bridgerland ATC - *At registration instructors did recruitment for zero hour. The program was also promoted at a robotics summer camp. There are students in Project Lead the Way that were the core group recruited at Box Elder and Bear River high school, because the teachers caught the vision for the value of this program, 42 students are enrolled at Box elder high school. Similarly due to interest from a teacher at Sky View, 25 students are now involved.*

SOAR Into STEM (Ogden and Ogden Weber ATC)- *Ogden district is pushing STEM into elementary to build awareness and intent by training teachers. Carl Lyman from USOE trained 16 elementary teachers in computer coding curriculum. They used grant funds for a STEM Access Library of STEM resources. This way every teacher does not need their own class set of equipment. The materials are in a library, and teachers can check out materials such as little bits to do STEM Activities with their students. Teachers have used Robotics systems with classes as low as kinder and 1st grade. The goal is to create the interest to build the pathway kids will enter at 9th grade. The grant also allowed them to put 3-D printers in all secondary schools which aligns the pathway courses with current industry technology. Currently the enrollment in the pathway is done by advertising them on posters and brochures with QR codes. Students scan the QR code and sign up using a Google Form. So far 48 students have done the Google form to declare enrollment in a pathway. The grant program manager presented in all feeder or pathway courses to market the program. The grant has also supported the expansion of STEM afterschool program in all secondary schools with a focus on STEM related competitions like First Tech Challenge, Coder Dojo and Ogden's STEM League. Students from these programs are also recruited into the Pathways program. Specific training was given to all counselors along with promotional materials so that they can steer students into pathway programs as they hold scheduling conferences with their students.*

Nebo Advanced Learning Center – *The district assessment department has been working on ways to message the value of the Advanced Learning Center as saving money due to the concurrent enrollment option. They are working on a cultural shift to get kids to take more than 2 classes at the ALC. Some seniors either go home early or work half of the day rather than taking advantage of the concurrent enrollment options at the ALC.*

Tooele County School District and Tooele ATC- *The 8th grade students get to take a trip to see USU Tooele campus and the TATC in May. The Tooele District also invites people from TATC for an annual event called "reality town." The seniors in the Pathways programs also take a trip to TATC to learn more about the program. There is also a Pathways night at the three high schools. There are high school specific Pathways posters that show connection to USU Tooele campus and TATC as well as future career opportunities. Tooele District is working with the TATC to get additional larger posters made for recruitment and marketing purposes.*

Success Academy and Washington and Iron County School District with Southwest ATC, Dixie State, and SUU – *During class sign-ups, the internship coordinator had a table with candy to recruit students. She went to computer classes to recruit students and made announcements over the loud speaker. She also held a parent night and a counselor meeting to market the program. They have also found success in recruiting through students already in the program and having meetings with computer science teachers. Some high school computer teachers are worried about losing funding, since their funding is based on enrollment in their courses at the high school. So the meeting with teachers is to explain that the courses in this pathway program are different, so it is not taking funding from the high school.*

AM STEM at Dixie ATC *– They advertise the program to students and parents with a focus on the exciting careers as a maintenance tech or in advance manufacturing. They have developed brochures and magazines about what they can do with this type of certification. One student drives 40 minutes to get to this early morning program, because he knows it will change his life. They even get kids enrolled who do not know how to turn on a computer, since the program has been explained as so accessible.*

PARENT EDUCATION & INVOLVEMENT

Involving parents is important for the success of most educational programs. Parents are often over focused on students pursuing a 4-year college degree right after high school and the requirements for entry into those degree programs. Many parents are not aware of the opportunities offered by the Applied Technology Colleges or the certification programs that start in high school and can be finished at the ATCs and sometimes colleges in Utah. Parents also may not be aware of concurrent enrollment course offerings at the high school which can save families money in the future. It is important for a successful STEM industry certification program to have a component focused on parent education and involvement. Below are two examples of ways the grantees are engaging parents.

AM STEM at Dixie ATC – *They host AM STEM Night for parents. They have made the program competitive. Students need to apply and have an in person interview. Kids take it seriously and show up for their interview in suits. This recruitment process has helped them to get top students into the program. This year there were 107 parents who came on the tour and even parents signed up for classes. They have created an "I can" video, which helps engage parents and students.*

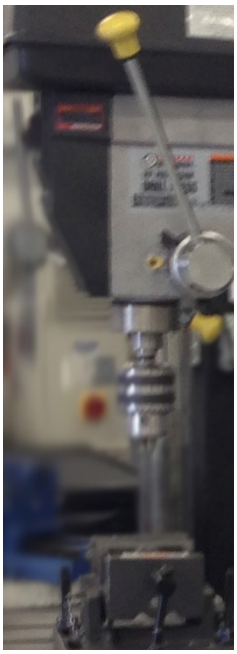
Cache Valley Districts and Bridgerland ATC *- Parent interest is high and they want to learn and get their own Robotics kits. Seven of the sixteen students have parents who have called to share how they cannot believe that their kids are getting up early in the morning on their own to get to their class.*

AM STEM at Dixie ATC – *They host AM STEM Night for parents. They have made the program competitive. Students need to apply and have an in person interview. Kids take it seriously and show up for their interview in suits. This recruitment process has helped them to get top students into the program. This year there were 107 parents who came on the tour and even parents signed up for classes. They have created an "I can" video, which helps engage parents and students.*

Davis and Morgan District *– In addition to the 400 students directly sponsored to attend the STEM Expo (see http://www.stemexpoutah.org/ and http://kutv.com/archive/northern-utah-stem-career-and-college-expo), the Expo was purposely extended until late evening so as to allow parents and other community partners to receive an opportunity to attend. Over 2,000 attendees entered the STEM Expo in the evening hours.*

SOAR Into STEM (Ogden and Ogden Weber ATC) *- Information for the program was presented and distributed at parent-teacher conferences at the high schools. Parents are also involved through volunteer efforts for the after-school STEM League activities.*

EQUIPMENT (RELEVANT TO CAREERS)



A successful high school industry certification program needs up to date equipment and resources relevant to the career pathways for which they are preparing students. Many high schools have older equipment and may not even be aware of the advancements in technology and equipment for the courses they offer for the certification program. This is one area where a grant program can be helpful to fill the gaps in equipment or replace outdated equipment. Below are a few examples of how grantees were able to leverage grant funding to make sure their students had appropriate equipment for their industry certification program.

Tooele County School District and Tooele ATC- *A large part of the funding went to buy 2 virtual welding machines for Tooele School District Welding courses. These machines save costs in terms of materials, but also develop muscle memory so that students do much better work in person. An example of what the virtual machine can do is to simulate for students what it is like to weld on a high beam. In addition, they purchased grinders and a few other pieces of equipment to support the pathways program. The grant funding also provided CNC equipment for TATC. The TATC benefited by the equipment provided by the grant and the articulation which should bring more kids there to complete more certifications in the future.*

AM STEM at Dixie ATC – *The program leaders worked with equipment manufacturers and were able to obtain a million dollars in equipment for the $330,000 grant and donations. For example, they were able to get $90,000 lathes for $20,000. The grant paid teacher time, and also for computers, Cisco trainers, and server rack components. Then they used those components and built racks for $12,000 that would have cost $30,000. Relevant equipment was the key to the program success. They believe in courses that are 30% classwork and 70% lab, so having relevant equipment for the lab is vital. They have also used grant funds to purchase EKG machines and Resuscitation dummies for the healthcare AM STEM and IT and graphics equipment*

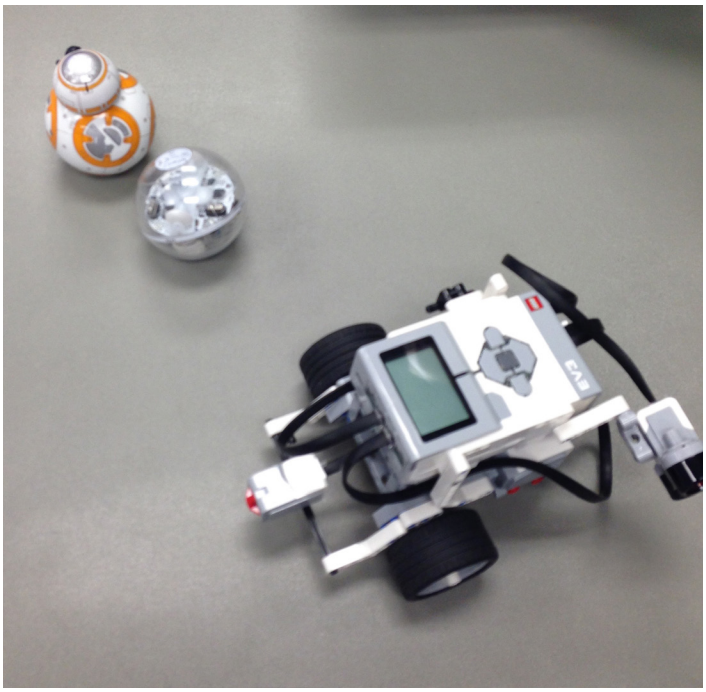
Nebo Advanced Learning Center *– Using grant funds Nebo purchased 3D printers, digital media equipment, and server stacks for IT. They also were able to support some of the costs associated with the implementation of Project Lead the Way.*

Cache Valley Districts and Bridgerland ATC *– The largest part of the funds granted were in the creation of industrial level trainers that would be located at all 8 locations. Students have labs that are done on industry level equipment in the areas of, programmable logic controllers, microcontrollers, hydraulics, pneumatics, robot simulations, and CNC simulation.*

Davis and Morgan District *– A large portion of funding has gone to preparation of the state's first Composites 1 high school program (Layton High School) based on the overwhelming response of students now enrolling in DATC Advanced Composites due to the STEM grant bringing them and their teachers into awareness of composites' existence, place, and purpose. Additional funding has provided teachers across the region with contemporary, STEM-rich options such as 3D printers, robots, injection molding trainers, and technology.*

SOAR Into STEM (Ogden and Ogden Weber ATC) *- Grant funds have been utilized to build the STEM library with purchase of classroom Robot competition kits, Spheros, 3-d printers, wind farm experimentation kits. Equipment for the startup of Project Lead the Way Launch will also be used.*

COUNCELOR EDUCATION



Counselors play a vital role in getting to know junior high and high school students and guiding them to select courses that will prepare them for their future careers and college. However, without education, counselors may not be aware of the latest career opportunities for students or industry needs in the state. In addition, counselors may make suggestions to students based on factors such as prior course grades, gender, or personal interests reducing the number of students guided into STEM pathways. Therefore, it is very important to educate counselors about the STEM certification programs and the diversity of students who can be successful in such programs. Also it is important for them to see that it is not a two track system, college or industry certification/ career. Students can get a certification to get a higher paying job to have while they complete a college degree or to fall back on if they cannot find a job once they get their degree. Next are a few examples of ways grantees are working with counselors to educate them about these STEM industry certification opportunities.

SOAR Into STEM (Ogden and Ogden Weber ATC)- *There are 49 students between the three pathways programs grades 10-12. The incoming 9th graders will have presentations at their junior highs with counselors. Oct 2015 was the first meeting with counselors, asking them to put the pathways at the front in discussion with students. They also had a follow-up training and discussion with counselors. Now the district student information system has a place where they select a career path and includes these 3 plus all other CTE pathways. Once a student declares a pathway the counselor and the program leaders can pull reports and connect with students and parents about the pathways and courses in those pathways.*

Tooele County School District and Tooele ATC- *The Tooele counselors are not tracking "high-end" students into Pathways, so the district Pathways leaders are trying to educate them. Often college bound students do not have job skills, so they end up working minimum wage at a grocery store, when their peers in CTE become certified and are working high paying jobs and also pursuing a college degree. So it is a need to rebrand the CTE Pathways. TATC meets with Counselors at their facility and they do a tour.*

Success Academy and Washington and Iron County School District with Southwest ATC, Dixie State, and SUU –*Counselors see the pathway program as a place to put kids they do not have anything to do with, so they have had to work to educate counselors. The involvement of the internship coordinator to engage counselors has been vital to keep them involved in the process. Students now approach the counselors after the internship coordinator did recruiting. The program leaders also made entrance to the program harder by adding a required letter of interest and application. This way students who are serious about the program are enrolled and not just a place for students with nothing else to do. This has raised the caliber of the students in the program, where students are more motivated and focused.*

Nebo Advanced Learning Center – *The STEM Coordinator provides counselor education meetings for junior high and high school counselors. They build connections with the counselors and share opportunities to learn and be involved in local and statewide STEM events. Local companies come to the district and say they need manufacturing and IT workers, and it has been helpful to have the STEM Coordinator to provide this information to teachers and counselors.*

Cache Valley Districts and Bridgerland ATC – *BATC instructor went to each high school and met with Counselors. They also brought them in to the BATC and fed them. A key part of the program is to educate the Counselors. They have taken some counselors on tours to see all of the classrooms and equipment. The challenge is that counselors are busy and they need to be reminded of this opportunity. Bridgerland has presented to school boards, had a booth at registration night, and also created a promotional video.*

Davis and Morgan District *– Counselors were invited to STEM expo to get exposed to STEM careers and heighten their awareness of what constitutes a STEM career and how to align student awareness and understanding of STEM as a potential pathway. Additionally, counselors have been trained by site-based CTE Coordinators regarding what STEM is, what local options exist for STEM and STEM-related programs and certificates, and training to address student interest in STEM fields. DATC student services staff are working to identify and track STEM students for their purposes, as well.*

21ST CENTURY CURRICULUM

It is important for district programs to review the curriculum currently in use for courses that lead towards an industry certification to make sure they are up to date and able to prepare students for the skills that industry needs. One way is to collaborate with industry to review curriculum to see if it meets their needs. Some of the grantees have determined that an appropriate curriculum does not exist, and so they are using grant funds to collaborate with industry or the ATC to create an appropriate curriculum. Below are a few such examples.

AM STEM at Dixie ATC – *They use a national curriculum for advanced manufacturing. They start the program with How Things Are Made for the 1st 9 weeks. For Industrial Maintenance they use a reliability tech motion curriculum. Level 1 students do Solid Works training. They have robotics programming for automation.*

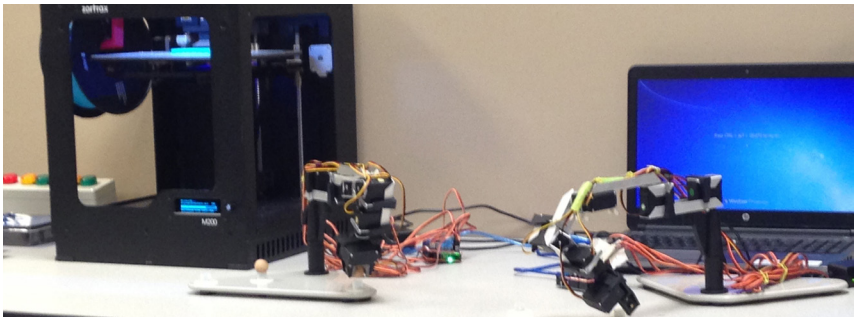
STEM Series (Launchpad with Success Academy and AM STEM Students)- *In software development, the tools change rapidly. Swift is what they use for mobile app development and it came out 3 months ago. So the challenge is staying up to date with the latest tools so that students are prepared for industry jobs.*

Cache Valley Districts and Bridgerland ATC –*Students learn PLCs, drone technology, program industrial robots, build small robots, solid works software, and more. The important thing is that they are learning transferable skills for multiple careers. They use a competency based model, where a student cannot progress to step 2 until they have mastered step 1. The program is Individually paced. The instructor from BATC says that the curriculum is teaching direct application of mathematics principles. When they are talking about 3D space they talk about geometry, trigonometry, and the application of algebra and the kids think it is cool. It is important to have industry participation to inform the curriculum design. They have an advisory committee that meets every 6 months. The Utah manufacturing companies are hurting for employees, since many current employees are set to retire. They see the benefit of this pipeline.*

Davis and Morgan District *– The nature of the intent of this grant lends itself directly to the need for teachers to identify curricular ignorance and be willing to address the void with their own classroom/ laboratory training. In doing so, it allowed teachers to comprehend current STEM pedagogy and practice, in comparison to their own actual instruction. Many have since returned and contemporized their curriculum with modern, relevant context and scope relative to STEM training.*

SOAR Into STEM (Ogden and Ogden Weber ATC) *- Grant funds are used to increase the rigor and relevance of the existing engineering pathway Ogden District by expanding the Project Lead the Way offerings at all Grade levels. At the Elementary Level, 6 teachers will be trained in PLTW Launch. At the Jr. High level Teachers will receive training to teach Gateway to Technology (Design and Modeling as well as Automation and Robotics.) At the High School level two teachers will receive training in the Aerospace Curriculum which includes a unit in composites fabrication. Teachers are also trained in Code. org curriculum as well as Defined STEM as supplementary instruction materials.*

INSTRUCTION DELIVERY

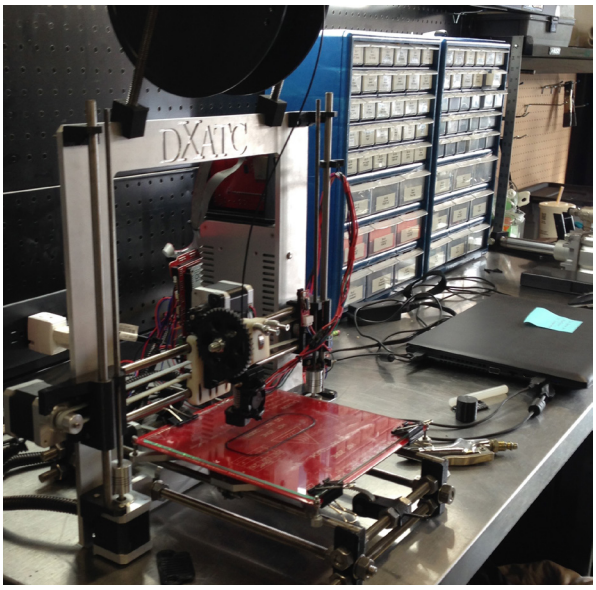


Due to the need to make instruction available to students at different times of the day, an industry certification program should think about innovative ways to bring instruction to students, such as broadcast courses, online courses, or opportunities for personalized learning with technology software. Next is an example of how one grantee is doing just that with some of their grant funding.

Cache Valley Districts and Bridgerland ATC – *An instructor from BATC broadcasts the course during zero hour through UEN. Then first and second period watch the recorded lesson. Year 1 course (2015-16), Level 1, is now in Canvas with the instruction recordings to be used in Year 2 and beyond. Course 2, Level 2, will be live broadcast and recorded during 2016-17. Fall 2016 new broadcasts Level 2 will not require Level 1 as a prerequisite. Students can finish any incomplete work in the summer at the BATC by filling out a scholarship application. One student is doing Level 1 at zero hours and Level 2 for 3 hours at BATC to get the full certificate done.*

PATHWAYS

While some students may enroll in an IT course to get a few quick certifications, others may take many courses along a pathway towards a STEM Career. In some cases, it may be too soon to start a certification program when currently no students would enroll due to lack of knowledge or interest. Therefore, starting a pathway, even as early as the middle grades, is one way to get students interested in a career and then on the path to certification and training for that career. For example, engineering is a field where people traditionally think that you complete most of your preparation in college. However, pre-engineering courses now begin as early as the middle grades. Students in middle school can do robotics activities that engage them in engineering and then can begin a STEM pathway that can prepare them for a future career in engineering. The same is true for manufacturing, computer science and other career pathways. There is much to learn from the grantees for how they are using grant funds to establish or strengthen STEM pathways programs within their districts.

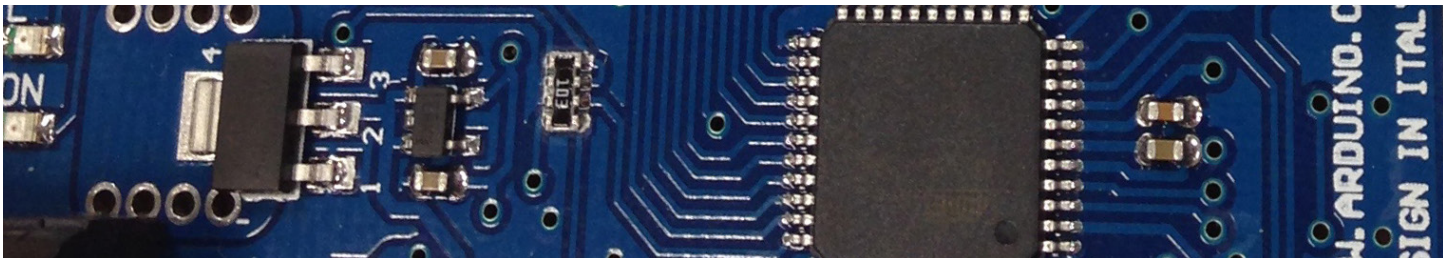


SOAR Into STEM (Ogden and Ogden Weber ATC)- *The pathway development was due to a CTE and OWATC collaboration. This began with an articulation discussion about what does a HS pathway look like, vs certificate completion at the ATC. The district preferred to have something students complete only in HS, so they focused on pathways and articulation to Weber or OWATC. Completion of Ogden district pathways are not sufficient for trade certification. Completion of a pathway shows up on their diploma, so it adds a recognition chord at graduation. It is not formalized yet, but they are looking into workplace readiness certificate that ATC can grant and Ogden district can design the program to meet the ATC standard. The Pathways lead to mentorships and site visits. Pathways are not enough for employability in a related industry, but enough for a meaningful work experience. When they use the word intern they are thinking juniors in college ready to be employed. So another word may be needed for exposure to industry on the job with workplace experience.*

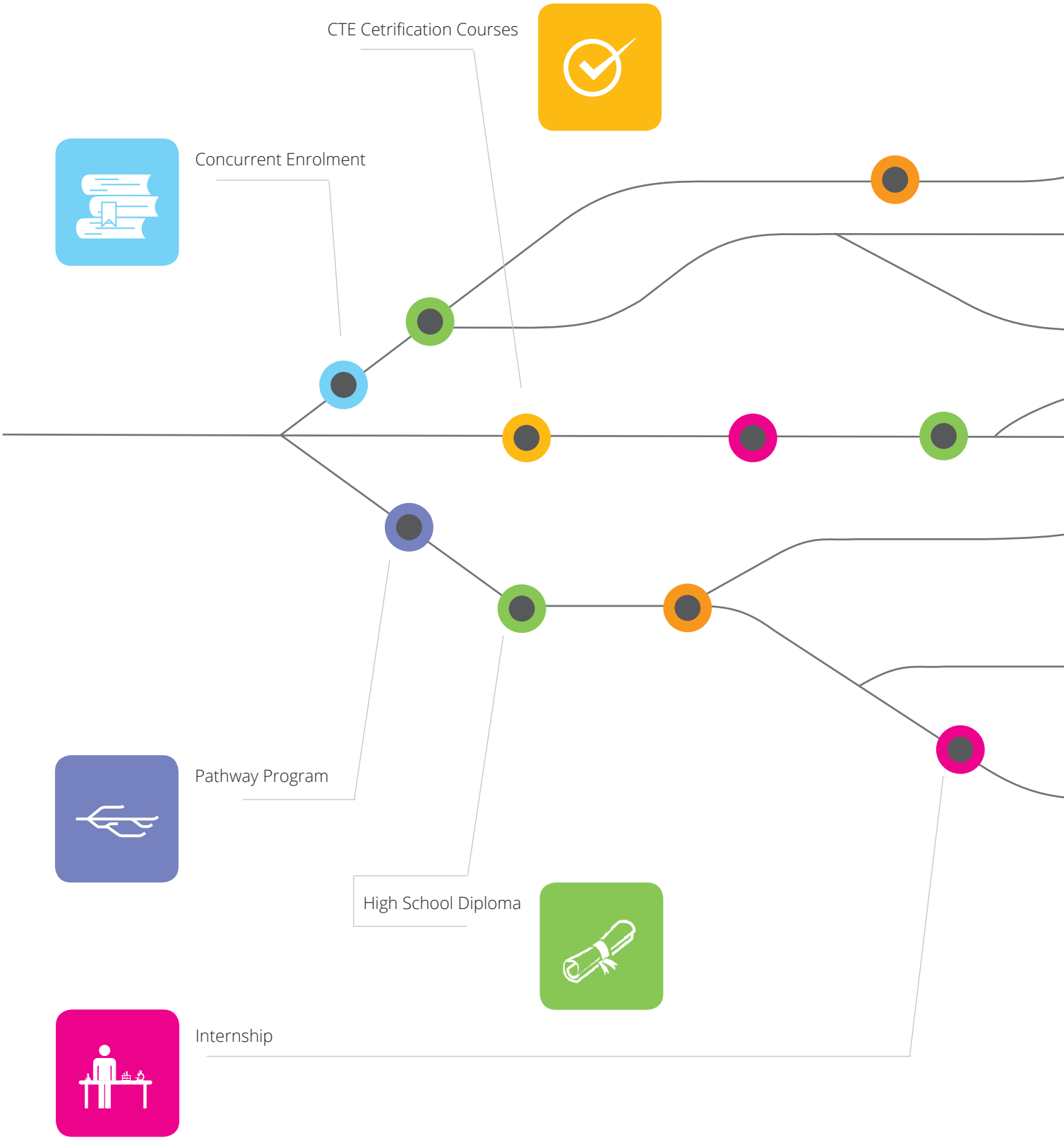
Davis and Morgan District - *Based on the needs assessment there was a need to begin with career pathways that would lead to UCAT and other industry certifications. There are three pathways supported by this grant program: Engineering, IT, and Health Science. Inclusive and where available, students are encouraged to consider internships as a critical 'capstone' pathway experience. Limitations in the form of industry interest, availability, security, etc. tend to drive to opportunity for internship obtainability.*

Success Academy and Washington and Iron County School District with Southwest ATC, Dixie State, and SUU *–It has been challenging making connections to establish the computer science pathway. They have a CIW certification for web design that is nationally recognized. They have a 2 year Comptia certification program that includes A+, Lynx +, security, network technology for a total of 8 industry recognized certificates that are part of this Computer Information Technology Pathway. Students are able to take classes their senior year on the SUU campus to finish their general education requirements.*

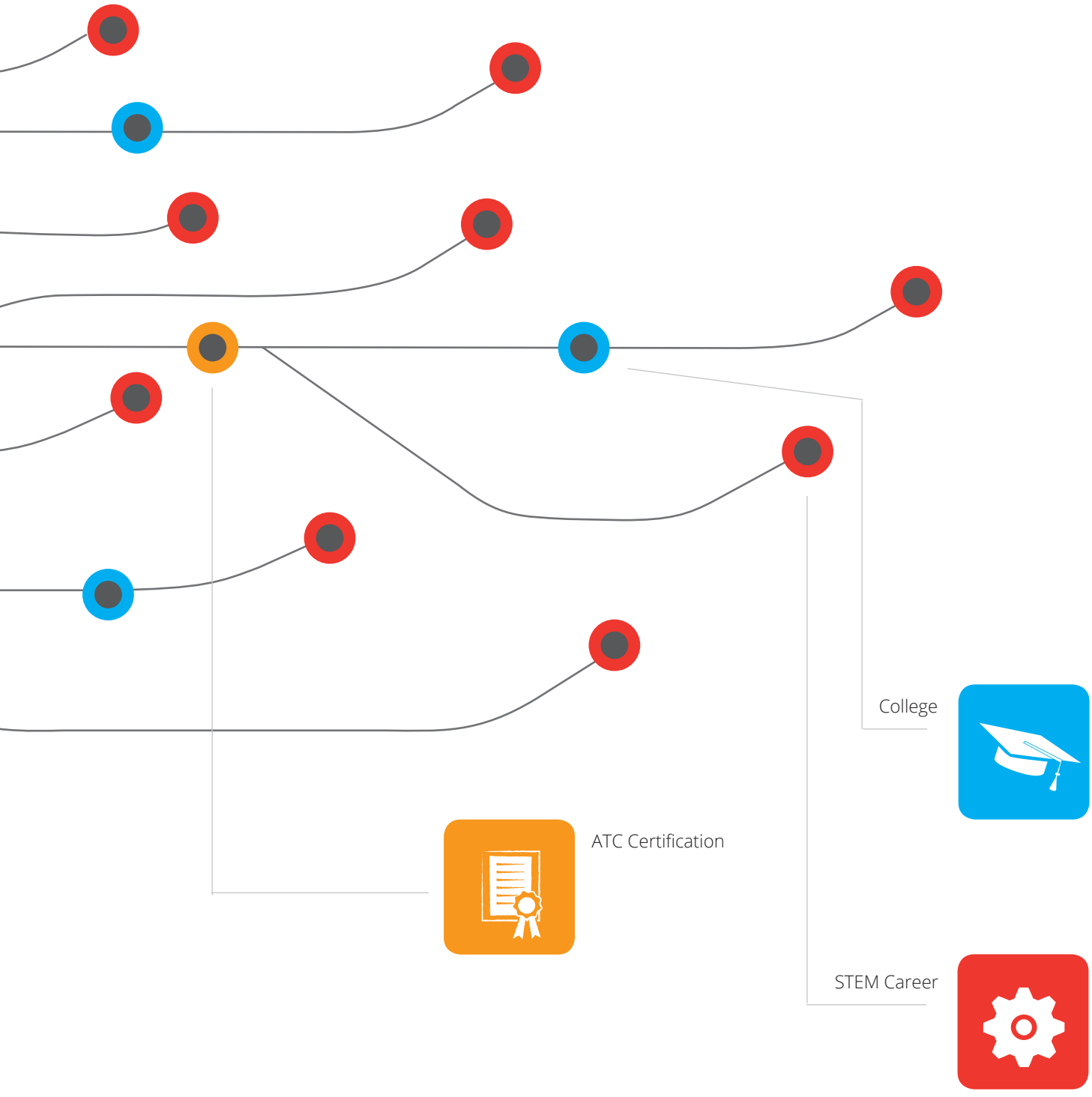
Nebo Advanced Learning Center *– The Nebo Advanced Learning Center is in its fourth year. Students from local high schools can go there for up to 8 periods. All of the courses offered are concurrent enrollment college courses. They realized there was a need to build the pipeline starting in the younger grades to recruit more students into engineering, healthcare, IT, CS. Every region has $50,000 for a pathway coordinator. The STEM Coordinator paid for by the STEM Action Center grant works with this pathway coordinator. The pathways are not in the student information system, but they are in the course guidebook for College and Career Readiness that Junior High and High School Counselors have to guide students and their parents.*



MORE THAN JUST TWO PATHWAYS



These are just a few of the many pathways being made available to today's high school students.

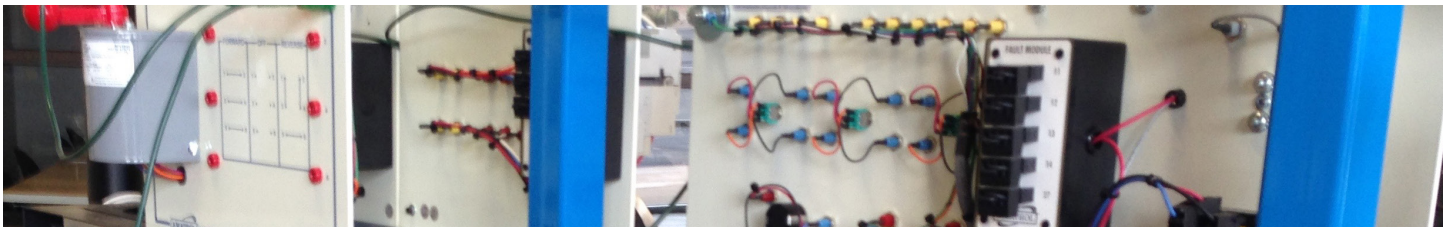


STUDENT INFORMATION SYSTEMS

Once pathways are in place with an outline of course options for students to complete to prepare for a particular career, how do students, their parents, counselors and teachers get that information to make sure the student maximizes their time in high school to complete the necessary coursework? Using the district student information system is one innovative approach Ogden district is using to share that information with all people working with a student towards their college and career goals.

SOAR Into STEM (Ogden and Ogden Weber ATC)- *The student information system (SIS) has pathways built in, connected to the related required courses. Once a student declares a pathway the counselor and the program leaders can pull reports and connect with students and parents about the pathways and courses in those pathways for IT, Welding, and Manufacturing.*

ARTICULATION TO ATC & COLLEGE



One challenge to having a successful high school industry certification program is collaborating with the local ATC or colleges around articulation. These post-secondary programs need to accept the credits for certification coursework completed at the high school in order for students to continue on to complete the full certification, which sometimes cannot happen until they reach the post-secondary institution. In some cases, students are able to begin taking courses at the ATC while in high school or complete dual enrollment courses at the high school that will count once they reach their local college or university. These relationships are vital to the success of these programs. Next we share a few examples of how grantees are collaborating with their local post-secondary institutions.

Tooele County School District and Tooele ATC- *This grant has made possible funding for part of a district person to be a liaison with the TATC to work on the articulation of the pathways. When a student completes 900 hours at TATC, it counts as 30 credits towards an Associates degree at USU. According to Tooele District leaders, 53% of seniors in the CTE program in high school are now in post secondary programs compared to only 48% of seniors not in the CTE program. Graduation rates, math scores and language scores are higher for CTE students, which the district believes is because relevancy is key, which CTE provides. Tooele County School District has an agreement with TATC, that while the district has a robust program for CTE, students can go to the TATC after school or in the summer to go quicker through the certification program. An important outcome of the articulation work is that whatever students complete in high school is waved at TATC During their high school years students do not have to pay tuition for TATC, but they have to pay fees.*

Success Academy and Washington and Iron County School District with Southwest ATC, Dixie State, and SUU – *Students in the pathway program at Success Academy are able to get college credit at Dixie State.*

Nebo Advanced Learning Center – *At the ALC all of the courses offered are concurrent enrollment college courses. Utah Valley University processes the course credits. Weber state has health care and engineering program articulation for credits completed at the ALC. The ALC students can get up to half of a year of their certification completed in Computer Science, Information Technology and Digital Media. Although there are 15 course articulation agreements, this has taken the time from the STEM Coordinator to work with Higher Education to make this happen. Students go to the Mountainland ATC for auto, dental, and medical, but those students usually do not go to the Advanced Learning Center since the focus is more on articulation to colleges (UVU or Weber). The Nebo district is working with MATC to have welding, manufacturing skill center. UVU is also creating a manufacturing pathway and will work on articulation with MATC and ALC. Currently MATC and Nebo have a strong partnership for welding. MATC instructors were judges at the district welding competition. District welding teachers work hand in hand with MATC teachers.*

AM STEM & Dixie ATC - *If students start the certification program as sophomore, they can do 3 years in high school and complete their capstone IT or digital media certification, and then they can articulate to Dixie State University with 30 transferable elective technical credits. They are not having issues with course articulations. They have a bachelor track in healthcare, billing, and coding with Dixie ATC.*

Davis and Morgan District *– The Davis/Morgan region have been thankful for this grant, because it has allowed them to provide grants for students to increase opportunities in STEM pathways/careers while bringing teacher skill and ability 'up to speed' and outfitting their facilities with current technology. The unforeseen benefit of the grant has also included the networking that has occurred between all levels and all organizations. Davis has increased strength with Morgan School District by their inclusion in the grant program. CTE, Math, and Science supervisors at the district level work hand-in-hand and not competitively to maximize utilization of time, resources, personnel, etc. The Davis and Morgan School Districts have enjoyed a strong relationship with the DATC in collaborating for the sake of students. More students are now registered for DATC STEM programs and certificates than ever before.*

SOAR Into STEM (Ogden and Ogden Weber ATC) *- 24 of the 32 pathway courses for Ogden's STEM pathways are Concurrent Enrollment through either WSU or the OWATC. Some of the I.T. courses are new this year so articulation agreements are still in the development process. All of these courses plus those that students can elect to take to get further industry certificates are offered at no cost while they are in high school. Students who complete the HS pathway requirements will also be eligible for scholarships from both post-secondary institutions in order to complete full industry certifications.*

INDUSTRY EXPERT TO TRAIN TEACHERS

One challenge of having a high school industry program is finding trained teachers with the latest industry skills. Many high schools are competing with industry for the same skilled people, but cannot pay the same salary. An alternative is to send current teachers to training or have an industry expert come to them to conduct a training. Leveraging the resources of trained experts working at the ATC or local colleges is another resource. Next we share a few strategies used by grantees to train their teachers.

SOAR Into STEM (Ogden and Ogden Weber ATC) *- OWATC will open up all of their courses for OSD teachers to come in and take in order to increase their skills in industry related to the courses that they teach. All OWATC instructors also carry significant industry experience.*

Cache Valley Districts and Bridgerland ATC – *The BATC instructor is a great resource according to teachers. BATC has spent a quarter million dollars in setting up the lab and high end training for this instructor. High School instructor training last summer for 2 weeks and this summer for 2 weeks is vital to transfer the knowledge from the BATC expert to these high school instructors.*

Nebo Alternative Learning Center –*Teachers in the district and at ALC lack the needed skills for manufacturing and IT. The district is discussing with IM Flash the option of offering distance classes for the district. US Synthetics has also connected with them about training some of their teachers, since what they focus on is a type of problem solver they need as an employee.*

TEACHER TRAINING FOR NEW INDUSTRY TOOLS, SKILLS & NEEDS

Teachers need to be trained in the skills that are needed by industry so that they can provide courses that will prepare the students. Grantees know this is important and below are a few examples of how they are preparing teachers.

Cache Valley Districts and Bridgerland ATC – *Just having the expert from BATC broadcast the course through UEN is not enough. If the UEN broadcast crashes, it is important to have a teacher live in class to support the students learning. The high school teacher also learns from this work with the BATC instructor.*

Davis and Morgan District - *Teachers did a variety of training where they learned about certificate programs. For example, one teacher who teaches Principles of Engineering has used grant money to get more kids interested. This teacher is a huge advocate for programs that will help you get a skill to make money to pay for college. The DATC course this teacher attended helped him learn more to share about certificates with his students and now even his son is in the process of picking a pathway. This teacher has an engineering background and shared how technical skills make a person more valuable. He recommends just a half day exposure for teachers in the future instead of the 3 days that he received. He explained how as a teacher you need to walk the DATC facility rather than just getting a list of programs. His repeated statement of, "I had no idea what was over at the ATC" cemented the need for focused PD coupled with accountability in instructional change and practice.*

SOAR Into STEM (Ogden and Ogden Weber ATC)- *ATK has committed to 2 teacher externships. Teachers have to apply and there is a coordinated selection process. Currently they are finalizing the pay requirements. For Engineering, with grant funds, they are sending 2 teachers to aerospace engineering training to bridge composites and engineering.*

Nebo Advanced Learning Center – *The STEM Coordinator has also created training for CTE teachers in areas where they report they have needs. For example, one training brought in business leaders to talk about the importance of coding. The STEM Coordinator also coordinated training from the Buck Institute on project based learning with grant funds for teachers at the ALC.*

Success Academy and Washington and Iron County School District with Southwest ATC, Dixie State, and SUU – *They have had a real challenge to find professors to teach the courses, which limits the growth of the program. It is hard to compete with industry for qualified people.*

SOAR Into STEM (Ogden and Ogden Weber ATC) - *Two of the industry partners, ATK and Petersen, have committed to offer a 6-week teacher externship training opportunity for 3 teachers. Teachers will work along Engineering and Manufacturing professionals at each of these facilities to gain real-world experience that they can bring into their classroom. They will document their experience and create lesson plans to define how they will work this experience into their classes. Grant funds will be used to pay teachers for their time working at these facilities. Other partners are looking into offering the same program at their sites.*

FUNDING FOR POSTSECONDARY TRAINING & CERTIFICATION

Some of the certifications require additional hours beyond high school, but this can be challenging for students who are not prepared for this financial burden. Several grantees shared opportunities for students to obtain scholarships or other funding to continue their certification after they graduate from high school.

Cache Valley Districts and Bridgerland ATC – *Seniors can have free tuition over the summer after their senior year at BATC. They also tell the seniors about BATC scholarships available and the application process. Many students are going on to USU. The AutoLiv internship provides tuition for BATC or USU. The 900 hour certificates qualify as the 1st year of 30 credits at USU for the AAS in General Technology, and USU is working on approval of a bachelors' degree in General Technology right now.*

SOAR Into STEM (Ogden and Ogden Weber ATC)- *They are working on, but not yet approved a plan for incentives. If a student completes a pathway they would get offered a presidential scholarship to complete the certificate program at the ATC. Also they are pursuing awarding the students a $500 scholarship for Weber St.*

Davis and Morgan District – *The districts included in their proposal a plan to offer $1,000 scholarships to support postsecondary costs of completing certifications. One scholarship winner will use her scholarship for $800 for DATC tuition, so she will not need to worry about tuition. She received the award after writing a 1-page paper on how the scholarship would help meet her goals for dental assisting. She will do an externship at DATC after completing her high school diploma. Another female student will use her scholarship to complete the DATC medical assisting certificate then continue on to UVU for general education. Finally she will complete an ultrasound program at Weber State. The DATC coordinating office pulls students in to recruit them for a scholarship. As students complete courses in their pathway in Davis district, they earn points that are accepted at Weber state. The Medical assisting program takes a year and a half and then they complete the externship. There is a bridge scholarship offered by DATC, but only for students already in the program.*

Nebo Advanced Learning Center - *Students after their senior year need to pay for any courses taken at the MATC unlike other areas in the state where the summer after their senior year is free. There is a CTE scholarship at MATC that students for which students may apply.*

Tooele County School District and Tooele ATC- *A real issue is that TATC has been open for 10 years and yet it still does not provide FAFSA for students to receive financial aid for tuition. They offer a $500 scholarship program students can apply for in addition to funding from family foundations. This is a limiting factor, and many students choose to go to Salt Lake Community College instead where they can get financial aid.*

AM STEM and Dixie ATC - *Dixie ATC provides bridge scholarships for their 1st year of tuition after they graduate from high school, which comes out of Dixie ATC funding.*

CERTIFICATE TESTING COSTS

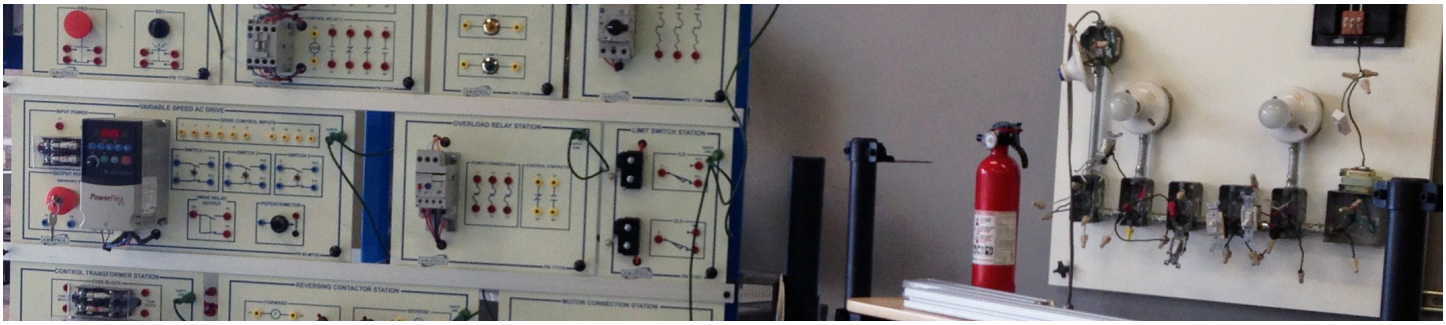
Some certificate programs can be completed through coursework, but others are not complete until an assessment is given. Many of these assessments are given by an outside vendor that charges a fee either per students or a rate for a number of students. This cost of certificate testing can be a burden to districts. The grant funds have been used by several districts to support the cost of these certificates which are vital to the certificate program.

Davis and Morgan District *– The Davis and Morgan district leaders wrote into the grant proposal money for a Certaport contract with Adobe because they need to continue with Adobe certification. Smaller districts like Morgan cannot afford to do the Certaport contract for Adobe certification. For sustainability this is an issue, because this is an ongoing need, and a cost of $90 per student.*

Tooele County School District and Tooele ATC- *One drawback of the A+ certification is the cost. Students get a 50% reimbursement once they pass and submit their certificate to the district. The district goal is to increase certifications by 30%. They purchased Test Out (less recognized as Comptia exams) and Cisco with the grant funds, but they are concerned long term with sustainability. The reason they do not use Comptia is that it does not have a Lynx certification test. Comptia is $90 per student. However, one negative about Test Out is that it does not articulate cleanly with TATC; however, more kids are testing through test out. There is a need for future funding for Test Out.*

Davis and Morgan District *– The Davis and Morgan district leaders wrote into the grant proposal money for a Certaport contract with Adobe because they need to continue with Adobe certification. Smaller districts like Morgan cannot afford to do the Certaport contract for Adobe certification. For sustainability this is an issue, because this is an ongoing need, and a cost of $90 per student.*

INTERNSHIPS



While providing an industry certification is important, it is also valuable to have internships available for students to gain on the job experience. There are many challenges and barriers to internships for students when they are under 18 years old. However, several of the grantees are finding ways to overcome these challenges and provide internship experiences for their students.

Cache Valley Districts and Bridgerland ATC - *AutoLiv Internship program for students provides a minimum of 16 hours and maximum of 29 hours at $15 per hour. The students receive tuition at BATC or USU. The current seniors in the program will need to finish over the summer. To qualify for the internship, the students must complete a 900 hour program. Students that complete Level 2 certificates , are ready for an internship, but not necessarily employable. Students must be 18 to start an internship.*

SOAR Into STEM (Ogden and Ogden Weber ATC)- *Hill Air Force base is working on an internship opportunity for students not yet 18. There will be 6 opportunities in composites with potential expansion to Computer Science and engineering. Students have to complete the pathway to do the internship. The Composites requirement courses are half of the required courses for the trade certificate through ATC, so if the students finish this portion it shows commitment and more than likely they will complete the trade certificate at OWATC. Introduction to Advanced Composites will be in high schools starting next year but this year students had to go to OWATC for the courses. Currently industry is not paying any of the internship costs, the district is. Hill Air Force base says after they finish the full certificate, they will pay the internship. Petersen Inc. has also agreed to offer an internship to one student in the engineering pathway. OSD is pursuing further internship opportunities with other industry partners.*

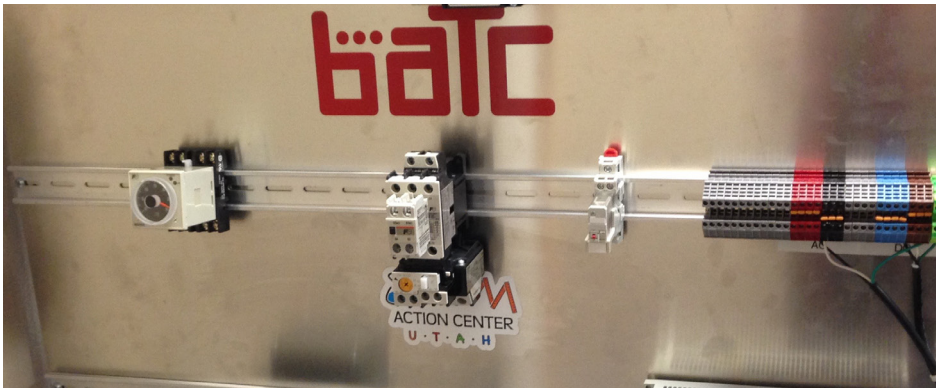
Success Academy and Washington and Iron County School District with Southwest ATC, Dixie State, and SUU – *Success Academy has spent grant funds on an internship coordinator who places students in the internships. While the students earn their Associates degree at Success Academy, they need job skills. The internship coordinator also develops relationships with the Southwest ATC, Dixie State, and Southern Utah University. There are more internship opportunities for students in St George. SynTec and G.O. Green have internship opportunities in Cedar City. So far only one student has engaged in an internship, since the program has just started. They also work with students on their resumes, hold mock interviews, and talk to students about how to behave in the workplace. Students worked on a commercial for Star Wars, and industry leaders were involved in voting for the winner.*

AM STEM at Dixie ATC – *An important part of the grant has been funding a placement coordinator. This provides internship opportunities for students. In the summer AM STEM Students have the opportunity to have paid internships. Students pay $1,000 fees for the program normally, but industry has stepped up and paid fees for many students and have provided internships. One of their students who had no pathway before AM STEM, took AM STEM and now works at a jewelry store doing wax models for thousand dollar rings. He programs the equipment and designs the rings. The student of the year at Dixie ATC is an AM STEM student. The instructors nominated him, and he received $1,000. He has been so strong Dixie ATC has hired him to help with their website and write curriculum.*

STEM Series (Launchpad with Success Academy and AM STEM Students)- *Grant funding is used to provide paid internships for student participants to intern with partner organizations. Internships are $2,000 and cover a 10 week paid internship. However, the technical requirements for the internship lend itself best to seniors or first year college students realistically.*

Nebo Advanced Learning Center *–The biggest struggle Nebo has had is with industry partnerships to provide internships for students. Every high school has a half time person who coordinates internships. They have had some success working with parents to place students with their companies. Health is the area where they have the most internship opportunities. However, it is somewhat of a challenge due to a requirement that students have shots, HIPPA, and some recent changes where Dr. offices no longer allow internships. They have had the most success with Mountain View Hospital. IM Flash has not been able to provide internships, but they do provide a field trip for students and teachers to visit their facility and also provide guest lectures to the high schools. They have worked with Launchpad and found internships for 13 of the 22 Launchpad slots. At the end of year Launchpad celebration, the industry partners were positive about the experience. They need to figure out a way to have local businesses provide internships so students don't have to drive to Provo.*

TRANSPORTATION

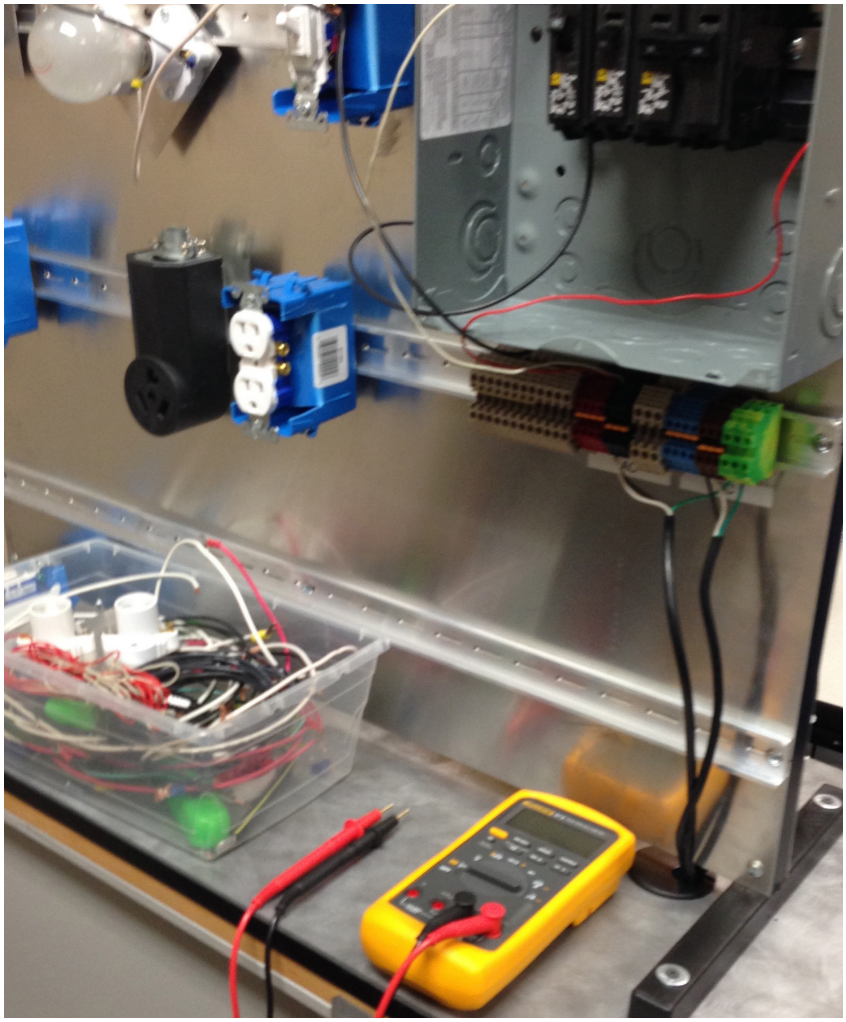


To complete the full certification program, often students need to travel to their local ATC or college campus. They may do this for part of their day during high school or after they graduate. Transportation is important to ensure that students have the opportunity to take advantage of these programs. Here is what is happening in two districts with transportation for students in the certification programs.

SOAR Into STEM (Ogden and Ogden Weber ATC)- *The ATC is conveniently located a 9 min drive max, and all students are provided transportation through a bus pass. The OWATC is also walking distance from Ben Lomand and Highland High Schools.*

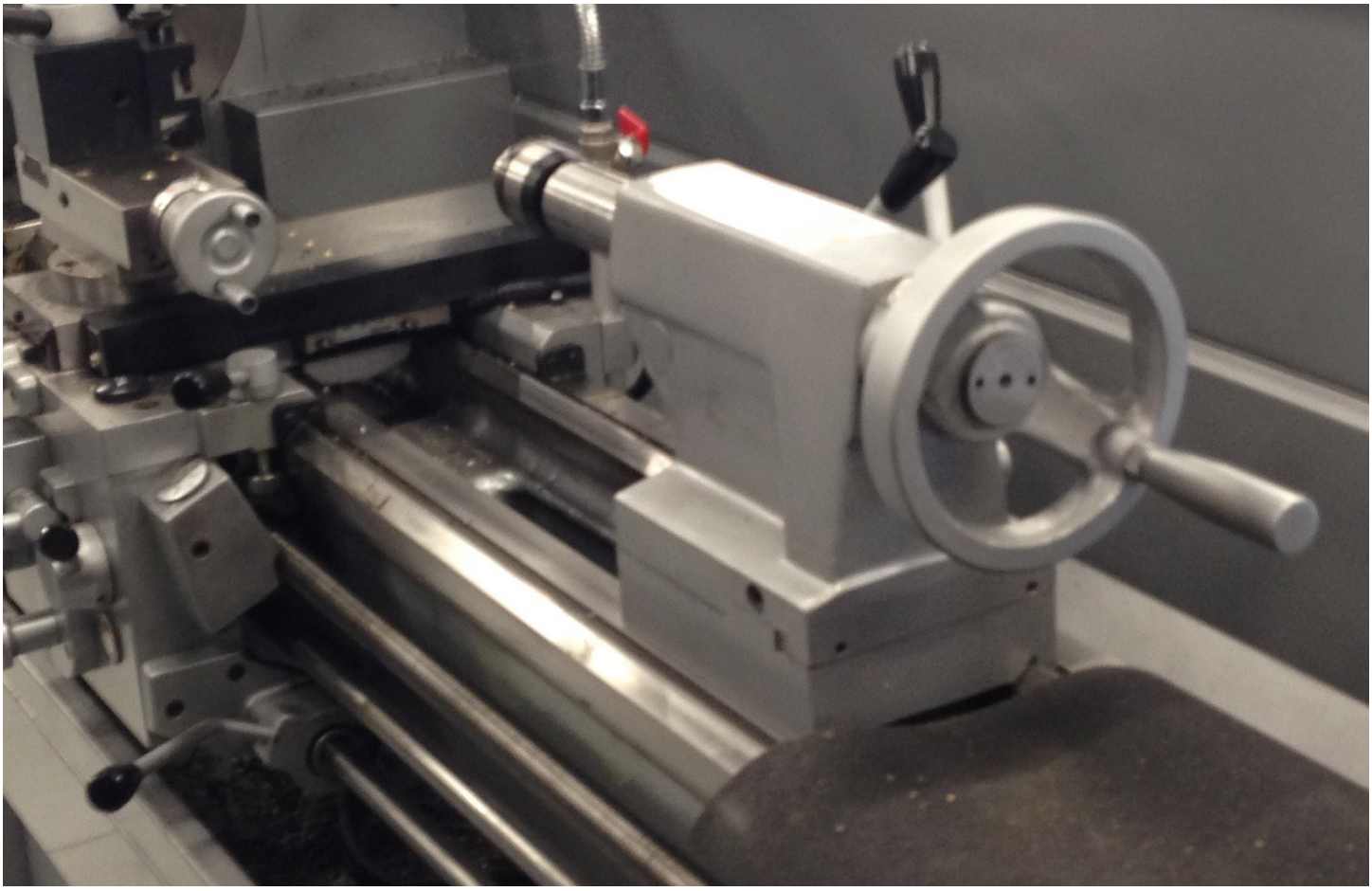
Davis and Morgan District *– The grant funded 50 students per high school and also for Morgan district to attend the district-sponsored STEM Expo (see http://www.stemexpoutah.org/ and http://kutv.com/archive/northern-utah-stem-career-and-college-expo).*

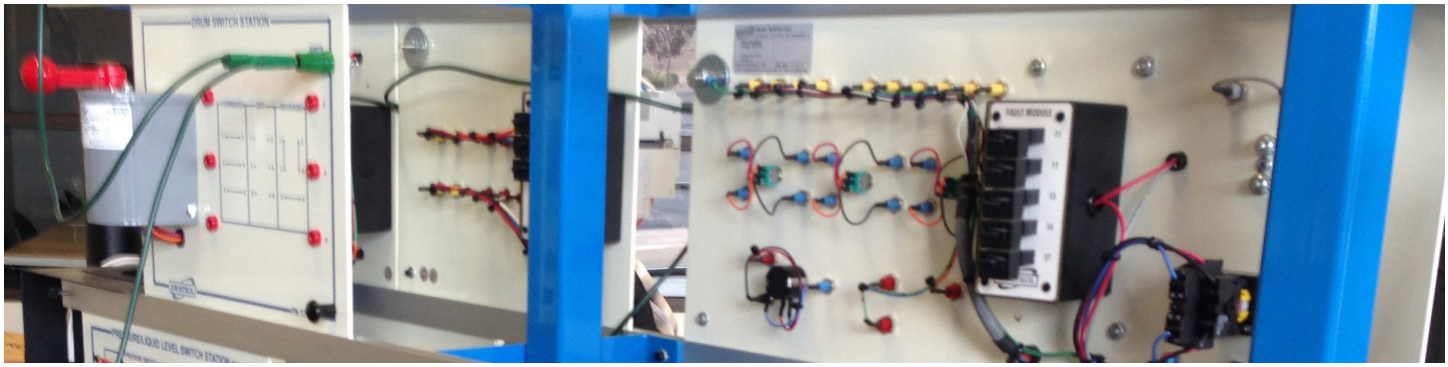
Nebo Advanced Learning Center– *The district provides busses from the high schools to the ALC and students can drive there on their own.*



SUSTAINABILITY

The STEM Action Center has been meeting with the grantees to engage in conversations about sustainability of these programs. For many the equipment is in place, the teachers are trained, and as long as students continue to select courses in the pathway there is sustainability. For others, more funding may be needed to continue to build the program, to train more teachers, and to support internship costs as well as certification testing costs. At the end of this grant program, there will be an opportunity to learn more about the ways each grantee is moving forward with a sustainability plan and also what other sources of funding and resources they have been able to access to sustain the program.





OUTCOMES

The main outcomes of interest for this grant program are the number of STEM industry certificates completed and the number of internships completed. Other valuable outcomes include enrollment in post-secondary education and employment; however, it may take another year or two to have data for those outcomes. We present the data available as of February 2016 for these outcomes and any other data the grantees have shared with us.

Grantee Partnership	*STEM Industry Certificates*	*Internships*	*Other Outcomes*
Cache Valley Districts and Bridgerland ATC (Data as of 2-1-2016)	• 118 students in progress towards Automated Manufacturing and Robotics Certificate	• 0 internships	• None submitted
SOAR into STEM Ogden and Ogden Weber ATC (Data as of 1/28/2016)	• 52 students in one or more STEM pathways. 44 of the students have completed one or more courses as part of the pathway	• 0 internships	• 18 students enrolled in concurrent enrollment courses
Davis and Morgan District and Davis ATC	• 802 students in the Media Design Pathway enrolled in a course where they can take an Adobe Industry Certification Test (Photoshop, Illustrator, InDesign, Premiere, Flash, and Dreamweaver) • Spring 2016 New enrollees in DATC Certification programs due to grant funding activities • 1 Chairside Dental Hygiene Assistant • 32 Composite Materials Technology • 2 Digital Media Design • 3 Emergency Services • 3 Information Technology • 19 Nurse Assistant	• No data submitted	• 50 scholarships awarded to students in STEM Certification programs
Success Academy and Washington and Iron County School District with Southwest ATC, Dixie State, and SUU (Data as of 12-6-2015)	• 15 Information Technology-AM STEM in progress • 14 A+ certificates completed • 11 Network + completed • 11 Security + completed and 6 in progress • 6 A+ CompTIA certificates completed 10 in progress • 1 CompTIA Network + completed, 4 in progress • 1 CompTIA Security + completed • 4 CompTIA Linux+ in progress • 6 MCSA Windows Server in progress	• 10 internships in progress • 1 student graduated and is interning with the city of St. George	

Grantee Partnership	*STEM Industry Certificates*	*Internships*	*Other Outcomes*
Summit Academy STEM IT (Data as of 1-28-2016)	• 16 STEM IT Certifications completed • 2 out of 16 passed TestOut PC ProA+Computer Repair • 67 IT certifications in progress	• 0 internships	• 1 senior going to college for mechanical engineering • 1 student in 9th grade may be accepting a summer IT job in California
Nebo Advanced Learning Center (Data as of 10-22-2015)	Students in Pathways • 103 Computer Programming • 46 Digital • 73 Health Science • 35 IT • 69 Pre-engineering (266 unique students, some are enrolled in more than one pathway)	• 0 internships	
STEM Series (Launchpad with Success Academy and AM STEM Students) (Data as of 2-1-2016)	• 73 Launchpad certificates completed • 17 Launchpad certificates in progress	• 31 internships completed spring 2015	
Southeast Consortium	• The program will not begin until fall of 2016. Standards and objectives for the three classes in the pathway are currently under development	• 0 internships	
AM STEM at Dixie ATC	• No data submitted	• No data submitted	
Granite District	• No data submitted	• No data submitted	
Tooele County School District and Tooele ATC	• No data submitted	• No data submitted	
Wasatch Front Consortium	• No data submitted	• No data submitted	

CONCLUSION

The goal of this preliminary report is to share the diversity of strategies districts are using to address the needs for high school STEM Industry Certification Programs. Hopefully some of the strategies being used by one district can inform the work of another. Also issues such as the challenges of funding the certification tests, transportation costs, and costs of completing the program at the ATC can be areas to consider for future funding. Grantees should share resources, such as teacher training materials and curriculum written for pathways and courses to sustain these programs statewide. There is also a role for industry to support these programs by providing internships, being available to train teachers and counselors about career options in their field. There are great things going on in the state around STEM industry certification supported by this grant program that people should take interest in, visit, and learn more about.

For questions contact Sarah Brasiel
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February 2016

February 2016

Date	Organization	Event	Est. Reach	Amount request	Amount	Amount	Description	Benefits to AC	STEM Mission Connection
8/29/2015	Self ESTEAM	Self ESTEAM	70	$1,049.94	$1,049.94	50	The SELF-ESTEAM organization was established to help increase the number of women and minorities that go into STEAM fields. The SELF-ESTEAM conference will reach out to students and help them build their self-confidence while preparing them for academic and professional success. The event will take place on August 15, from 7:30 a.m. to 5 p.m. Location to be determined.	The STEM Action Center will be featured on the SELF-ESTEAM website, all social media platforms, in the conference program books, on the banners, student conference tote bags, all conference advertisement materials (digital and print). In addition the STEM Action Center will be mentioned in all official press releases.	This event introduces students to local STEAM community leaders, academia professionals and industry representatives. These leaders, professionals and representatives will have the opportunity to be a part of this conference by presenting session modules and discussing what their company/organization does in terms of STEAM. The target audience for this event is junior high and high school minority girls. This is an all day event that will take place quarterly.
09/24-25/2015	USU STE2M Center	Making Innovation Conference	200	$2,000	$2,000	350	The Utah State University STE²M Center is organizing Utah's first Making Innovation Conference. The mission of the Making Innovation Conference is to gather local and national researchers, educators, policy makers, designers, and makers to present, share, and discuss innovative maker activities and related research that promotes STEM learning. The STEM Action Center has been invited to attend, exhibit and to submit a proposal for presentation.	The Utah State University STE²M Center is organizing Utah's first Making Innovation Conference. The mission of the Making Innovation Conference is to gather local and national researchers, educators, policy makers, designers, and makers to present, share, and discuss innovative maker activities and related research that promotes STEM learning. The STEM Action Center has been invited to attend, exhibit and to submit a proposal for presentation.	Researchers and advanced practitioners will provide sessions about teaching and learning with STEM through Making. Roundtable breakout sessions will stimulate discussion and collaboration between academics, teachers/schools/districts, and policymakers from around the state who might help to support the movement and integration into traditional schooling venues.
10/28/2015	SLCSE	STEM Fun Run	300	$870	$870		This is a fundraising/community building event for the Rose Park community on October 10 from 8 a.m. to 12 p.m. SLCSE is a Title I charter school within the Salt Lake School District. The money raised from this Fun Run will go to provide needed supplies within our science and math classes and scholarships for our seniors. They struggle with getting their large Hispanic community involved with their school events, so we are hoping to provide a great family outing and have contacted area STEM supporters such as Thanksgiving Point, The Leonardo, Red Butte Gardens, and Utah Museum of Natural History.	They would use the STEM Center logo to show support on banners, flyers, signage, website,etc. They hope to make this an annual event and expect 150-250 participants this first year.	They would use the STEM Center logo to show support on banners, flyers, signage, website,etc. They hope to make this an annual event and expect 150-250 participants this first year.
11/5/2015	Bio Utah	Bio Utah Summit	300	$1,500	$1,500	400	BioUtah hosts the Utah Life Science Summit at which they have an awards ceremony luncheon for those dedicated to the life sciences industry on November 5, 2015. High school students are recognized at this event for their efforts in STEM related subjects, along with individuals in the community who have excelled in promoting life sciences through service and other contributions.	• BioUtah reserves two tables for STEM students and awards finalists. • Verbal recognition of the STEM Action Center at the event • STEM Action Center welcomed to share promotional materials at the event	This is an opportunity to encourage life science individuals to think about how they can impact STEM education and to take advantage of and participate in STEM related opportunities and education.
11/9/2015	Davis Education Foundation	Northern Utah STEM College and Career Exposition	5000	$5,000	$5,000	4000	The Davis, Weber, Ogden and Morgan school districts will host the Northern Utah STEM College and Career Exposition on November 9, 2015 at the Davis Conference Center in Layton, Utah. Our event is divided into two sessions; a high school session and a community STEM Family Night. We anticipate 800 high school students, teachers, administrators, and counselors will participate from the school districts during our high school session.. A Family STEM Exposition will run from 5:00 – 9:00 PM and will be open to parents, junior high students and elementary students of Davis, Weber, Morgan and Ogden school districts. We anticipate more than 6,000 to be in attendance.	• Name and company logo on all print materials (registration, news, flyers, posters etc.) • Name and company logo on event banners. (See last year example) • Name and company log on all electronic signage at the Davis Conference Center. • Verbal recognition at the event and all media coverage. • Name and company logo on student event materials (bags, notebooks, name tags) • Prime booth location in the EXPO Hall • The invitation to provide a specialty workshops (repeated six times) for the students. • Name and logo on all four school district's (Foundation) websites. • Invitation for membership on the planning event committee	The event is specifically promoting science, technology, engineering and mathematics through best practices, by directly engaging students with industry.
11/13/2015	Utah School Counselor Association (USCA)	Utah School Counselor Association (USCA) Conference	500	$1,500	$1,500		The Utah School Counselor Association (USCA) is holding their annual conference. The event will take place on November 13, 2015, from 7:00 a.m. to 5 p.m. at Utah Valley Convention Center.	The STEM Action Center will have a half page ad in their on-site conference program booklet, a half-page ad in the USCA Magazine, a link on the USCA Conference website and a listing on the Silver Sponsor sign in the registration area. We will also be provided with exhibitor space at the event.	This event is an opportunity to talk with counselors about STEM opportunities in the State of Utah. It's an opportunity to give student counselors resources that they can use to help students with career choices in STEM.
11/13/2015	Boys and Girls Club	Northern Utah STEM Fair	2,000	$5,000	$2,500	3754	The Boys & Girls Club of Northern Utah, with the support of many of the businesses in Northern Utah have to together a STEM Fair on November 13 from 9:30 a.m. to 6:00 p.m. for our students and families. The goal of this event is to educate kids and families the many local careers and job opportunities available in STEM and the existing educational and training paths available and accessible.	The STEM Action Center's logo will be added to the posters and to the promotional materials handed out at the event. They will be setting up on-line promotions and communication before the event with a huge boost during the event with the STEM Action Center's logo and information included. A booth will be available with premium positioning. They will also add to the event systems that ensure ALL students and families visit the STEM Action Center's booth.	This event will expose attendees to STEM, research and practical implications. Connect that exposure to existing STEM related careers and jobs and then to the education and training opportunities available to attain those jobs. Workforce alignment is the main purpose of this event
12/5/2015	Eagle Mountain City	Youth Tech Jam	300-500	$1,000	$1,000	475	Eagle Mountain City is planning the 1st Annual EMCity Tech Jam for all kids and youth (ages 9-18) in Eagle Mountain City and surrounding areas on Saturday, December 5' 2015, from 1 p.m. to 5 p.m. At this event, they have partnered with local developers to teach the participants how to code and develop their first App and Video Game. Each kid will be required to bring their own laptop to follow along and code. They expect 300-500 kids at this event.	The marketing material will contain STEM Action Center logos. STEM Action center will have a complimentary booth. STEM Action Center will also be put on the event agenda to speak to parents and students.	This event will teach youth between the ages of 9 and 18 years to develop both an App and Video Game. Their goal for this event is to attract new coders to the programming world and inspire more kids to pursue coding. It will also be an opportunity to educate parents about the opportunities and economic prosperity in coding.
12/5/2015	Kidnected	Adobe Coding Event	300+	$2,500	$2,500	500	250 under-served students are attending for a full day of activities, discovery and inspiration! Classes / Projects for : Graphic Design, Web Design, Game Design, Robotics, Digital Publishing, and Code.org; a maker space with 3D printers, CNC Mills, an Egg-bot, A WaterColor-bot, 10 different other kinds or robots, and much much more; a Creative space using all the Adobe creative tools to create artwork and express your voice; A conference, with teachers / celebrities and activities (including a world record attempt for the largest virtual village!); Industry, News & Media, and non-profit organizations will all be on hand. This will be a high profile event, generating a lot of excitement. All funding will go directly to the benefit of the kids, through travel, food/refreshments, and swag/prizes.	? Website logo, booth availability (maker space) and T-shirts/banners with logo	Sparked by Computer Science Education week, the first annual I Heart Tech conference is specifically dedicated to STEAM (STEM + Arts) education. All classes, projects and activities will focus on STEM-related skills, and discovery of opportunities for kids. This is especially true, because the event is targeting under-served populations (refugees, the economically disadvantaged, and girls). This event is also a "pilot" for future events, and the prototype for the sponsorship and promotion of maker spaces in schools.
1/13/2016	GOED/USTAR	Governor's Science Medals	300	$500	$500	240	The Governor's Medal award program was initiated in 1987 to recognize those who have provided distinguished service or made significant career achievements that have benefited the State of Utah in the areas of science and technology. This year's event will be held on January 13.	Sponsors will be featured on video screens before and during the event. Also listed on the program and literature. Sponsor will be given a table at this event. Sponsor is welcomed to have promotional material on lobby table.	The Governor awards medals to science and technology leaders who have improved the lives of people in the state and nation through their research and/or years of service. This includes academia and science education and those striving to educate the science leaders on future generations.
1/21/2016	Utah Technology Council	UTC Legislative Meet & Greet	100	$500	$500	1400	Tech industry members and legislators have the opportunity to interact with each other at the Utah Technology Council's Legislative Meet and Greet at the Capitol Building on January 21, 2016.	The Utah STEM Action Center will have a 10X10 space to present to industry on the significance of STEM in Utah.	This is an opportunity to show legislators and other industry members how the STEM Action Center is promoting science, technology, engineering and mathematics through best practices in education to ensure connection with industry and Utah's long-term economic prosperity.
2/1/2016	Horace Mann Elmentary School	Science Fair and STEM Night	300	$50	$50	325	School's first-ever Science Fair & STEM Night. On February 4th, 2016. Their 5th and 6th grade students have prepared science fair projects to present to a panel of judges. At their event, the entire student body and their families will have the opportunity to view projects, as well as see demonstrations by our First Lego League teams.	STEM Action Center will be promoted through posters, programs and school marquee. All promotional materials will also show the STEM Action Center logo. Individual classroom presentations the week of the event will also mention the STEM Action Center.	Their target audience and goal of this event is to promote a love and genuine interest of all aspects of the STEM organization. Their school is firmly rooted in continuing these organizations and promoting further interest in all STEM-related fields for years to come. With this STEM night, they will highlight, celebrate and promote all aspects of STEM and instill a love of learning into all students who attend Horace Mann Elementary.
2/2/2016	STEM Fest	STEM Fest	21,000	$15,000	$15,000	20000	For four full days, March 25 - 28, 2015, at the UCCU Center on UVU campus in Orem – students and families can immerse themselves in a free festival that's been uniquely designed to spark children's imagination through science and technology.	Benefits include: • 20 x 50 Booth • Be included on all printed materials • Giant Ceiling Banner • Billboard Event Advertising • Broadcast Event Advertising • Social Media Campaign • Festival Entitlement • Included on Website	This free event engages over 20,000 students with science, technology, engineering and math through hands-on STEM activities.
2/2/2016	Craft Lake City	Craft Lake City	20,000	$1,500	$1,500	20000	As the only multi-day annual arts festival in Salt Lake City that is free to the public and the only arts festival that exclusively features Utah-only artists, the Craft Lake City DIY Festival seeks to broaden the term "craft" to encompass all things handmade. The event will take place August 12 (5 p.m. - 10 p.m.) & August 13 (12 p.m. -10 p.m.) at the Gallivan Center.	Benefits include: 4 onsite benefits, 4 pre-event exposure opportunities and 6 post-event exposure opportunities, including: Line listing on the Back Page of the Craft Lake City DIY; Festival Program; Two (2) tickets to Craft Lake City's DIY Festival VIP Patio; Logo and link archived on CraftLakeCity.com 2016 Sponsor and an exhibitor booth.	Benefits include: 4 onsite benefits, 4 pre-event exposure opportunities and 6 post-event exposure opportunities, including: Line listing on the Back Page of the Craft Lake City DIY; Festival Program; Two (2) tickets to Craft Lake City's DIY Festival VIP Patio; Logo and link archived on CraftLakeCity.com 2016 Sponsor and an exhibitor booth.
2/5/2016	Utah Science Teachers Association	Utah Science Teachers Association Conference	700	$150			School's first-ever Science Fair & STEM Night. On February 4th, 2016. Their 5th and 6th grade students have prepared science fair projects to present to a panel of judges. At their event, the entire student body and their families will have the opportunity to view projects, as well as see demonstrations by our First Lego League teams.	STEM Action Center will be promoted through posters, programs and school marquee. All promotional materials will also show the STEM Action Center logo. Individual classroom presentations the week of the event will also mention the STEM Action Center.	Their target audience and goal of this event is to promote a love and genuine interest of all aspects of the STEM organization. Their school is firmly rooted in continuing these organizations and promoting further interest in all STEM-related fields for years to come. With this STEM night, they will highlight, celebrate and promote all aspects of STEM and instill a love of learning into all students who attend Horace Mann Elementary.
2/13/2016	SUU STEM Center	Southern Utah STEM Fest	3,000	$5,444	$5,000	2200	The Southern Utah University Center for STEM Teaching and Learning, the Orchestra of Southern Utah, Cedar City Library in the Park, Iron County School District and Southern Utah Sustainable Operations Partnership are collaborating to plan a two-day STEAM festival in early 2016. We are inviting STEM and art organizations and businesses, from across the state, to set up booths in the Heritage Center conference center for two days of hands-on learning.	The Utah STEM Action Center will have a booth during the event. Additionally, the STEM Action Center logo would be used on all promotional materials including posters, websites, and press releases.	Our event will be very similar to other STEM festival-type events held throughout the state, the interactive nature of this event will undoubtedly promote long-term interest in the STEM disciplines. Additionally, the SUU Center for STEM Teaching and Learning has a whole cadre of programming that we facilitate for these same schools. The STEAM Festival would just be one more piece of a whole array of professional development, student engagement, and college and career readiness options provided by the center.
3/11/2016	UVU & Women's Tech Council	SheTech	900	$5,000	$5,000	1000	SheTech Explorer Day is a conference for high school girls 9th through 12th grade. They expect over 1,000 girls to attend this event. Students will interact with different companies that have technology at their core and see if it is a right fit for them. This day-long event will include hands-on activities in science, technology, engineering and math (STEM).	• STEM Action Center presence on all marketing collateral, website and apparel • Booth to showcase STEM Information	This event directly engages female students with science, technology, engineering and math subjects through hands-on STEM activities.
3/13/2016	Girl Scouts	Stand Beside Her Mentor Luncheon	300	$2,500	$2,500	328	More than 300 business, civic, and community leaders will come together to celebrate female leadership and honor individuals and corporations who are making positive changes in our communities. The luncheon will feature 2016 Stand Beside Her Champions: accomplished women who are making a difference in their communities—including women in STEM fields. The afternoon also celebrates their Emerging Leaders and each table host pins these outstanding Girl Scouts.	Our logo/name on luncheon collateral; 1 Emerging Leader Mentor; 1 Table at event; we will be highlighted in Girl Scouts of Utah publications; our logo on their website with their Community Partners	Our logo/name on luncheon collateral; 1 Emerging Leader Mentor; 1 Table at event; we will be highlighted in Girl Scouts of Utah publications; our logo on their website with their Community Partners
3/16/2016	Moutainland Code Camp	Moutainland Code Camp	50	$1,500	$1,500	100	Code Camp is a programming, design and entrepreneurship 24-hour contest event. Teams ranging in size from two to four participants compete against other teams to build the best web or mobile app. Code Camp is for High School students interested in, aspiring to become or just exploring programming and design throughout the Mountainland region (Summit, Wasatch, and Utah County). Industry mentors will work with participants throughout the event to discuss app ideas, give insight and share strategies.	Code Camp is a programming, design and entrepreneurship 24-hour contest event. Teams ranging in size from two to four participants compete against other teams to build the best web or mobile app. Code Camp is for High School students interested in, aspiring to become or just exploring programming and design throughout the Mountainland region (Summit, Wasatch, and Utah County). Industry mentors will work with participants throughout the event to discuss app ideas, give insight and share strategies.	The Utah Department of Workforce services recently rated Computer Programmers as a high wage high demand five star occupation. With a greater demand for a skilled workforce, the region recognizes the need to cultivate knowledgeable employees and recognize our responsibility to educate our students on high wage, high demand occupations; this event is an opportunity to excite students about Coding and potentially affect their career decisions.
3/21/2016	Bridgerland Applied Technology College (BATC)	BATC Career Days	2,000	$500	$500	4000	Career Days is designed to expose youth in the Bear River region to a comprehensive-hands-on experience with STEM/technology careers. The event includes interactive acclivities, competitions and demonstration highlighting technology education and STEM career options. The two-day event, May 4-5, is now in its' 9th year and has introduced over 28,000 middle and high school students to STEM/technology related careers.	BATC will include our logo on all printed- promotional materials as well as a website link and presence, along with the opportunity to exhibit.	BATC Career Days is usually the first introduction to students in the Bear River region to considering and pursuing educational options that are STEM based. This includes stimulating and encouraging students to pursue classes, clubs and activities that provide skills in the STEM careers. With the participation of local businesses, our attendees make the association between technology and the skills required in the workforce.
4/13/2016	Utah Association of Public Charter Schools	Utah Association of Public Charter Schools Conference	500	$1,500	$1,500	604	As Utah's largest gathering of charter school leaders and educators; we are excited to once again come together on June 13-14th at the Davis County Convention Center and put into reality the above sentiment by cultural anthropologist, Margaret Mead as they celebrate the innovative efforts of dedicated teachers, administrators and board members across the state in providing educational opportunities for the 60,000+ students in Utah who attend public charter schools.	The STEM Action Center will have a booth, promotion on t-shirts and the opportunity to network during meals and work on future collaborations with the Charter Schools to increase STEM awareness.	The STEM Action Center will have a booth, promotion on t-shirts and the opportunity to network during meals and work on future collaborations with the Charter Schools to increase STEM awareness.
4/15/2016	Jordan Applied Technology Center	JATC and SLCC Biotechnology Symposium	150	$2,500	$2,500	150	Biotechnology students from Jordan and Canyon's School Districts and from the Salt Lake Community College participate in inquiry based hands on independent projects in state of the art biotechnology facilities. These projects will be displayed and presented in poster format in the Health Sciences Building at the Salt Lake Community College Health Sciences Building. On May 20, students will describe their research to academic and industry professionals that will judge the posters in a number of categories. They invited local biotech companies and gave them the opportunity to set up tables to share information to help students.	Approximately 40-50 students will participate and will be judged by 12-15 professionals in the biotechnology community. They advertised this event three weeks before the event and acknowledge the STEM Action Center. They also acknowledged the STEM Action Center as a contributor in all their advertisements.	Approximately 40-50 students will participate and will be judged by 12-15 professionals in the biotechnology community. They advertised this event three weeks before the event and acknowledge the STEM Action Center. They also acknowledged the STEM Action Center as a contributor in all their advertisements.
4/18/2016	Windridge Elementary School	Super Science and Math Night	300	$500	$500	500	The First Annual Super Science and Math Night will be a free event where Windridge students and their families can explore different areas of science, technology, engineering and math. They will invite area business, teachers and special guests to provide an evening of fun-filled activities and presentations centered around STEM concepts for Windridge Elementary Students and their families. The purpose of this event is to provide fun and engaging ways to present STEM concepts outside of the classroom environment.	Prominent position of STEM Action Center logo on signage/programs/promotional materials: Option to bring your own sign (however large you'd like) to display at event, or one can be provided for you; feature in School Newsletter; feature on School Marquis; booth at Event with opportunity to distribute materials and host an activity; opportunity to address guests at beginning and/or close of event; mention in any press release or media.	Super Science and Math Night will showcase STEM concepts in a fun and exciting way, going beyond classroom learning to illustrate real-life applications. The goal of the event is for every child to leave feeling like they could make scientific discoveries, engineer a rocket, or create cutting edge technology.
5/7/2016	Beehive Science and Engineering Academy	STEM Expo	4,000	$6,000	$2,500	4000	Utah STEM Expo has been put together with the attendance of students in 6th through 12th grade with their projects and demonstrations. There will be projects from science, math, engineering and computer science performed by students from Beehive and other schools. The event will take place April 25.	Utah STEM Action Center will be highlighted as the sponsor and supporter of the event in all promotional materials and communications and news. There will be tables assigned to STEM Action Center for set up and promote itself during the event. After the event STEM Action Center will be provided with videos and pictures and again will be highlighted in media and communications.	STEM focused programs are increasingly recognized as playing a valuable role in improving science, technology, engineering and mathematics (STEM) education. Utah STEM Expo is designed to increase active engagement and focus in STEM learning activities, pursuit of in-school STEM learning opportunities, active inquiries into STEM topics, concepts or practices, active information-seeking about mechanical or natural phenomena or objects. In addition, demonstration of STEM knowledge, skills, understanding of STEM method of investigation, mastery of technologies and tools that can assist in STEM investigations, ability to work in teams to conduct STEM investigations, and applied problem-solving abilities to conduct STEM investigations.
5/11/2016	Stoel Rives	STEM Innovation Awards	350	$7,500	$7,500	450	The 14th annual Utah Innovation Awards, presented by Stoel Rives LLP and the Utah Technology Council, recognizes significant innovations and the Utah companies that created them. STEM Action Center will join their awards event, where we will present this year's STEM Innovation Awards. Created by the STEM Action Center, the Utah STEM Innovation Awards (STEMi Awards) are designed to recognize and reward individuals who excel in and contribute to STEM learning and achievement. Principals, teachers, parents, students, school counselors, and mentors may nominate someone for a STEMi. The event will occur May 11 from noon to 2 p.m.	UTC and Stoel Rives have agreed to let the STEM Action Center's STEM Innovation Awards be a part of the Utah Innovation Awards. They will be putting our logo on their printed materials, as well as having an ad from the STEM Action Center in the program. They're also creating the trophies for the awards.	As part of our role to promote STEM through best practices; the STEM Action Center has been tasked to award those that are excelling in STEM. UTC's Innovation Awards coincides well with what the STEM Action Center hopes to achieve by this event because they are promoting innovation as well in the STEM fields.
			62320	Total:	$64,470				
				FY2016 Budge	$75,000				

Targeted Areas
Application Process

Oversight & Communication
Unused Licenses

Observations --Year 1 (2014-2015)

(1) Buy in: The application process was created as a "district" application. District math coordinators were asked to submit a district-wide application based on the need for schools in their district. Feedback from LEAs indicated that they wanted the district math coordinator to be the point of contact. However, the Center determined that the lack of buy in from school principals was problematic and resulted in having a negative impact on awareness and ultimately usage. **(2) Lengthiness of application process**: The STEM AC strives to find a balance between local control and choice and effective process. The process includes an Request for Proposals (RFP) for products, a rigorous review, contract negotiations and the final selection of the products. This is followed by state wide "road shows" that allow district representatives to review the various products. Finally, applications are submitted from districts for license requests. The licenses are distributed and the product providers are responsible for training educators on the use of the licenses. This was the first year of a state wide implementation and required a considerable amount of time. Thus, usage did not begin until November 2014 and for a majority of schools usage it really ramped up in February 2015, after they attended training and determined the appropriate implementation plan. It took longer than expected for some product providers to finalize their contract with the STEM AC, due to a back and forth process of discussing language in the contract until it was acceptable.

The STEM Action Center worked primarily with the district math coordinators to communicate requirements of the grant. This is related to the buy in issue described in the previous section.
The STEM Action Center relied on district applications to determine how many licenses were needed. This reflects the STEM AC's commitment to respecting local control and choice. Once the applications were received, the STEM AC determined how many licenses could be funded for the first year of the project. Several issues arose for year 1: (1) Over-Requesting: Districts over-requested real need. It is difficult to tell a district that they are over-requesting and at some level we must trust their judgment. It is not easy to determine the reason behind this phenomenon, but it was real and widespread across many districts. (2) Lengthiness of the process: This has been discussed in previous sections and impacted implementation during Year 1.

Observations - - Year 2 (2015-2016)
(1) Application Detail: As we met with teachers and administrators in Year 2, it became clear that usage expectations and other grant expectations needed to be communicated more clearly in the application. **(2) Oversight:** In Year 2, we also learned that teachers and administrators did not always know exactly who to contact to receive support or get their questions answered.

The STEM AC notifies district math coordinators and ALL principals and teacher contacts regarding requirements of the grant. It became clear that greater oversight by the STEM AC was necessary in order to ensure that effective communication could support successful implementation.
The over-request for licenses was mitigated and for Year 2 the unused license issue had less to due with over-requested licenses and was concentrated on general adoption issues. Preliminary data from product providers indicates that overall usage and adoption rates (at fidelity) increased significantly in Year 2. An additional observation was made based upon educator feedback. Educators indicated that it would useful to them to see how other educators, that had higher level of success with adoption and outcomes, were integrating the learning tools into their every day instruction.

Operational changes	Potential process or contractual changes
Changes for Year 2 (Based upon Year 1 observations): **(1) Buy in:** The application was again a "district" application but required school principals to sign a letter of commitment to ensure students have access to technology for at least 45 minutes per week to use the software in the second year of the grant program. District math coordinators submitted the applications with all letters of commitment attached to the application. We also required the LEA IT Director's signature to ensure they were made aware of the licenses being provided to the school and to hold them accountable for access to devices for Year 2 implementation. **(2) Length of Application Process**: The fact that the products were all the same for Year 2 it resulted in a shorter time to implementation. **Changes for Year 3 (based upon Year 2 observations):** To mitigate some of the challenges teachers had in Year 2, the Year 3 applications included more detail regarding all grant expectations, and a link to a concise list detailing all grant requirements was emailed to all participants. Participants also received a list providing contact information for representatives from each product provider, and the contact information of an employee at the STEM Action Center. In addition, emails were sent out to all participants early in October to ensure everyone was receiving the support they needed.	If the STEM Action Center were to enter into a lengthy contract for a software product it could preclude a district or school from the opportunity to integrate new and or improved products. One recommendation is to pursue a three year R&D cycle where products are selected, with district involvement, through an RFP process. The products would be piloted at small scale while being evaluated for the first year, and then scaled up for two years of implementation to understand impact. In addition, few students will want to use the same program for multiple years, because they may get tired of the interface or other design features (possible "product fatigue"). Therefore, we could use an approach that allows local decision-making and the option of different product selection for different grades, every few years, to maximize the benefit from education technology.

Changes in year 2 (based upon Year 1 observations): The application required an "on-site" contact for every school so that the STEM AC and product provider could work directly with the principals regarding professional development and license distribution. Product providers put forth extra effort to ensure training on the product was scheduled during the summer months so that teachers were ready to utilize the products on day 1 of the school year. **Changes in Year 3 (based upon Year 2 observations):** The STEM AC team is spending more time in direct communication with educators and principals to identify additional professional learning support that can be provided. One action that will be taken, based upon educator input, is to create a library of videos that highlight best practices for the integration of the digital learning tools into every day instruction. The STEM AC has identified a few videos already that are specific to a product, STMath. We are working with STMath to determine if they have any useful qualitative data that help guide as we scale this to all products.	One of the issues noted by teachers in their end of year survey (from both years) was the lack of access to computers as the largest constraint to implementation. This was a direct result and the reason why we required the principal to commit and ensure students have access to technology for at least 45 minutes. This is also why we required the IT Director's signature to ensure they were aware of the principal's commitment. We cannot use STEM AC funds for the purchase of devices but we are working with industry partners to secure funding for computers or donations of high quality machines.
Changes in Year 2 (based upon Year 1 observations): Licenses were ONLY provided to schools who USED products in year 1 of the grant. If a school had ZERO usage, they weren't allowed licenses for year 2. Unfortunately, limited funding didn't allow for new schools to be added to the project. **Changes in Year 3 (based upon Year 2 observations):** Again, the STEM AC was faced with the inability to fulfill all licenses requests from LEAs. We were able to increase the total number of licenses by negotiating credits from product providers for unused licenses in Year 2. However, this still did not allow the Center to meet 100% of the requests. The STEM AC prioritized requests for licenses to those schools that had usage from Year 2. The STEM AC received $3M in ongoing funding for the math project. This has allowed the Center to have more directed conversations with LEAs about long-term sustainability. The STEM AC believes that usage, or adoption, with continue to increase with the implementation of videos for educators that highlight best practices in integration.	The STEM AC is working with their third party evaluators to stratify the usage, or adoption, data. In other words, we want to track schools that are within certain benchmarks of the defined fidelity threshold. We know those that are at or above fidelity, but how many are within 5 or 10 minutes of fidelity. This will allow the Center team to be more targeted with their support.

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- http://www.deseretnews.com/article/865646805/STEM-or-STEAM-Is-there-room-for-both-in-Utah-schools.html?pg=allhttp://www.heraldextra.com/news/local/utah-stem-fest-huge-success-with-utah-county-students/article_940f0208-3140-5a9a-92e2-ca5fe3a3d7e6.html
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- http://kutv.com/features/stem/casey-live-from-the-stem-fest
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- http://www.stgeorgeutah.com/news/archive/2016/05/20/pdd-state-board-of-education-awards-
- http://news.hjnews.com/allaccess/woodruff-elementary-gets-state-gold-stem-
- http://www.thespectrum.com/story/opinion/blogs/educationitself/2016/05/06/r2-d2-star-wars-
- http://kutv.com/features/beehive-academy-receives-platinum-designation-for-stem-curriculum
- http://www.thespectrum.com/story/news/2016/09/16/students-learn-stem-through-schools-greenhouse/90514872/
- http://www.utahbusiness.com/19-schools-receive-stem-designation/

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http://kutv.com/news/2news-this-morning/stem-all-you-need-to-know-to-attend-stem-expo
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http://business.utah.gov/news/carnegie-mellons-create-lab-expands-education-network-utah/
http://business.utah.gov/news/utah-schools-receive-official-state-stem-designation/
http://business.utah.gov/events/event/stem-best-practices-conference/

STEM Action Center Publications

J. Dounay-Zinth and T. Goetz. Promising Practices: A State Policymakers' STEM Playbook. 2016. Education Commission of the States
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STEM Action Center
Annual Report to the Education Interim Committee
October 17, 2016

The following report is being submitted to the Education Interim Committee by the STEM Action Center. The report contains the following requested information:

(1) The Board shall report the progress of the STEM Action Center, including the information described in Subsection (2), to the following groups once each year:

(2) The report described in Subsection (1) shall include information that demonstrates the effectiveness of the program, including:

(a) the number of educators receiving high quality professional development;

(b) the number of students receiving services from the STEM Action Center;

(c) a list of the providers selected pursuant to this part;

(d) a report on the STEM Action Center's fulfillment of its duties described in Subsection 63M-1-3204; and

(e) student performance of students participating in a STEM Action Center program as collected in Subsection 63M-1-3204(4).

1. The number of educators receiving high quality professional development:
Two projects support high quality professional development: (1) the professional learning platform that is video-based and online and the (2) elementary STEM endorsement. A total of 17,346 licenses were distributed to educators for the video-based, online platform. There are 332 elementary educators enrolled in the first cohort of the STEM endorsement. A total of 85 educators received professional development for either Exploring Computer Science (a secondary course) or Computer Science Fundamentals (an elementary program). The funding for this was a combination of the code.org grant discussed later in this report and a corporate match. Thirty teachers participating in the 7th and 8th grade Applied Science project received additional professional development.

2. The number of students receiving services from the STEM AC

The numbers of students that accessed resources from the STEM AC are as follows:

- Fairs, Camps and Competitions: 1,113
- Classroom grants: over 9,883
- STEM Certification pathway grants: 6,919
- K-12 math technologies: 180,707
- STEMFest: over 17,000
- Organization grants: 4,519
- Sponsorship: 62,500

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3. A list of providers selected pursuant to this bill:
See Appendix A.

4. A report of the STEM AC fulfillment of its duties described in subsection 63M-1-3204

STEM Action Center (STEM AC) Staff and Roles (63M-1-3204; 1(a), (c)i)
The STEM Action Center (STEM AC) consists of the Executive Advisory Board, an Executive Director (Tami Goetz), Program Director (Sue Redington), Program Coordinator (Jackie Moynihan), Outreach and Engagement Specialists (Kellie Yates and Clarence Ames) and a Marketing and Communication Specialist (Kaitlin Felsted). The STEM Action Center also works collaboratively with several other state agencies to support STEM education and workforce and economic development. These collaborations result in two additional shared staff members: the Utah Department of Workforce Services (DWS; Lynn Purdin) and the Governor's Office of Economic Development (GOED; Vatsala Kaul). Kellie Yates also serves as a liaison with the Utah State Board of Education. A part time Director for the newly formed STEM AC foundation was added this fiscal year. The STEM AC received several grants that provided for staff to implement and oversee the projects and these include three new team members for the Mobile STEM Classroom (Lola Beatlebrox, Bradley Hunsaker and Abby Dowd) and a part-time team member for the STEM for Life project (Yeganeh Lari). Finally, the STEM AC is fortunate to have a full time volunteer that helps with various projects, Ann Barnia.

Private entity engagement (63M-1-3204; 1(d); 2 (e))

MEDIA CAMPAIGN

Private entity support impacts the STEM AC both directly and indirectly. Companies impact the STEM AC indirectly via the Investors Coalition. This is an industry-driven coalition, led by Comcast, which has been deploying a media campaign for the past several years. The media campaign has consisted primarily of a series of television commercials that showcase Utah companies that support STEM education. Comcast has been the creative lead on these commercials and provides the broadcast outlet for the commercials. The Investors Coalition has worked with the Utah Technology Council and its private foundation (this is NOT the recently created Utah STEM Foundation that is aligned with the STEM AC) to accept funds to support the creation of the commercials. The STEM AC leverages the support of the companies with the commercials by featuring them on our website and using them at various outreach events. Private support from companies that is provided directly to the STEM AC is described in other sections. It is important to note that several of the grants that the STEM AC has received are due to the media exposure that has resulted from the work of the Investors Coalition.

The STEM AC is working with Comcast, Adobe and Dell EMC to launch the next phase of the media campaign which is now intended to move from a high level message of "changing hearts and minds" to an action-oriented campaign that will focus on mentoring. The statewide launch of STEM Mentor Exchange (STEM MX) is scheduled to occur in the spring of 2017. STEM MX is a mobile app for teachers, counselors, and parents to find resources, particularly from industry partners. These resources can be varied but the overall goal is to allow teachers, counselors, and parents to learn more about careers, Utah companies, and what it takes for their students to make informed decisions for their academic and career choices. STEM MX will also allow teachers, counselors, and parents to more effectively find supplies, equipment, speakers, internships, summer camps, and organize site visits and other out of school activities. Additionally, STEM courses and programs at our educational institutions will be identified. The STEM MX project is supported through a combination of a grant from Boeing (the grant was awarded to the Davis Education Foundation but was written collaboratively with the STEM AC) and a match of donated technical design services from Dell EMC and Adobe. Comcast has been donating professional marketing services and will continue to contribute to disseminating STEM MX. These in-kind donations are described in greater detail in Appendix B. The STEM AC will work collaboratively with Utah DWS and the USBE to align STEM MX with UtahFutures. The DWS partners are very excited to take advantage of the mobile app platform and we will work as partners to join them for statewide teacher training events.

The STEM MX app is now in the beta testing phase and we are soliciting submission of profiles from teachers, counselors, parents, and industry partners. The online profile submission can be found at http://www.stempartner.com

UTAH STEM FOUNDATION

As directed by the Utah Legislature, the STEM Action Center officially filed for the creation of the Utah STEM Foundation on May 2, 2016. The Utah STEM Foundation's main priority is to help enhance the efforts of the STEM AC, whose mission is to support STEM education and align

education efforts with talent needs. The Utah STEM Foundation will accomplish this by leveraging community partners, creating engagement and industry alignment, and soliciting monetary and in-kind donations.

The Utah STEM Foundation, in alignment with the STEM AC, recognizes that the ability to fund STEM classrooms is an ongoing challenge for most states, school districts, and schools. The cost of equipment and supplies can be prohibitive, access to devices can be limited and the ability to dedicate full-time facilities is not possible. Rural school districts, or schools in communities out of a metropolitan area, are impacted even more due to a lack of the critical mass needed to justify this expenditure and a lack of STEM expertise due to a limited educator talent pool.

One of the first donations to the Utah STEM Foundation was a grant from the Tesoro Corporation. The Tesoro Corporation has granted the Utah STEM Foundation $1.5 Million dollars to initiate a STEM mobile classroom environment for the students in the State of Utah. We look forward to engaging local corporations and individuals to help support this effort to ensure ample exposure to STEM and workforce possibilities for our students. The Foundation is in the process of reviewing the draft of its strategic plan with Board Members.

Organizations that have joined forces to help support the Utah STEM Foundation include:

- Tesoro (as mentioned)
- Larry H. Miller
- Boeing
- Adobe
- IM Flash
- UTA

STEM SCHOOL ASSEMBLY

The STEM AC receives regular requests to provide STEM assemblies to students in both elementary and middle school. Assemblies are a challenge due to the large number of students; it is challenging to engage the students and provide a fun and meaningful experience. The STEM AC has been working with Paul Brewer, a local magician to create an innovative version of a magic show that incorporates STEM themes with a high tech format for delivery. The pilot program is being supported by a $10,000 grant from CenturyLink and over 60 schools have signed up for the assembly. The beta launch for the first STEM assembly will be October 6, 2016 at Rosamond Elementary School located in the Jordan School District. The Utah STEM Foundation is working to secure additional funds in anticipation of high demand.

NORTHERN UTAH STEM EXPO

The Davis, Weber, Ogden and Morgan school districts hosted the Northern Utah STEM College and Career Exposition on November 9, 2015 at the Davis Conference Center. The event was divided into two sessions; a high school session and a community STEM Family Night. 800 high school students, 60 teachers, 16 companies presenting, and 60 companies participating as exhibitors attended during our high school session. A Family STEM Exposition ran from 5:00 – 9:00 PM and was open to parents, junior high students and elementary students of Davis, Weber, Morgan and

Ogden school districts. There were approximately 4,500 in attendance. The STEM Action Center sponsored this event at $5,000 and helped to promote it to the public.

SELF ESTEAM

The Self-ESTEAM conference introduced students to local STEAM community leaders, academia professionals and industry representatives. These leaders, professionals, and representatives had the opportunity to be a part of this conference by presenting session modules and discussing what their company/organization does in terms of STEAM. The event took place at the Salt Lake Library and more than 50 young women across the state were impacted. The STEM Action Center sponsored this event at $1,049.

MAKING INNOVATION CONFERENCE

The Making Innovation Conference was held at Utah State University on September 24-25, 2015. More than 350 educators and industry members attended this event. The mission of the Making Innovation Conference was to gather local and national researchers, educators, policy makers, designers, and makers to present, share, and discuss innovative maker activities and related research that promotes STEM learning. The STEM Action Center team attended and presented on various STEM programs during the conference. The STEM Action Center sponsored this event at $2,000.

UTAH LIFE SCIENCE SUMMIT

BioUtah hosts an annual Utah Life Science Summit at the Hilton Salt Lake City Center at which they have an awards ceremony luncheon for those dedicated to the life sciences industry. This year's event was held on November 5, 2015. The STEM Action Center sponsored the recognition of six high school students at this event for their efforts in STEM related subjects. Sponsorship included trophies, two tables at the front, and logo recognition. More than 400 people attended the event from industry, government, and higher education. The STEM Action Center sponsored this event at $1,500.

UTAH SCHOOL COUNSELOR ASSOCIATION CONFERENCE

The Utah School Counselor Association Conference is an annual conference; this year's event took place on November 13, 2015 at the Jordan Academy for Technology and Careers for Utah School Counselors. The Utah STEM Action Center used this event as a way to promote STEM resources to counselors. More than 500 attendees from industry and education were at the event. The STEM Action Center sponsored this event at $1,500.

NORTHERN UTAH STEM FAIR

The Boys & Girls Club of Northern Utah, with the support of many of the businesses in Northern Utah, came together for a STEM Fair on November 13, 2015 from 9:30 a.m. to 6:00 p.m. for students and families. The goal of this event was to educate kids and families about the many local careers and job opportunities available in STEM and the existing educational and training paths available and accessible. More than 3,700 students were in attendance and the STEM Action Center sponsored this event at $2,500.

YOUTH TECH JAM
Eagle Mountain City (EMC) hosted the 1st Annual EMCity Tech Jam for all kids and youth (ages 9-18) in Eagle Mountain City and surrounding areas on Saturday, December 5, 2015, from 1 p.m. to 5 p.m. At this event, EMC partnered with local developers to teach the participants how to code and develop their first App and Video Game. More than 475 students were in attendance and the STEM Action Center sponsored this event at $2,500.

I HEART TECH
More than 500 underserved students attended I Heart Tech, which was a full day of activities at Adobe in Lehi on December 5, 2015, engaging students in Graphic Design, Web Design, Game Design, Robotics, Digital Publishing, and Code.org. The STEM Action Center sponsored this event at $2,500.

CRAFT LAKE CITY/ENGINEERING BUILDING
Craft Lake City, held at the Gallivan Center from August 14-15, 2015, hosted an Engineering STEM Building where the STEM Action Center interacted with students, parents and industry for two days. More than 20,000 attended the event. The STEM Action Center sponsored this event at $1,500.

SOUTHERN UTAH STEAM FESTIVAL
The Southern Utah University Center for STEM Teaching and Learning, the Orchestra of Southern Utah, Cedar City Library in the Park, Iron County School District, and Southern Utah Sustainable Operations Partnership collaborated to plan a two-day STEAM festival in early 2016. They invited STEM organizations, art organizations, and businesses from across the state to set up booths in the Heritage Center conference center for two days of hands on learning. More 2,200 people attended from the community. The STEM Action Center sponsored this event at $5,000.

SHETECH
SheTech Explorer Day is a conference for high school girls in 9th through 12th grade. More than 1,000 girls attended this event at Utah Valley University's UCCU Center. Students interacted with different companies that have technology at their core to see if it is a right fit for them. This day-long event included hands on activities in science, technology, engineering and math (STEM). The STEM Action Center sponsored this event at $5,000.

MOUNTAINLAND CODE CAMP
On April 1, 2016, at the Xactware Corporate Offices, Code Camp held a programming, design, and entrepreneurship 24-hour contest event. Teams ranging in size from two to four participants compete against other teams to build the best web or mobile app. Code Camp is for high school students throughout the Mountainland region (Summit, Wasatch, and Utah County) who are interested programing and design, just exploring, or aspiring to become programmers. More than 100 students attended and the STEM Action Center sponsored this event at $1,500.

STAND BESIDE HER MENTOR LUNCHEON

On March 4, 2016, at the Hilton Salt Lake Center, more than 300 business, civic, and community leaders came together to celebrate female leadership and honor individuals and corporations who are making positive changes in our communities. Great emphasis was placed on STEM, with several girls having the opportunity to be mentored by STEM leaders. The STEM Action Center sponsored this event at $2,500.

UTAH PUBLIC ASSOCIATION OF CHARTER SCHOOLS
Utah's largest gathering of charter school leaders and educators, approximately 600, came together on June 13-14th at the Davis County Convention Center. The STEM Action Center had a booth, promotion on their t-shirts and the opportunity to network during meals and work on future collaborations with the Charter Schools to increase STEM awareness. The STEM Action Center sponsored this event at $1,500.

JATC AND SLCC BIOTECHNOLOGY SYMPOSIUM
Biotechnology students from Jordan and Canyon's School Districts and from the Salt Lake Community College participated in inquiry based hands on independent projects in state of the art biotechnology facilities. These projects were displayed and presented in poster format in the Health Sciences Building at the Salt Lake Community College. On May 20, 2016, students described their research to academic and industry professionals that judged the posters in a number of categories. They invited local biotech companies and gave them the opportunity to set up tables to share information to help students. More than 100 students were impacted and the STEM Action Center sponsored this event at $2,500.

BEEHIVE SCIENCE AND ENGINEERING ACADEMY STEM EXPO
Utah STEM Expo was attended by students in 6th through 12th grade showcasing their projects and demonstrations. There were projects from science, math, engineering and computer science performed by students from Beehive Academy and other schools. The event took place on April 25, 2016 with more than 4,000 students impacted. The STEM Action Center sponsored this event at $2,500.

OTHER SPONSORED EVENTS:
STEM Fun Run ($870, 150 impacted, SLCSE, October 10, 2015); Governor's Science Medals ($500, 240 impacted, Rio Tinto Stadium, January 13, 2016); UTC Legislative Meet and Greet ($500, 1,400 impacted, Utah Capitol, February 3, 2016); Science Fair and STEM Night ($50, 325 impacted, Horace Mann Elementary School, February 4, 2016); Utah Science Teachers Association ($150, 300 impacted, Utah Valley Conference, February 5, 2016); Bridgerland Applied Technology College ($500, 4,000 impacted, BATC Logan Campus, March 4-5, 2016); Super Science and Math Night ($500, 500 impacted, Windridge Elementary School, May 2, 2016).

UTAH STEM FEST
The Utah STEM Action Center partnered with Utah's Industry to put on the second statewide STEM Fest from February 2-4, 2016 at the South Towne Expo Center. There were 66 sponsors from industry, government and higher education—more than 30 of those were from industry—

totaling $122,700 in cash sponsorships. The STEM Action Center contributed $17,591 of its operational funding to the event, along with over 300 hours in staff time.

More than 17,000 seventh and eighth graders throughout the state attended. The event was opened to the public on Tuesday evening with approximately 3,500 additional attendees for family night. Students were from 28 Utah school districts and nearly 50 charter schools, in addition to several home school students (see Appendix C). Sponsorships were used to fund STEM Fest, along with funding bus scholarships to help lower transportation costs for schools. 51 bus scholarships were awarded for a total of $17,251.20.

A list of sponsors for STEMFest 2016 is included as Appendix D.

There have been many districts that have indicated that they are unable to send students to the STEMFest due to the hectic nature of spring with testing. It has been decided that the STEMFest will be held in the fall of each year rather than the spring in order to allow for greater access to all Utah students. The next STEMFest will be held in the fall of 2017.

STEM INNOVATION AWARDS

The STEM Action Center held the second STEM Innovation Awards in partnership with Utah Technology Council at their annual Utah Innovation Awards luncheon on May 11, 2016. There were more than 400 industry leaders in attendance at the award luncheon.

The STEM Innovation Awards are an opportunity to recognize a student, teacher, counselor, principal and mentor in Utah who excel in science, technology, engineering and math (STEM). Nominations were open to the general public from February to March 2016. The STEM Action Center team and the STEM Action Center Board, through a rigorous process, selected this year's honorees.

- Student: Emily Naylor, Senior at Mountain Heights Academy
- Teacher: Katie Rogers, 4th Grade STEM Teacher at Thunder Ridge Elementary
- Principal: Matthew Lowe, Title I School Site Coordinator at Hurricane Elementary School
- Mentor: Steven Shumway, Professional Development Provider for K-12 STEM Education at Brigham Young University
- Counselor: Zekeriya Temircan, Academic Dean at Beehive Science and Technology Academy

STEM BEST PRACTICES CONFERENCE

The STEM Action Center held the second annual STEM Best Practices Conference on June 21, 2016 from 8 a.m. to 4 p.m. at the Salt Lake Community College Larry H. Miller Conference Center.

The conference was an opportunity to learn about STEM Best Practices from Utah community experts and leaders in the K-12 STEM community. There were 425 registrants from 12 different states, 20 Local Education Agencies (LEAs), 45 cities and 84 schools. Thirteen industry partners supported panel presentations (BioUtah, Intermountain Healthcare, Utah Technology Council,

Utah Career Center, US Synthetic, LanDesk, BioInnovations Gateway, Boeing/Utah Aerospace Pathway, Launchpad, Orbital ATK, Janicki and Xactware) and the following university partners participated as presenters: the University of Utah, Dixie State University, Southern Utah University, Brigham Young University, Utah Valley University, Weber State University and Utah State University.

The following feedback was provided by participants:

- "Lots of good ideas to collaborate with industry!"
- "It was so beneficial to hear what other administrators have done at their schools."
- "It was nice to see what some of the resources are that are available."
- "I appreciate all of the opportunities and help the STEM Action Center provides."
- "Great ways to involve industry in the classroom-got lots of ideas from here."
- " I learned a lot that I will use in my class!"
- "Working with other STEM educators from around the state and building networks. I loved the Keynote as well he was inspirational!"
- "Overall more confidence in talking STEM in my classroom"
- "Thank you! It was a great day!"
- "This conference was very efficient, I liked that it was one day, and that there were so many sessions packed into one day. I also liked the vendors that were there and the museums area. Great job!!"

There were a total of five sessions throughout the day. Each session included five different breakout strands for educators, administrators, industry, informal science education groups, and higher education. In the 5 sessions, each strand had a different theme and topic they would discuss with their breakout audience.

The first and second breakout sessions for educators discussed STEM Action Center opportunities and grants. The third breakout for educators was titled STEM Books: Literature in STEM, which featured local librarians and STEM-related books. Our new and upcoming app STEM MX was discussed in the fourth breakout session, and hands on STEM activities were discussed in the last session.

For the administrator strand, our speakers talked about elementary and secondary STEM schools in the first and second breakout sessions. Session three was dedicated to engineering in elementary schools and supporting STEM students in elementary. In sessions four and five, speakers discussed STEM initiatives and STEM elective courses for secondary schools.

Our industry breakout sessions throughout the day had the theme "skills development and career pathways." Members of 12 different companies spoke throughout the day about their industry-education partnerships which are growing STEM in Utah by working to help students develop the skills and talent necessary to fill the career paths of the future.

Attendees also had the option to spend a session at our "innovation hub" where informal science education groups such as Utah Hogle Zoo, Hawkwatch, Clark Planetarium, etc. had a chance to speak with educators about resources or just simply swap ideas at their tables.

UTAH JAZZ AND CENTURYLINK STEM STUDENT RECOGNITION

The Utah Jazz, in partnership with CenturyLink and the STEM AC, presented six awards to outstanding STEM students during the 2015-2016 basketball season. The students were nominated by a teacher and selected by the STEM AC staff to receive a customized Jazz jersey during half time at a Jazz game. The following students were recognized:

- Andrew Hutchins, BioInnovations Gateway senior
- Jessica Ivie, Copper Hills High School senior
- Ivan Cardenas, Hunter High School senior
- Jonah Rosenberg, Academy for Math, Engineering and Science junior
- Robert Lytle, DaVinci Academy of Science and the Arts freshman
- Melissa Hernandez, Ogden High School senior

CenturyLink donated $10,000 to the STEM AC during half time at the last game of the season. The use of this donation was discussed previously under the STEM assembly section.

TESORO MOBILE CLASSROOM

The STEM AC received a grant for $1.5M over five years to fund the design, purchase, retrofitting, and operation of a mobile classroom. The Utah Transit Authority (UTA) has donated two, 40-foot buses and a ten person van to the STEM AC.

The STEM bus will focus on curriculum content that aligns with math and science standards in STEM-related areas and will emphasize hands on activities that highlight and showcase Utah companies and their technology. The STEM AC is exploring options for one of the busses to showcase technology (e.g., virtual and/or augmented reality) that can also serve to provide training in areas such as welding or other STEM-related trades. The STEM AC is fully engaged with the Informal Science Education Enhancement (ISEE) group to ensure that the STEM bus is synergistic with these informal science education partners that already have mobile education opportunities in their defined subject areas. The bus will be particularly beneficial to Utah rural schools that often do not have the critical mass of students to justify fully equipped engineering or science labs. There are plans to determine if the bus can also help to support professional learning opportunities for educators, particularly those in rural areas.

The retrofit on the first bus is projected to be completed by January or February 2017. A ribbon cutting and a series of promotional events are being planned. There are over 100 requests for visits in spite of the fact that no formal announcement has been made for reserving visits.

UTAH AEROSPACE PATHWAY PROJECT

In March 2015, the Boeing company approached the State of Utah about doing an industry-focused educational program. They asked for a specifically designed curriculum that met their

industry standards. As the project evolved Boeing invited several other businesses, including Harris, Orbital ATK, Hill Air Force Base, Hexcel and Janicki Industries, to be part of this partnership.

The STEM AC worked with the Governor's Office of Economic Development to find two school districts, Granite and Davis, to work with corresponding post-secondary training institutions, Salt Lake Community College (SLCC) and Davis Applied Technology College (DATC). Beginning fall of 2015, high school students in these districts will be able to enroll in this innovative program and have the opportunity to seek employment with these businesses.

The STEM AC worked with the school districts to define the pathway and curriculum that will allow students to take a first semester class that teaches the basics of manufacturing. During the second semester students will get more advanced training at SLCC or DATC. During the second semester students will also get an opportunity to be part of an innovative internship with one of the industry partners. Those students age eighteen and older will have an opportunity for employment immediately following the school year.

This is the first time that major industry partners have stepped up and taken a very active role in a K-12 education partnership. Boeing selected Utah to pilot this program because they knew that Utah would perform well and that this would provide them with a template to use in other states. A press conference on September 4, 2015 was held by Governor Herbert to celebrate this successful partnership.

Replicating and expanding the UAP model to other industries and school districts will reshape the high school experience, especially in underserved populations of students. As this program expands it aims to help all students move into pathways that lead to postsecondary education and meaningful careers. With these common elements in place the high school experience will be transformed into a catalyst that will better ensure college and career success.

There are five critical areas that must be part of future expansion and replication of Career Pathways:

- High school students must be admitted at little or no cost to a local post-secondary institution during their senior year to better understand the higher education world.
- Students must receive meaningful industry experience.
- Professional learning communities must provide a support network between counselors and teachers to identify aptitudes within students to provide enhanced counseling.
- Labor market data must be used to provide guidance and knowledge to help students make educated decisions.
- The models must provide short-term training for adult learners to create opportunities to continue their education.

The STEM AC is using critical elements of the UAP model as it builds out the K-16 Computing Pathways initiative.

R&D role of STEM AC (63M-1-3204; 2 (a)- (c); (f))
The STEM AC continues to integrate third party assessment for many of its projects. The STEM AC has contracted with Utah State University for a third party evaluation since its inception. This has been a well-executed contract with high quality support from Dr. Sarah Brasiel. There has been considerable turnover with the evaluation staff at USU in this past year with the departure of Dr. Brasiel and her successor, Dr. Nadelson. The contract ends December 30, 2016 and the STEM AC staff has taken this as an opportunity to evaluate the current status of evaluation needs for the projects. It is anticipated that the scope will change and the STEM AC and Board feel that it is their due diligence to review current and ongoing needs for evaluation.

The integration of R&D as a core function of the STEM AC has proven to be quite valuable in many ways. The data collected for several of the projects, such as the K-12 math tools, provides useful information to districts for the selection of supplementary educational tools. Resources are limited and it is crucial that districts have the information they need to determine which tools are best suited to their needs. This helps to mitigate the selection of tools that are not of high quality and shown to work. Qualitative survey data is critical as well. For example, research indicates that one of the biggest factors for success in a professional development or learning strategy is educator buy in. Survey data allows the STEM AC to determine if certain platforms (i.e., the video-based, online platform) are being integrated appropriately to gain optimal educator buy in, and thus high rates of adoption.

The STEM AC also works with Local Education Agencies or LEAs (LEAs are defined as school districts or charter schools) to design, implement and oversee grant programs that test promising and best practices in key areas of STEM education and talent development. This allows LEAs and the STEM AC to be more effective in future program support and design.

The parameters of the evaluation (such as metrics and data that is to be collected) are defined by the requirements of the STEM AC's statute, and recommendations by the third party evaluator, the Utah State Board of Education, and LEA partners.

The projects for which there is an emphasis on third party evaluation and assessment include (1) implementation and outcomes of math tools in K-12 classrooms (2) implementation of high quality professional learning that integrates video-based, online professional development tools and materials with face to face professional learning (3) design and implementation of an elementary STEM endorsement (4) implementation of products and materials with the necessary professional development to improve applied science and technology in 7th and 8th grade Career and Technical Education courses and (5) implementation of high school STEM certifications that are industry-recognized and facilitate employment in available STEM careers. The math tools and professional learning projects are long-term with ongoing funding. The elementary STEM endorsement is funded from one-time funds but the program is designed as a three-year program and funding is allocated based upon that implementation and evaluation plan. The one-time funding for the applied science project has lapsed, however the data continues to be collected for the 2016-17 school year. Finally, the high school STEM certification project has closed the

majority of the original grants funded, with a few that have been granted no-cost extensions and two that have received amendments to their projects.

Review and acquire STEM education related technology 63M-1-3204 2 (c)
A core function of the STEM AC, which is a critical component of the R&D process, is the review and evaluation of STEM education-related materials and products. The STEM AC works closely with the State Division of Purchasing office to comply with all required procedures for the solicitation, review and contracting of product providers. The STEM AC works diligently to bring in subject matter experts (from LEAs and the Utah State Board of Education) to review the quality and appropriateness of educational tools.

The STEM AC is entering the third year of the K-12 math digital learning tools project (school year 2016-17) and has completed the solicitation and procurement of products for Year 3. There were several challenges faced with this process, but the State Division of Purchasing team has been very willing to work with the STEM AC to explore solutions.

The completion of the second year of evaluation (2015-2016 school year) will allow the STEM AC, in partnership with the USBE, to continue to use the third party assessment results to select only those products that have yielded meaningful effect sizes for student achievement, yielded high levels of educator and student satisfaction, and provided a reasonable expectation for the ability to keep the tool relevant.

Use resources to bring the latest STEM education learning tools into the classroom
63M-1-3204 2 (f)
The STEM AC focuses on using resources that bring the latest STEM education learning tools into public education classrooms. This can be seen with the continued support for the implementation of math digital learning tools in K-12 classrooms. These tools infuse the use of technology to support the improvement of math skills for students and they also help to support the preparation of students to achieve greater success in postsecondary STEM-related programs. The STEM AC is working with LEAs and data from the third party evaluation to better understand how to incorporate the use of digital learning tools more effectively into the classroom. This will be a focus for year 3 with the math learning tools and will leverage the video-based, online platform that is used for the professional learning project.

The STEM AC has secured several grants over the past year that will allow for the use of innovative practices in the classroom, as well as outside of the classroom. This includes the Tesoro grant for the Mobile STEM Classroom and the Intermountain Healthcare grant that supports the creation of innovative teaching modules in the classroom that build STEM concepts within engaging topics such as outdoor recreation, healthy lifestyles, nutrition and medicine. These modules are being created by cohorts of teachers across the state. They are aligned with the core and standards and will help to bridge concepts to careers in the context of highly engaging topics. The grant also allows for educators to participate in summer field experiences to STEM-related companies that work in areas of healthcare and healthy lifestyles. These summer

experiences better prepare teachers to effectively integrate the latest STEM tools and technology into their classrooms.

Support of STEM-related competitions, fairs and camps, and STEM education activities (63M-1-3204; 2 (d))

The STEM AC funds and oversees three grant programs: (1) Student Fairs, Camps and Competitions (FCC), (2) Classroom grants and (3) Organization grants. These three grant programs are funded from the STEM AC's operational budget.

Fairs, Camps and Competitions

The STEM AC funded 1,113 students for the Fairs, Camps, and Competitions (FCC) micro-grant program during fiscal year 2016. A total of 660 applications (the applications represented individual students as well as teams) were received and a total of $217,740 was allocated from the operational budget to support students in the FCC program. The FCC program supports a variety of STEM-related activities for students. This year the STEM AC offered two solicitations for the Student FCC grants; Fall and Winter. From the Fall solicitation we funded several robotics teams participating in events such as FIRST Lego League, FIRST Robotics, VEX Robotics, FIRST Tech Challenge etc. Students were awarded funding for their school science fairs. From the Winter solicitation students were awarded funding for STEM summer camps. A few popular camps among the awardees were Build Camp, GREAT Summer Camps at the University of Utah and Discovery Space Camp. A spreadsheet with all activities that students participated in is included as Appendix E.

The STEM AC staff, with Board input, has reviewed the impact and inherent risk of the FCC grant program. The STEM AC has identified several areas of risk with the implementation of the program. The students are required to identify mentors on their applications. The funding is provided to individual students and their mentors, which makes it challenging to track the disbursement of the funds and ensure that they are received and appropriately used. It is difficult to administer a competitive grant program to young students and their mentors and/or parents. The emotional challenges that result from funding one student but not another, the cost of oversight for the program, and the challenges related to measuring impact have made it apparent that this may not be an appropriate mechanism to support students. The STEM AC, with its Board, has determined to put the program on hold until a more effective mechanism can be identified. There are several options that have been considered, including working through a school or district as the fiscal agent. The Board has indicated that they feel that the program is valuable and have directed the STEM AC team to find a different, lower risk mechanism.

Classroom Grants

Classroom grants for the 2015-16 school year were varied in scope and subject. Included in this vast array of STEM work were kindergarten students learning about life cycles and the environment by observing a local waterway and noting changes throughout the year. In January, this same kindergarten teacher worked with DWS to have trout eggs brought into the classroom where students cared for the eggs and the eventual hatchings. In the spring these students were able to release their fish into the waterway they had been observing all school year. Another

project involving 1st and 2nd graders provided funds for hands on blocks of each number varied in size depending on the number they represented. These were used to develop number sense, as well as addition and subtraction skills. Middle school students learned about reproduction methods of hydra by physically splitting specimens, then caring for the new specimens created by the experiment. High School art students had the opportunity to use three-dimensional pens to investigate volume and matter associated with sculpture. Teachers that participated in the program feel very positively about the changes they were able to make in their classrooms to make learning more relevant and immediate for their students. The Classroom Grant for educators impacted approximately 9,883 students, with 280 applications received and $77,270 allocated to the grants from the operational budget. A summary of the districts, grades, number of students and brief project descriptions is included as Appendix F.

Organization Grants

The STEM AC funded nine STEM-related organization grants that impacted approximately 4,519 students, with $30,425 allocated from the operational budget. These organizations included the FIRST Tech Challenge, Utah Science Olympiad, Utah State University Computer Science Department, Envirothon, Weber State University Prep, MESA, Bridgerland Applied Tech Center, FIRST Robotics and Refugee Coding Camp.

- FIRST Tech Challenge (FTC) is a low-cost program designed to inspire and increase the interest of young people (ages 14-18) in STEM fields. The FTC offers students the opportunity to design, build and program robots; build experience and confidence with complex STEM-based concepts; document the engineering design process; develop problem-solving and team-building skills; enhance their public speaking skills; and compete and cooperate in alliances during tournaments. Additionally, FTC enables high-school students to solve real-world challenges and offers a life-changing experience to help students realize a STEM career is feasible for them and have the confidence to pursue complex, challenging educational goals.

- Utah Science Olympiad's main goal is to encourage students at early age (starting in middle school) to begin exploring STEM disciplines through participation in a grand tournament of science and engineering events. These events cover a multitude of STEM related disciplines such as genetics, chemistry, anatomy, physics, engineering and technology. The events are hands on and engaging and require students to investigate the world around them.

- The Utah State University (USU) App Camp was designed for students entering 6th-8th grades to learn App Inventor. USU hopes to increase the number of middle school students, particularly girls, in camps that teach them how to program while exposing them to near peer and industry mentors to highlight career opportunities in the tech industry.

- The Envirothon competition helps students develop knowledge and skills necessary to address complex issues and challenges associated with managing natural resources through scientific principles within their communities, their State, and North America. At the same time it gives them a greater sense of confidence and ability to become active, involved citizens. Students gain experience working collaboratively as a team, and learn the aspects involved in land management and community decisions while gaining valuable exposure to a range of STEM disciplines and potential career paths.

- Weber State University's PREP program helps students prepare to take advanced level math courses in high school, enabling them to be qualified for math, science, technology, and engineering majors in college. It hopes to inspire students to pursue a future in STEM professions, which will have a significant impact on the local community and state workforce by providing highly skilled individuals prepared to meet the demands of a technology driven workforce.

- The MESA Regional, State, and National Competitions are designed for middle and high school students. Students are required to complete one engineering project for these events. MESA encourages creativity and problem solving, while keeping students occupied and off the streets after school.

- The Bridgerland Applied Technology Center (BATC) VEX Robotics Competition helps high school and junior high students in Northern Utah become interested in and develop STEM skills in programming, troubleshooting, and team building. The competitions are a great way to introduce high school students to BATC programs and to local employers in STEM fields.

- FIRST Robotics (FRC) is a robotics competition for high school students. FIRST hopes to get students excited about STEM pathways after high school. It has been determined that 90% of all students who participated in FRC, are now either in a STEM career or studying a STEM field in college. Women who participate in FRC are four times more likely to go into a STEM field.

- Cotopaxi is committed to empowering people to lift themselves out of poverty by creating sustainable income opportunities. This led to the creation of the Refugee Coding Camps. The company believes teaching computer science creates a clear pathway to jobs, addressing one of the fundamental needs of a community of more than 60,000 refugees in the state of Utah.

Identification of best practices being used outside the state and learning tools for K-12 classrooms (63M-1-3204 2 (h and i)
The STEM AC team continues to reach out to other states to explore best practices. Annual attendance at the Midwest STEM Forum allows the STEM AC to learn about best practices that are

being employed in multiple states such as Kansas, Indiana, Iowa, Missouri and Wisconsin. The STEM AC has been in conversation with STEM initiative directors in other states including Washington, Massachusetts and Arkansas. Several best practices have been identified, including the strategy that Arkansas has deployed for its computer science initiative. This is a partnership between the Governor's Office and the Arkansas Office of Education. The STEM AC has been in regular conversation with Anthony Owen, the Computer Science Coordinator in the Arkansas Governor's Office to learn what has worked for them, as well as lessons learned. The STEM AC has been working with Patrick D'Amelio, the CEO for Washington STEM, to learn about their method for strategic planning that they have adopted for Washington STEM in the past year. Their new strategic plan is a result of critical "lessons learned" from the past five years of operation. The STEM AC has had conversations with Jeff Weld, the Executive Director of the Iowa STEM initiative to explore their approach to a multi-institutional external evaluation team. Finally, the STEM AC has entered into a partnership with STEMx to become part of the STEMx network. The STEMx network is a multi-state STEM network developed for states, by states. The STEMx network consists of 21 states and has created an accessible platform that is shared by member states. This platform allows for access to data and tools that can be used to support STEM efforts. This will allow the STEM AC to become more connected to efforts from across the country.

Provide a Utah best practices database (63M-1-3204, 2 (j))
The Curiosity Unleashed (STEM.utah.gov) website provides access to Utah best practices and content that targets students, parents, educators and industry partners. The content consists of innovative STEM materials for use in the classroom and at home. These materials range from audio and video-based content to links that showcase best practices by Utah STEM stakeholders as well as materials that are hosted by other high quality websites. The website includes information that showcases the variety of career options, the educational pathways and the Utah professionals that represent these STEM career choices. The website includes information regarding STEM events and activities across the State; a description of these events, along with dates, locations and a point of contact are included. Events are posted monthly on a calendar. This content is presented as a searchable library that allows a user to find resources of interest. Contests for students will be hosted, in partnership with industry partners, that allow students to provide input to the website and become more involved in STEM. The annual Best Practices Conference provides an opportunity to share and collect best practices.

The STEM AC has also been working with industry (specifically Comcast, Dell EMC, Adobe and Boeing) to build a mobile app called STEM MX. The app is modeled after the matching services that exist in the public domain that utilize a profile-based submission platform. An algorithm then takes the profiles for "need" and matches them to the profiles submitted for "supply" and determines the best matches based upon keywords and phrases. This mobile app gives educators, counselors and parents an effective and easy way to connect to industry mentors and resources in the STEM community. Educators will be able to access industry mentors for help with STEM-related projects (e.g. helping to teach a difficult STEM subject in the classroom, soliciting industry participation in STEM events, fairs and competitions, etc.). Counselors will have the ability to submit a profile that describes certain careers and STEM areas in which they are deficient in their knowledge and find an industry mentor to educate them. Parents will be able to submit a profile

that can help them find resources such as summer camps, scholarships or STEM-related programs or events.

The beta version has been released as a pilot and we are currently soliciting profiles from educators, counselors, and parents, as well as industry partners. This will result in a near comprehensive database. The STEM AC will work with Comcast to promote the use of STEM MX through media broadcasts and other outlets available with Comcast.

This platform solves the problem of exhausting or overtaxing industry partners. It allows for an industry mentor to toggle between active and inactive for their profile depending upon their current or projected workload. It is anticipated that this control over volunteering will be attractive to industry partners and encourage participation. This match-based platform also facilitates a more targeted approach to finding information. An issue that arises with keyword or phrase searches in a traditional website is that you only get information based upon what you know about the topic. A profile-based option allows for a user to be completely lacking in content knowledge in an area and still find useful resources and mentors.

The STEM AC is working closely with the Utah DWS and USBE to collaborate on the Utah Futures website. The STEM MX mobile app provides an additional mobile opportunity for them to access and allows for a very robust data set to be used in both the Utah Futures website and STEM MX. The STEM AC, DWS, and USBE will work together to share training sessions for educators and counselors.

Keep track of how the best practices database is being used and how many are using it 63M-1-3204 2 (k) i and ii – The STEM Best Practices database is defined as the STEM website that is used to collect resources in STEM stakeholder community. The following information has been tracked based upon use of the website: during the 2016 fiscal year the STEM Action Center website had 106,517 page views, 33,325 new users, and 47,271 sessions. These numbers have all increased compared to FY2015. The social media accounts for the Center include Facebook (1,020 followers), Twitter (685 followers), Instagram (150 followers), LinkedIn (122 followers) and Google+ (16 followers).

The objective of our web assets is to inform and promote STEM opportunities to community members and foster an online network dedicated to STEM education. The STEM Action Center's web assets have seen significant growth from fiscal year 2015 to fiscal year 2016.

The STEM Action Center has a combined total of 1,993 followers across all social media platforms, a 111 percent increase from last fiscal year's cumulative 943 followers. An average of 22 posts/tweets a month promoted events and services, and highlighted STEM news across the state and nation. Our social media accounts drive traffic to our main website, STEM.utah.gov and event-affiliated websites such as stembestpractices.com. Social media is a valuable tool for promoting events. Traffic increases before and after events as more and more individuals rely on social media for information. Using the STEM Best Practices conference as anecdotal evidence, we find reach

increases by approximately 3,000 people in both the month prior to, and the month after the event.

The STEM Action Center website is a resource for students, parents, educators and industry to learn about activities and efforts across the State. During the 2016 fiscal year, the website (STEM.utah.gov) also had modest gains in page views, users, and sessions, from the last fiscal year. The data shows the STEM AC is continuing to build a community that relies on the website often. New visitors increased 33 percent during the 2016 fiscal year, while 63 percent of visitors are new. With a low bounce rate, which indicates visitor retention, visitors are browsing through to find out more about the STEM Action Center. The top three pages include our programs for educators, and grants.

Join and participate in a national STEM network (63M-1-3204 2(l))
The STEM AC joined STEMConnector, a national organization that supports the STEM community not only at a national level, but regionally as well. This membership expired and we are now considering a different approach. STEMConnector provided excellent networking opportunities at various events, as well as considerable national exposure. The STEM AC has built a positive relationship with STEMConnector and will continue to work with STEMConnector and the Million Women Mentors initiative.

However, the STEM AC has decided to join STEMx, another national level organization that has evolved to be more service-oriented, with less focus on membership (thus, less overpriced membership dues). This organization is also led by states and their STEM initiatives, which is more appropriate for the STEM AC.

STEM School Designation (63M-1-3204, 2 (n))
The STEM AC, working with the USBE, has generated a comprehensive plan for a STEM School Designation program. This plan was included in the FY 2015 annual report. The Utah State Board of Education and the STEM AC Executive Board have approved the criteria. The first solicitation for applications was released in early September of 2015 and recently closed. There were 37 schools that submitted a notification to apply, with 24 schools actually completing the application. 19 of those schools were awarded STEM School Designations. A summary of the awardees is included as Appendix G and a sample designation proposal is included as Appendix H.

Support best methods of high quality professional development for K-12 STEM Education (63M-1-3204 2 (o))
OVERVIEW:
The STEM AC has been working collaboratively with the USBE to design and deploy a high quality professional learning platform to LEAs. The statute requires that a video-based, online platform be used for the deployment of professional development. The statute also allows for hybrid learning activities, such as face-to-face professional learning opportunities.

The funding for the professional learning program was awarded in July of 2014.

School year 2014-15: The first year was focused on soliciting applications from LEA's to request the licenses that provided the video-based online platform(s), which were selected through a Request for Proposals (RFP) process described in following sections. There were two product providers selected for the project: School Improvement Network (SINET) and their product Edivate and Scholastic in partnership with the Teaching Channel. The LEAs were required to describe the focus or intended use of the licenses in their existing professional learning plan. The STEM AC provided guidance when approached, but intentionally allowed the LEAs to lead out on their own design and implementation plan. The intent was to allow the LEAs as much local control and oversight. For instance, an LEA could choose to target all new educators, or science and math educators. It was their decision to determine which educators were provided access the professional development opportunity.

License distribution and training for use of the video-based online platforms was conducted by the product providers over the remaining portion of the school year. The product provider, SINET, created 50 new STEM-based videos for viewing by the educators. The purpose of the videos was to help to guide educators with best practices in content-based pedagogy or instructional methods. Once the videos were viewed the teachers were encouraged to target the use of new practices in their classroom and videotape themselves. The resulting video was to be uploaded and viewed by the educator and their coach, accompanied by self-reflection, to help provide ongoing instructional development for the educator.

Usage was tracked and reported by the product provide and reported in the 2015 annual report. It was fairly low during the first year due to the time required for license distribution and educator training. The primary reason for low usage was that the majority of LEA's only began to access the video-based on line platform by January of 2015. The STEM AC tracked feedback from LEAs to identify issues that were preventing the project from being successful. A number of issues were identified including: the need for a more defined implementation plan for how the LEAs would ensure high fidelity adoption of the platform, diversification of professional learning opportunities, and additional support from product providers.

School year 2015-16: The 2015-16 school year represented the first full year of implementation for Edivate. The LEAs submitted their applications with a total request of 16,016 Edivate licenses at the beginning of the year and 37 LEA's participating. The product providers worked with LEAs to develop a more robust implementation plan around the use of the platform.

The overall purpose of the more robust implementation plan was to assist each participating LEA to:

- Establish a full, detailed strategic professional learning vision and implementation plan.
- Identify goals and objectives of the implementation
- Create metrics and measures of success for the implementation

- Align the use of Edivate tools and resources in support of the overall vision and goals for professional growth.

The School Improvement Network (SINET) created an additional 50 STEM-based instructional videos for the platform.

The second product provider, Scholastic in partnership with the Teaching Channel, was dropped from the program during the 2015-16 school year, due to a failure to deliver the required training to educators. The agreement was terminated under the terms of the contract. The Scholastic product and program was soon after acquired by a different company and operating with a different business scope altogether.

The STEM AC worked closely with SINET, the sole product provider for this project, to focus on increasing usage or adoption of the platform. There were numerous strategies deployed by SINET but it became clear by the middle of the school year that usage was still not increasing to an acceptable level. The STEM AC team spent a considerable amount of time reaching out to partners in LEAs to determine the reasons behind the slow adoption of the platform. The research indicates that the ability of an educator to view and self-reflect on their own teaching is one of the more effective strategies to improve practice in the classroom. Thus, it appeared that other challenges existed.

The feedback was extremely helpful and allowed the STEM AC, working with LEAs, the USBE and SINET, to identify key issues to focus on for the 2016-17 school year. These included (1) an excess of licenses requested from LEAs; for many LEA's the videos are being watched in a group setting and thus multiple licenses are not necessary (2) low usage of the licenses which translates into a lack of adoption by the teachers (3) a focus on watching classroom management videos rather than the STEM videos that were created (4) insufficient oversight by the product provider (5) teachers were reluctant to upload videos of their own teaching for self-reflection and evaluation (6) training had been provided primarily for administrators at school and district levels, which did not provide adequate opportunities for teachers to become familiar with the product and (7) technical issues for uploading of teacher self-videos. A complete matrix is included as Appendix I that outlines the issues and challenges that have been identified, the solutions that are being applied to those challenges and how the STEM AC, working with LEAs, SINET and USBE, will track the degree of success with each solution.

<u>Specific strategies to address the above issues</u>

Lack of adoption

The STEM AC worked diligently with LEAs to determine why the video-based, online platform was not being adopted at higher usage rates during the 2015-16 school year. The STEM AC determined that the intent of including a more robust implementation plan was good. There needed to be a starting point and allowing for more local control was well received. However, the feedback from LEAs indicated that there was a lack of communication in requirements and guidelines for usage. The LEA's felt they were addressing their goals because their goals were very loosely defined and included things like "give teachers access to online PD," which didn't define user expectations and

limits. The STEM AC also determined that it was time to move to a hybrid approach, with a blended strategy of the video-based, online platform and face-to-face interactions. This hybrid approach is allowed by statute, however it was determined early on, in partnership with the USBE, to begin with the required video-based, online platform initially to keep the implementation simple.

The STEM AC was proactive and worked with the math, science and STEM specialists at the USBE to draft and release a Request for Grants for the 2016-17 school year that allowed LEAs to submit a grant request in which they could apply for additional funds to support the adoption of the SINET platform. The grant solicitation included the following criteria: (1) the requirement to use the Edivate platform (2) the requirement for the use of SMART goals with specific measurement metrics to address the lack of defined goals relating to STEM professional development (3) clearly defined goals relating to STEM-specific professional development (4) usage and participation requirements for grant components other than watching videos within the Edivate platform.

The applications were due April 29, 2016. Applications were reviewed and awarded by May 20, 2016 to allow for a timely deployment for the 2016-17 school year. There were 144 applications submitted and 78 were funded. The feedback from LEAs is overwhelmingly positive, particularly in regards to being able to define local needs and solutions regarding STEM learning for educators. Specifically, district leaders are excited about the defined opportunities for SEEd (middle school science) standards exploration and application.

There were 15,212 licenses requested as part of the grant application. STEM AC negotiated with SINET and they agreed to donate 7,312 licenses due to low usage from the previous full year of implementation.

A summary of LEAs that were awarded and short descriptions of the goals of the grants is included as Appendix J. These grants allow for LEAs to integrate the Edivate platform into a comprehensive professional learning strategy. The STEM AC feels that this approach remains aligned with statutory allowances and will result in success of the professional learning program.

Change in approach to videos

As stated earlier, preliminary data received from the independent evaluator indicated that 90% of the videos watched in the 2015-16 school year were regarding classroom management. The STEM AC, working with the USBE and SINET, have determined that the use of videos will be more valuable if they target defined needs within the grants, or in other words, are less generic in STEM and more intentional with regards to addressing key needs by LEAs.

To this end, the STEM AC is working with USBE, SINET, and LEAs to create a series of videos that focus on these areas:

(1) Teaching Strategies for the New Science Standards (SEEd): The STEM AC in concert with STEM subject-area specialists from USBE have identified content and exemplary educators for the creation of a library of videos to provide middle and junior high school educators with high quality professional learning associated with the new Utah science standards for grades 6-8.

(2) STEM Equity and Micro-Messaging: The STEM AC has been working on a three-year project with funding from the National Science Foundation (NSF) and the National Alliance for Partnerships in Equity (NAPE), in partnership with Utah Valley University and Park City School District. The data from this study (and similar studies in other participating states) indicate that negative micro-messaging to students regarding their abilities and inclusion in STEM significantly impacts their decisions to pursue STEM-related education pathways. The project provided micro-messaging training to teachers and counselors. The results after one year demonstrated significant increase in enrollments of girls in key STEM classes. Hill Air Force Base has provided a grant to the STEM AC to scale this STEM Equity project to Ogden and Weber school districts. The STEM AC will work with NAPE and SINET to create a series of STEM Equity videos for micro-messaging training. This will provide an even greater opportunity to scale the training to all LEAs.

(3) Math videos for digital K-12: it has come to the attention of the STEM AC that further professional development would be beneficial to K-12 educators to support the integration of the digital learning tools for math.

(4) Middle School Math Instruction: Videos will be created that address the needs of middle school math teachers with the new standards by identifying exemplar educators, concepts, and pedagogical strategies that will benefit the larger math community. These videos will be distributed via the Edivate platform. These videos will focus heavily on multiple representations of math concepts --moving from the concrete to the abstract-- which will result in foundational knowledge, better preparing students with mathematical thinking skills. As this is very different from previous mathematics instruction, these videos will be an excellent way to model how to take students from concrete examples to abstract representations of a concept.

(5) Learning Experiences versus "stand alone" videos: The feedback from LEAs also indicated that adoption would be higher if the videos were embedded in learning experiences. Learning experiences integrate videos with self-reflection, activity-based reinforcement of teaching concepts and simulated applications of targeted pedagogical concepts. The STEM AC is working with SINET, LEAs and the USBE to re-purpose the existing 100 STEM videos and classroom management videos to create a series of learning experiences. These will have more targeted and defined outcomes and it is anticipated that this will help to increase effective adoption of the platform.

Greater oversight from the STEM AC

Distinct points of oversight include a minimum of monthly check-in between STEM AC and participating LEAs, including at least one face-to-face visit in the first half of the school year, monthly usage reports being made available to grant site administrators for better on-site usage monitoring, participant input on custom content, designated reports due twice per year to maintain funding, and providing all required documents and reports up-front so expectations are clear from the beginning of implementation. Another document created determined the task/time equivalents for tasks completed within Edivate that are not timed. This way, users get credit for the time they use Edivate, not just for watching videos but any other tasks, such as observing

another teacher and filling out a reflection report. Bi-weekly meetings, in person or via phone have also been instituted between STEM AC and SINET to address any questions or issues that come up from LEAs.

Comprehensive Assessment Plan
The STEM AC, in partnership with the third party evaluators and SINET, now feel that sufficient challenges have been identified and addressed in the first full year of implementation (2015-16) and that it will now be feasible and effective to move forward to a more comprehensive evaluation strategy (beyond usage) for 2016-17. The STEM AC has requested a summary of the additional quantitative and qualitative data that will be tracked by the product provider. This is still yet to be submitted, but once it is received, the information will be shared with the third party evaluator to finalize an assessment plan for the 2016-17 school year.

Recognize a high school student's achievement in STEM Fairs, Camps and Competitions (63M-1-3204, 2 (p))
There were several activities that recognized achievement in STEM by schools and students. The STEM AC, in partnership with Comcast and the Utah Technology Council, recognized student achievement with the second annual STEMi Awards.The STEM AC, working with CenturyLink and the Utah Jazz, recognized outstanding students in STEM during half time at eight Jazz games last season. Finally, the STEM AC worked with BioUtah for a second year, to recognize five STEM students at their annual innovation awards event. All of these events are discussed in greater detail in previous sections.

The STEM AC has worked with KUTV on more than 40 STEM stories over the 2016 fiscal year ranging from STEM Fest, to student awardees, to STEM company spotlights. You can find these features on the KUTV website at http://kutv.com/features/stem. There are numerous press releases and media spotlights that are included as links with this report as Appendix O.

Develop and distribute STEM information to parents of students being served by the STEM AC (63M-1-3204, 2 (r))
The STEM MX mobile app, previously discussed, will provide access to resources for parents. This app is in the beta test phase and will be launched officially in the first quarter of 2017. The STEM AC also reaches out to parents when they attend student STEM events, such as the DIY fair. Parents are encouraged to sign up for the newsletter and to follow the STEM AC on social media, where they can find out about STEM events across the state and student grant opportunities. The second annual STEM Fest attracted more than 3,500 family participants on open family night.

A specific section on the website is dedicated to parents, where they can learn the significance of STEM and also keep up to speed on the latest events.

Support targeted high quality professional development for improved instruction in education, including improved instructional materials that are dynamic and engaging and the use of applied instruction (63M-1-3204, 2(s) i - iii)

The STEM AC provides oversight to three projects that address high quality professional development for the improvement of hands on, applied and engaging instruction materials. The STEM AC has been working in partnership with the Career and Technical Education (CTE) staff at the USBE to select and implement new materials and classroom tools into 7th grade Introduction to CTE (now known as College and Career Awareness) and 8th grade Exploring Technology. These tools focus on computer sciences and programming, information technology, and engineering. Four products were selected to support hands on instruction (see Appendix A) in the CTE courses. Product providers conducted hands on instructional support during the 2014-15 school year for their project-based platform. The platform varied for each provider that allowed districts to integrate the hands on activities in the most effective way for their programs and students. Full implementation was completed during the 2015-2016 school year. A full evaluation report is included as Appendix P.

The STEM AC worked in partnership with the math and science specialists at the USBE, as well as partners in higher education, to design and implement a new Elementary STEM Endorsement. This endorsement consists of a sequence of six courses that will provide elementary educators with a more in depth understanding of critical STEM topics and innovative ways to implement applied or hands on instruction in their classrooms. The focus of the endorsement is the use of technology or engineering-based applications for science and math. The endorsement program completed its first full year, with 332 teachers enrolled and approximately 310 teachers having completed the courses. The feedback from teacher cohort group leaders was solicited through an emailed survey and it is included (in summary) in the third party independent evaluation (Appendix P).

Finally, the STEM AC is working with the USBE and selected product providers to deploy video-based, online professional learning tools for K-12 STEM educators. The professional learning platform is discussed in detail in previous sections.

Ensure that an online college readiness assessment tool be accessible by public education students and higher education students. (63M-1-3204, 2 (t) i and ii))
The STEM AC, working in partnership with the USBE and Utah Education Network, determined that EdReady did not meet Utah's college readiness assessment needs. LEAs' interest in using EdReady was also insufficient to justify renewing the contract. The digital math tool ALEKS, a McGraw-Hill product, is designed to help students prepare for college math and shows to be a promising supplemental tool in helping students gain greater proficiency in their college math skills.

ALEKS assesses grade level proficiency in high school students. These assessments provide students with a clear understanding of what they have mastered, and what they still need to learn. These results can easily be compared to college proficiency standards to determine if they are at performance levels in math that meet admission requirements. ALEKS also gives students access to developmental math curriculum online that allows them to improve in areas that have been identified as deficient for college admission.

The Board may prescribe other duties for the STEM AC in addition to the responsibilities described in this section (63M-1-3204, 3)
The STEM AC has been involved in additional activities that include the following:

STEM AC STRATEGIC PLANNING
The STEM AC, working with its Executive Advisory Board, continues to evaluate its overall strategy for supporting talent development as well as strategies to coordinate and collaborate with higher education. The Center's strategic plan is included as Appendix K. The strategic plan is supported by the creation of accountability and effectiveness matrices for each of the legislative projects that receive funding. These tools help us track the statutory requirements of the funding, the actions that the STEM AC has taken to align with statutory requirements, the outcomes of the actions, and how the funding aligned with those actions. The accountability matrices are in the process of being updated and will be available upon request once the update is complete.

INTERNAL STEM AC AUDIT
The STEM AC received approval from the Executive Advisory Board in April of 2015 to conduct an internal audit of process and effectiveness. The intent of the audit was to identify weaknesses in operation, accountability mechanisms and effectiveness of program oversight. The audit report is near completion and the STEM AC will review recommendations and observations and respond to them with corrective action.

WORKFORCE ALIGNMENT STRATEGY
The STEM AC has been working in collaboration with the Utah Department of Workforce Services (DWS) via a shared liaison position. The liaison has been actively involved in helping to guide the STEM AC in projects with the healthcare industry, as well as work-based learning efforts with the National Governor's Association and other state partners. The DWS liaison has also been instrumental in overseeing and building out capacity on the STEM Certification grants.

The STEM AC Executive Director and the STEM AC DWS liaison have been working to identify federal grants that align with key initiatives in workforce alignment. The STEM AC strives to be responsive to stakeholder needs and is exploring ways to continue to support the trades as they align with STEM education and workforce alignment. The STEM AC has funded several grants with the High School STEM Certification project (see following section for more details) that target areas for trades education and training. These include the Bear River Consortium (Cache, Box Elder and Rich school districts; $600,000; automated manufacturing), the Corporate Connections in Manufacturing Consortium (Carbon, San Juan, Emery and Grand County school districts; $375,000; manufacturing), the Pathways to Manufacturing consortium (Granite, Salt Lake City, Murray, Jordan, Canyons and Tooele school districts; $500,000; manufacturing), SOAR (Ogden school district; $340,000; advanced composite manufacturing), Phase One of Tooele County School District (TCSD) and Tooele Applied Technology College (TATC) Alignment Project (Tooele school district; $339,000; welding and manufacturing) and AM STEM (Washington County school district; $339,000; advanced manufacturing, construction technology and emergency medical technician). This represents a total investment of $2,485,000 STEM AC funds to projects that focus on trades-related efforts. The Utah Manufacturing Association (UMA) was a partner on two

of these grants. Further, the STEM AC Executive Director Tamara Goetz was instrumental in helping Davis Applied Technology Center secure Utah Cluster Acceleration Partnership funds to design and implement the first industrial injection molding training program in Utah. Additional actions include exploring a possible liaison role with Utah Manufacturing Association, engaging more effectively with the Women in the Trades organization,

Finally, the STEM AC is working to support key talent needs in the state as part of its workforce alignment strategy. The UAP project, described previously, is one example. The K-16 Computing Pathway Initiative that is described below is another example of this strategic alignment.

HIGH SCHOOL STEM CERTIFICATION PATHWAYS

This program is defined by statute, **63M1-3211**, and provides funding to support high school STEM pathways. The two requirements of this grant program are (1) industry-recognized credentials must be supported and (2) the pathway must support a STEM job that is in high demand. The STEM AC, working with a sub-committee of partners in K-16 education and the Utah Department of Workforce Services, reviewed grant submissions and awarded 12 grants. The grants could be early implementation (short-term in design) or comprehensive development (long-term in design, requiring more planning) plans. The overall intent was to support the creation of new pathways or enhance and build capacity of existing pathways.

The grants were awarded to individual LEAs or consortia consisting of several LEAs. The areas of STEM focus included manufacturing, information technology, life sciences and healthcare.

The majority of these grants have closed out and submitted their final reports. Several have requested no-cost extensions or have been amended to address changes in scope.

A report conducted in February of 2016 is included as Appendix L. A full, final report is in the process of being completed. Initial outcomes indicate that 6,919 students participated in the certification pathways, 4,791 students having completed certificates. There were 639 students that completed internships.

K-16 COMPUTER SCIENCE PATHWAY

There are two synergistic approaches to growing Utah's CS/IT talent: (1) meet short-term needs with accelerated training or "up skilling" and (2) a long-term sustainable approach working with education and business partners to build a pathway or a "pipeline."

This initiative will focus on building a K-16 pathway that will allow for stackable credentials within the pathway that are facilitated by clearly defined exit and re-entry points to access credentials. The proposed initiative will focus on key issues that are barriers to access student to CS education and career opportunities.

The STEM Action Center (STEM AC) has been working with K-16 education partners to identify the needs in the pathway. These include innovative outreach, engagement and awareness activities (with a focus on underrepresented populations), robust and industry-relevant content

for courses, classroom engagement with industry partners (this can include time spent in elementary classrooms as well as instruction in secondary courses), a sufficient number of secondary teachers, work-based learning opportunities, and effective articulation with postsecondary partners that increases retention of students in undergraduate programs.

Vance Checketts, Vice President of Utah Operations for Dell EMC, hosted a first-ever "working meeting" or task force meeting that will provide an opportunity for industry partners to commit to helping the STEM AC and education partners begin to build the K-16 computing pathway in their schools, districts, and institutions of higher education. The meeting was held on September 13 from 8:30 am to 12:00 pm at the new Dell EMC location on Frontrunner Boulevard in Draper, UT. There were nearly 40 in attendance representing Adobe, 3M, Landesk, Comcast, Ancestry.com, Vivint, Microsoft, Google, Oracle, IMFlash, Goldman Sachs, eBay, Hill Air Force Base, AT&T, Inside Sales, OCTanner Utah Technology Council, Womens Tech Council, and Beehive Startups.

The resulting commitment from corporate partners will be leveraged to support a potential bill that will be carried forward in the 2017 legislative session. The intended fiscal request with the proposed bill will help to fund a statewide K-16 Computing Pathway program.

The STEM AC is currently targeting small pilot grants with one-time carry over funds to leverage with the legislative funding request. The STEM AC will leverage other resources that it has secured to the computing pathway including the CREATE Lab content (which will be described in greater detail hereinafter).

An additional resource that will be leveraged heavily in the K-16 computing pathway project is the current code.org grant that the STEM AC was awarded in partnership with the USBE. The code.org grant is a two-year project that provides ongoing educator professional learning for the key courses in the computing pathway, including: Exploring Computer Science (ECS; 9th or 10th grade), AP Computer Science Principles (AP SCP; 11th or 12th grade), and AP Computer Science (AP CS; 11th or 12th grade). Additional training provided for by the grant includes: (1) Fundamentals of Computer Science, which provides professional learning for elementary teachers to bring Hour of Code and Code Studio to their classrooms; and (2) Computer Science in Science, which is new to the pathway and helps science teachers integrate relevant computer science concepts that align with state science standards into their science classes.

The grant provides for half of the stipends compensating teachers for participation. The STEM AC received a grant from the Hill Air Force Base to match the other half of the high school stipends ($30,000) and the USBE has matched half of the elementary stipends ($17,000). The STEM AC's work with code.org has resulted in an invitation by the White House to participate in a computing roundtable and to share the efforts in Utah with partners to build out a K-16 pathway.

HIGHER EDUCATION COLLABORATION

The STEM AC has been working strategically with higher education partners on several projects, including CREATE labs and the STEM Equity Pipeline.

(1) STEM Equity Pipeline: The STEM AC has been working with Utah Valley University, the National Alliance for Partnerships in Equity (NAPE), and several Utah LEAs to implement a multi-year project that is funded by the National Science Foundation. The overarching purpose of the STEM Equity Pipeline project is to use root cause analysis to determine the reasons why enrollments for underrepresented populations are unacceptably low in STEM education and career pathways. A pilot was conducted with Park City School District (PCSD) in their middle, junior, and high schools. The first year of root cause analysis was followed by data-driven changes during year two. Year three enrollments for girls in select STEM courses increased dramatically. Data is being collected for Hispanic and Latino students for year four enrollments. The data from this project is available upon request.

The STEM Equity Pipeline root cause analysis work is being scaled to Ogden and Weber School Districts with support from a grant from Hill Air Force Base. This will launch during the 2016-17 school year.

(2) CREATE Labs: The STEM AC received a grant (along with the city of Atlanta) from the CREATE Lab at Carnegie Mellon University (CMU), which is funded by the Infosys Foundation, to establish a CREATE Lab satellite. The overarching purpose of this grant, with the creation of the satellite, is to provide support to implement engaging coding and robotics projects that integrate across the arts, humanities, social sciences, and environmental sciences. The projects specifically target elementary and middle school students. The grant provides resources for four projects and intensive training for project partners to incorporate the projects into the classroom. The pilot for the satellite project includes Utah Valley University and Southern Utah University, along with the school districts in their service areas. The partners recently attended a workshop at CMU to develop a strategic plan for implementation. The CREATE Lab project will be provided as an option for engaging, cross-disciplinary content for the K-16 Computing Pathway Initiative described in the previous section.

Outreach and Engagement

The STEM AC conducts the following outreach and engagement activities as a means to provide project support to teachers and promote STEM AC resources.

- Visits with district superintendents: The STEM AC is working to ensure that all superintendents are familiar with the STEM AC and its resources, and are supportive of their district's participation in STEM AC projects. The Executive Director has had one on one visits with the superintendents of 21 districts to date. These visits took place on site in superintendents' offices, with their administrative teams.
- Site visits to STEM AC projects: The STEM AC team conducted site visits for several projects during FY 2016. These projects included the 7th and 8th grade Applied Science and classroom grants.
    - (1) Applied Science: These visits took place around the state. Positive feedback as well as concerns were discussed at each site. Positive feedback included comments from teachers, administrators, and even students using the materials and curricular components of each of the products. Teachers talked about their lack of knowledge in a former content area being overcome with materials provided for cutting edge

biotechnology topics. Administrators enjoyed having more hands on opportunities for students to participate in. Students commented that they liked doing projects and learning things along the way rather than doing typical school work. While praise varied greatly, the face-to-face teacher visits made clear that after using the products for some time, teachers wanted opportunities to meet with other teachers using the same product to discuss how to use and implement various product materials and/or features.

- (2) Classroom grants: Classroom grants for the 15-16 school year varied in scope and subject. Team members were able to observe multiple projects on-site, including the classroom grant projects mentioned on page 14 in this document. During the 2015-2016 school year, 23 classroom visits for classroom grants were made.

- (4) High School STEM Industry Certification Program: Site visits for this program were completed in December 2015 and January 2016. At each awarded site, a monitoring tool was used to address project scope and progress and to identify any concerns or needs for MOU amendments. Budget discussions were also held to provide an updated forecast of expected expenditures.

- (3)Road trips: The STEM AC team conducted a multi-week "road trip" across the state to provide additional professional development to teachers for the use of the digital math tools and the professional learning platform, Edivate. At the beginning of August 2016, the STEM Roadshow consisted of five events around the State of Utah. These events designed to get the year off on the right foot, providing teachers with opportunities to collaborate, share successes, find solutions to challenges, and receive professional development related to products provided by the STEM Action Center's Math and/or Professional Development grant programs. Across all five locations (Cedar City, Manti, Price, Salt Lake City, and Park City) 471 participants attended sessions providing training and collaboration opportunities related to mathematics technology, and 112 participants attended training for products provided by Professional Development grants. In total 524 participants from 158 schools in 28 districts and 31 charters attended.

  One teacher in particular shared that in his opinion, it was the most worthwhile professional development opportunity in which he had ever participated. He was particularly excited about the ideas and suggestions he had received that would help him track student progress, target instruction to meet student needs, and integrate technology into his classroom more effectively.

- Sponsorship of events for students: The STEM AC uses a portion of its operational funds to sponsor STEM-related events. A total of 26 events were sponsored for the FY2016 with an estimated 63,320 students impacted and a total of $64,470 allocated. The sponsorship recipients are listed in Appendix M.

- The STEM Action Center distributes a monthly newsletter that has a reach of over 3,000 Utahns, with more than 1,000 unique sign-ups at the STEM.utah.gov website since its creation in December of 2014. The newsletter receives an average open rate of 21.6%.

Acquisition of STEM education related instructional technology program – Research and development of education related instructional technology (63M-1-3205)
The STEM AC completed its second full year of training and implementation to support the digital math learning tools project (2015-16 school year). A total of 180,707 students had access to the licenses associated with the math digital learning tools. The program covered 29% of all Utah students in grades K-12, with 78 districts and charter schools participating (523 schools total). There were 9 learning tools that were tested during the second year.

There were numerous "lessons learned" from the first full year of implementation (2014-2015), and the STEM AC was very intentional about applying solutions to those issues that emerged over the first year. A matrix is provided in Appendix N that describes the "lessons learned" from 2014-15 school year and solutions that were applied to the identified challenges. The spreadsheet also describes "lessons learned" from the second full year of implementation (2015-16) and the solutions that are currently being applied and tracked.

In year one districts applied for grants, and we learned that in some cases there was no support or buy in from principals and technology directors. Though in year two it was a still a district application, school principals were required to sign a letter of commitment promising to ensure that students would have access to technology for at least 45 minutes per week to use the math software provided. We also required signatures from the IT Director at each LEA to ensure they were aware of any technology provided by the grant and that they would have adequate bandwidth and infrastructure prior to year two implementation.

In year one product providers also had difficulty distributing licenses and arranging professional development. To mitigate these issues, all applications in year two were required to list "on-site" contacts. Receiving buy-in from stakeholders at all levels had an enormous impact. Product providers were able to distribute the majority of awarded licenses and facilitate professional development right at the beginning of the school year. The contract in year two also required product providers to distribute license and arrange professional development before they received payment, which may have encouraged them to put forth extra effort to ensure timely completion of these activities. We also made sure that usage expectations were clearly communicated to administrators and math coordinators.

Due to limited funding we decided to focus on providing the product to schools where there was evidence that teachers would use the products and receive support from administrators. Awarded schools that had zero usage over the course of year one were not provided with technology in year two, and no new schools were added to the project.

The third party evaluator for the STEM AC has been working with the USBE to access end of year test scores (SAGE) for the 2015-16 school year to align with use of the digital learning tools. The

data was provided to the STEM AC on Friday September 25th, 2015 for the first year and we anticipate a similar delivery or release date for the 2015-16 school year SAGE data. The evaluator will provide a full report by and it will be included as an addendum to this report once the SAGE data is received and adequate time has passed for completion of the report.

Third party evaluation report on performance of students participating in STEM Action Center programs as collected in Subsection 63M-1-3204(4).

The third party evaluator for the STEM AC, as described in the preceding section, has been working on the completion of a full annual report that will include the end of year test scores (SAGE) and their alignment with use of the math digital learning tools and professional learning and applied science projects. The STEM AC will provide the full annual report as an addendum once it has been submitted by the evaluator. It is anticipated that Utah State University, the third party evaluator, will be submitting the final evaluation report by mid-November, 2016.

Additional:

SB93 Computer Science Initiative - 2016 Legislative session

The STEM AC is required to submit an update on the activities of SB93. The Computer Science Initiative is to provide incentives to current educators to earn a Computer Science endorsement. Within that effort, districts may elect to use funds for professional development training for teachers, travel reimbursements for relative conferences, conference registration fees, tuition fees, and other approved computer science related expenses.

During the first of September there was a CTE Directors meeting where SB93 was introduced and questions were answered. Currently, on the CTE home page there is a link to the information and the grant application with due dates and other information.

Alliance for Science and Technology Research for America (ASTRA)

The ASTRA STEM on the Hill State STEM and Innovation Report Card 2016 indicated that there has been a slow, but steady increase in student interest in STEM careers since 2013/2014. While it is not easy to determine if the investment by the State in STEM has been directly responsible for this increase in STEM, it cannot be ruled out as having influenced Utah students and their interest in STEM. The other data point that is of concern, but validates the direction of several STEM-related projects in Utah, is the fact that this increase in STEM careers in not seen with girls. The STEM AC, and its partners, will use this as a positive motivator to continue to provide access to STEM activities and programs to Utah girls.

ATTACHMENTS:

Appendix A: Selected Product Providers
Appendix B: Investors Coalition Report
Appendix C: STEMFest District and School Participants
Appendix D: STEMFest Sponsor List
Appendix E: Fairs, Camps and Competitions

Appendix F: Classroom Grants Summary
Appendix G: STEM School Designation Summary
Appendix H: STEM School Designation Application Sample
Appendix I: “Lessons Learned” Summary – Professional Learning
Appendix J: Professional Learning Grant Awards Summary
Appendix K: STEM AC Strategic Plan
Appendix L: High School STEM Certification report
Appendix M: Sponsorships Summary
Appendix N: “Lessons Learned” Summary – Digital Math Tools
Appendix O: STEM Press Releases and Media Highlights
Appendix P: Third Party Independent Evaluation (to be submitted)

Appendix A

Attachment A
Selected Product Provider List

HB Project	Vendor	Alignment
Math Software: Grades K-12	- Ascend Education (Ascend Math) - Carnegie Learning (MathiaX & Cognitive Tutor) - Curriculum Associates (i-Ready) - McGraw-Hill (ALEKS) - MIND Research Institute (ST Math) - Think Through Learning (Think Through Math)	✓ Contains individualized instructional support for skills and understanding of core standards ✓ Is self-adapting to respond to the needs and progress of the learner ✓ Provides opportunities for frequent, quick and informal assessments ✓ Includes an embedded progress monitoring tools and mechanisms for regular feedback to students and teachers
Professional Development Software	- School Improvement Network	✓ Access to automatic tools, resources and strategies ✓ Work in online learning communities ✓ Includes video examples of highly effective STEM education teaching ✓ Covers a cross section of grade levels and subjects ✓ Includes videos of Utah STEM educators ✓ Contains tools to help implement what has been learned ✓ Allowance for face-to-face learning in a hybrid model
Applied Science (CTE) Software: Grades 7-8	- Pitsco - The STEM Academy - ITEEA - Project Lead the Way	✓ An applied science curriculum for students in grades 7 and 8 ✓ Includes STEM applied science curriculum with instructional materials ✓ Includes STEM hybrid or blended high quality professional development that allows for face-to-face applied learning ✓ Includes hands-on tools for STEM applied science learning.

STEM Utah Industry Coalition

Report to the STEM Action Center

Aug 5, 2016

The STEM Utah Industry Coalition was organized in 2013 to support the newly created STEM Action Center, and to advance STEM education in meeting Utah's growing workforce needs. The Coalition is organized and functions with the assistance of the Utah Technology Council. All totaled the industry cash and in-kind support for the STEM Action Center approaches $4.5 million.

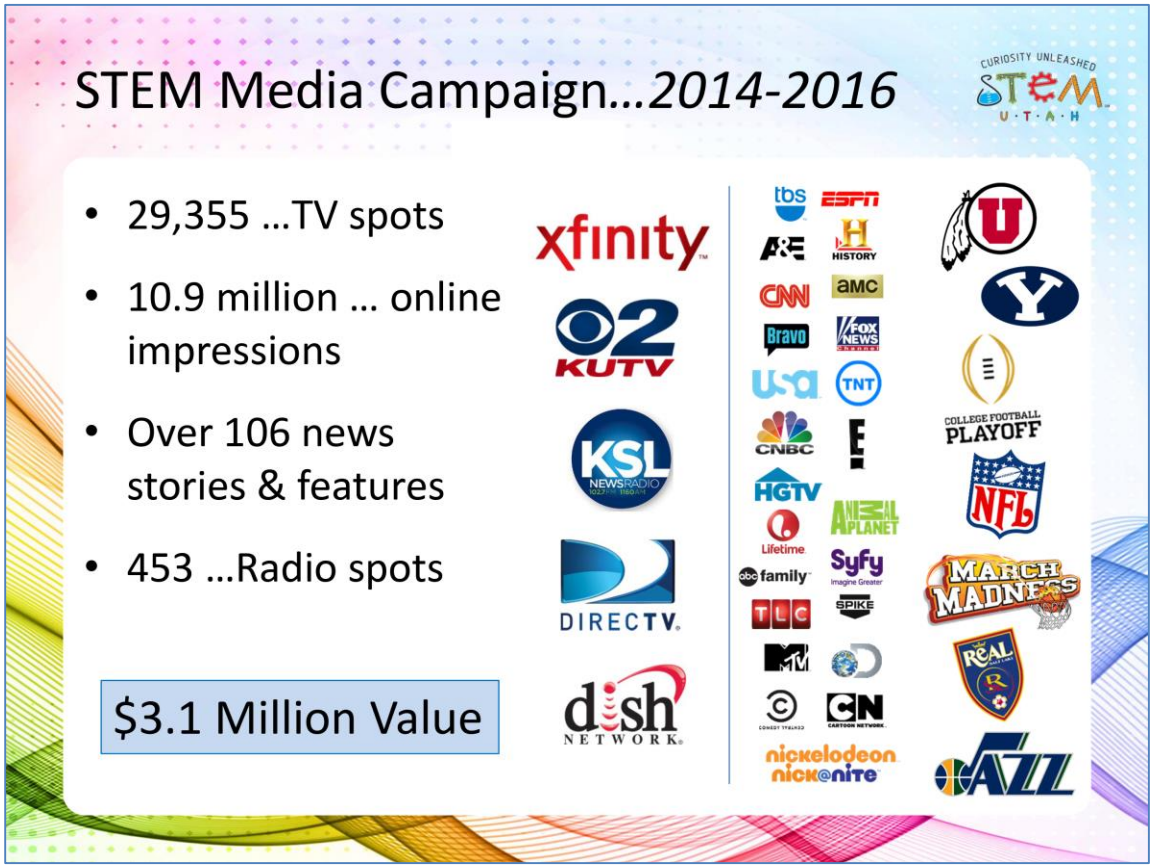
STEM Utah Media Campaign "Curiosity Unleashed"

In January, 2014 the Coalition launched the STEM Utah media campaign, "Curiosity Unleashed", to encourage STEM education. Since that time over 30,000 TV & Radio spots, 11 million online impressions and 100 news stories have been broadcast across the state. STEM education…not cell research…is now top of mind when you walk into schools, or talk to parents and educators.

The campaign has also included:

- The state-wide STEM Assembly broadcast over KUEN and online, 2014
- The STEM Fests in 2015 & 2016 that were attended by over 50,000 students and hundreds of industry presentations.
- The STEMie Awards in 2015 & 2016, in collaboration with the UTC/Stoel Rives "Utah Innovation Awards"; recognizing STEM education excellence in a student, teacher, principle, counselor, and volunteer.
- Science on the Slopes at the Solitude Ski Resort in April 2016 is association with; Ski Utah, STEM Action Center, US Forest Service, KSL Radio, Utah Avalanche Center, and Tree Utah.

Media Campaign Value in Cash & Trade from Coalition Partners:



- **Campaign breakout for August 2015 through July 2016:**
  - **Media summary**
    - TV spots…Cable networks, KUTV & KMYU 10,090
    - Radio spots 453
    - Online video ad impressions 1,363,715
    - News stories on broadcast TV, radio & live event coverage 19
  - Cash & In-Kind contributions:
    - **Total for Fiscal year 2015-16** **$631,608**

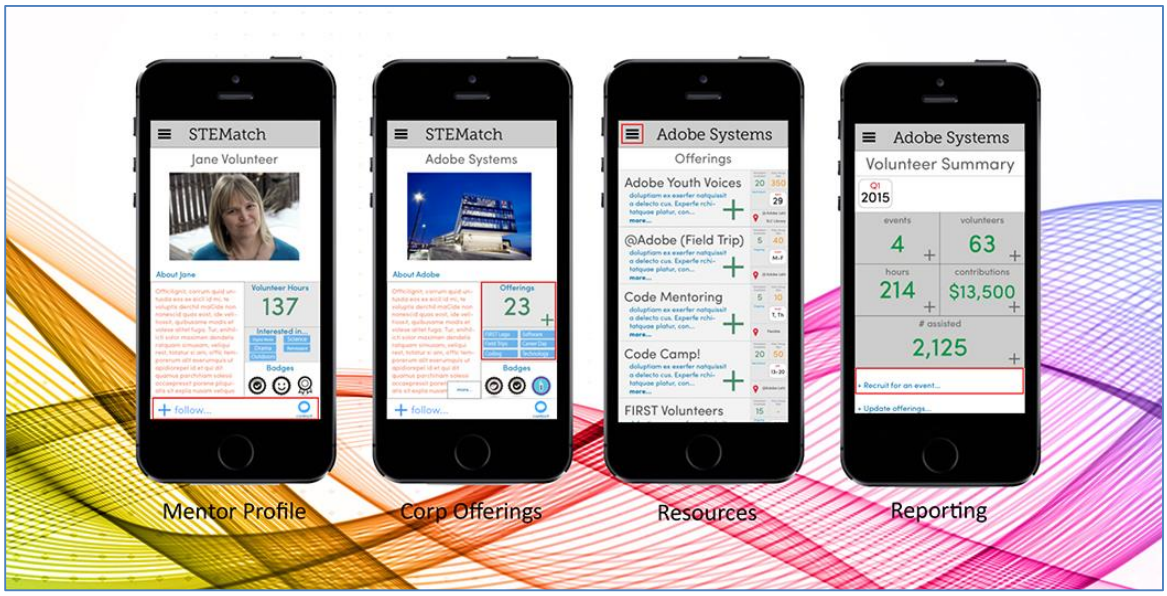
STEMatch Mobile App

The need to connect educators with industry has never been greater, especially with the rapid advance of technology. Educators are challenged to prepare students for the jobs of the future, but industry also has a responsibility to help.

As technology advances and jobs change, many companies have educational resources or encourage their employees to volunteer as mentors or sponsors at the schools in their community.

Several Coalition partners have reported frustration in finding meaningful opportunities to serve. And on the other hand educators are frustrated in finding the right resources and mentors from industry. As a result the STEM Utah Coalition is developing a mobile app called STEMatch.

The app is being developed by a volunteer team of over 20 engineers and professionals from EMC^2, Adobe, Boeing, Comcast, Pluralsight, and the law firms of Workman Nydegger and Callister Nebeker & McCullough.



Educators will be able to search for industry support from a wide range of subjects, leaning opportunities and resources; and likewise industry volunteers will be able to search for opportunities to serve and mentor in their fields of expertise.

A beta version of the app is projected for release in late Q4/2016 with a first release in Q1/2017.
Go to http://www.stempartner.com for a preview.

The actual retail cost of bringing a mobile app of this scope to market, which is being donated in cash and trade by Coalition partners, is estimated at around: $650,000.

Direct Industry Grants to the STEM Action Center:

- **Creation of the STEM Action Center Foundation:**
  - Lee McCullough of Callister Nebeker & McCullough has provided pro-bono his services to create the STEM Action Center Foundation.
  - **Value:**

- **Tesoro:**
  - The Tesoro Foundation has provided a $1.5 million grant to create STEM Buses; mobile STEM classrooms that will tour the state in 2017

- **IHC:**
  - $200,000

Appendix C: STEMFest District and School Participants

District	School
Alpine	Baird Academy
Alpine	Lakeridge Junior High School
Alpine	Lakeridge Junior High School
Alpine	Lakeridge Junior High School
Alpine	Lakeridge Junior High School
Alpine	American Fork Junior High
Alpine	American Fork Junior High
Alpine	American Fork Junior High
Alpine	American Fork Junior High
Alpine	American Fork Junior High
Alpine	American Fork Junior High
Alpine	American Fork Junior High
Alpine	khgfjh
Alpine	Frontier Middle School
Alpine	Frontier Middle School
Alpine	Frontier Middle School
Alpine	Frontier Middle School
Alpine	Frontier Middle School
Alpine	Frontier Middle School
Alpine	American Fork High School
Alpine	Willowcreek Middle School
Alpine	Willowcreek Middle
Alpine	Mountain Ridge Jr.
Alpine	Mountain Ridge Junior
Alpine	Homeschool
Alpine	Willowcreek Middle School
Alpine	Pleasant Grove Junior High
Alpine	American Fork High School
Alpine	River Rock Elementary
Alpine	Lone Peak High School
Alpine	Freedom
Alpine	Freedom
Alpine	Freedom
Alpine	Boden School of Wisdom and Knowledge
Alpine	Homeschool
Alpine	Foothill
Alpine	None
Alpine	Homeschool
Alpine	Home school
Alpine	Homeschool
Box Elder	Box Elder Middle School
Box Elder	Box Elder Middle
Box Elder	Box Elder Middle School
Cache	South Cache 8/9 Center

Cache	South Cache 8/9 Center
Cache	Utah State University
Canyons	Mount Jordan Middle School (1)
Canyons	Mount Jordan Middle School (1)
Canyons	Mount Jordan Middle School (2)
Canyons	Mount Jordan Middle School (3)
Canyons	Butler Thursday
Canyons	Albion Wednesday
Canyons	Eastmont Middle
Canyons	Eastmont Middle School
Canyons	Indian Hills Middle School
Canyons	Indian Hills Middle School
Canyons	Indian Hills Middle School
Canyons	Eastmont Middle School
Canyons	Indian Hills Middle School
Canyons	American Preparatory Academy Draper 3
Canyons	Union Middle School
Canyons	Union Middle School
Canyons	Union Middle School
Canyons	Hillcrest High
Canyons	Hillcrest IB
Canyons	Draper Park Middle School
Canyons	Draper Park Middle School
Canyons	Draper Park Middle School
Canyons	Draper Park Middle Schoolo
Canyons	Draper Park Middle School
Canyons	Draper Park Middle School
Canyons	Butler Middle School
Canyons	Butler Middle School
Canyons	Butler Middle School
Canyons	Butler Middle School
Canyons	Eastmont
Canyons	Eastmont
Canyons	Eastmont
Canyons	Eastmont
Canyons	Pine Ridge Academy
Carbon	Helper Middle School
Davis	Fairfield Junior High
Davis	Legacy Jr. High
Davis	Bountiful Jr. HIgh
Davis	West Point Junior High
Davis	North Davis Jr. High
Davis	Bountiful Jr. High
Davis	Legacy Jr High - MESA Club and Honors Students
Davis	Centennial Junior High

Davis	Centennial Junior High
Davis	Centennial Junior High
Davis	Centennial Junior High
Davis	Centennial Junior High
Davis	Davis County Home School Co-op
Davis	Mueller Park Jr.
Davis	Syracuse Junior High School
Davis	Layton High School
Davis	Syracuse High School
Davis	Syracuse High School
Davis	South Davis Junior High
Davis	homeschool
Davis	Mueller Park Jr. High
Davis	Central Davis Jr. High
Duchesne	Roosevelt Junior High School
Duchesne	Roosevelt Junior High School
Emery	Canyon View Jr. HighSan Rafael Junior High
Emery	Canyon View Jr. HighSan Rafael Junior High
Emery	Canyon View Jr. HighSan Rafael Jr. High
Emery	Canyon View Jr. HighSan Rafael Jr. High
Garfield	Bryce Valley High School
Grand	Grand County High School
Granite	West Lake Jr. High School
Granite	West Lake Jr. High
Granite	West Lake Jr. high
Granite	West Lake Jr. High
Granite	Entheos Academy
Granite	Wasatch Jr. High
Granite	Evergreen Junior High
Granite	Evergreen Junior High
Granite	Evergreen Junior High
Granite	youth services
Granite	YESS/Uni
Granite	Thomas Jefferson Junior High
Granite	Thomas Jefferson Junior High
Granite	Thomas Jefferson Junior High
Granite	Kearns Junior High School
Granite	Kearns Junior High School
Granite	Kearns Junior High School
Granite	Matheson Jr. High
Jordan	MHA
Jordan	Elk Ridge Middle
Jordan	Montessori at Riverton
Jordan	Oquirrh Hills Middle
Jordan	Copper Mountain Middle School

Jordan	River's Edge
Jordan	Sunset Ridge Middle School
Jordan	None
Logan	students from cache and logan school districts
Millard	Fillmore Middle
Morgan	Morgan Middle School
Morgan	Morgan Middle School
Morgan	Morgan Middle School
Morgan	Morgan Middle School
Morgan	Morgan Middle School
Murray	American International School of utah
Murray	American International School of Utah
Murray	Christ Lutheran School
Nebo	Mt. Nebo Jr. High School
Nebo	Mt. Nebo Jr. High
Nebo	Mt. Nebo Jr. High
Nebo	Goble Family Homeschool
Nebo	Goble Family Homeschool
Nebo	Goble Family Homeschool
Nebo	Goble Family Homeschool
Nebo	Goble Family Homeschool
Nebo	Goble Family Homeschool
Nebo	Spring Lake Elementary
Nebo	Spring Lake Elementary
Nebo	Spanish Fork High School
Nebo	Spanish Fork High School
Nebo	Spanish Fork High School
Nebo	Westside Elementary
Nebo	Spanish Fork High School Maple Mountain High School Salem Hills High Scho School
Nebo	PJHS
Nebo	Payson Jr. High
North Sanpete	North Sanpete Middle School
North Sanpete	North Sanpete Middle School
North Summit	North Summit Middle School
Ogden	Mount Ogden Jr. High
Ogden	Highland Junior High
Ogden	Highland Junior High
Ogden	Mount Ogden Jr. High
Other	Charter School
Other	Monticello Academy, a Charter School
Other	Monticello Academy
Other	PrivateRowland Hall
Other	Spectrum Academy, Pleasant Grove
Other	Spectrum Academy, Pleasant Grove

Other	Blessed Sacrament
Other	North Davis Preparatory Academy
Other	North Davis Preparatory Academy
Other	North Davis Preparatory Academy
Other	Private School Rowland Hall Middle School
Other	Canyon Grove Academy
Other	John Hancock Charter School
Other	Early Light Academy
Other	Summit Academy Bluffdale Junior High
Other	Private (SLC)
Other	Beehive Science and Technology Academy
Other	Beehive Science and Technology Academy
Other	Beehive Science and Technology Academy
Other	Mountainville Academy
Other	Summit Academy Charter School
Other	Summit Academy Charter School
Other	Vanguard Academy
Other	Vanguard Academy
Other	Vanguard Academy
Other	Vanguard Academy
Other	North Star Academy
Other	American Preparatory Academy
Other	ho
Other	ho
Other	Ascent Academies of Utah - West Jordan
Other	Ascent Academies of Utah - West Jordan
Other	Ascent Academies of Utah - West Jordan
Other	Ascent Academies of Utah - West Jordan
Other	Ascent Academies of Utah - West Jordan
Other	Ascent Academies of Utah - West Jordan
Other	American Preparatory Academy Draper 3
Other	Channing Hall Charter
Other	Channing Hall Charter
Other	Ascent Academy of Lehi
Other	Winter Homeschool
Other	Utah Connections Academy
Other	Utah Connections Academy
Other	Other
Other	Other
Other	Other
Other	Other
Other	Other
Other	Other
Other	Other
Other	Other

Other	Other
Other	Other
Other	Other
Other	Other
Other	Park City Day School
Other	Park City Day School
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Other	Park City Day School
Other	Park City Day School
Other	Intermountain Christian School
Other	Intermountain Christian School
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Other	We are a homeschool co-op of jr high and high school aged youth.
Other	Freedom Prep Academy
Other	Spectrum Academy
Other	American Leadership Academy
Other	American Leadership Academy
Other	Maria Montessori Academy
Other	Carlin Combined Schools
Other	homeschool
Other	Madeleine Choir School
Other	Blessed Sacrament School
Other	Spectrum
Other	Homeschool
Other	Carden Memorial School
Other	Homeschool
Other	North Davis Preparatory Academy
Other	North Davis Preparatory Academy
Other	North Davis Preparatory Academy
Other	Legacy Preparatory Academy
Other	Grace Lutheran School
Other	Grace Lutheran School
Other	The McGillis School
Other	Homeschool
Other	Homeschool
Other	Syracuse Arts Academy
Other	Syracuse Arts Academy
Other	Arches Academy
Other	Mother earth academy
Other	St. Marguerite Catholic School
Other	Legacy Preparatory Academy
Other	Layton Christian Academy
Other	Daniels Academy
Other	Clearfield Job Corps
Other	Renaissance Academy
Other	Renaissance Academy

Other	Good Foundations Academy
Provo	Dixon Middle School
Provo	Dixon Middle
Provo	Homeschool
Provo	My Tech High/Provo eSchool
Provo	My Tech High
Provo	My Tech High
Provo	My Tech High
Salt Lake City	Dual Immersion Academy
Salt Lake City	Glendale Middle School
Salt Lake City	SLCSE
Salt Lake City	MBG
Salt Lake City	homeschool group
Salt Lake City	Northwest Middle
Sevier	North Sevier Middle School
South Sanpete	Gunnison Valley MIddle School
South Summit	South Summit High School
Uintah	Uintah High School
Wasatch	homeschool
Washington	Utah Online School
Washington	Utah Online School
Washington	Utah Online School
Washington	Utah Online School
Washington	Utah Online School
Weber	South Ogden Jr. High
Weber	South Ogden Jr. High
Weber	South Ogden Junior High
Weber	South Ogden Junior High School
Weber	Quest Academy Charter School
Weber	Quest Academy Charter
Weber	Jackson Family Homeschool
Weber	TH Bell Jr. High

Appendix D

STEMFest 2016 Sponsors

Think Through Math
McGraw Hill
The Leonardo
IMFlash
Elements of Evil
Salt Lake County
BioEYES Utah
Utah State Office Education
Oracle
US Synthetic
Natural History Museum
Utah Valley University
UCCU
LanDesk
Alison Sturgeon
Orbital ATK w/ Clark Planetarium
Rocky Mountain Power
Discovery Gateway
Red Butte Garden
Hawkwatch International
Salt Lake County Library Services
Utah Virtual Academy
Staker Parson Companies
Junior Achievement of Utah w/ Nelson Labs
Operating Engineers JATC of Utah
Goldman Sachs
Hogle Zoo
Itineris Early College High School
Mad Science
L-3 Communications
Microsoft
Associated General Contractors of Utah
Lassonde Entrepreneur Institute
Utah Education Network
Loveland Living Planet Aquarium
Utah Odyssey of the Mind
Utah Educational Savings Plan

Craft Lake City
UCC Trades

FIRST Utah (Lego League, Tech Challenge, Robotics Challenge)

Governor’s Office of Energy Development
Boeing
Brigham Young University
University of Utah
Department of Workforce Services
Hughes General Contractors
Paul Mitchell School
Neumont University
Salt Lake Community College
NUNTMA
Imagine That 3D
The Tessera
SpyHop
Larry H. Miller Dealerships
Build Camp
New Horizons Maritime Center
Salt Lake Community College, Biotechnology Department
LSI
Jordan High School
EMC
School Improvement Network
Utah Highway Patrol
Bicycle Collective
Texas Instruments
Utah STEM Action Center
MIND Research Institute

Appendix E: Fairs, Camps, and Competitions 2016

Applicant name	ID Number	Name of person/entity being reimbursed	Reimbursment Address	City	Zipcode	Amount awarded	Students Impacted	Date of event	Reimbursment Amount	Complete
A. Allred	A-4000401755	Canyon Grove Academy	588 W 3300 N	Pleasant Grove	84062	$899.00	4		$899	Yes
A. Evans	A-4740153726	Ascent Academy West Jordan	5662 W 8200 S	West Jordan	84081	$982.76	10		$972.76	Yes
A. Fox	A-4391839152	Desert Hills Middle School	936 E Desert Hills Dr.	St. George	84790	$2,500.00	17		$2,500.00	Yes
A. Hyer	A-2054285097	NUAMES, VEX Robotics	2750 N University Park Blvd	Layton	84041	$1,619.84	7	4/22/2016		
A. Pham	A-9539452158	AMES	5715 S 1300 E	SLC	84121	$500.00	1	5/15/2016		
A. Sung	A-6755908925	Department of Medicinal Chemistry: Balagu	261 B Connor Road	SLC	84113	$500.00	1		$196.22	Yes
A. White	A-4819401878	InTech Collegiate HS	1787 N Research Parkway	Logan	84341	$175.45	1		$175.45	Yes
A. Yun	A-4777948900	Lan Yu	2939 Cardiff Rd	SLC	84121	$380.00	4	3/31/2015		
B. Lara	A-4850472737	Entheos Academy	4710 W 6200 S	Kearns	84118	$1,205.00	7	1/16/2015		
B. Romney	A-4610790051	InTech Collegiate HS	1787 N Research Parkway	Logan	84341	$341.42	1		$154.63	Yes
B. Turner	A-4687284299	Iron County 4-H Robotics	2041 W 460 S	Cedar City	84720	$1,393.30	11		$1,393.30	Yes
C. Davies	A-0592126134	Tyler T Croft	902 Healey Blvd	Alpine	84004	$1,607.00	8		$1,284.07	Yes
C. Edgington	A-5813226770	Melinda Edgington	509 Tonpah Way	Ivins	84770	$116.47	1		$116.47	Yes
C. Hafen	A-0342883132	Rebecca Hafen	186 E 100 N	Ivins	84738	$293.08	1		$277.50	Yes
C. Humphrey	A-3851971449	Holly Humphrey	4246 Chestnut View Dr	South Jordan	84009	$475.00	1		$475.00	Yes
C. Kane	A-8493370610	Jennifer Kane	178 S 1050 W	Hurricane	84770	$230.00	8		$230.00	Yes
C. Larsen	A-9744707637	Westfield Elementary	380 S Long Drive	Alpine	84004	$941.93	9		$941.93	Yes
C. McBride	A-3518479214	Salt Lake Center for Science Education	1400 W Goodwin Ave.	SLC	84116	$328.00	4		$70.00	Yes
C. Morrill	A-3466042441	Jill Morrill	4805 W 4600 S	West Haven	84401	$1,474.91	5		$1,414.91	Yes
C. Murray	A-3570053143	LeShell Murray	382 E 650 S Cir.	Cedar City	84720	$160.00	7		$150	Yes
C. Russon	A-5603456422	Cindy Cannon	832 Northcliffe Dr	Salt Lake City	84103-3341	$500.00	1		$500.00	Yes
C. Rust	A-6272364614	Wayne Rust	355 W 470 S	Lindon	84042	$500.00	1		$500.00	Yes
D. Blaine	A-7913487386	Jennifer Blaine	162 E Fish Hatchery Rd.	Mantua	84324	$1,399.00	12		$1,378.00	Yes
D. Call	A-2326470128	Manila Elementary	1726 N 600 W	Pleasant Grove	84062	$1,350.00	10	1/30/2016		
D. Ivie	A-6389567880	Entheos Academy	4710 W 6200 S	Kearns	84118	$1,380.00	9	1/16/2015		
E. Case	A-9066888519	Sheri Prucka	P.O. Box 3087	Park City	84060	$1,545.00	6		$1,545.00	Yes
E. Delany	A-6130164148	Nicole Delany	10048 Jordan Park Circle	South Jordan	84095	$500.00	1	6/20/2016		
E. Dowell	A-7971524349	William Dowell	4115 Juniper Ln.	Eden	84310	$500.00	1		$389.09	Yes
E. Ong	A-5873526730	Jacob Ong	729 W Rolling Sage Way	Saratoga Springs	84045	$1,371.82	7		$1,268.82	Yes
E. Reed	A-6104789071	InTech Collegiate HS	1787 N Research Parkway	Logan	84341	$107.68	1		$76.90	Yes
G. Arveseth	A-5387214404	South Hills Middle School	13508 S 4000 W	Riverton	84065	$1,433.00	1		$1,321.53	Yes
G. Gardiner	A-5433706266	Matt Gardiner	234 S 100 W	St. George	84770	$150.00	1		$150.00	Yes
G. Manninen	A-3462941357	Sheri Prucka	P.O. Box 3087	Park City	84060	$2,086.00	7		$2,086.00	Yes
G. Scott	A-3372695266	Salt Lake Center for Science Education	1400 W Goodwin Ave.	SLC	84116	$500.00	1		$373.75	Yes
H. Miller	A-8963086620	Brett Miller	3438 Eden View Dr.	South Jordan	84095	$300.00	1	3/4/2016		
H. Segura	A-4907395379	Anneli Segura	1130 North Sonata Street	Salt Lake City	84093	$500.00	1		$500.00	Yes
H. Pu	A-5957455917	InTech Collegiate HS	1787 N Research Parkway	Logan	84341	$200.00	1		$200.00	Yes
H. Rousseau	A-5176851066	Uintah High School	1880 W 500 N	Vernal	84078	$1,600.00	7		$1,600.00	Yes
I. Allred	A-7479739195	Canyon Grove Academy	588 W 3300 N	Pleasant Grove	84062	$899.00	6		$899.00	Yes
I. Packer	A-6237024449	Ed Packer	122 W Fayelle Ave.	Murray	84107	$55.40	1		$26.69	Yes
J. Burnett	A-7379139626	InTech Collegiate HS	1787 N Research Parkway	Logan	84341	$266.28	1		$159.49	Yes
J. Butner	A-1798748784	Jonathan Butner	1555 Ramona Ave.	SLC	84105	$398.00	1		$398.00	Yes
J. Garzella	A-2196252450	Juan Diego Catholic High School	300 E 118000 S	Draper	84020	$2,500.00	20		$2,500.00	Yes
J. Heap	A-8055846119	Tamarah Hinkle	1401 Snow Hill Lane	St. George	84770	$150.00	1	7/10/2015		
J. Hudson	A-4615472660	Blue Peak High School	211 S Tooele Blvd.	Tooele	84074	$750.00	5		$335.88	Yes
J. Killpack	A-2065680939	InTech Collegiate HS	1787 N Research Parkway	Logan	84341	$141.49	1		$60.59	Yes
J. Muna	A-9401732269	Hunter High School	4200 S 5600 W	West Valley	84120	$2,500.00	1	3/31/2015		
J. Price	A-3055260214	Dennis Worwood	P.O. Box 181	Ferron	84523	$1,898.00	12	11/7/2015		

Applicant name	ID Number	Name of person/entity being reimbursed	Reimbursment Address	City	Zipcode	Amount awarded	Students Impacted	Date of event	Reimbursment Amount	Complete
J. Shuckra	A-2272377101	Amy Shuckra	1871 Hollywood Ave.	Salt Lake City	84108	$500.00	1		$500	Yes
J. Tanner	A-9727013392	Renee Tanner	572 S 300 E	Kaysville	84037	$762.88	6		$762.88	Yes
J. Tew	A-3148729729	Westfield Elementary	380 S Long Dr.	Alpine	84004	$941.93	8		$873.34	Yes
J. Wells	A-6808895737	Weber School Foundation	5320 S 500 E	Washington Terra	84405	$1,521.89	4		$1,457.57	Yes
K. DeGroote	A-4860924783	Michael De Groote	6458 White Cony Circle	West Valley City	84128	$388.24	1		$374.97	Yes
K. Fisk	A-1115964313	Michelle Fisk	6866 Manorly Cir.	Cottonwood Heigh	84121	$100.00	1	3/17/2015		
K. Gambill	A-6548392805	Westfield Elementary	380 S Long Drive	Alpine	84004	$941.93	8		$877.73	Yes
K. Goss	A-8645838529	Dustin Topham	10189 N 4800 W	Lone Peak	84003	$2,500.00	8	3/17/2015		
K. Jeffries	A-2104627049	Jordan Jefferies	2897 E 3580 S	St. George	84790	$448.00	1		$180.00	Yes
K. Jones	A-1354280588	Jessica Wilstead	1857 S 30 W	Washington	84780	$969.89	7		$969.89	Yes
K. Parkinson	A-4194054158	Charles Hindman	328 W 1550 S	Perry	84302	$1,450.00	12		$1,450.00	Yes
K. Wang	A-3282120742	Department of Medical Laboratory Science	3875 Stadium Way Departm	Ogden	84408	$500.00	1		$500.00	Yes
L. Jang	A-9524623032	Salt Lake Center for Science Education	1400 W Goodwin Ave.	Salt Lake City	84116	$500.00	4		$334.21	Yes
L. McAvoy	A-2799766096	InTech Collegiate HS	1787 N Research Parkway	Logan	84341	$122.34	1		$122.34	Yes
M. Barnett	A-3125507447	Nicole Barnett	8017 S Big Spring Dr.	West Jordan	84081	$500.00	1		$500.00	Yes
Mary Evans	A-2182385199)	Hillcrest High Scholl TSA	891 E 7905 S	Sandy	84094	$1,750.00	7	3/16/2016		
M. Green	A-6529810060	Crimson View Elementary School	2835 E 200 S	St. George	84790	$1,050.00	12		$1,050.00	Yes
M. Heritage	A-5342801440	Entheos Academy	4710 W 6200 S	Kearns	84118	$980.00	5	1/16/2015		
M. Holmes	A-8053115061	Green Acres Elementary	640 E 1900 N	Ogden	84414	$487.79	1		$487.79	Yes
M. Luckart	A-5368923932	Entheos Academy	4710 W 6200 S	Kearns	84118	$1,192.00	7	2/28/2015		
M. Nelson	A-2874421241	Mathew Nelson	914 S 2300 E	Salt Lake City	84108	$1,358.28	6		$1,316.11	Yes
M. Obray	A-3557750000	Riverton High Science Olympiad	12476 S Silverwolf Way	Riverton	84065	$1,469.12	17		$998.71	Yes
M. Reyes	A-2983470040	Salt Lake Center for Science Education	1400 W Goodwin Ave.	Salt Lake city	84116	$460.00	4		$169.91	Yes
M. Singh	A-4999006569	Shiho Pingali	2162 S 1900 E	Salt Lake City	84106	$1,363.14	8		$1,363.14	Yes
M. Smith	A-8525865952	Ascent Academy West Jordan	5662 W 8200 S	West Jordan	84081	$982.76	9		$972.76	Yes
M. Dew	A-4500496199	InTech Collegiate HS	1787 N Research Parkway	Logan	84341	$123.71	1		$60.07	Yes
N. Bigelow	A-6364122727	David Bigelow	4775 W 500 S	West Haven	84401	$1,474.91	5		$1,414.91	Yes
N. Boateng	A-0621530707	InTech Collegiate HS	1787 N Research Parkway	Logan	84341	$50.00	1		$50.00	Yes
N. Dawson Coe	A-6000117312	Beehive Science and Technology Academy	830 E 9400 S	Sandy	84094	$1,545.00	9		$1,545.00	Yes
N. Ivie	A-6429841117	Entheos Academy	4710 W 6200 S	Kearns	84118	$750.00	6	1/16/2016		
N. Keen	A-8315547596	Iron County 4-H Robotics	2041 W 460 S	Cedar City	84720	$1,585.91	9		$1,585.91	Yes
N. Lyday	A-3182947238	Da Vinci Academy	2033 Grant Avenue	Ogden	84401	$109.00	1	3/15/2016		
N. Nekonerds	A-4587058305	NUAMES, VEX Robotics	2750 N University Park Blvd	Layton	84041	$2,246.00	7		$2,246.00	Yes
N. Tadesse	A-3361052853	Girmai W. Tadesse	2744 W 2175 S	Syracuse	84975	$160.00	1	2/18/2016		
R. Howell	A-7845527778	Hillcrest Highschool Robotics	7350 S 900 E	Midvale	84047	$2,500.00	1		$2,500.00	Yes
R. Isakson	A-5806513069	Diana Isakson	4894 W 4750 S	West Haven	84401	$1,474.91	5		$1,414.91	Yes
S. Delgado	A-4494035272	AMES	5715 S 1300 E	Salt Lake City	84121	$500.00	1	3/17/2016		
S. Dudleston	A-9504027478	Melissa Dudleston	789 E Lost Ridge Dr.	Washington	84780	$150.00	1		$150.00	Yes
S. Donley	A-2697798675	Green Acres Elementary	640 E 1900 N	Ogden	84414	$1,125.27	7		$998.57	Yes
S. Loosli	A-9448208754	Aaron Loosli	125 W 400 N	Pleasant Grove	84062	$475.00	1		$475.00	Yes
S. McFarland	A-0039718581	Mary Ann McFarland	1457 W 1970 N	Provo	84604	$475.00	1	6/27/2016		
S. Martinez	A-1985546704	Jose Martinez	1503 N 2100 W Apt. E206	St. George	84770	$68.41	1	3/18/2016		
S. Miller	A-1000434095	Riverside Elementary School	2500 Harvest Lane	Washington	84780	$1,220.00	12		$1,136.43	Yes
S. Owens	A-6879994327	InTech Collegiate HS	1787 N Research Parkway	Logan	84341	$236.85	1		$112.51	Yes
S. Young	A-0437817470	Terry Andersen	3013 S 1355 W	Perry	84302	$1,030.00	12		$932.47	Yes
T. Durham	A-6641948399	Sandy	1065 S Windsor St.	Salt Lake City	84105	$500.00	1		$445.00	Yes
T. Larson	A-8484389137	Judge Memorial Catholic High School	650 S 1100 E	Salt Lake City	84102	$2,500.00	14		$2,500.00	Yes
T. Quah	A-6243543406	Tai Sin Quah	1567 N EastHills Circle	Bountiful	84010	$500.00	1	4/2/2016		

Applicant name	ID Number	Name of person/entity being reimbursed	Reimbursment Address	City	Zipcode	Amount awarded	Students Impacted	Date of event	Reimbursment Amount	Complete
T. Ross	A-9548478417	Syracuse TSA	665 S 2000 W	Syracuse	84075	$1,200.00	7	11/5/2015		
V. Garg	A-8066868644	InTech Collegiate HS	1787 N Research Parkway	Logan	84341	$500.00	1		$500.00	Yes
V&K Ragula	A-4731510408	Sanch Datta	4540 S Jupiter Dr.	Salt Lake City	84124	$2,500.00	7		$2,494.12	Yes
W. Roeca	A-5449348378	Salt Lake Center for Science Education	1400 W Goodwin Ave.	Salt Lake City	84116	$275.00	4		$275.00	Yes
Y. Projansky Ono	A-8708895399	Sarah Projansky	1220 Second Avenue	Salt Lake City	84103	$100.00	1		$100.00	Yes
Z. Ong	A-3447843926	Yaling Brenda Ong	729 W Rolling Sage Way	Saratoga Springs	84045	$1,002.22	11		$1,002.22	Yes
Total						**$91,221.21**	**496**		**$64,719.45**	

Appendix F: Classroom Grants Summary

SCHOOL	GRADES	# OF STUDENTS	PROJECTS
Alpine	3	100	Greenhouse ($915.12)
Charter School	11	134	Sensing instruments for use with calculators (1783.20)
Alpine	6	30	Conductors and membranes (declined $1250.69)
Granite	7,8	350	3D Printer (1500)
Charter School	7 and 8	83	Math 2d and 3d floor plan supplies
Charter School	9 thru 12	70	Robotics Class
Charter School	K, 3,4	80	Trout in the Classroom
Charter School	11	54	Cell structure lab supplies
Washington	6,7	450	Lego Robots for Math
Charter School	7,8,9	138	3D Printer ($1500.00)
Alpine	5	150	3D printer
Davis	1	85	Enegery transfer project materials (no books)
Alpine	6	34	Ev3's for coding
Charter School	8	55	Paintball markers and Chronometers
Charter School	1	80	Illuminated Orbiter
Cache County	K5	530	Sumblox math manipulatives
Washington	9 thru 12	32	3D printer
Granite	7	203	Microscopes and speciments for Asexual reproduction
Granite	8,9	210	Microbiota Ecosystems, incubators and microscope adapters
Logan City	9 and 10	480	Chemistry of life lab supplies
SLC	9 thru 12	35	DNA Photometer
Weber	2	28	Chromebooks for daily coding activities
Nebo	6	26	Ev3 for Mars rover tasks
Cache County	5	93	Mag-lev track
Nebo	4th-6th	200	busing to Wetlands Classroom
Washington	8th	400	Heat transfer: popcorn
Cache County	5th	92	Maglev vehicles

South Sanpete	9th-12th	32	quadcopters
Alpine	6th	130	Webcams
Tooele	7th - 8th	40	MESA industry field trip
Jordan	9th	28	AP Enviro aquaponics system
Cache County	6th	100	Microscopes and slides
Mountain West Montessori	8th	60	music and Oscilloscpe
Provo City	9th-12th	594	hotplates for sci experiments
Granite	5th	25	Lego Mindstorms building and coding
Tooele	8th	62	VEX components
Box Elder	10th - 12th	150	infrared camera
North Summit	1st - 4th	300	Maglev vehicles
Salt Lake City	k-6	50	Weather balloon, busing
DaVinci Academy	9th-12th	100	Physics lab supplies
Early Light Academy	6th	104	Space Shuttle Room
Alpine	4th	100	Spheros, coding
North Summit	1st - 4th	300	Hydraulics
Jordan	7th - 9th	600	Shaker table
Ogden Preparatory School	8th-9th	50	Xcontroller
Granite	7th - 9th	1000	3D printer, coding with Arduino
John Hancock Charter School	K-6	160	EIE kits and supplies
DaVinci Academy	8th - 12th	20	x-Carve (to modify robots)(1500)
Alpine	5th	70	Student news show
Provo City	1st	90	Sound & light, Rocks
Salt Lake City	7th & 8th	25	Sea Perch
Alpine	K-6	700	WeDo robots
Jordan	4th-6th	50	Lego Mindstorms building and coding
Provo City	9th-12th	180	Hydroponics
Jordan	5th	125	Cubelets
Provo City	4th	90	EIE kits and supplies
Alpine	6th	55	Mars Rover materials

Granite	3-4, 5-6	180 - 500	Ozobots, coding
Provo City	Preschool	36	Movement and friction
Alpine	10th - 12th	20	VEX pragamming components
Jordan	4th	120	Sphereo/coding

Appendix G: STEM School Designation Summary

Name of School	District	Website	Designation Level	STEM Mission
Beehive Academy	Charter School	www.beehiveacademy.org	Platinum	Beehive Science and Technology Academy (BSTA) is a STEM-focused, charter school which uses iPads and other technology aided education tools. We serve around 300 students in grades 6 through 12. BSTA offers courses and extended day activities that promote STEM, including computer science and advanced math courses, STEM expo projects and other STEM related activities. BSTA also prepares students for prestigious STEM competitions such as Robotics, Lego Robotics, MathCounts, Math Matters and state science fairs. College prep courses are offered with particular emphasis on STEM related industries so that Beehive students graduate ready to move on to their next level of education. The main objective is to develop students who possess critical thinking skills, mathematical reasoning, and complex problem-solving abilities, and who will be equipped for college matriculation and work-ready careers in the areas of Science, Technology, Engineering, and Math. Project-based learning is at the center of BSTA's STEM learning and certification programs, leading to increased student engagement, collaborative work ethic, and real-world culminating projects that showcase students' understanding and acquisition of academic vocabulary, math conceptual mastery, problem-solving/reasoning skills, and computational fluency-automaticity. Every student in the school is issued an iPad that are used extensively in each classroom, as well as for major projects. Each year, all students participate in the Utah STEM Expo hosted by BSTA. iPads are particularly used for this event as students have to design a project, film it, put it on BSTA's YouTube channel, and then demonstrate it in front of thousands of visitors.
Crimson View Elementary	Washington	cves.washk12.org	Platinum	At Crimson View Elementary, we would like to develop innovation in every student. We would like to integrate STEM into a cohesive learning paradigm based on real-world applications. We would like to focus on teacher knowledge, student projects, and creating technology rich classrooms. We would like create more opportunities for our students to EXPLORE-CREATE-DISCOVER, our mission statement. We will do this by training teachers to provide more hands on science and engineering opportunities for students and by collaborating with other STEM communities. We would like to train our students to think and solve problems, not regurgitate information. We would like to better prepare our students to enter STEM careers by helping students become more aware of STEM related jobs, discover their talents, develop their passions, and deepen their understanding, to provide a better world for us all. We would like to develop STEM leaders at our school, teaching students that they have a voice in the world by sharing their ideas and projects. We would like students to learn and become proficient at the scientific practices. (Asking questions and defining problems • Developing and using models • Planning and carrying out investigations • Analyzing and interpreting data • Using mathematics and computational thinking • Constructing explanations and designing solutions • Engaging in argument from evidence • Obtaining, evaluating, and communicating information). This can all be accomplished by continuing teacher education, providing hands on opportunities for students, investing in new technology, and implementing the latest research.
DaVinci Academy	Charter School	davinciacademy.org	Gold	Vision Statement: To create an academic institution where everyone can learn, develop their talents, acquire appropriate social and cognitive skills and master their academic goals. Mission statement: DaVinci Academy of Sciences and the Arts is dedicated to developing competent, inventive, ethical, and divergent thinkers who are able to apply their knowledge, skills, leadership, and problem-solving abilities to become productive citizens of the dynamic world. Please see our web site for more details of our school culture. We offer programs that promote enthusiasm, exploration, and academic excellence in an interdisciplinary curriculum that involves real-world experience and application. We serve as a laboratory school to examine and develop new methods and materials in curriculum innovation and reform, including, but not limited to, traditional, online, and distance education programs. We serve as a model for private sector and public education partnerships, including mentor and internship opportunities. We implement a curriculum that complies with all state requirements in serving a school population of grades K-12. The Utah State Core Curriculum serves as the foundation of subjects taught and provide a minimum basis for academic requirements. Our comprehensive program of instruction is based on offering a rigorous curriculum of science, technology, engineering, arts, and math.

Name of School	District	Website	Designation Level	STEM Mission
Draper Park Middle School	Canyons	draperpark.canyonsdistrict.org	Bronze	We aim to provide an engaging STEM learning experience to every student in our school. STEM experiences are embedded in the science course curriculum rather than offered as extra-curricular opportunities, making STEM equitable to all students in our school. Through STEM experiences, we are providing our students with 21st century skills. Our students inquire, collaborate, and solve problems using the nature of science. We strive to create a renewed interest in STEM opportunities by relating classroom activities to actual Science, Technology, Engineering, and Math applications in everyday life. Our curriculum includes using Lego Robots to teach coding and problem solving around robot design challenges, introduction to Forensic Science techniques, including gel electrophoresis, to solve a fictional crime, critically analyzing the benefits, and potential risks of GMO's in our food supply, and studying climate change by designing windmills and solar panel cars to efficiently use our renewable resources. Our ultimate goal is that our students will leave with imagination and the ability to propose, and find solutions to, problems in the world around them.
Foothill Elementary	Alpine	http://foothill.alpineschools.org/	Silver	Our vision statement at Foothill Elementary states "Ensuring every student learns deeply through STEAM and 21st Century Learning Skills to prepare students for college, career, and life." As we purposefuly implement 21 st Century Learning Skills and integrate STEAM into each of our classrooms we are teaching the whole child and are helping students learn. Our greatest desire is that our students will know how to think deeply so they can be creative problem solvers and have the skills and abilities to contribute to the world. Our faculty works interdependently in a professional learning community and we value the collaborative process deeply. We are continually learning, growing, and improving through professional development. We believe that STEAM is not a special program or club, rather, it is instruction and pedagogy for all students in all of our classrooms (K-6). STEM is not one more thing that we have to do, but is a purposeful, meaningful integration of each content area to provide richer, deeper learning for all of our students. As educators, we know we need to build our own capacity in the STEM subjects and how best to teach them and are committed to continually learning in these areas. We know that success in STEAM will not only benefit our students personally, but also the community. Therefore, it is imperative that we form partnerships with universities, businesses, and other educators to work together in improving our communities, society, and our way of life.
Green Acres Elementary	Weber	greenacres.wsd.net	Bronze	The Green Acres mission is to 'educate children to be productive, healthy, responsible citizens who enjoy learning and life.' Our STEM emphasis is intended to provide engaging instruction and experiences to meet student learning objectives in the Utah State Common Core Standards, develop STEM literacy- meaning our students will understand each of the STEM disciplines and its role in modern society, our students will view themselves as capable of learning and doing Science, Technology, Engineering and Math. They will also have the necessary 21st century skills to be successful learners Kindergarten through 12th grade. They will have the confidence, capability and desire to complete post-high school college or vocational training and secure meaningful career opportunities. Our STEM emphasis is a bridge between current science standards, engineering concepts and current research in anticipation of changes to Utah state science standards. As Green Acres educators we will participate in professional development to continually improve our instructional practices, knowledge base and confidence to learn along with our students. We will work collaboratively to ensure each student's success and our school's success.

Name of School	District	Website	Designation Level	STEM Mission
Hurricane Elementary School	Washington	hes.washk12.org	Gold	Hurricane Elementary's goal is to develop proficiency and excitement for STEM education in each student. As students experiment, program, build, and solve problems, they learn and apply STEM skills, which help them achieve excellence in every other discipline. Every student attends a weekly hands-on STEM Class, with Dr. Tauiliili, to follow-up the STEM learning from their traditional class. STEM education ignites a spark for us to learn and grow. Students at Hurricane Elementary are excited about the future and want to make a difference. Our students participate in robotics clubs, Science Olympiad, or other science, technology, and engineering related extracurricular activities. We a Title I school and over 70% of our students live below the poverty line. We believe that it is important for our students to have an education that focuses on STEM so they will have the tools that they need to love school, improve academic achievement, and succeed in the job market of the future. Our students learn how to learn, have the confidence to build and explore, and feel comfortable with core math and science vocabulary and concepts. STEM education encourages Hurricane Elementary teachers to improve what we do. We attend weekly staff development training to improve student engagement, teach the standards, and provide student-centered learning. We continually planning Student Learning Objectives that meet the Science, Math, and Language Arts standards and allow students to direct and be accountable for their learning. We take STEM learning seriously and our teachers and staff are always growing to meet the needs of our students. STEM Education involves our parents and community members. Our community is excited about STEM classes and after-school programs which results in them taking an active role in promoting STEM education. STEM education provides a structure for our administration to focus funds and efforts in education. Each year, as we budget and plan for the future, our administration works to make sure that STEM education is a high priority.
Itineris Early College High School	Charter School	www.iechs.org	Bronze	As an early college high school with an emphasis in math and science, particularly biotechnology, our curriculum is already STEM oriented. Itineris has already implemented several successful programs to assist students in the transition from high school to higher education as evidenced by our college readiness as indicated by standardized tests and by our graduation rates both in high school and from Salt Lake Community College will the concurrent enrollment courses that we offer. We also have many students going into STEM fields of study. The school is poised to supplement our current instruction with initiatives that will widen the STEM focus to be more systemic within the entire curriculum. Increased ties to STEM fields in all subjects will give students are better knowledge of opportunities available to them given each students unique interests and talents. With SLCC as our education partner, we have fostered strong relationships with math and science departments. We offer concurrent enrollment courses both on our campus and on the college campus. We administer our courses to mirror those being offered at the college to provide a seamless college experience, especially in our math and science fields. In addition, students have the opportunity to access a SLCC/community partnership, InnovaBio, once they have completed an introduction to biotechnology concurrent enrollment course. InnovaBio is a partnership between local biotechnology companies and SLCC educators to provide students hands-on internship experience in the biotechnology field.

Name of School	District	Website	Designation Level	STEM Mission
Manila Elementary School	Apline	manila.alpineschools.org	Silver	1. STEM is for ALL students as part of the regular classroom experience. In addition we support extracurricular programs that are open to all students of the grade levels the program is appropriate for. 2. We see an integrated STEM activities practice, a change in pedagogy vs the “one more subject to teach” syndrome. 3. We see the STEM models of learning becoming part of the school culture of learning. - Ask, Inquisition (What is the problem? What if? I wonder?) - Imagine, Acquisition (What could be some solutions? Brainstorm) - Plan, Supposition (Draw a diagram, “I think” statement, List materials) - Create, Implement (Follow plan, Create it, Test it, Design and Carry out) - Test - Improve, Summation (Collect evidence-date, Draw conclusions, Reflect, Redesign) - Repeat Cycle - Exhibition (Sharing and Communication of Results) 4. The Arts (language arts, visual arts, arts of social science and history) should be integrated into STEM learning … Thus we advocate for STEAM. 5. Key practices at Manila include integrative curriculum, problem solving, collaboration, reflection, learning from failure and mistakes, fun and engagement. 6. All learning connects to the Utah Core Curriculum Standards.
Mount Jordan Middle School	Canyons	http://mountjordanmiddle.canyonsdistrict.org/	Bronze	We aim to provide an engaging STEM learning experience to every student in our school. STEM experiences are embedded in the science course curriculum rather than offered as extra-curricular opportunities, making STEM equitable to all students in our school. Through STEM experiences, we are providing our students with 21st century skills. Our students inquire, collaborate, and solve problems using the nature of science. We strive to create a renewed interest in STEM opportunities by relating classroom activities to actual Science, Technology, Engineering, and Math applications in everyday life. Our curriculum includes using Lego Robots to teach coding and problem solving around robot design challenges, introduction to Forensic Science techniques, including gel electrophoresis, to solve a fictional crime, critically analyzing the benefits, and potential risks of GMO’s in our food supply, and studying climate change by designing windmills and solar panel cars to efficiently use our renewable resources. Our ultimate goal is that our students will leave with imagination and the ability to propose, and find solutions to, problems in the world around them.
Mountainville Academy	Charter School	mountainvilleacademy.org	Silver	We are passionate about STEM education at Mountainville Academy! We want to build a broad STEM culture for our students because we recognize that every child is capable of learning based on their individual needs. We are aware that solid instruction and differentiation will allow us to integrate better STEM teaching into our existing curriculum. By doing this, it will increase academic performance and make a difference in the lives of the young people at our school. We are intensifying the use of technology at our school and continue to train our teachers to better stay up with the ever changing technological world we live in. We brought in Leslie Fisher, an expert in technology, for a day of training before school started this year. We have four elementary teachers that are currently in an elementary STEM endorsement cohort and are so excited about what they are learning. We added two middle school STEM related classes to our middle school offerings this year. One is a Simply Coding class that students are loving and the other is IT Repair where our 9th grades receive certification when completed. Our computer teacher received training in order to teach the IT repair class. We also offer an Explorer Tech class in middle school that one of our science teachers teach that is a very popular class. Our big picture goal is to enhance our students’ future lives and help them to be college and career ready, hopefully in a STEM related field.

Name of School	District	Website	Designation Level	STEM Mission
Neil Armstrong Academy	Granite	www.armstrongacademy.org	Gold	Mission Statement: At Neil Armstrong Academy, we are committed to a focus on learning, high levels of engagement, and a problem?solving process common to the science, technology, engineering, and math (STEM) fields to prepare all students with the skills they will need for their future. Vision Statement: Teachers and staff will continuously focus on student?learning outcomes as they work collaboratively to address the questions: (1) What do we want our students to learn? (2) How will we know when each student has learned it? (3) How will we respond when some students don't learn? and (4) How can we extend and enrich the learning for students who have demonstrated proficiency? We will use many forms of data to drive student achievement. Collective Commitments ? I will feel safe to try, fail, and try again until I succeed. I will encourage others to feel safe as well. ? I will share my skills, talents, and ideas, and be open to change. ? I am committed to the belief that everyone can learn. ? I will participate during group activities, and I will speak positively with one voice once the group has chosen a direction even if it wasn't my first ? I will make a difference in the community.
Overlake Elementary	Tooele	http://tooeleschools.org/schools/elementaryschools/oes/Pages/default.aspx	Silver	Overlake Elementary is dedicated to guiding students into the STEM subjects by sparking a lasting enthusiasm for STEM related careers and helping them prepare for their futures now. This will be completed in three ways: First, we will incorporate STEM subjects and processes into the curriculum. This is defined as creating problem solving activities in reading, writing, math, and science. It also includes the teaching of the Engineering Design Process to incorporate better problem solving within the daily curriculum. Second, Overlake will bring in hands on curriculum for Science and Math. This will help all students visualize the Sciences, Engineering, and Math no matter who they may be. Third, we will introduce students to the fields of STEM by partnering up with outside entities to bring in extra activities. These include, Summer Science Academy, field trips, assemblies, Lego League, Code.Org, and others. The purpose is to bring STEM to life inside and outside of the school classroom. To make this vision a reality, Overlake will team up with Tooele Education Foundation, Overlake Community Council, and Engineering Parents. We will find resources for teacher development, hands on experiments, and out of school activities related to STEM.
Quest Academy	Charter School	www.questac.org	Silver	Quest Academy is a technology-focused charter school for grades K-9 in West Haven, Utah. Our mission is to provide students a challenging, technology-rich environment, enabling young citizens to become leaders prepared for the challenges of an evolving global community. Quest Academy offers a high quality, individualized learning experience, coupled with a positive learning environment by teachers who care and truly know students and their needs. The school's commitment to a technology-rich environment does not just mean more computers; the technology is embedded in the curriculum to allow each student to meet state curriculum and core subject standards.

Name of School	District	Website	Designation Level	STEM Mission
Sunset Elementary	Washington	sses@washk12.org	Bronze	Sunset Elementary is committed to providing students with opportunities that will build essential skills for success in life. Our world is ever evolving and it is difficult to fully understand what education, and the job market will look like twenty years from now. Although, there are skills that continue to stand the test of time, and have been important factors throughout our history the ability to communicate, collaborate, be creative, and think critically. Learning must allow for making connections to the larger world that awaits our students. Through collaboration amongst our team of teachers, families within the school community, partners in the field, and of course the involvement of our students in this process. Teaching the why's behind the work we will accomplish within the walls of our school will make the learning more meaningful, and will engage our students in the world that awaits them.
UCAS	Charter School	ucas-edu.net	Bronze	The Utah County Academy of Sciences (UCAS) is an early college public high school that provides an unconventional educational opportunity for high school students who are greatly motivated. UCAS is committed to preparing students for the 21st century workplace careers by providing high quality educational opportunities though a curriculum that emphasizes science, technology, engineering and math (STEM). UCAS works closely with Utah Valley University (UVU) allowing students who have the interests, ability, and desire to move through their formal schooling at an accelerated rate. Our mission at UCAS is to provide a quality early-college education to a diverse student population emphasizing science, technology, engineering, and mathematics (STEM) with the opportunity to earn both a high school diploma and an associate degree in a safe, supportive, dual-campus environment. At UCAS, STEM education is includes an interdisciplinary learning atmosphere that integrates the four areas of science, technology, engineering, and mathematics into a comprehensive and coherent curriculum across all content areas. Teachers are skilled in curriculum development and delivery along with research proven techniques. STEM education at UCAS promotes learning through an integrated curriculum that is driven by both problem solving and problem-based learning. The curriculum is consistent with the goals of Early College High Schools and the Curriculum departments offered at UVU. Two major strands of emphasis are offered by the UCAS are: 1) Medical Science and Health Technology intensive strand (UVU School of Science and Health), and 2) Computer Sciences and Engineering Technology intensive strand (UVU School of Computer Sciences and Engineering.)
Union Middle School	Canyons	unionmiddle.canyonsdistrict.org	Bronze	We aim to provide an engaging STEM learning experience to every student in our school. STEM experiences are embedded in the science course curriculum rather than offered as extra-curricular opportunities, making STEM equitable to all students in our school. Through STEM experiences, we are providing our students with 21st century skills. Our students inquire, collaborate, and solve problems using the nature of science. We strive to create a renewed interest in STEM opportunities by relating classroom activities to actual Science, Technology, Engineering, and Math applications in everyday life. Our curriculum includes using Lego Robots to teach coding and problem solving around robot design challenges, introduction to Forensic Science techniques, including gel electrophoresis, to solve a fictional crime, critically analyzing the benefits, and potential risks of GMO's in our food supply, and studying climate change by designing windmills and solar panel cars to efficiently use our renewable resources. Our ultimate goal is that our students will leave with imagination and the ability to propose, and find solutions to, problems in the world around them.
West Point Elementary	Davis	http://www.davis.k12.ut.us/Domain/5435	Silver	At West Point Elementary, our vision is to provide tasked-based, hands-on opportunities for students to grow a love and passion for STEM. It is our desire to help and encourage students to seek post-high school education preparing them for college-career readiness in STEM fields.
Woodruff Elementary School	Logan	http://woodruffwildcats.weebly.com	Gold	Woodruff Elementary's vision for STEM education is to ensure that each student has a world-class foundation in STEM skills that will allow them to have access to all STEM paths in their future education and careers. We are committed to hands on, real-world learning experiences when instructing students in STEM areas. Through these activities our students will gain the necessary skills of reflection, creativity, collaboration, leadership and critical thinking that will enable them to become the STEM innovators of the future.

Appendix H

Utah STEM School Designation Criteria
Pilot Year Model

Utah STEM School Designation

2015-2016

Application Packet

Pre-Application Deadline:
October 1, 2015

Application Deadline:
December 18, 2015

Utah State Office of Education

STEM Action Center with the Governor's Office of Economic Development

Utah STEM SCHOOL DESIGNATION – School Application Overview

1. **School Information**
   Name of School: Beehive Science and Technology Academy
   Address: 830 East 9400 South Sandy, Utah 84094
   Phone: 801-576-0070
   Website: beehiveacademy.org
   Public/Charter/Private: Charter

2. **Lead Contact for STEM School Designation Application**
   Name: Hanifi Oguz
   Email:principal@beehiveacademy.org
   Position: Principal

3. **Members of the STEM Schools Designation Application Team**
   Name, title, email for all members. Should include representation of administration, teacher, STEM partners, and stakeholder groups (such as community council, parents, etc.)

Hanifi Oguz	School Principal	hanifi.oguz@beehiveacademy.org
Zack Temircan	Academic Dean	zack@beehiveacademy.org
Germaine Barnes	School Safety Coordinator	germaine.barnes@beehiveacademy.org
Carol Firmage	Humanities Dept. Chair, English Teacher	carol.firmage@beehiveacademy.org
Halis Kablan	STEM Coordinator, Science Teacher	halis.kablan@beehiveacademy.org
Michael Defronzo	Mathematics Teacher	michael.defronzo@beehiveacademy.org
Pedro Martinez	Senior Engineer, IM Flash- Industry Partner Representative to BSTA	pmartinez@imflash.com

Utah STEM School Designation Criteria
Pilot Year Model

4. **What level are you applying for? (Bronze, Silver, Gold, Platinum)**
   Note: If you are applying for Gold or Platinum, you will be required to schedule a site visit for the STEM AC evaluation team in late January / February.
   Gold

5. **In 250 words or less, please describe the STEM vision for your school.**

Beehive Science and Technology Academy (BSTA) is a STEM-focused, charter school which uses iPads and other technology aided education tools. We serve around 300 students in grades 6 through 12. BSTA offers courses and extended day activities that promote STEM, including computer science and advanced math courses, STEM expo projects and other STEM related activities. BSTA also prepares students for prestigious STEM competitions such as Robotics, Lego Robotics, MathCounts, Math Matters and state science fairs. College prep courses are offered with particular emphasis on STEM related industries so that Beehive students graduate ready to move on to their next level of education.

The main objective is to develop students who possess critical thinking skills, mathematical reasoning, and complex problem-solving abilities, and who will be equipped for college matriculation and work-ready careers in the areas of Science, Technology, Engineering, and Math. Project-based learning is at the center of BSTA's STEM learning and certification programs, leading to increased student engagement, collaborative work ethic, and real-world culminating projects that showcase students' understanding and acquisition of academic vocabulary, math conceptual mastery, problem-solving/reasoning skills, and computational fluency-automaticity.

Every student in the school is issued an iPad that are used extensively in each classroom, as well as for major projects. Each year, all students participate in the Utah STEM Expo hosted by BSTA. iPads are particularly used for this event as students have to design a project, film it, put it on BSTA's YouTube channel, and then demonstrate it in front of thousands of visitors.

Utah STEM School Designation Criteria
Pilot Year Model

1. **Curriculum: Problem-Solving Rigorous Learning**

STEM Curriculum is selected based on Utah Core Standards. The curriculum has an articulated interconnectedness between science, technology, engineering and math. Curriculum and instruction are coordinated between the various aspects of STEM. Projects form a substantial part of the curriculum.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
1a. Interdisciplinary Instruction Helps Students Make Interdisciplinary Connections *There are collaborative team(s) comprised of teachers who teach different disciplines. Students identify ways that disciplines are interrelated, reinforced, and complement one another.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Teachers ask students to think about how the content of the lesson relates to other STEM disciplines. - Students are asked to apply what they learned in another subject to a lesson, assignment, or activity at least once per month.	- Teachers ask students to think about how the content of the lesson related to ALL other disciplines. - Students are engaged in an integrated unit that articulates interdisciplinary connections one or more times per week.

Narrative: 1a: Exemplary – 3 points

BSTA strives to make interdisciplinary connections for students across the curriculum a common practice, at least once per week. Students are expected to understand how subjects are interrelated and complementary in the following ways:

Grade Level Collaborative Teacher Teams (CTT) and Department CTTs meet on alternating weeks, one meeting each week. All teachers at BSTA participate in CTTs. At Grade Level CTT meetings, teachers discuss Learner Centered Problems (LCP) and collaborate on strategies to improve student proficiency in the LCPs and other specific areas. This includes much collaborative curriculum planning across all content areas in our school, including the elective courses. This process has been expanded due to our two-year school improvement plan, "Assessment To Achievement," which BSTA volunteered to participate in. This year, CTTs are placing a large emphasis on writing skills, ratios and percents, and statistics in high school grades, across all subject areas.

Utah STEM School Designation Criteria
Pilot Year Model

Departmental CTTs collaborate to create instructional rubrics which are used in all departments. Students are assessed weekly on writing specific skills in each content area. Each department built its own rubric for an assessment based on a model rubric created in the math department. Students are provided with a similar rubric before they begin writing, and students self-assess their writing as a way to build metacognitive skills. The rubric becomes a means of instructing the students about what is expected of them.

Math, language arts, science, art, music, and history classes all have planned curriculum overlaps. For example, a project created to assess students in Secondary 1 Math had students create and use exponential equations, tables, and graphs to represent the half-life of Carbon 14 in a sample. Students also quantified the data to represent the South African ebola outbreak which began in 2014. Using tables, graphs, equations, and a written essay of their findings, students formed conjectures and made projections about future outbreaks of the disease.

In music classes, students discuss the history, politics, and other inspirations behind specific music genres and the time periods in which they were popular, including but not limited to the anti-war music of the 1960's and the Punk Rock Movement of the 1980's. Students form conjectures as to the motivation for these and various other musical genres of the world.

English language arts, math, and social studies teachers collaborated on a unit of literature using *Flatland* by Edwin Abbott, a mathematician/theologian in the late 1800s. *Flatland* is a satire about Victorian society, which uses characters who are represented by geometric shapes-- "the more angles your shape has, the greater your social status." The novel is thought provoking and rich in geometric descriptions and mathematical vocabulary. Abbott describes an entirely self-absorbed society that is either unwilling or unable to accept new science or ideas that are beyond their views of normality. Student assignments included an essay to tell what shape they would have been and why, again drawing on their metacognition to self-analyze and quantify themselves in historic comparison to characters in Victorian society.

Utah STEM School Designation Criteria
Pilot Year Model

1. **Curriculum: Problem-Solving Rigorous Learning**

STEM Curriculum is selected based on Utah Core Standards. The curriculum has an articulated interconnectedness between science, technology, engineering and math. Curriculum and instruction are coordinated between the various aspects of STEM. Projects form a substantial part of the curriculum.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
1b. Problem-Solving Learning *Learning is student-led, interdisciplinary, and engaged in real-world content and multiple solutions for student cooperation utilizing STEM knowledge and skills. Problem-solving learning at this school requires a thorough process of inquiry, knowledge building, and resolutions. Curriculum includes projects, often interdisciplinary and ranging from short- to long-term, which are focused on solving an authentic problem.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Problem-solving learning (short-term) is evident in lessons/activities at least once per month in the STEM curriculum. - Problem-solving learning in projects (long-term) is evident in the STEM curriculum at least three times per year. - Students are required to do research for problem-solving learning at least three times per year.	- Problem-solving learning in short-term projects is evident in lessons/activities at least once per week in the STEM curriculum. - Problem-solving learning in long-term projects is evident in the STEM curriculum at least five per year and three per year in other disciplines. - Problem-solving learning in long-term projects at the school draw from multiple courses or subjects.

Narrative: 1b: Exemplary – 3 points

At BSTA, students are engaged in utilizing their STEM knowledge and skills in solving problems and completing projects both short and long-term.

School Name: Beehive Science and Technology Academy (BSTA)

Utah STEM School Designation Criteria
Pilot Year Model

BSTA hosts the Utah Stem Expo at the South Towne Expo Center each spring and has done so since 2013. Students create projects in math, science, computer programming, and this year also in the arts. Students select their project in September and spend the year working on it. They complete write-ups about their selection, record video demonstrations that they post on Youtube, and preview their assignments for parents at open houses and public events long before the Expo. These are NOT typical science projects, but in-depth research and development opportunities. In the past, students have built hovercrafts, created hydrogen gas that could help power gasoline engines, and numerous other projects. Future projects include building an Aim's Room (please visit our Stem Expo in the spring.)

In 2015, BSTA became a pilot school for College Prep Mathematics (CPM), a rigorous, problem-solving based mathematics curriculum. CPM lessons rely on cooperative or group activities in which students are given problems to solve, which are taught weekly at all grade levels. Teachers facilitate discussion, direction, and investigation by students. Later lectures address the students' problems, attempts, and successes during the problem solving sessions. Direct instruction fills in students' gaps in understanding by defining terms, symbols, and algorithms to formalize the concepts.

A recent example of a problem based math lesson Was "Newton's Revenge" in which it was rumored that a roller coaster was unsafe because people were getting hurt when they raised their hands by hitting them on the ceiling of a tunnel the coaster traveled through. Students in the eighth grade created scatter plots and a trend line (on Desmos) to examine the data and make a projection about how tall a person would need to be to reach the ceiling from a seated position. They concluded that the roller coaster was safe for people less than eight feet tall.

Computer science and programming classes use problem solving instruction to teach flow-charting as a way to solve problems.

Science Classes use the Discovery Education Science Techbook, an online content portal that provides students with access to content in text, audio and visual formats.. Students have access to an interactive glossary, videos, reading passages, charts, virtual labs, simulations and assessment tools. Each concept is based on the 5E Model (Engage-Explore-Explain-Elaborate-Evaluate). The above mentioned materials are distributed in a manner under these 5E tabs to help students build up on inquiry learning. This learning model is especially useful to enhance mastering the subject matter, developing scientific reasoning, and cultivating interest and attitude about science.

In the engineering class, students design and build many projects. During this process students use a decision making matrix for solving problems that result while designing and constructing projects. Last summer a few students and teachers collaborated to design and build a 10'x12' storage shed for the school. Together they designed a roof truss system and solved the many problems that arose in this real world endeavor.

School Name: Beehive Science and Technology Academy (BSTA)

Utah STEM School Designation Criteria
Pilot Year Model

1. **Curriculum: Problem-Solving Rigorous Learning**

STEM Curriculum is selected based on Utah Core Standards. The curriculum has an articulated interconnectedness between science, technology, engineering and math. Curriculum and instruction are coordinated between the various aspects of STEM. Projects form a substantial part of the curriculum.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
1c. Student Cooperation *Students learn from each other and work well together.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Students collaborate and work as teams in STEM disciplines at least once per week. - Student products in STEM disciplines reflect group learning interactions at least once per month. - Students are engaged in giving and receiving constructive feedback to peers in STEM learning cooperative settings at least three times per year.	- Students collaborate and work as teams in all disciplines at least once per week. - Student products in all disciplines reflect group learning interactions at least once per month. - Students are engaged in giving and receiving constructive feedback to peers in all course cooperative settings at least three times per year. - Students use appropriate technology as available for collaborative work, communication, research and data collection/analysis, in projects and other assessments daily.

Narrative: Exemplary -- 3 points

Students at BSTA of various ages are collaborative, learn from each other, and work well together on projects and in various STEM capacities.

In Science classes, students regularly work in groups to complete projects from the large, overarching annual STEM Expo projects to smaller weekly classroom projects, and daily activities. Group work is the norm in science classes. Students routinely create models (e.g. solar system models or moon phases model).

The math department uses College Prep Mathematics (CPM), a rigorous, problem-solving based mathematics curriculum weekly. CPM lessons rely on cooperative and/or group activities in which students work in teams to solve problems at all grade levels. Math classes use CPM activities at least once per week. Teachers facilitate discussion, direction, and investigation by students. CPM includes Desmos, a computerized charting and graphing tool, which students

Utah STEM School Designation Criteria
Pilot Year Model
use alongside TI and Casio graphing calculators. Once per quarter, math students demonstrate their work on specific problems to their whole class who then offer constructive feedback. (Please use this link to view a short video of a cooperative math activity)

Social Studies classes have weekly group current event discussion projects.

Creative activities are designed in many classes to form new teams at the start of a new unit.

Google classroom is used in many classes to connect students together as they collaborate digitally to solve problems and create projects.

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1. **Curriculum: Problem-Solving Rigorous Learning**

STEM Curriculum is selected based on Utah Core Standards. The curriculum has an articulated interconnectedness between science, technology, engineering and math. Curriculum and instruction are coordinated between the various aspects of STEM. Projects form a substantial part of the curriculum.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
1d. Connections to the Real-World and Current Events *Students make connections between what they are learning and real-world experiences, current events, and/or their daily lives.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Instruction regularly helps students to better understand current events and/or issues. - Students are required to apply knowledge learned in the classroom to conceptual or theoretical real-world scenario at least three times per month in STEM disciplines.	- Instruction consistently helps students to better understand current events and/or issues, including those specific to Utah, the United States, and international communities. - Students are required to apply knowledge learned in the classroom to conceptual or theoretical real-world scenarios at least three times per month in all disciplines.

Narrative: Exemplary -- 3 points

At BSTA, students are connected to the world and its events daily through many different disciplines.

Social Studies classes watch news clips and have current event discussion/projects regularly.

Math class problems are often taken from real world events. A recent project in Secondary I Math had students use data from the 2013 Ebola outbreak in South Africa. Students made tables, graphs, and wrote equations. They found that the numbers being infected each month followed an exponential curve. They wrote equations and made projections about the future spread of the disease.

School Name: Beehive Science and Technology Academy (BSTA)

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Financial Literacy classes teach students to prepare for the workforce with mock job interviews, balance a checkbook with simulated checking accounts, manage credit cards, understand insurance, estate planning, investments and how to budget money for a successful life.

In music classes, students discuss the history, politics, and other inspirations behind specific music genres and the time periods in which they were popular, including but not limited to the anti-war music of the 1960's and the Punk Rock Movement of the 1980's. Students form conjectures as to the motivation for these and various other musical genres of the world.

Digital photography classes teach the art of catching the moment in a photograph in collaboration with reporting on current events.

English classes have discussions and regular journal entries relating to current events to incidents that have taken place in the literature that they are studying.

Science classes use Discovery Education and its Virtual Labs to investigate real world connections to the science curriculum.

In their science classes, students use their Utah STEM Expo projects to make connections to daily life and/or industry use. Students relate their project to every-day activities or an industry in their Youtube video showcasing their STEM Expo project and in preparing their project website.

School Name: Beehive Science and Technology Academy (BSTA)

Utah STEM School Designation Criteria
Pilot Year Model

1. **Curriculum: Problem-Solving Rigorous Learning**

STEM Curriculum is selected based on Utah Core Standards. The curriculum has an articulated interconnectedness between science, technology, engineering and math. Curriculum and instruction are coordinated between the various aspects of STEM. Projects form a substantial part of the curriculum.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
1e. Engineering Design Process *The teacher supports students' use of an engineering design process (prototype, test, evaluate, and revise).*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Engineering design process is the focus of science and CTE classroom curriculum at least twice per year. - One problem-solving learning project per year requires development of a product/outcome utilizing the engineering design process in most STEM classes.	- The engineering design process is the focus of science and CTE classroom curriculum at least four times per year. - The engineering design process is referenced in all classes as a possible strategy to addressing a problem.

Narrative: Exemplary -- 3 points

The teachers at BSTA support students as they learn the engineering design process.

CTE classes use specialized equipment and Vex robotics with an emphasis on the engineering design process.

Gateway To Engineering classes teach students the engineering design process.

Computer science classes teach the engineering design process.

Computer gaming development classes teach the engineering design process.

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Utah STEM School Designation Criteria
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Art classes teach the engineering design process with 3D printers to make Christmas Ornaments. Students learn the engineering design process using 3D pens, scanners, and printers in Robotics Clubs and Competitive Teams.

1. **Curriculum: Problem-Solving Rigorous Learning**

STEM Curriculum is selected based on Utah Core Standards. The curriculum has an articulated interconnectedness between science, technology, engineering and math. Curriculum and instruction are coordinated between the various aspects of STEM. Projects form a substantial part of the curriculum.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
1f. Standards and Core Course Sequence *The school takes standards (Utah Core Standards, 21st Century Skills (http://www.p21.org/), etc.) into account in school scheduling/curriculum design/instruction.*	*N/A* *Standards-based instruction aligned to the Utah Core Standards is central to instruction. Schools need to have this element in place to be eligible for STEM School Certification.*	N/A *Standards-based instruction aligned to the Utah Core Standards is central to instruction. Schools need to have this element in place to be eligible for STEM School Certification.*	- Utah standards are the central component of all lessons for all classes. - Educators frequently review disciplinary standards for their subject area(s). - The curriculum is vertically aligned within programs, as well as to the current Utah Core Standards. - *Secondary schools:* The school provides a thoughtful rationale for the core course sequencing.	- Educators frequently review disciplinary standards for subject area(s) specific to their teaching assignment and other subject areas. - Educators utilize additional standard sets, such as 21st century skills, computer science standards, etc., to inform instruction. - Teacher teams vertically plan STEM instruction within schools. - *Secondary schools:* Students have opportunities to take STEM-based courses beyond the traditional grade-level requirements.

Narrative: Exemplary -- 3 points

School Name: Beehive Science and Technology Academy (BSTA)

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BSTA uses Utah Core Standards: Honors Level, National standards, Common Core Standards, and 21st Century Skills in scheduling and designing its instruction.

Students attended the *Day of the Dead Pre-Med Conference* in October 2015 at the University of Utah School of Medicine. This conference gave our high school seniors insight into the application process for medical school and a glimpse into what awaits medical students as a study and a career. Highlights included a visit to the cadaver lab.

Students attended *Science Day* at the University of Utah in November 2015. There they attended workshops offered by the University's best professors and local STEM industry leaders.

Math classes incorporate the Utah Core Curriculum (UTCC), The Common Core State Standards (CCSS) for Classroom Practice and the National Council of Teachers of Mathematics (NCTM) Principles and Standards which are the foundation for the design of the College Prep Mathematics (CPM) program being used. Most math teachers are members of at least one of the Councils. All teach well beyond the scope of the Core curriculum.

A+ classes follow the MATHCOUNTS curriculum and include arithmetic, algebra, counting, geometry, number theory, probability, and statistics. The focus of MATHCOUNTS curriculum is in developing mathematical problem solving skills.

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1. **Curriculum: Problem-Solving Rigorous Learning**

STEM Curriculum is selected based on Utah Core Standards. The curriculum has an articulated interconnectedness between science, technology, engineering and math. Curriculum and instruction are coordinated between the various aspects of STEM. Projects form a substantial part of the curriculum.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
1g. Cognitively Demanding Work *Students use thinking and process skills. This includes considering alternative arguments or explanations, making predictions, interpreting their experiences, analyzing data, explaining their reasoning, and supporting their conclusions with evidence.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Student learning products exemplify at DOK 2-3 level at least once a month. Classroom instruction is predominantly student-centered, and all students are asked to extend and refine their acquired knowledge to routinely analyze and solve problems, as well as create unique solutions. - All students are asked to support their conclusions with evidence. Students are asked to explain their reasoning. - All students are asked to consider and/or define alternative explanations.	- Student learning products exemplify at DOK 3-4 level one or more times per month. Classroom instruction is predominantly student-centered, and all students are asked to have the competence to think in complex ways and apply the knowledge and skills they have acquired. Students are asked to create solutions and take action that further develops their skills and knowledge. - All students are asked to support their conclusions with evidence. Students are asked to explain their reasoning. - All students are asked to come up with alternative explanations or arguments. All students are asked to make hypotheses or predictions.

Narrative: Exemplary 3

- BSTA Teachers create and use SAGE Formative Tests regularly (bi-monthly) to challenge and assess students with 40% to 50% of the questions at or above DOK 3.

School Name: Beehive Science and Technology Academy (BSTA)

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- Computer Programming and Game Development Classes apply Webb's Depth of Knowledge Levels to Bloom's Cognitive Process Dimensions to develop challenging curriculum at or above DOK 3.
- BSTA Collaborative Teacher teams implement Evidence Based Instructional Strategies (EBIS) to raise the bar of student accomplishment. BSTA has chosen to implement strategies that will enforce metacognitive skills across all content areas .
- Each student at BSTA works all year to complete a project that will be displayed at The Utah Stem Expo in the spring. This is so much more than just a science project. Students select their project in September, complete continuous studies and research, create websites, youtube videos, and finally build their projects to display at the Expo. Some of the past projects included: a hovercraft and a device to create hydrogen fuel from water to enhance fuel consumption.
- Science classes start with advanced depth of knowledge projects in the early grades. A middle school project, "Track the Moon" shows how sixth grade students learn about the moon's orbit.
- The following clubs held after school are further examples of work students do that is cognitively demanding:
- Lego League
- Chess Club
- Future City Design
- Turkish Olympiad
- Math Counts
- Math League
- Digital Media

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2. **Leadership**

The school leadership has created clear definitions and a vision of STEM teaching and learning as it applies in the local school and as informed by state, national, and global efforts. Collaboration exists between community, industry and other education partners. Efforts are made to connect to national and global efforts.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
2a. Career Exposure *Students participate in post-secondary education exposure activities, such as college tours, and in career-readiness experiences, including internships and mentoring. In some cases, experiences may be customized for each student.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Career field experiences are offered to students at least two times per year for authentic learning. - Careers are directly incorporated into the STEM instruction at least once per month. - *Secondary Schools:* Internships or on-site STEM participation exist for some of the students. - *Secondary Schools*: All students participate in job-shadowing, field experiences, or other on-site experiences in STEM fields at least once each year.	- Outside-the-classroom learning includes field experience and authentic, contextual learning that directly connects to the in-class curriculum. - Partners help students and teachers understand what is expected of a student planning to enter a career in the partner's field.

School Name: Beehive Science and Technology Academy (BSTA)

Narrative: Exemplary -- 3 points

BSTA prepares all students to be college and career ready with a rigorous and broad curriculum, grounded in the core academic discipline, but also consisting of other subjects that are part of a well-rounded education. Academic preparation alone is not enough to ensure postsecondary readiness but it is clear that it is an essential part of readiness for college, careers, and life in the 21st century. Thus, BSTA college programs are designed to support the students starting in the ninth grade the areas of academic planning, four-year high school plans, and post high school planning. Students will learn specific information about themselves through self-knowledge, education and occupation exploration in college and career ready classes, such as College Advisory Class and ACT/SAT Preparation Class. The broad goal of teaching these classes is to help students begin to figure out who they are while they decide what they want to become.

BSTA's college advisory program provides students the opportunity to explore careers, get familiar with personal skills to have a successful career, and learn about colleges, the scholarship process, and the application process. Moreover, BSTA offers college mentorship and leadership program for students. The CMLP (College Mentorship and Leadership Program) is a multi-faceted program, designed to prepare students to be admitted to top colleges. Students are able to improve their academic and personal skills. The purpose of the CMLP program is to give an extra edge to our students so they can be eligible for more resources during their college life. The program also has a major ingredient of guidance to secure the character and personality part of college admission and provides highly motivated and enriching activities. Along the way, students will be guided through scholarship and awards applications for colleges such as the Congressional Award.

BSTA organizes field trips and college trips to expose and prepare its students for various career opportunities. College recruiters and representatives from other careers like the Air Force, IM Flash, etc., come to BSTA each year to talk about their respective careers and scopes. BSTA also arranges and encourages students to do internship programs to experience different jobs in the field. Students go with faculty to various college fairs, and STEM fests to expose them to STEM careers. BSTA invites many colleges and companies to the BSTA sponsored Utah STEM Expo to talk to students about their job opportunities.

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Leadership

The school leadership has created clear definitions and a vision of STEM teaching and learning as it applies in the local school and as informed by state, national, and global efforts. Collaboration exists between community, industry and other education partners. Efforts are made to connect to national and global efforts.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
2b. College and Career Readiness Skills *Students use the skills of communication, creativity, collaboration, leadership, critical thinking, and technological proficiency.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	*STEM lessons/activities require students to exercise skills they will use in the workplace:* - Lessons/activities require students to demonstrate leadership and responsibility. - Lessons/activities require students to present information effectively and are aligned with the Utah ELA standards for communication. - Lessons/activities require students to exercise time management and organize their work. -	*ALL lessons/activities require students to regularly exercise skills they will use in the workplace:* - Lessons/activities require students to demonstrate leadership and responsibility. - Lessons/activities require students to present information effectively, and are aligned with the Utah ELA standards for communication. - Lessons/activities require students to exercise time management and organize their work.

Narrative: Exemplary -- 3 points

BSTA students are asked to do activities, projects and assignments that help prepare them for the workplace by employing time management and organizational skills. They regularly do projects that require collaboration, creativity and communication in all of their classes. All students are required to prepare a STEM project and present it on Youtube, at the Utah STEM Expo, and at other public events. Students are provided a guidebook with each step outlined, a required due date, and a grade.

School Name: Beehive Science and Technology Academy (BSTA)

In non-STEM subjects, students also do numerous projects and presentations using Apple TVs in each classroom. There are many apps and programs used by all teachers and students as they interact with each other virtually using their iPads. Each student has an interactive student calendar in their CoolSIS account, which allows them to organize themselves, keep track of their grades and have access to course documents. Teachers assign projects and assignments in CoolSIS, which is automatically added to students' calendars.

Communication is one of our school wide goals. Two of BSTA's DRSLs are effective communication skills (see artifacts) and 21st century technology skills. There is a poster in each classroom in the school listing these goals, and each teacher incorporates these skills into their teaching.

Each year, BSTA organizes the STEM YouTube video contest in connection with their STEM Expo project. All students are required to participate. Students upload their videos to YouTube, and then watch the videos of their friends and classmates, after which they leave encouraging and inciteful comments. Students also participate in other public events and interact with people while they present their projects. These many different opportunities greatly improve their communication skills both to their peers and the general public.

Utah STEM School Designation Criteria
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2. **Leadership**

The school leadership has created clear definitions and a vision of STEM teaching and learning as it applies in the local school and as informed by state, national, and global efforts. Collaboration exists between community, industry and other education partners. Efforts are made to connect to national and global efforts.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
2c. STEM Instructional Team Leaders Support Instruction *A portion of school's staff, in addition to administrators, has time designated for instructional leadership and actively supports instruction (e.g., leads professional development, models instruction, gives feedback on instruction, etc.). School leaders ensure that staff members have opportunities to grow in their roles as STEM school teachers and leaders.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- A STEM leadership team is in place to ensure continuous STEM program improvement. - Teacher teams address expectations of school set by the leadership team. - Teams meet regularly to discuss school goals and progress, research, best practices, and opportunities for improvement. - School leaders ensure that teachers have opportunities to see exemplary practice. - Teachers know that it's okay to try new practices. School leaders support teachers when they fail with constructive procedures and feedback. - Utah Effective Teaching Standards and Utah Educational Leadership Standards are **involved in planning and framework** for leadership development—see http://www.schools.utah.gov/CURR/educatoreffectiveness/Standards.aspx - School leader(s) encourage and support teachers to seek out additional professional learning opportunities beyond school/LEA.	- A STEM leadership team is in place to define and monitor and evaluate entire school. - Leadership teams meet regularly to discuss research, best practices, successes, and opportunities for improvement toward STEM School goals. - School leaders model instructional practice, **demonstrate and support staff development in high-quality instruction**. - School leaders model and support risk-taking and autonomy for staff. - School leaders model and support staff innovation and/or attempting new strategies. - Utah Effective Teaching Standards and Utah Educational Leadership Standards are **directly referenced and central to planning, development, and evaluation** of leadership efforts—see http://www.schools.utah.gov/CURR/educatoreffectiveness/Standards.aspx

Narrative: Exemplary -- 3 points

BSTA staff and administration work together to ensure teachers have the opportunity to enhance their abilities as STEM leaders. Teachers are encouraged and recognized for seeking out learning opportunities for professional development. They also know that if they try something new and it fails, the administration will be supportive and helpful in giving feedback for success in future tries.

We have a STEM Coordinator to lead STEM teaching in the school. Our STEM committee involves three administrators, three teachers and one parent. The committee meets quarterly to discuss STEM education and its implementation. It also meets as needed when a STEM related activity or event is organized. Teachers are encouraged and recognized for seeking out learning opportunities for professional development. The Smart School suggestion came from staff, and school administration worked with the school board to find the matching $240,000 to start the technology program in the school. BSTA has piloted the Assessment to Achievement program, the Globolaria Game Design program, the Smart School Technology Program, Edivate, PLTW, and the STEM Math program from the STEM Action Center. Administrators and coaches model teaching and scenarios to staff during the in-service days and various professional development events. Staff evaluations and professional development opportunities are designed according to the Utah standards.

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Pilot Year Model

Leadership

The school leadership has created clear definitions and a vision of STEM teaching and learning as it applies in the local school and as informed by state, national, and global efforts. Collaboration exists between community, industry and other education partners. Efforts are made to connect to national and global efforts.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
2d. Staff Has Sense of School Ownership and Participates in Decision Making *Staff members behave in a manner that exhibits their responsibility for and commitment to the success of the school. The staff contributes to and has a say in decisions regarding the school. The staff works with independence and self-direction.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- The school leadership engages staff in strategic planning. - The school leadership has an articulated process for staff to give input and feedback. - Decisions are made by greater than 50% of the school's staff.	- The school leadership engages ALL staff members in strategic planning. - The school leadership has an articulated process for staff members to give input and feedback, and responds to feedback in an open setting. - Decisions are made by ALL school faculty and staff members.

Narrative: Exemplary -- 3 points

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The administration at BSTA endeavors to make all staff and their families feel welcome and a part of the BSTA family. This makes for better success in the classroom, and commitment to the success of the school. When a new faculty or staff member is hired, he or she is welcomed and told they will now be an essential part of the effort to prepare students for the future. They are greeted with the idea that they will always be a part of the Beehive family, no matter how long they stay. Each year there are several opportunities for staff and their families to come together and interact—Fall Festival (in October), a holiday dinner, and picnics in the spring, etc.

At least once a month, a school-wide faculty meeting is held where everyone is given a chance to voice their opinions on items that concern the whole school. Even where decisions are made by the administration, faculty and staff are made aware of those decisions and asked for input. The month's birthdays are also celebrated as well as any accomplishments recently made.

There is no micromanaging at Beehive. The faculty is allowed to work independently and with self-direction in their various subjects. Each individual has a different teaching style, and at BSTA everyone is allowed to use that style to become the most inspiring teacher he or she can be. At the end of the year, all staff come together and do a year end wrap-up meeting. Together, everyone evaluates the year and its various programs. At these meetings, evaluations are made as to the effectiveness and success of each one. Changes and adjustments are made to make each school year an improvement. Then before school starts during our in-service days, teachers have lengthy discussions in which implementation plans are discussed. Various staff surveys are also held to get input. A technology survey, and a professional development survey are just two of them.

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3. Assessment

Assessments are ongoing, authentic and cross-curricular. They are project-focused and performance-based. Rubrics for projects are provided and articulate with the goals of the assessment. Formative assessment informs summative assessment and teaching efforts.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
3a. Student Learning Outcomes (SLOs) Process *Demonstration that school utilizes SLO process to measure student outcomes and teacher instruction.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- STEM courses utilize SLOs to measure progress toward targets for at least two expected student learning outcomes. - Students are actively informed about mastery expectations and progress.	- 80% of courses utilize SLOs to measure progress toward targets for at least two expected student learning outcomes. - Qualitative assessments exist around student learning outcomes.

Narrative: Exemplary--3 points

Students are continually actively informed of their progress at BSTA as is demonstrated by the following:

Students and parents are informed of progress in all classes through Coolsis, an online grading tool, which is available on student iPads, and for parent mobile devices.

Students and parents are informed of progress throughout the year with eight report cards sent home by mail, as well as up to date information on CoolSIS.

Teachers are expected to respond to parent emails within 24 hours, which aids in prompt communication about a student's progress.

Parent-Teacher Conferences are held twice during the year to allow for more communication about student progress. Meeting with teachers by appointment is also available any time.

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Testing is used in tracking student progress at different levels. The SAGE interim and Summative tests aid in tracking student progress throughout the year. These test results guide teachers in planning their teaching and in setting goals. Individual student reports are used to inform students of their level and to set their own goals. SAGE Formative testing is used in a more frequent manner to guide and keep track of student learning.

In high school, a student's level is measured with standardized testing. ACT Explore in 9th grade, ACT Plan in 10th grade and the ACT in 11th grade are administered once a year to help with college admission planning.

Assessment to Achievement program guides teachers in using measurable data to guide them in their teaching. The School Transformation Team (STT) meets regularly to plan and guide the Collaborative Teacher Teams (CTTs) in their strategies and teaching methods to improve assessment outcome.

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Utah STEM School Designation Criteria
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3. **Assessment**

Assessments are ongoing, authentic and cross-curricular. They are project-focused and performance-based. Rubrics for projects are provided and articulate with the goals of the assessment. Formative assessment informs summative assessment and teaching efforts.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
3b. Use of Assessment to Inform Instruction *The teacher uses information on current student understanding to inform and plan future instruction.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- All teachers use multiple indicators of success (e.g., performance assessments, observations, monitoring student dialogue) at least once a week to inform their decisions about instruction (reteach concepts, try an alternative instructional strategy, organize the students differently, provide an alternative example). - Most teachers go back and reteach concepts based on student understanding. - Teachers consistently use observation and monitor student dialogue to assess student learning.	- All teachers use multiple indicators of success (e.g., performance assessments, observations, monitoring student dialogue) almost every class session to inform decisions about instruction (e.g., reteach concepts, try an alternative instructional strategy, organize the students differently, provide an alternative example). - Teachers use observation and monitor student dialogue to consistently assess student learning, and share their data in teacher teams at least once a month.

Narrative: Exemplary--3 points

The teachers at BSTA use current student understanding to plan their instruction in the following ways:

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Teachers are using SAGE Interim/Summative data to help them make decisions about students' performance and plan their future instruction.

MAP testing is used for certain students to aid teachers in decision-making.

Teachers submit curriculum maps at the beginning of the year to the administration. While they are following their curriculum maps throughout the year, teachers make changes according to the students' pace in learning.

Grade level meetings and department meetings help teachers in discussing and deciding strategies for student group learning levels and to track their progress.

Assessment to Achievement goals that have been set are used in classes to track student learning and success. Resources provided through the Assessment to Achievement system help teachers make decisions based on data.

Khan Academy is an online system used by the Math department to track individual students' math progress. Reports generated based on students' responses guide teachers in determining the need to reteach certain concepts.

SAGE Formative is used by some teachers to assess and track students' success based on topics and state standards. Reports generated based on students' responses guide teachers in determining the need for reteaching concepts.

Discovery Education Techbook is used by the science department to provide content and assessment to students. This system helps teachers keep track of students' understanding of science concepts. Reports generated based on student responses guide teachers in determining the need for reteaching concepts.

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4. **Professional Learning**

STEM-focused professional learning is fully implemented. Professional development aligns with Utah's requirements for professional learning (Utah Code 53A-3-701) and aligns with Utah Core Standards and Utah Effective Teaching Standards. Learning communities and learning networks are integrated into efforts for personal growth and school wide growth.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
4a. Staff Engagement in Relevant Professional Learning Opportunities *The staff participates in internal or external growth and development activities that are beneficial and relevant to their work. Staff members are willing to try new practices and adjust what they do for the greatest benefit for students.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Professional development meets **ALL** of the criteria established in Professional Learning Standards articulated in Utah law 53A-3-701 passed in 2014 http://le.utah.gov/~code/TITLE53A/htm/53 A03_070100.htm - School leader(s) make sure teachers have access to STEM professional learning at least once per school year. - Staff members occasionally try new strategies (e.g., instructional, management, stakeholder outreach). - Staff members have clear opportunities to give input about professional development needs and outcomes received at the school.	- Professional development meets **ALL** of the criteria established in Professional Learning Standards articulated in Utah Code 53A-3-701, passed in 2014 http://le.utah.gov/~code/TITLE53A/htm/53A03_070100.htm - School leader(s) make sure teachers participate in professional learning at least once per month. - Staff members regularly try new strategies (e.g., instructional, management, stakeholder outreach). Some PD experiences or staff collaboration time are structured to focus on new practices.

Narrative: Exemplary--3 points

Beehive Science and Technology Academy has implemented a comprehensive approach to the professional development of our administration and teaching staff by ensuring professional learning occurs within learning communities committed to continuous improvement, individual and collective responsibility, and

School Name: Beehive Science and Technology Academy (BSTA)

goal alignment. Our administration is affiliated with the *Accord Institute for Educational Research*. The Institute organizes workshops, trainings, seminars and conferences to spur professional growth for teachers, administrators, and other school staff. The support and training BSTA has received is as follows:

Provides guidance on promoting STEM practices at school sites and how to organize and hold STEM/STEAM Fairs, festivals and expositions.

Training to teachers on how to create curricula on A+ Math and present this curricula to students. Mr. Oguz and Mr. Zack Temerican, the Principal and Vice Principal of BSTA, attend the trainings offered by the Accord Institute monthly. Some topics have included data driven instruction, inquiry based science curricula, and how to refine skills in problem solving, adaptive reasoning, and proofing.

We conduct an annual survey with our staff, which asks what additional professional development opportunities staff desires and also any STEM related training they feel would be beneficial. These surveys are conducted in late spring and help determine professional development topics for the summer and fall.

Our teachers participate in professional learning at least two times per month ranging from three to eleven hours of learning monthly per teacher. This is accomplished through many avenues. We utilize a professional learning website titled, *Edivate*. On this site, each of our teachers set their own learning goals and then obtain these goals through opportunities offered in reviewing videos of other teachers on topics of their choice. Reviewing research and participating in online discussions with other educators are a few of the methods used. Administration gets monthly reports to ensure teachers are making progress toward their goals, and we collaborate often providing educational videos, academic articles and examples of new practices.

We have organized teacher learning communities, which meet twice monthly to discuss new practices, data driven curricula and concepts gained in book studies organized by our administration.

Beehive staff is participating in “Assessment to Achievement,” which is a two year opportunity focusing on effectively using relevant data to improve student outcomes. This training is sponsored by USOE and Ed Direction and ten staff members are being trained directly. They then train our remaining staff. Teams increase their own expertise in analyzing data gained from student outcomes and using these skills to inform instructional and program decisions and improve student achievement. Participants will collaborate as school teams to analyze the data and implement school-wide strategies. These teacher teams attend over ten full days of training per year. Our staff is specifically focusing on “Metacognition” with our students teaching them to think about how they think. Our staff is utilizing specific tools such as rubrics to encourage comprehensive writing.

Our staff continues their professional development through continuing education. Our two computer and IT teachers are prime examples. Ms. Guney completed her MS in Computer Science and Software Engineering from Colorado Technical University in November 2014. Ms. Temerican also completed her MS in Computer Science and Software Engineering from Colorado Technical University in March 2015. Both teachers are members of the “Computer Science Teacher

Association-CSTA. Other training attended was in January, 2015 Globaloria for Game Design and in October, 2015 Microsoft Game Programming. These two teachers routinely provide training on our professional development days for our entire staff on apps and available software for classroom use. Mr. Kablan, our Science chair, ensured all three of our Science teachers attended AMS Summer Materials Camp sponsored by the University of Utah. The purpose of this training was to demonstrate how to properly use materials science in STEM Education. Mr. Kablan also attends meetings with the STEM Action Center quarterly. He attended the Northern Utah Stem Expo in order to collaborate with participating schools. He heads our Robotics Team and attended the FTC Kickoff, which is the start of the competition season.

4. Professional Learning

STEM-focused professional learning is fully implemented. Professional development aligns with Utah's requirements for professional learning (Utah Code 53A-3-701) and aligns with Utah Core Standards and Utah Effective Teaching Standards. Learning communities and learning networks are integrated into efforts for personal growth and school wide growth.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
4b. Professional Development Resources *Resources (both time and funding) are available to help teachers and staff develop and further their skills.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- School leadership ensures that professional development opportunities are identified and shared. - School leadership makes sure that professional development is high quality. - School leadership supports staff interests in STEM professional learning. - Leaders designate financial and human resources to support staff professional development.	- The leadership obtains grant(s) and/or brings in resources beyond school funding streams to support professional development. - Leaders evaluate the impact of professional development.

Utah STEM School Designation Criteria
Pilot Year Model
Narrative: Exemplary--3 points

The 2015-2016 school year is the second year grant funding was obtained to continue utilizing software to assist our teachers with their professional development goals. The software utilized is “Edivate.” Each teacher has a “learning plan” with stated goals, which are monitored monthly. One hundred percent of our staff is utilizing this tool to set professional learning goals and work towards increasing their knowledge and skills to achieve these goals. The teachers meet twice per month on an established schedule and TLC groups of three to four teachers to discuss knowledge gained and strategies for improvement. These meeting days we provide a substitute teacher to help cover classes so the teachers can meet and learn from each other.

Last year we received a grant for $2500 from Century Link to train our computer teachers. They attended training on game development with these funds.

The USOE and Ed Direction is sponsoring a grant for training titled, “Assessment to Achievement,” which we applied for and received. This is a two-year training of ten staff members on how to analyze data properly regarding student achievement and then implement instructional strategies to improve student performance. In addition to this training, the teams meet weekly to discuss the strategies and provide additional resources to fellow teachers to utilize in their classes.

The school is receiving training funds from a Title I grant for professional development of our staff. A portion of our Title I funds is also used for training of our teachers and support staff.

Beehive received a USOE grant titled “Mentorship Grant” in which the funds are used to provide support of our teachers by a “Mentor” teacher with over twenty years of experience.

The Utah State Charter School Board provides Beehive Academy with an annual training grant of $1850. These funds have provided an opportunity to bring in outside trainers to provide quality instruction to our teachers. One example of this was training provided August 4, 2015 on student engagement.

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We have partnered with STEM related businesses such as IMFlash to help teachers make curriculum relevant to current uses in professional careers. Our students are visiting their company and representatives are coming to the school to do presentations several times a year.

Beehive Academy values our staff and their knowledge and experience as one of our greatest assets to improve student achievement. We have a strategic plan for professional development through personal learning plans in Edivate, providing relevant training on STEM teaching methods and content knowledge through professional development training days. TLC's or Teacher Learning Communities are provided scheduled time for twice monthly meetings with coverage for a substitute teacher in some classes as needed. Teachers are provided an experienced teacher as a mentor to help them develop their curriculum to become more effective for our diverse population of students. Most importantly, we are learning how to use student data to improve our teaching methods and curriculum in the most thorough training any of us has experienced through "Assessment to Achievement."

Utah STEM School Designation Criteria
Pilot Year Model

4. **Professional Learning**
STEM-focused professional learning is fully implemented. Professional development aligns with Utah's requirements for professional learning (Utah Code 53A-3-701) and aligns with Utah Core Standards and Utah Effective Teaching Standards. Learning communities and learning networks are integrated into efforts for personal growth and school wide growth.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
4c. Staff Reflects On Their Work *The staff considers the strengths and weaknesses of their practices and ways they can improve.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Staff members explicitly identify times to consider the strengths and weaknesses of their work. - Staff members document monthly reflections about how to improve their work.	- Staff members develop strategies for improving their work in collaboration with colleagues and administration. - Staff members document weekly reflections about how to improve their work.

Narrative: Exemplary--3 points

Beehive Science and Technology Academy staff members complete thorough self-evaluations annually. In these evaluations, our teachers reflect on the curricula used and what can be improved to meet the diverse learning styles of our student population. Additionally, the teachers reflect on teaching methods and regularly share an activity utilized, which engaged all students during their TLC meetings and staff meetings held weekly. These are reflected in grade level, department and staff meeting notes. The teachers have been analyzing their methods during their "Assessment to Achievement" training and making adjustments accordingly in classroom lessons in order to emphasize teaching our students about their own metacognition in learning STEM curriculum. Personal teaching reflections are a part of the teachers' learning plans in Edivate. Currently, these are discussed monthly with administrators and if further support is

needed, it is arranged. Teachers are evaluated and provided feedback up to three times annually by administrators who utilize the Duubl site. This allows for a very comprehensive evaluation of their lessons, classroom management, content knowledge, and application of information to real world examples.

Utah STEM School Designation Criteria
Pilot Year Model

5. **Teaching**

Teaching is conducted with a focus on STEM concepts, processes and thinking. Teachers coordinate lessons, ideas and planning among one another with a mechanism in place for doing so in both formal and informal ways. Incentives exist for supporting one another. Correlations among various aspects of STEM are articulated and explicit. The faculty demonstrates content competency in all areas of STEM and have relevant endorsements. Efforts are made to support content sharing.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
5a. Code of Behavior and Values *The staff emphasizes and demonstrates code of behavior and values for themselves and students. The staff listens to, supports, and engages constructively with colleagues.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- The student handbook articulates a code of behavior, values, and treatment of one another with trust and respect. - The code is visibly displayed. - Staff and students talk about the code of behavior and values in classes.	- Staff and students talk about it in and outside of class (in hallways and after school activities). - Students use and are assessed on core values in their learning. - A program for recognition of student conduct exists. - STEM career behaviors and skills are embedded into the code of behavior and values.

Narrative: Exemplary--3 points

At BSTA, the staff demonstrates a high level code of behavior and values for themselves and their students. All the staff are supportive of each other, listen to problems and try to encourage and assist whenever possible. Examples of the beliefs and values are as follows:

Beehive Science and Technology Academy Student Handbook outlines the expected code of behavior for students along with consequences and the discipline procedure that will be followed. These rules are covered during the orientation presentations before school starts. At the beginning of the year, these rules are also read with the students during Silent Sustained Reading (SSR) times and any questions by the students answered to clarify the rules.

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The Discipline Record System (DRS) on Coolsis is used by the staff to record positive and negative behavior demonstrated by the students. Consequences like loss of privileges, lunch detention, after school detention, etc. are in place for negative points. Rewards like free dress days, certificates, etc. are in place for positive points. Coolsis sends an email and/or smartphone notification to parents for any positive or negative behavior incidents.

The Beehive Science and Technology Academy Employee Handbook describes the code of conduct expected from the staff.

In order to spread kind behavior habits among students, Hope Squad initiated the Kindness Counts program. Any student can report an act of kindness observed during school through Edmodo. Last year, if the count reached 700 acts within a certain time, a field day was promised to the students. The goal was achieved in a short time, and the field day was a great success.

Kindness counts cards are handed out to students by teachers to recognize positive or kind behavior. These cards can be taken to Ms Barnes (Discipline Coordinator) to get prizes in addition to positive points entered on Coolsis.

Students learn to be responsible by following steps for Utah STEM Expo project assignments. Each step with separate due dates helps students plan and manage their time responsibly. Students upload their project videos to YouTube and embed them to their websites. In each of these steps they are responsible for the content of their digital products.

Time management and taking responsibility for their products are expected in every class for any assignment or project.

These values and skills help build up their STEM career behaviors and skills.

The Character Education and Life Skills course is one hour per week in each grade of middle school. The objective of the Life Skills Class is to encourage students to take responsibility for their actions, to familiarize them with good character traits, to introduce them to role models, and to help develop good citizens with high moral values.

In Computer Game Design course, students learn about Ethics in Game Design.

Beehive Science & Technology Academy has the following beliefs and values:

- All students will strive for academic growth, with an emphasis on literacy, science, math, and technology skills.
- Excellence is achieved in a variety of academic, creative, and personal ways.
- Each student is a valued individual with unique physical, social, emotional and intellectual needs.

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- Teachers, administrators, parents, students and the community share the responsibility for advancing the school's mission.
- Students will model appropriate behavior in a safe and supportive setting to achieve future success in a diverse global community.
- Student learning is supported by a commitment to continuous improvement and research-based pedagogy.
- Extracurricular programs and activities promote holistic student development.
- Vigorous college preparatory programs help students graduate as competitive candidates for the world's top learning institutions.

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5. Teaching

Teaching is conducted with a focus on STEM concepts, processes and thinking. Teachers coordinate lessons, ideas and planning among one another with a mechanism in place for doing so in both formal and informal ways. Incentives exist for supporting one another. Correlations among various aspects of STEM are articulated and explicit. The faculty demonstrates content competency in all areas of STEM and have relevant endorsements. Efforts are made to support content sharing.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
5b. Teacher Differentiation of Instruction Based on Learning Needs *The teacher customizes instruction based on abilities, learning styles, and developmental levels of the students.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Course pacing of content covered is modified to accommodate for differences among students. - Teachers ensure that rigor is maintained while making lessons accessible for all students. - Teachers adapts curriculum to better fit student learning styles. - Teachers use a range of pedagogical strategies.	- Teacher differentiation incorporates students' real-life applications for outside learning. - Students are able to self-select the differentiation. - Teachers regularly and systematically share information about students' learning differences.

Narrative: Exemplary--3 points

Teachers at BSTA are constantly reviewing student abilities, learning styles and developmental levels of their students and adjusting instruction as needed. They use test results, daily checks and a variety of methods to confirm the students are learning the material.

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Assessment to Achievement Action Plan is devised in a way to provide differentiation within the classroom as outlined on the attached “Action Plan for Improving Teaching and Learning at Beehive Academy”.

Assessment to Achievement methods have helped teachers to check the students’ learning and thinking skills. Many different learning styles are also discussed and addressed through grade level and department meetings biweekly.

In group projects in US History Class, students are given choices of producing different types of material to fulfill the requirements of the project. For example, in the “Protesting the Taxation Acts-Presentations” they have to choose from a writing a commercial, jingle, poem or making a poster as detailed in the artifacts.

In group projects in 6th Grade Language Arts class, students have to choose a role like Artist, Scribe, Researcher and Presenter, to prepare their group project as exemplified on the attached “African Monster Webquest”, where they have to follow a rubric to guide them to excellence.

The Smart School Program at Beehive Academy provides all students with iPads that they can use for school. In an effort to provide differentiated education, teachers use different apps and online platforms. A few online platforms to name are Google Classroom, Khan Academy, Discovery Education and Edmodo. Additionally, teachers can make app requests to use in their classes as can be seen in the attachment.

Department meetings, grade level meetings and faculty meetings are times when teachers can share and discuss differentiation among a variety of student groups. In the attached example, the agenda items are ELL students and Title 1 students.

Utah STEM Expo, which is a major project for students to accomplish in science classes, gives the students the option of selecting their projects from a list of science, math, computer science, art and technology projects. Then, they put their selections through the online project selection form to let the teachers know of their choices.

Professional Development is an important focus at Beehive Academy, where teachers can improve their skills by working in groups/teams. An example is the TLC meetings that are scheduled biweekly with small groups where teachers utilize Edivation to improve skills. Here is a link: https://www.pd360.com/

In the CMLP (College Mentorship and Leadership Program), students are setting goals in personal development, public service, physical fitness and exploration/expedition to obtain certificates and medals from the Congressional Award after completing certain hours in their goals. Please follow the link to get more information about the award: http://congressionalaward.org/program/program-areas/

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5. **Teaching**

Teaching is conducted with a focus on STEM concepts, processes and thinking. Teachers coordinate lessons, ideas and planning among one another with a mechanism in place for doing so in both formal and informal ways. Incentives exist for supporting one another. Correlations among various aspects of STEM are articulated and explicit. The faculty demonstrates content competency in all areas of STEM and have relevant endorsements. Efforts are made to support content sharing.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
5c. Staff Spreads Practices *The staff shares with others practices they enact in their classrooms and school.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- STEM practices and strategies are shared across all staff members in the school. - The staff at this school shares information and strategies with other schools interested in STEM practices.	- Staff members at this school provide PD/training/ consultation to each other and to other schools interested in STEM practices. - Staff members at this school share instructional materials with each other and with other schools interested in STEM practices.

Narrative: Exemplary--3 points

Teachers and staff collaborate and share with each other the successful practices that are used in the classroom. These practices are shared in grade level and department meetings, and informally in classrooms and the staff room.

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Teachers are meeting in small groups every two weeks to focus on professional development through the online system called Edivation. These meetings are focused on learning and using new teaching methods, improving instruction and overcoming challenges in the teaching profession. https://www.pd360.com/

In-service training days before school starts in the fall and professional development days throughout the year help teachers improve in their profession as well as learn new ways and tools to improve their teaching.

Assessment to Achievement program brings all teachers together to work towards a common goal in improving BSTA's education in certain areas. Goals set through the program and tools provided help teachers collect data about their students and set new goals towards their learning.

Utah STEM Expo is designed to invite other schools to bring their students to demonstrate their STEM projects. Beehive Science and Technology Academy students participate in many other events to demonstrate their STEM projects to increase awareness in STEM education. Beehive Academy is willing to share the STEM experience with other schools and communities. An invitation was sent out to all the science teachers in the community through USOE and some schools showed up with students and projects.

The science department encourages students to participate in STEM activities as well as present in different events. Some events that our students have presented in are: Utah Scouting Expo, Utah State Fair, Healthy STEM 5K, Charter Day on the Hill, Utah STEM Fest. Recently, we were contacted by the PTA president at West Kearns Elementary to take some students to their STEM Night to present their projects.

Utah Council for Citizen Diplomacy brought some International visitors to Beehive Academy to observe STEM focus for our students.

USOE invited Beehive Academy to share practices at a Title I Directors meeting.

Similarly, there have been many invitations and/or presentations by our staff about our STEM applications in different meetings and conferences.

Lastly, a science specialist from Arkansas State Department of Education contacted Beehive Academy Principal, Mr. Oguz and obtained materials and advise about how to run a STEM Expo for Arkansas Schools.

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Utah STEM School Designation Criteria
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5. **Teaching**

Teaching is conducted with a focus on STEM concepts, processes and thinking. Teachers coordinate lessons, ideas and planning among one another with a mechanism in place for doing so in both formal and informal ways. Incentives exist for supporting one another. Correlations among various aspects of STEM are articulated and explicit. The faculty demonstrates content competency in all areas of STEM and have relevant endorsements. Efforts are made to support content sharing.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
5d. Common Planning Time and Individual Planning Time are Incorporated into the Schedule *Planning time specifically devoted to supporting collaborations among school staff, and planning time provided specifically for staff to prepare individually for instruction, in any way that*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Teachers have a set time to collaborate and work individually at least monthly together to plan integrated lessons, share/co-create STEM activities, and plan learning outcomes. Regular, collaborative planning time allows teachers within grade levels to give each other advice and ideas about instruction, and work through problems together.	- Teachers have a set time to collaborate and work individually at least weekly together to plan integrated lessons, share/co-create STEM activities, and plan learning outcomes. - Regular, collaborative planning time allows teachers within and across grade levels to give each other advice and ideas about instruction, and work through problems together.

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they choose.				

Narrative: Exemplary--3 points

Teachers at BSTA have planning and collaboration time built into their schedules to support each other and work through problems that occur in their classrooms. Twice a month, TLC groups meet together to discuss instruction methods and improve practices. Grade Level groups meet once a month to collaborate and give each other advice and work through problems together. STTs meet together once a month to track progress of CTT groups and discuss ways of improvement of goal applications throughout the school. CTT Groups meet together twice a month as part of a department meeting to analyze classroom data and discuss ways of implementation of goals set through Assessment to Achievement.

All of these meetings and minutes are required to be typed/uploaded to the shared documents on Google Drive for everyone to have access to them. This enables the administration to be able to keep track of these meetings. At the same time, all staff members have access to these minutes to share and collaborate with the rest of the staff.

There are several examples of meeting agendas and minutes attached in the artifacts.

Utah STEM School Designation Criteria
Pilot Year Model

6. **Student Engagement and Equity**

There is solid evidence for engagement of all demographics in the local community. Efforts are connected and follow a coherent, research-based plan. Efforts show a deep understanding of STEM equity issues and needs. Students are regularly involved in planning and conducting learning activities. Students are regularly engaged in the actual doing of science, mathematics, and project-based learning.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*

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6a. Support for Social and Emotional Needs of Students *The staff considers the range of students' needs. These include social, emotional, and academic needs.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- The school has a student induction process, program, or activities that support incoming students. - Teachers reach out to family and talk with students to understand students' social and emotional well-being. - Regularly scheduled strategies and procedures have been implemented across the entire school that focus on relationships and on developing and fostering global literacy (e.g., student advisory class, class meeting, or homeroom).	- The school has a student induction process, program, or activities that supports new students' transitioning to the school in ALL grade levels. - Teachers meet regularly to discuss students' social and emotional needs. - A scheduled part of the school day extends instruction or focuses on supporting relationship building. - Annual resources are allocated to develop, revise, and sustain strategies and procedures across the entire school (e.g., student advisory class, class meeting, or homeroom). - Students, teachers, parents, and external partners provide input into strategies and procedures (e.g., student advisory class, class meeting, or homeroom).

Narrative: Exemplary--3 points

Beehive Science and Technology Academy welcomes new students from the moment they indicate an interest in the school. We conduct numerous open houses where we discuss all of our programs and certifications students may receive from our STEM curriculum. There are tours of the school and students are on hand demonstrating their STEM projects and meet new prospective students and answer questions about the school. We offer a shadow program where the students can shadow a Beehive student for a day. Prospective students will be assigned a student volunteer who will welcome them to the school and explain how our classes benefit them and introduce the new student to teachers and staff. There is an orientation night for all students and their parents, which many new and returning students attend. We have a "meet and greet" time beforehand with refreshments, which is popular. Each new student is offered a "buddy" to help them navigate school and classes until they feel comfortable and this often results in friendships.

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BSTA has a “home visit” program in which parents sign up for an evening that is convenient. A teacher and an administrator will come to their home for approximately thirty minutes and meet with the family and the student. This is very successful in establishing a trustful relationship with our families. We usually average between 65 to 70% of our families who sign up for a home visit.

BSTA has a required “Character Education” class, which all 6th grade students take. This is designed to foster good character and habits in our students. They discuss current issues that are critical for success such as integrity, being aware of how one treats others, and demonstrating respect for self and others. Students find service projects to participate in such as food drives, collecting socks or toilet paper for the shelters and collecting pennies to donate. Additionally, in the school the students conduct kind acts such as giving inspirational notes to other students and staff.

Beehive addresses the issue of suicide prevention and anti-bullying with two programs. The first is a “Hope Squad” of students who are extensively trained to talk with troubled students and then report it if they feel the student is in need of counseling or help. These students simply ensure no student feels alone or unnoticed. The Hope Squad wears specialty tee shirts so others may see them and know they can speak to them. These were students nominated by all students as caring and trustworthy. The Hope Squad sponsors another program titled, “Kindness Counts.” They and staff recognize acts of kindness by giving positive comments and rewards.

We offer a homeroom class we call SSR (sustained silent reading). This is where student announcements occur and when we have contests for service drives students participate as a group. But more importantly, students read aloud a book together for about ten minutes and then they also read their own books silently the remainder of the class, thus improving reading skills and instilling the joy of reading.

Beehive Academy offers free after school tutoring and clubs. Our students can get homework assistance from teachers Tuesday through Thursdays and a few teachers offer it on Fridays as well. Our students have an opportunity to participate in clubs such as Robotics, Lego Club, Minecraft, Chess, and Game Design. They work in teams under the supervision of a teacher and parent mentors. Often members of the community assist too.

We offer numerous opportunities for student advising including an ACT Prep class as part of the 11th grade curriculum. The students are prepared through careful analysis of content and test strategies to do their best when they take the ACT.

Beehive has a program titled College Mentorship and Leadership Preparation or CMLP. Students apply and are chosen to participate and are placed into small groups of five or six under the advisement of a mentor teacher. These teachers model leadership and help students develop their skills through open discussions and activities. The students go on college tour trips both in state and out of state and are provided with options to consider. They earn service hours and work towards a Congressional Award.

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Utah STEM School Designation Criteria
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Each high school student is counseled individually by our College Advisor and Vice Principal. They are given information on scholarships, grants and entrance requirements for colleges and universities.

6. **Student Engagement and Equity**

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Utah STEM School Designation Criteria
Pilot Year Model
There is solid evidence for engagement of all demographics in the local community. Efforts are connected and follow a coherent, research-based plan. Efforts show a deep understanding of STEM equity issues and needs. Students are regularly involved in planning and conducting learning activities. Students are regularly engaged in the actual doing of science, mathematics, and project-based learning.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
6b. Belief That All Students Can Learn *The staff takes steps to ensure all students have opportunities to master content.*	*N/A* *Belief that all students can learn is central to instruction. Schools need to have this element in place to be eligible for STEM School Certification.*	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- The school works to provide equitable access to rigorous, high-level courses. - All students' specific and identified needs are being met. - Specific considerations are made in STEM classrooms that support all students, including populations underrepresented in STEM fields. - Teachers receive professional development on underrepresented populations in STEM fields to inform instruction.	- The school works to provide equitable access to rigorous, high-level courses. - Special programs have been designed to encourage underrepresented students to develop interest in STEM careers. - Special programs have been designed to encourage underrepresented students to develop interest in STEM careers.

Narrative: Exemplary--3 points

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Firstly, Beehive Science and Technology Academy is a public school with a minority charter. This means we are intended to attract students from under-represented communities. Currently we have over 32 different cultures represented in our school.

Our students have access to an advanced Math Program called A+ Math. Beehive Academy CTE Pathways deliver relevant and rigorous academic and technical experiences in Computer Science and Engineering.

Programming/Software Development

Digital Media

(Utah) Pre-Engineering

Web Development and Administration

Database Development and Administration

The Advanced Placement program offers college level courses at high schools across the United States and Canada.

BSTA has offered the following AP Courses;

AP Biology,

AP Calculus AB,

AP Chemistry

AP Studio Art: 2D Design,

AP US History,

AP Physics

AP Computer Science

AP English

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Concurrent enrollment is the process in which high school students (only Juniors and Seniors) enroll at a university or college to attain class credit for high school and/or college.

BSTA and SLCC (Salt Lake Community College) have signed an agreement to become partners so that BSTA students can take college courses from SLCC without paying tuition at SLCC. All credits transfer to Utah Universities.

One-to-one Student Education Occupation Plan (SEOP) meetings once or twice a year.

11th Grade ACT/SAT Prep. Courses and camps are part of our regular course curriculum.

College Mentorship and Leadership Program (CMLP)-This program pairs a small group of students (5-7) with a teacher mentor. These groups meet regularly for community service projects, leadership development activities, study and discussion groups and to support the ACT/SAT preparation. These students also participate in the Congressional Award Program in which they must have an excellent GPA, certified public service hours and demonstrated leadership at school and in the community. The students apply and are awarded medals based upon their achievements. Last year our Valedictorian was awarded a Gold Medal and it was presented by Congress in Washington D.C.

Our BSTA staff attends in-school presentations with our industry partners such as IMFlash. The students learn about STEM careers directly from those involved in the industry as do the teachers. Often they then visit the business location to tour and discuss STEM related careers (Artifact 6b.5). Recently, we presented training to our teachers based upon “Vital Signs-Reports on Condition of STEM Learning in the U.S.” We read the report and held open discussions with the staff. In fact, these discussions helped us formulate one of our goals in our five-year plan to implement strategies to increase the enrollment and participation of minorities at Beehive Academy. (Artifact 6b.6)

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6. **Student Engagement and Equity**

There is solid evidence for engagement of all demographics in the local community. Efforts are connected and follow a coherent, research-based plan. Efforts show a deep understanding of STEM equity issues and needs. Students are regularly involved in planning and conducting learning activities. Students are regularly engaged in the actual doing of science, mathematics, and project-based learning.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
6c. Student Participation in Decision-Making	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Students participate in the development/revision of the code of behavior and values. - Students are encouraged to give feedback at any time (via a suggestion box, etc.). - There are structured opportunities for students to provide feedback.	- Students participate in high-level school decision-making, such as disciplinary regulations, course planning and development. - School has a system in place to ensure that there is representative voice in student decision-making.

Narrative: Exemplary--3 points

At Beehive Academy Student opinion is valued in developing the direction of our school. An "Annual Student Survey" is conducted in which students provide stakeholder feedback on curricula, school environment and activities and many other topics. (Artifact 6c.1) Our student body elects a "Student Council" that participates in planning activities, discussing ideas for school improvement, class offerings and numerous other topics. The council is mentored by a teacher and

parent liaison. All grade levels are represented by at least one member. (Artifact 6c.2) Students are invited to attend the PTA meetings as well as parents to discuss issues regarding school discipline, uniform policies, fundraising activities and other related topics. (Artifact 6c.3)

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6. **Student Engagement and Equity**

There is solid evidence for engagement of all demographics in the local community. Efforts are connected and follow a coherent, research-based plan. Efforts show a deep understanding of STEM equity issues and needs. Students are regularly involved in planning and conducting learning activities. Students are regularly engaged in the actual doing of science, mathematics, and project-based learning.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
6d. Extracurricular Activities *Students have the opportunity to participate in sports, clubs, and STEM activities that take place outside of regular school hours.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Programming is connected to the school day curriculum. - The school offers extracurricular activities that are engaged in by **some** of the students. - Some of the students participate in STEM competitions on-site/online STEM exhibits, and/or in state and national STEM forums.	- STEM experiences are directly connected in in-class learning. - The school offers extracurricular activities that are engaged in by **most** of the students. - **S**tudents participate in STEM competitions on-site/online STEM exhibits, and/or in state and national STEM forums.

Narrative: Exemplary--3 points

Beehive Administrators and staff have close connections with the Utah STEM Action Center and meet on a regular basis to ensure our approach to STEM education is current and effective. The STEM Action Center is a featured guest at our annual STEM Expo. In the past, a member from the Center has given a welcome speech to all participants. Each year our students attend the STEM Expo sponsored by UVU and the STEM Action Center. Our students participate in

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Math Matters Competitions, MMA American Mathematics Competitions, and Salt Lake Valley Science and Engineering Fair, Lego League-Robotics Competition (2016-- Utah Champions representing Utah at the International Competition in St. Louis, Missouri in April, 2016) and Robotics competitions. (Artifact 6d.1)

BSTA offers after school clubs three to four days a week most of which support STEM. Some of these clubs are “Coding Club” where students learn to write software code, Mathcounts, Future City, Robotics, and Film Club to name a few. Our students choose a club to attend, and we have over 78% of our students that participate in one or more clubs. (Artifact 6d.2)

Each student at Beehive creates a STEM project annually, in which they research the science, complete a written description of the project, obtain the materials and complete it by demonstrating and filming it for our YouTube channel. Additionally, students use their technology skills to design a website for their projects. The students then demonstrate their projects at our STEM EXPO at the end of the year for over 4000 visitors and dignitaries. (Artifact 6d.3)

Science classes at each grade level do weekly labs that incorporate kinesthetic learning styles. Students learn the experimental inquiry process and work to understand scientific concepts. The school utilizes an exceptional level of technology with the use of a 3D scanner and two 3D printers to design and make models of their work. (Artifact 6d.3) BSTA offers after school clubs to all students for one hour three days per week. There are no fees to participate and most of our students participate in one or more of these clubs. (Artifact 6d.4)

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6. **Student Engagement and Equity**

There is solid evidence for engagement of all demographics in the local community. Efforts are connected and follow a coherent, research-based plan. Efforts show a deep understanding of STEM equity issues and needs. Students are regularly involved in planning and conducting learning activities. Students are regularly engaged in the actual doing of science, mathematics, and project-based learning.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
6e. Representative Population *School maintains student population with a focus on reflecting a population representative of the community/area the school serves.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- The school engages in outreach, support, and focus on underrepresented student populations.	- The school actively recruits student populations reflective of the diversity and gender of the local community. - School population is fully representative of the diversity and gender of the local community.

Narrative: Exemplary--3 points

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Beehive Science and Technology Academy is identified as a "Minority Charter" by the Utah State Department of Education. We have a comprehensive plan for outreach to all minority communities. This is accomplished through our marketing plan whereby flyers are sent to community centers representing minority communities, and brochures are distributed to women's technology and business groups. Our cooperation and partnership with both in and out of state universities is designed to encourage the discussion of our school for students desiring STEM related degrees for the younger siblings of university students. For the 2014 School Enrollment, we had 66.79% males and 33.21% females. Our ethnicity representation was 3.44% Asian male and 1.15% Asian female; .76% Black male, 6.11% Hispanic male and 3.82% female. There were .38% Pacific Islander male and .38% female, 55.73% White male and 27.48% female. Those in the multiple ethnicity category were .38% male and female. In 2015 the reporting method changed to eliminate percentages in favor of actual numbers. For the 2015 School Enrollment, we had the following ethnicity representation: 10 Asian males and 9 Asian females, 6 Black males and 2 females, 19 Hispanic males and 12 females. There is 1 Pacific Islander male and 1 female, American Indian: 1 male; 182 White males and 95 females. Those in the multiple ethnicity category were 4 males and 2 females.

As we all know statistics are not always representative of actual information. For instance, we have numerous students from India who do NOT identify themselves as Asian on applications. We hold an international celebration day annually in which students prepare information, food, dances, etc. from their native cultures and we represent over 32 different cultures in our school including Russian, Bosnian, Polish, Egyptian, Syrian and Iranian to name a few. These however, do not "fit" the categories listed for minorities but we feel nevertheless they ensure diversity.

Our diverse learning community includes our population of students with special needs (Special Education). Approximately 20% of our students have Individual Education Plans compared to the State of Utah average of 12%. An additional 5% have 504 Plans to support their special needs. We can speculate and deduce the cause for our increased population based on parent feedback, physician referrals and information gained in our application process and orientations but it seems the three primary reasons are: our small class sizes at capped at 25, our use of technology to support learning, as well as the STEM focus in our curriculum. Our Title I funding percentages are available on the CNP website and BSTA has participated in the NSLP for four complete school years beginning in the 2012-12 School Year.

Percentages for free and reduced lunch qualifying students are as follows: 2012-2013: 21.43%, 2013-2014: 34.01%, 2014-2015: 25.17%, 2015-2016: 23.99%. One challenge we have as a school is that despite our efforts to have parents complete this form to identify qualifying status, we routinely have only 30-34% who complete the form any given year. Of those completing it nearly 92% qualify for the Free and Reduced Lunch Program. As stated before, a significant portion of our families are immigrants and do not desire government assistance. Some may fear it adversely affecting their visa applications. Nevertheless we truly represent the community our students are coming from according to economic status.

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6. **Student Engagement and Equity**

There is solid evidence for engagement of all demographics in the local community. Efforts are connected and follow a coherent, research-based plan. Efforts show a deep understanding of STEM equity issues and needs. Students are regularly involved in planning and conducting learning activities. Students are regularly engaged in the actual doing of science, mathematics, and project-based learning.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
6f. Student Autonomy *Students have independence in and ownership of their learning. Students set goals for their learning and make choices about how to accomplish them.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Some lessons/activities required students to take initiative and be self-directed. - The majority of STEM lessons/activities require students to manage their own work and bring it to completion. - Students make meaningful choices about their learning (e.g. choosing a topic) experiences.	- Most lessons/activities required students to take initiative and be self-directed. - Most STEM lessons/activities require students to manage their own work and produce results. - Teachers seek input from students about their personal interests to incorporate into lessons. - Students make choices that significantly shape their learning experiences (e.g., choose style of

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				learning). - Teachers allow students to lead the class. - Teachers seek input from students about their personal interests to incorporate into lessons.

Narrative: Exemplary--3 points

Beehive Science and Technology Academy utilizes a learning management format for it's students. We are an ISchool so students access their curriculum on their school issued Ipads through various learning management systems such as Google Classroom, our school management software--CoolSis and Discovery Education Learning. The students will often access the required reading, videos, lesson activities, group blogs, discussions and quizzes through this format. There is still direct instruction in the classroom to support the students in need of the visual and auditory direction from the teacher to gain the knowledge. This allows for students to work at their own pace with supports to advance to higher levels and be challenged, or spend more time on a difficult concept.

- Many assignments students receive offer choices of topic, method of research, and type of presentation. One example of this is the "Short Project North American Explorers."

- The school offers free after school tutoring for one hour and students may attend as needed on a voluntary basis. At times teachers will require students to attend who need support. Students will electronically submit work for grading or complete tests and quizzes electronically approximately 65% of the time.

- Not long after the beginning of each school year, students are given a STEM project handbook in their science classes. This lays out each stage they have to complete for their STEM project, which culminates in the STEM Expo in the spring. Included in the handbook are the specific due dates for each stage. (Artifact 6f.2) They are graded based on meeting their due dates, the quality of the project, the ability to research and describe their projects, and the video and website created. This is just one example of the type of STEM projects in our school. Another example of how cross curricular cooperation in STEM is utilized at Beehive is as follows. A math teacher and language arts teacher had students complete a project based upon the book "Flatland" by Edwin Abbott. This book is a satire set in a Victorian era society. The characters are all represented by geometric shapes and their social status in society is based upon how many angles they have.

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In math class, students worked on their societal placement by utilizing descriptive geometric vocabulary and visualizations. Then in their language arts class, the students compared societies from the Victorian era to the ones they created. This is an example of the students driving the curriculum within a literary framework. These are just two examples of how our curriculum is designed to allow students to complete projects, which are self monitored.

- Teachers seek input from students about their personal interests to incorporate into lessons.

- Students make choices that significantly shape their learning experiences (e.g., choose style of learning). Most of our students with special needs have an accommodation to complete written work with the assistance of technology (usually work typed in a word processing program) unless the lesson itself is designed to improve writing skills specifically. We found this to be useful for all our students as we prepare them to utilize the supports technology offers our students in the business world. Students are given opportunities in their courses to choose projects and work partners, topics to research, whether they want to read an electronic copy or a book, and many other choices. BSTA addresses the need for all learners to choose the style that best meets their needs in terms of offering in person instruction, videos, discussions, debates, blogs and other verbal methods, labs, hands on games, 3D scanners and printers, Legos, robotics, engineering classes to build machines, and activities designed to keep students moving around the room to address kinesthetic learners to name some of these methods.

- Teachers at BSTA all have in class presentations, speeches, debates, recitals, and small team activities designed to develop each student's public speaking and presentation skills. Often students are encouraged to create videos during projects to help them critique their own ability for improvement. This is also a technique we use to help our teachers--some of whom film their teaching for our professional development tool "Edivate." It enables a live critique at points during the video from administrators and peer mentors. Some of these videos are saved and uploaded to Edivate's video library.

Teachers seek input from students about their personal interests to incorporate into lessons. BSTA conducts an annual survey of our staff, students, and parents as a method of gaining insight for our School Improvement Plan. We value the critical feedback in order to ensure we are addressing concerns and communicating our efforts. One example provided is Mr. DeFronzo's class survey on whether they preferred a paper or electronic final. Another example Is Ms. Firmage's Final Exam, which surveys her students about what literature should be kept in the curriculum.

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6. **Student Engagement and Equity**

There is solid evidence for engagement of all demographics in the local community. Efforts are connected and follow a coherent, research-based plan. Efforts show a deep understanding of STEM equity issues and needs. Students are regularly involved in planning and conducting learning activities. Students are regularly engaged in the actual doing of science, mathematics, and project-based learning.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*

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6g. Students Reflect on Their Learning *Students reflect on the strengths and weaknesses of their learning approaches and ways they can improve them; students accept changes.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Most classes employ the use of self-assessment for students to reflect on their learning specific to content and skills for each unit/problem solving learning project. - Students identify and document strengths and weaknesses at least twice a year in collaboration with faculty.	- All classes employ the use of self-assessment for students to reflect on their learning specific to content and skills for each unit/problem-solving learning project. - Students identify and document strengths and weaknesses more than four times per year in collaboration with faculty. - School maintains a portfolio of student reflections to inform students' continued self-assessment over the course of their high school career.

Narrative: Existing--2 points

Beehive Science and Technology Academy routinely has students reflect on their thinking and their learning. One example of this is the "Sixth Grade Science Core Curriculum Benchmark Student Self Assessment" (Artifact 6g.1). An additional example is the documentation for a reflective assignment email from Daniel Bryant to Germaine Barnes dated January 19, 2016. This outlines a reflective assignment regarding the "Sandwich Algorithm" (Artifact 6g.2). A third example of a reflective assignment is the "Semester Feedback Form" in which students were asked to reflect and give feedback on activities from their language arts class for the semester (Artifact 6g.3). Mr. Harlow's student survey is a mixture of personal and subject matter but helps students provide feedback on their knowledge and personal relationship with the teacher (Artifact 6g.4).

The next example of students providing feedback regarding the curriculum is the U.S. Literature Final Exam in which students were asked to write a persuasive essay on which piece of work they read during the semester that should be kept in the curriculum and why using evidence from the text. Students were then asked to prepare a five-minute speech from their essay (Artifact 6g.5). Additionally, all teachers are using rubrics with our students in which they "self evaluate" their work in their classes. This process is being utilized as a method for students to review their work and compare it to the levels of expected achievement in the rubrics. The students' questions of how they can improve are then answered (Artifacts 6g.6-7).

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Beehive faculty conduct quarterly self-assessments with students in reflective writing assignments. Students complete these prior to the end of the grading periods and during formal assessments. Students are asked to reflect upon their learning, skills, knowledge and understanding of the curriculum presented. The teachers utilize this feedback to reflect upon their teaching methods, curriculum maps and lesson plans. Additionally, there is a comprehensive student survey conducted annually in which students reflect and comment on teachers, lessons, courses offered and many other concepts regarding the academic environment. The system utilized for our grading and behavior is "Coolsis." This software allows students to observe their calendar, schedule, assignments, grades, classroom behavior, and attendance. This enables the student to reflect upon their completed work and grades and then identify and discuss with their teachers their strengths and weaknesses and develop goals for improvement. The students then discuss these goals and choose electives, which may offer supports needed such as "study table" or "remedial math." The other support they may choose is free after school tutoring (Artifact 6g.8-9). Beehive Academy encourages our students to reflect upon their own academic needs and choose solutions tailored to those needs.

Beehive Academy maintains a few portfolios of student reflections to inform students' continued self-assessment over the course of their high school career. One portfolio pertains to each students' STEM education and includes the steps completed in their STEM portfolio. This portfolio contains the students' choice of project, materials list, video of the project, and the website created by the student highlighting their project (Artifact 6g.10).

The next example is a 4 year portfolio, which is completed by all high school students in collaboration with our student advisor and vice principal. This portfolio includes all course credits required to graduate and meet the Utah State requirements (Artifact 6g.11).

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7. Community

There is an established community of practice regarding STEM learning and STEM teaching. Events, activities and opportunities for involvement help students, teachers, parents and community members learn about and support STEM education in the school.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
7a. Family Involvement *Families are aware of/participate in student activity and achievement.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Staff members keep students' parents/guardians up to date about classroom instruction and their student's learning. - Some teachers use technology to regularly communicate student progress to parents/guardians. - Opportunities exist for parents to be involved in presentations and/or assisting in the classroom.	- Staff members keep students' parents/guardians up to date about classroom instruction and their student's learning and seek structured feedback. - All teachers use technology to regularly communicate student progress to parents/guardians. - The school actively engages in strategies to increase parent engagement.

Narrative: Exemplary -- 3 points

Beehive Academy uses *CoolSIS*, which is a leading school information system. Teachers easily enter their graded assignments and organize their courses. Here, parents also have access to everything as soon as teachers and administrators enter their information. Parents and students can access CoolSIS through the web, smartphones, and tablets. *CoolSIS* keeps all stakeholders up-to-date with the student's grades and behavior incidents by sending push notifications to the parent's smartphone. Moreover, *CoolSIS* can send text messages about any progress made by the student. *CoolSIS* helps teachers and administrators to build connections with their students and parents.

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Beehive parents are involved in various ways with their child's schooling. One way is to become involved with the Parent Teacher Organization (PTO). The PTO at Beehive operates under a broad purpose of securing educational advantages for students. Parents who become involved in the PTO have opportunities to participate in many school activities including conducting fundraising, parent-teacher conferences, reviews and amendments to the school improvement plan, and providing input and holding regular events for families. Also, parents provide input into the end of each year's status report; they approve the capital and operational budget requests, solicit input from and hear the concerns of constituents about school programs, review the results of all relevant state and district administered surveys, provide counsel to the Board of Education on issues and policies, participate in the selection process when there is a vacancy for the position of a board member at the school, advocate for the school, serve in an advisory capacity to the principal, and request local position exchanges.

Beehive has a parent, teacher and community communication liaison to coordinate the communication efforts. Regular emails are sent to keep parents informed of all that happens at Beehive.

Eight printed report cards are mailed throughout the year to keep parents informed about their student's academic progress.

Student and parents communicate through email, Edmodo, Google Classroom and other online platforms.

Home visits are conducted to involve parents.

Parent orientation nights, back to school nights, and bi-annual parent teacher conferences are held each year. Many other one-on-one meetings between parents and teachers also occur.

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7. Community

There is an established community of practice regarding STEM learning and STEM teaching. Events, activities and opportunities for involvement help students, teachers, parents and community members learn about and support STEM education in the school.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
7b. Service Learning *Students participate in service learning or volunteer activities to give back to partners in the community.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Students engage in service-learning opportunities that are aligned with school curriculum and instruction at least once per year.	- Students and some partners engage in service learning opportunities that are aligned with school curriculum and instruction two or more times per year. - Student leadership is evidenced in the planning and implementation of service learning.

Narrative: Exemplary -- 3 points

The students and staff at BSTA participate in various community outreach programs each school year. Some of the ways BSTA members have given back to the community are:

Community event programs: A food drive to support the local food bank, CMLP (College Mentor and Leadership Program) volunteer hours, National Honor Society charity drive, Student council charity drive, and Hope Squad.

Food drives: Beehive students and parents collect canned food, toys, coats, clothes or other donations for the needy. Teachers (e.g., character education, social science) give to charity projects for students to experience service to the community and to enrich students' knowledge.

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The model combines inquiry into poverty with charitable activities and helps foster connections between students and the human beings they aim to serve.

Some of the charity work done during the holiday season is as follows: students answer a letter to Santa from a needy child; Beehive students send a care package to deployed troops, veterans, or wounded soldiers; students write a thank you letter and include some food to active soldiers; the students donate children's books, novels, and other reading materials to shelters, libraries, and schools.

In addition, Beehive Academy has a college mentorship and leadership program in which students have to do some sort of community volunteer activities to fulfill the community service requirement. For example, they have volunteered to run/walk for an event, like 5K –Utah, participated in a clean up of a local park, school, or church, volunteered on Thanksgiving Day with their whole family to serve a meal in a local shelter, hosted a food-packaging event at our school to help hungry children, offer peer tutoring, attended college leadership conferences that UVU organizes to guide high school students about how to be successful and become a good leader in the community.

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7. Community

There is an established community of practice regarding STEM learning and STEM teaching. Events, activities and opportunities for involvement help students, teachers, parents and community members learn about and support STEM education in the school.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
7c. School Establishes and Maintains Community Presence *School actively engages the community and participates in community involvement activities.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- The facility is open to students before and after school hours to help build the school community and provide opportunities to continue academic work. - School supports community-based events with facilities. - STEM teams communicate frequently and consistently with the community.	- The school works with community organizations to support community initiatives (e.g., staff and students volunteer, school and community organizations work together for a common cause). - Opportunities exist to showcase student work through community events via on-site or online exhibitions.

Narrative: Exemplary -- 3 points

Beehive Academy conducts and attends many community events to participate in the local community. For example, BSTA hosts the annual Utah STEM Expo, and Math Matters. BSTA students participate in the Scouting Expo, Utah State Fair, the Regional Science Fair organization, Comic con, FLL, Robotics, Healthy STEM, Charter day On the Hill, and School Choice every year. Students learn to establish goals, delegate responsibility and give directions to their peers on executing tasks successfully while attending and organizing such events.

The UTAH STEM Expo is an excellent opportunity for middle/high school students to demonstrate their STEM explorations in and out of the classroom and extensions of the inquiry process posed in their projects and demos. The Expo itself offers a venue for students to showcase the fruits of their STEM studies and

hard work, a venue for professionals to show how STEM is used to better our communities, and one for spectators to participate in hands-on experiments. The Expo event connects our school to the community, our students to professionals, and generates interest and excitement for science, technology, engineering and mathematics.

Mathmatters is a math contest for all 5th and 6th grade students in Utah. Every year, 300 students participate in this great math event and receive prizes.

8. **Facilities**

Spaces are available for collaboration and project work. Facilities have been adapted or designed for STEM learning. Facilities reflect a focus on STEM learning efforts. Facilities reflect student design and input in the use of the facilities. Materials and equipment follow safety protocols. Obvious efforts have been made to make resources available to students for use in learning, design and project efforts.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
8a. Technology Use *Students use technology as intended for learning purposes.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- The teacher uses current and emerging technologies in instruction of most classes. - Teachers teach students specific skills using a range of technologies (computers to AutoCad, etc.). - Products of 21st century technology tool use by students are visible throughout the school through several grade levels. - Teachers and students receive ongoing access and opportunities to expand their proficiency in technology use at	- The teacher uses current and emerging technologies in instruction of ALL classes. - Products of 21st century technology tool use by students are visible throughout the school through ALL grade levels. - Teachers and students receive ongoing access and opportunities to expand their proficiency in technology use at least once per month. - Teachers challenge students to identify and use the tools they need to solve problems. - Technology is used to engage in global learning opportunities and communities that extend beyond

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			least once per year.	the state of Utah.

Narrative: Exemplary -- 3 points

Teachers at BSTA use current technology to teach students in STEM and all other subjects. Beehive Academy is a smart school with all students and teachers having IPADs and related technologies available. There are two PC labs and one MAC lab at the school. All the classrooms are equipped with digital projection, Apple TV and integrated sound systems, and the school has upgraded its wireless network to increase network highway traffic. Wireless switches and adaptors are installed all around with the capability available for up to 1000 devices. The Internet connection was increased to a gigabyte dedicated fiber optic line through UEN. All teachers have been extensively trained to use technology in their instruction. The total number of training days for technology use is more than 10 days. Teachers work and support each other in using technology for instruction in their professional learning communities. Google classroom, Educreations, Kahoot, Khan Academy, Discovery education, Ted talks, Evernotes, Goodreads, Garage Band, Flashcards, My homework, and Duolingo are some of the technology tools utilized by students and teachers.

Some students take online courses at BSTA. Teachers also use technology to improve themselves as they are part of the Edivate learning community. Here they interact with teachers around the country. Students use YouTube to interact with their STEM projects and through their Google sites with the global community.

Artifacts: Apps list, Ipad Policy, Smart Technology document, Survey result, Edivate, Youtube video and student website sample student work of technology use.

Utah STEM School Designation Criteria
Pilot Year Model

8. **Facilities**

Spaces are available for collaboration and project work. Facilities have been adapted or designed for STEM learning. Facilities reflect a focus on STEM learning efforts. Facilities reflect student design and input in the use of the facilities. Materials and equipment follow safety protocols. Obvious efforts have been made to make resources available to students for use in learning, design and project efforts.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
8b. Allocation for Physical Resources to Support STEM Learning for Students *The allocation and use of resources and space are present to create flexible community learning environments to meet the needs of project-based learning.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Spaces are available for collaboration and project work. - Facilities have been adapted or designed for STEM learning. - Materials and equipment follow safety protocols.	- Spaces are available for collaboration and project work, and are regularly used by all students and teachers to facilitate learning. - Facilities reflect student design and input on use of the facilities.

Narrative: Exemplary -- 3 points

There are spaces allocated at BSTA for students to collaborate and work on projects. After school there are three computer labs for students to use during tutoring/club times four days a week. These areas include 2 robotics rooms, 1 Lego robotics room, and 1 Vex robotics room is allocated to robotics related group activities. The media center is available to students for project work and collaboration. Students are able to communicate, interact and collaborate through their IPads and apps like Edmodo and Google Classroom. There is a science lab that is open to students for projects and collaboration. The discipline and safety coordinator at the school works with teachers to ensure that they are trained in and follow safety protocols. Students maintain a student store, have bulletin boards to present their materials, and use various rooms for their activities. Student clubs and activities are provided with the necessary facilities. Students have decorated and painted the common use areas and some classrooms.

School Name: Beehive Science and Technology Academy (BSTA)

Utah STEM School Designation Criteria
Pilot Year Model
Artifacts: Photos of these areas, List of project collaboration rooms. Student council minutes.

9. **Strategic Alliances**

Alliances exist between the school and strategic partners. Parents and parent groups are involved in the school process and decision making. Business, industry, and other community partners work together to promote STEM learning and career awareness. Long-term partnerships are formed and supported through ongoing efforts. Partnerships are evaluated at least annually, and additional partnerships are formed to support emerging needs and opportunities. Teachers have ongoing relationships with industry partners and engage in externships.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*

9a. Partners Support Instruction and Provide Resources
Partners from industry, institutes of higher education, career and technical centers, etc. participate in and/or support instruction to meet a variety of academic goals, which often includes connecting students with professionals.
	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Community members are actively engaged in the vision and work of the school (e.g. curriculum, co-teaching, field experiences).
			- Partners help teachers understand what is expected of a student planning to enter a career in the partner's field.
			- Business, community, and post- secondary partnerships are involved in all STEM classes at least once per school year to:
			  - Develop lesson plans or problem-solving learning projects with teachers.
			  - Provide professional learning.
			  - Provide field experience or site-based learning opportunities.
			- Partners provide resources to support student learning outcomes.
				- The school actively seeks input from partners and integrates suggestions into school-wide strategies
				- Partners recruit other STEM partners to support the school with resources.

Utah STEM School Designation Criteria
Pilot Year Model
Narrative: Exemplary -- 3 points

Beehive Academy partners with various industries, organizations and institutes of higher education. Parents and the school parent organization (PTO) are active partners in these efforts. In PTO and school community platforms, these efforts are extensively discussed, and available resources and funds are channeled to the appropriate participants. More funding and other strategic alliances and partnerships are constantly explored. The school community council allocated 40% of the land trust funds to STEM education in the school. PTO members and parents are actively looking out for sponsors for the Utah STEM Expo and other STEM educational activities, like Robotics, Lego, etc. They look out for financial support as well as getting the field experience to our school and engaging partners with the school.

The STEM Action Center is our strategic partner in our STEM education. They sponsor the Utah STEM Expo. Our school procured the Edivate STEM professional development tool, a CTE grant of PLTW for eighth grade students, STEM Math software, a Smart School Technology grant, Robotics grants and various student grants to participate in STEM competitions. We received a STEM grant for the art teacher to teach 3D art.

IM Flash sponsors the Utah STEM Expo and they are our strategic partners in our STEM education. They contributed to our STEM designation application by sending an expert to serve on the committee. We have a strategic agreement with them to expose our students to high tech jobs. Yearly, 4 activities are arranged with two expert speeches and 2 field trips to the IM Flash facility. Further internship opportunities are constantly being explored.

CTE Career Pathways programs in four different areas of technology are implemented with the support of the USOE.

Salt Lake Community College has an agreement with Beehive Academy to provide concurrent enrollment courses in various fields to our students. Students are able to get the university 1-year completion certificate and associate degree with a nominal $10 per credit fee. Many of the advanced STEM courses are offered to them.

Through CMLP (College Mentorship and Leadership Program), many leadership programs are developed with Utah Valley University, the University of Utah, and Westminster College.

Sandy City and the Sandy Area Chamber of Commerce are our strategic partners in our STEM education, and we are continuously utilizing their resources.

Through CTE- College and Career Awareness class, parents and experts from different STEM fields are invited to share their experiences with our students.

Our Robotics and Lego Robotics programs are supported by parents and industries who provide expertise and financial support.

School Name: Beehive Science and Technology Academy (BSTA)

Utah STEM School Designation Criteria
Pilot Year Model

9. **Strategic Alliances**

Alliances exist between the school and strategic partners. Parents and parent groups are involved in the school process and decision making. Business, industry, and other community partners work together to promote STEM learning and career awareness. Long-term partnerships are formed and supported through ongoing efforts. Partnerships are evaluated at least annually, and additional partnerships are formed to support emerging needs and opportunities. Teachers have ongoing relationships with industry partners and engage in externships.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
9b. Partners Help Establish and Maintain Community Presence *Partners increase knowledge and visibility of the STEM school.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Several partners actively showcase student work in their business or elsewhere in the community, and/or support publicity around student STEM learning. - Partners engage in school-related functions with students.	- Partners attend and/or host community events to support the school or showcase student work

Narrative: Exemplary -- 3 points

School Name: Beehive Science and Technology Academy (BSTA)

Utah STEM School Designation Criteria
Pilot Year Model

The Utah STEM Expo is hosted by Beehive Academy and is supported by many organizations and companies. They bring STEM job expertise to the community, and financial support and field knowledge to share with our community. The Utah STEM Action Center, ALS Environmental, US Synthetics, T. D. Williamson, Inc., Sandy City, Utah Association of Public Charter Schools, Accord Institute for Education and Research, Westminster College, University of Utah, Department of Physics and Astronomy, Weber State University, University of Utah College of Science, University of Utah College of Engineering, IM Flash Technologies, Utah National Guard, Utah Computer Science Teachers Association, Sandy Area Chamber of Commerce, Cowabunga Bay, Utah State University, and the U.S. Navy are some of our sponsors and supporters. Many public schools and charter public schools also collaborate and support the event.

Students also attend various STEM related events like, Utah STEM Fest, Robotics competitions, Healthy STEM and other local and national STEM events.

9. **Strategic Alliances**

Alliances exist between the school and strategic partners. Parents and parent groups are involved in the school process and decision making. Business, industry, and other community partners work together to promote STEM learning and career awareness. Long-term partnerships are formed and supported through ongoing efforts. Partnerships are evaluated at least annually, and additional partnerships are formed to support emerging needs and opportunities. Teachers have ongoing relationships with industry partners and engage in externships.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
9c. Staff Establishes and Maintains Partnerships *Staff creates and develops partnerships with organizations external to the school.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- Some staff members at this school create external partnerships with the school, such as with colleges, universities, businesses, or institutions. - Staff members work collaboratively with the school's external partners.	- Most staff members this school create and maintain external partnerships with the school, such as with colleges, universities, businesses, or institutions.

Narrative: Exemplary--3 points

Beehive Academy partners with various industries, organizations and institutes of higher education. Parents and the school parent organization (PTO) are active partners in these efforts. In PTO and school community platforms, these efforts are extensively discussed, and available resources and funds are channeled to the appropriate participants. More funding and other strategic alliances and partnerships are constantly explored. The school community council allocated 40% of the land trust funds to STEM education in the school. PTO members and parents are actively pursuing the sponsors for Utah STEM Expo and other STEM education activities, like Robotics, Lego, etc. They look out for financial support as well as getting the field experience to our school and engaging partners with the school.

The STEM Action Center is our strategic partner in our STEM education. They sponsor the Utah STEM Expo which Beehive hosts each year. Our school procured the Edivate STEM professional development tool, a CTE grant of PLTW for eighth grade students, STEM Math software, a Smart School Technology grant, Robotics grants and various student grants to participate in STEM competitions. We received a STEM grant for the art teacher to teach 3D art.

IM Flash sponsors the Utah STEM Expo and they are our strategic partners in our STEM education. They contributed to our STEM designation application by sending an expert to serve on the committee. We do have a strategic agreement with them to expose our students to high tech jobs. Yearly, 4 activities are arranged with two expert speeches and 2 field trips to the IM Flash facility. Further internship opportunities are constantly being explored.

CTE Career Pathways programs in four different areas of technology are implemented with the support of the USOE.

Salt Lake Community College has an agreement with Beehive Academy to provide concurrent enrollment courses in various fields to our students. Students are able to get the university 1-year completion certificate and associate degree with a nominal $10 per credit fee. Many of the advanced STEM courses are offered to them.

Through CMLP (College Mentorship and Leadership Program), many leadership programs are developed with Utah Valley University, the University of Utah, and Westminster College.

Sandy City and Sandy Area Chamber of Commerce are our strategic partners in our STEM education, and we are continuously utilizing their resources.

Through CTE--College and Career Awareness class, parents and experts from different STEM fields are invited to share their experiences with our students.

Our Robotics and Lego Robotics programs are supported by parents and industries. They provide expertise and financial support.

School Name: Beehive Science and Technology Academy (BSTA)

Utah STEM School Designation Criteria
Pilot Year Model

10. **Advancement and Sustainability**

A five-year plan includes each of the criteria for an effective STEM school. Strengths and weaknesses are identified. Plans are in place to address weaknesses with evidence and research supporting the plan. Strengths are examined for the purpose of continued improvement. Future efforts and trends are examined, and ongoing renewal is planned for.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
10a. Development of a Five-Year Plan on Goals and Benchmarks for Community Strengths *The school has a five-year plan that includes evaluation of each of the criteria for a STEM school. Examination of strengths takes place for the purpose of continued improvement.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- The plan was created by multiple stakeholders and includes at least two strengths to build upon.	- The school plan includes plans for sustainability and improvement regardless of changes in leadership or staff with LEA support.

Utah STEM School Designation Criteria
Pilot Year Model
Narrative: Exemplary--3 points

Beehive Academy has strong engineering, technology programs, project-based STEM learning opportunities and technology aided education for its students. BSTA included these last two strengths in its five year plan to sustain and further improve and refine them. Beehive Academy has a STEM committee consisting of three administrators, three teachers and one industry partner representative. The STEM committee worked on developing a draft for the five year STEM improvement and sustainability plan with strategies, action plans and the necessary funding elements in place. The draft improvement plan was shared with all staff and discussed in an all-faculty meeting where feedback was gathered. The draft plan was also shared with school board members, school community council, PTO (Parent-Teacher Organization) members and student council members. All of these entities discussed the plan and gave their feedback to the STEM committee. The plan was then developed with all stakeholders, and responsible parties' interests in mind. It will be implemented regardless of the changes in leadership or staff as it is a plan shared and accepted by all stakeholders and supported by the school board.

10. **Advancement and Sustainability**

A five-year plan includes each of the criteria for an effective STEM school. Strengths and weaknesses are identified. Plans are in place to address weaknesses with evidence and research supporting the plan. Strengths are examined for the purpose of continued improvement. Future efforts and trends are examined, and ongoing renewal is planned for.

Element	Non-Existent – 0 points	Developing – 1 point	Existing – 2 points	Exemplary – 3 points *(In addition to all "Existing" indicators)*
10b. Development of a Five-Year Plan on Goals and Benchmarks for Improvement *The school has a five-year plan that includes evaluation of each of the criteria for a STEM school. Examination of weaknesses takes place, with evidence and research supporting the plan.*	The school does not include and/or does not have evidence of this element in practice at this time.	Work is in progress to develop this element within the school. This element is included in the school's STEM planning document.	- The plan was created by multiple stakeholders and includes at least two weaknesses to address.	- The school plan includes plans for sustainability and improvement, regardless of changes in leadership or staff with LEA support.

School Name: Beehive Science and Technology Academy (BSTA)

Utah STEM School Designation Criteria
Pilot Year Model

Narrative: Exemplary--3 points

Beehive Science and Technology Academy (BSTA) will increase the student population of females and minorities having access to STEM education at the school. BSTA will work closely with university and industry partners to provide internship and field learning opportunities for all students, and will focus on increasing the participation of underrepresented group participation in STEM education. Increasing relevant activities, internships and field learning opportunities for its students are a high priority. These two goals are part of its five year sustainability and improvement plan. Beehive Academy has a STEM committee consisting of three administrators, three teachers and one industry partner representative. The STEM committee developed a draft five-year STEM improvement and sustainability plan with strategies, action plans, and necessary funding elements. The draft improvement plan was shared with all staff and discussed in an all faculty meeting and feedback was gathered. The draft plan was also shared with school board members, school community council, PTO members and student council members. The plan was discussed in a student council meeting and at an all community meeting. The plan was developed with all stakeholders and all the responsible parties interests in mind, and will be implemented regardless of the changes in the leadership or staff as it has been accepted by all stakeholders and supported by the school board.

School Name: Beehive Science and Technology Academy (BSTA)

Year 1				Year 2				Year 3			
Issues	**Corrective Actions**	**Tracking**	**Documentation**	**Issues**	**Corrective Actions**	**Tracking**	**Documentation**	**Issues**	**Corrective Actions**	**Tracking**	**Documentation**
The contract wasn't negotiated and signed until December 2014.	A 5 year contract was written for the use of this product. The amount of licenses requested each year determines the annual award amount. Therefore, the award amount is different every year.	**Appendix I: "Lessons Learned" Summary - Professional Learning (1)**		Schools had issues uploading videos	SINET promised to provide greater technical support to teachers in year three.	The STEM Action Center will monitor this closely from day one of the 2016-17 school year.		By 9/30/2016 some licenses had still not been distributed to multiple schools.			
The application was brand new and provided minimal information. Schools were asked to provide the total amount of licenses requested without a sound implementation approach to be included with that.	Detailed action plans were created between SINET and school administrators for quality implementation.			Evaluators recieved teacher videos via an emailed link. Videos could only be accessed the first time the link was clicked, and there was no way to match videos by teacher, thus pedogogical changes could not be assessed. SINET never did find the missing videos, and this part of the evaluation did not take place.	SINET promised to resolve these issues and provide evidence that their product is working as intended.	Videos will be shared with evaluators through a different document, not via the Edivate platform.		By 9/30/2016 the STEM Action Center received notice that some LEA trainings weren't scheduled until the end of November.			
Distribution of licenses was a slow process and scheduling trainings was an arduous task given the timeframe.				At the end of the year, when data was recieved from SINET, usage was very low.	The STEM Action Center worked with SINET and district administrators to create detailed implementation plans.	The STEM Action Center will monitor this closely from day one of the 2016-17 school year.		Inability to track the viewing of user-uploaded content	Kerry Day from SINET was tasked with researching this solution.		

Appendix I:
"Lessons Learned" Summary - Professional Learning (2)

There was low buy in from teachers and administrators.	SINET hired 2 implementation specialists that worked solely on this project. These two specialists divided the workload and helped support the administrators in creating their implementation plans and getting trained on the product.			There was low buy in from teachers and administrators.	The STEM Action Center provided funding for robust, district driven Professional Development plans as long as they commited to using Scinet's product effectively as part of that plan.	The STEM Action Center will monitor this closely from day one of the 2016-17 school year.		20 minutes of monthly usage required for each license distributed	Created a task/time equivalent docuemnt for items in Edivate that did not get measured in time. For example- uploading a document to be shared with a group was determined to be eqaul to 5 minutes of usage. The number of items uploaded is tracked, so this provides a reasonable time equivalent for usage requirements.	
				LEAs were unwilling to share problems/concerns because they were worried about future funding		STEM AC has asked for monthly information about the status of the projects at an LEA level as part of their required reporting. Phone calls and face-to-face visits are requested by all LEAs with STEM AC staff.		In spite of detailing how Edivate would be used in application documents, some LEAs are not sure where to start with using Edivate to assist in STEM related PD	SINET has proposed creating series of learnign activities to guide users into STEM materials. These series would primarily focus on utulzing the cusotm conet aready created for this project as well as other matiersl in teh Edivate content library. Missing componenets would be created using teh funds designated for 16-17 custom content. A scope of work and budget outline is expected from SINET to STEM AC by Oct. 14.	

Appendix J: Professional Learning Grant Awards Summary

Application #	LEA	STEM Priority	How will Edivate be used?
GA--0545	Davis School District	Mathematics AND CTE: Technology and Engineering	This project introduces a completely new approach to robotics in Davis School District. Since this will be a trial-and-error year for the involved teachers, the Edivate platform will primarily be used for problem-solution discussions and to facilitate collaborative lesson planning. First, teachers will be expected to video record their efforts to implement the project. Second, teachers will be expected to reflect on their efforts, posting specific problems they encounter. In addition, teachers will be expected to use the Edivate platform for self-evaluation of their progress. Finally, teachers will be expected to respond to other teachers' posts to provide feedback and suggestions, collaborating to solve problems and to improve lessons. As the school year progresses, the project coordinator will use Edivate to monitor students' levels of engagement and understanding and to monitor the teachers' proper use of Edivate to solve problems and improve lessons. As the school year closes, the project coordinator will use Edivate as one instrument to assess the teachers' progress.
GA--0786	C.S. Lewis Academy	Science, Mathematics AND CTE: Technology and Engineering	Edivate will be used to instruct teachers on how to implement STEM activities in their classrooms. Edivate will also be used for teachers as a self-reflection and self-evaluation tool. The Edivate observe tool will be used for evaluation of teachers.
GA--1076	Syracuse Arts Academy-Antelope Campus	Science	Edivate will be used to participate in the online science courses, professional development for individual teacher needs K-9, supporting beginning teachers, departments needs at the Jr High level, and a strong focus on LA, Math and Science K-9. It will also be used to watch exemplar lessons/teachers, provide opportunities for self evaluation of lessons and professional reflection. Lastly, provide a collaborative framework for professional development.
GA--1160	Monticello Academy	Renewing Licenses ONLY	
GA--1740	Piute County School District	Science	The entire staff will be trained on the use of Edivate including self reflection and use of the video tools with a focus on STEM videos. In addition we will work with Beaver and Millard school district to implement the new science standards.
GA--2639	North Sanpete School District	Science, Mathematics AND CTE: Technology and Engineering	Annual Compliance TrainingIntroduce swivel cameras for teacher recordingsNSPD Conference to train teachersIntroduce Edivate Groups for collaborative discussions

Application #	Expectations and Outcomes
GA--0545	Teachers will be able to instruct students in C programming for the purpose of controlling Arduino- based robots for lessons in after school MESA/STEM/TSA clubs as well as for incorporation into 5th grade through h school classrooms. Teachers will be provided with a take home cost-effective classroom robot kit (1 robot) produced by the Utah company Addicore. (Robot kits from Addicore will be available for purchase by teache for use in their clubs or classrooms for $35.00 plus S&H.;) Specifically teachers will be able to:1. Understand STEM field undergraduate requirements to encourage STEM college enrollment.2. Explain microcontroller technology and programming, especially as it applies to robotics.3. Build basic C programs.4. Explain and give examples of how mathematics is integral to programming.5. Access and implement free graphical programming environments designed for grades 5-12.6. Implement robotics-based math and technology lessons that are appealing and fun for students with the minimum amount of financial expense. Students wil learn the basics of C programming and Arduino based robotics. Students will be encouraged to participate in a low-cost, no travel competition based on this robot kit in the 2016-17 school year geared toward high sch students but open to all. Specifically students can be expected to learn1. A basic understanding of computer technology and how and why their other technology devices work.2. How a computer "thinks."3. Basic graphical programming that is preparatory for industry-level programming.4. C programming as well as gaining an aptitude in other programming languages.5. Applied mathematics required for programming.
GA--0786	All teachers at C.S. Lewis Academy will be instructed on how to incorporate STEM activities in their classrooms. All teachers will be required to upload videos of their teaching for self-evaluation and sharing with mento and/or peers. Administrators will monitor usage.
GA--1076	Teachers will become knowledgeable about the new science core standards through online participation in viewing the science courses/learning modules in Edivate, participating in facilitated discussions and collabora activities with fellow scientists, accessing professional reading materials, visiting other classrooms and provide effective instruction through which students will become proficient in the New Generation Science Stand over the next 2 years.
GA--1160	
GA--1740	All science teachers will become effective in implementing the new science standards. All science teachers will be actively involved in participating and completing the face to face and online learning opportunities.All teachers in Piute School District will be encouraged to participate in watching and implementing STEM activities in their classrooms. Teachers will also be encouraged to participate in our professional development incentive program which requires at least 25% of their PD be STEM videos. Administrators in the district will monitor participation.
GA--2639	Complete compliance training# of teacher recordings with swivel cameras# of groups using Edivate Groups

Application #	Assessment
GA--0545	Teachers will be given a pre- and post- assessment survey of their knowledge of programming, robotics, and the Arduino platform. The Edivate videos and discussion will allow for teacher reflection, goal setting, and evaluation, The teacher discussions on Edivate will be used to plan the content of the additional Open Source instructional videos and part of the January workshop. In addition, the Edivate videos and discussion will allow the coordinator the means to track and report the growth of each participating teacher on each of the six intended outcomes:1. Understand STEM field undergraduate requirements to encourage STEM college enrollment.2. Explain microcontroller technology and programming, especially as it applies to robotics.3. Build basic C programs.4. Explain and give examples of how mathematics is integral to programming.5. Acces and implement free graphical programming environments designed for grades 5-12.6. Implement robotics-based math and technology lessons that are appealing and fun for students with the minimum amount of financial expense.
GA--0786	Administrators at C.S. Lewis Academy will monitor teachers for effectiveness and usage requirements. Administrators will run monthly reports to gather quantitative data if expectations are being met. Surveys will be twice a year to gather qualitative data. The school's policies on noncompliance will be followed if expectations are not being met.
GA--1076	1-School administrators will monitor teacher progress/course completion in the Edivate Modules supporting the New Science Core requirements.2-We will report teacher completion of Science modules embedded in Edivate to monitor usage.3-Survey the teachers to get qualitative data.If expectations are not, the plan will be modified.
GA--1160	
GA--1740	Administrators at the district level will monitor usage and implementation of instruction. Science teachers will have clear instruction on what they are to provide and how often they will provide it as it relates to self evaluation. Participation in the district incentive program will not only provide an opportunity for assessment but an incentive to be involved and complete the program.Facilitators will be responsible to make sure tha teachers have the tools and training to complete the tasks of the project and resolve any issues that may arise. Administrators will follow district policies as it relates to noncompliance.Quantitative data will be recorde the edivate platform. Qualitative data will recorded and discussed in the collaborative session with the teachers professional learning group.
GA--2639	# of employees completing annual compliance training# of collaborative groups using Edivat Groups# of recordings using swivel cameras

Application #	LEA	STEM Priority	How will Edivate be used?
GA--3001	Alpine District, Nebo District, Provo District Consortium Alpine District - Ashley Russon (arusson@alpinedistrict.org)Nebo District - Nedra Call (nedra.call@nebo.edu) and Alison Hansen (alison.hansen@nebo.edu)Provo District - Jennifer Remy (jenniferr@provo.edu) and Jared Ferguson (jaredf@provo.edu)	Science	All participating teachers will be assigned to an online Edivate cohort of 10-12 teachers. A blended learning model will be used as teachers meet face to face and on online (via Edivate) throughout the duration of the program.Fostering collaboration among the Alpine, Nebo, and Provo teachers will also be an emphasis within assigned cohort groups via Edivate.Teachers will be able to submit video of themselves teaching for self and possible group learning and reflection using the Edivate platform.
GA--3504	Endeavor Hall	Science, Mathematics AND CTE: Technology and Engineering	Edivate will provide teachers with resources to improve their practice. Teachers and administrators will use the observation tool to observe themselves and others. The school transformation team and the STEM committee will use data to create the school academic goals. Using the Edivate resources the teams will identify areas of focus and will use the observation tools to monitor teacher performance and student achievement.

Application #	Expectations and Outcomes
GA--3001	
GA--3504	By the end of the year students at Endeavor Hall will increase proficiency in Science by 10%, as measured by summative SAGE scores. Proficiency in Science will be monitored through the year using MasteryConnect, S Interim, and other classroom assessments. By the end of the year students at Endeavor Hall will increase proficiency in Math by 10%, as measured by summative SAGE scores. Proficiency in Science will be monitored through the year using MasteryConnect, SAGE Interim, and other classroom assessments. Teachers will use observation tools from Edivate to monitor their own performance and practice. The tools will also be used tc observe and provide feedback to peers. teachers will also use the professional learning tools from Edivate to learn from and practice skills and strategies that were identified from the observations. Teachers will be tra to use the common core tools on Edivate to review standards and to align classroom teaching and learning to the standards. Student achievement will be impacted as noted in the stated goals.

Application #	Assessment
GA--3001	Our expectation is by August 2017, each 6th, 7th, and 8th gr teacher in Alpine, Nebo, and Provo District will be extensively trained on the new SEEd standards and prepared to deliver the new curriculum to their stude at a highly effective level. We have described in detail in the section below "detailed implementation plan" how we will do this. The big picture plan is to use a blended learning platform. We will spend 5 days with 6 gr teachers and 3 days with 7th and 8th gr teachers and weave Edivate throughout the presentations on each day of training in each grade level. We intend for all 6th-8th gr teachers to have Edivate licenses for this fa to-face instruction. Additionally, we will divide teachers into groups of 10-12 where they will use Edivate to study best practice in a science classroom. These small teacher groups will be given assignments accessed through Edivate to engage in which will be done in between each face-to-face session. An additional piece we will implement will be to write a course of what we are doing this year that can be delivered online for ne teachers with Edivate being the platform of instruction. This will ensure all of our hard work this first training year can be utilized by our new teachers in subsequent years. Each of the three districts in this consortium be directly responsible for its teachers and will monitor each teacher's completion of this training course, both this first training year in 2016-17 and in subsequent years for new teachers.
GA--3504	The plan will be assessed using teacher surveys each quarter. These surveys will be conducted by the administration and will specifically survey teachers regarding the professional development and teacher supervisio Teachers will be able to evaluate and comment on the effectiveness of the professional learning opportunities that they are part of. Using the Edivate observation tools, teachers and administrators will be able to ass whether the evidence-based instructional strategy is being used in the classroom, and how effectively the EBIS is helping teachers and students to work on the learner-centered problems that are identified at the beginning of the year. The school transformation team will collect data from teachers through the year from classroom assessments and medium-term assessments. This data will specifically be used to analyze how standards are being taught and mastered in the classroom. The Edivate resources would be used to teach and reteach common core standards based on the data analysis. When the data shows that expectations are r being met, the school transformation team and the administration will work together to develop an action plan. This plan will be presented to the rest of the teachers and will be implemented during collaborative tea team meetings when all of the teachers are together. This will ensure that there is support for teachers as they complete the required tasks and assignments. The STT has been able to make adjustments to processes through the year based on the data that teachers provide. This has helped to develop a school culture that is data-driven and requires all teachers to participate.

Application #	LEA	STEM Priority	How will Edivate be used?
GA--4063	Washington County School DistrictScience: New 6-8 SEEd Standard Training	Science	Teachers will use Edivate as they complete modules on the Crosscutting Concepts and Science & Engineering Practices each month. Each semester teachers will upload a 5-8 minute video of themselves teaching, showing a specific Crosscutting Concept and Science & Engineering Practice. They will do a self-reflection of their video. They will also do a peer review of their team members' videos.

Application #	Expectations and Outcomes
GA--4063	The expected outcomes of this grant are that fifty-four 6-8 Grade Integrated Science Teachers in Washington County School District understand and can apply Crosscutting Concepts and Science and Engineering Practi with all overlapping Core Ideas in our current Science Core Curriculum and the new SEEd Standards. Teachers will improve their instruction as they teach phenomenon of Core Ideas with Crosscutting Concepts and Sci and Engineering Practices.These expected outcomes will be measured quantitatively by assessing teacherâ€™s lesson plan improvements with 3 Dimensional 5E Lesson Plan Rubrics, generating their own quantitative for growth. At the beginning of the professional development teachers will assess a current lesson plan of their own with a 3 Dimensional 5E Lesson Plan Rubric as a pre-assessment. After teachers have learned abou 3 Dimensions of Science and the 5E Lesson Plan Model, they will make a new lesson plan and assess it with the same rubric as a post-assessment. The difference in their score will be quantitative data for growth. Additional qualitative data will come from the completion of discussions, self-reflection and peer reviews of videos, along with quarterly Collaborative Assessment Logs (CALs) with the head facilitator and each team o the expected outcomes.Grade level teacher teams at each school will go through modules on Edivate to learn about the 3 Dimensions of Science, which include Crosscutting Concepts and Science and Engineering Practices. With those modules, teacher teams create lesson plans for all overlapping Core Ideas with the appropriate Crosscutting Concepts and Science and Engineering Practices, using the 5E Lesson Plan Model.Teac will teach the 3 Dimensional lessons they write and video themselves once per semester, upload the videos on Edivate, and self-reflect using them. Their team members will peer review each otherâ€™s videos. If teachers choose to upload their videos for anyone in the District to view through Edivate, they will receive the $100.00 incentive bonus for each of the 2 videos they will be making, for an extra $200.00 stipend. To up videos that anyone in the District grade band can view, they will join a Washington County School District grade band specific Group. As teachers teach phenomenon of Core Ideas with Crosscutting Concepts and Scie and Engineering Practices they will improve their instruction. Students will learn 3 dimensionally, gaining knowledge and learning skills to help them apply the core ideas they are learning. An important expectation is teachers will complete this professional development with a stronger understanding of teaching Science 3 dimensionally, using the Crosscutting Concepts and Science and Engineering Practices with the overlapping ar new Core Ideas in the new SEEd Standards the following school year. Grade bands of teachers will end the school year with a bank of lesson plans and video examples to use as they start teaching the new SEEd Stand in the 2016-17 school year.

Application #	Assessment
GA--4063	This professional development will be assessed for effectiveness with evidence from lesson plans on Edivate and the two videos teachers upload and reflect on with Edivate. Teachers are including this professional development in their Professional Growth Plans. Teachers will be self-assessing themselves at the beginning of the year and then reflecting on it again at the end of the year after the professional development. Teach will assess a current lesson plan with a 3 Dimensional 5E Lesson Plan Rubric as a pre-assessment. After teachers have learned about the 3 Dimensions of Science and the 5E Lesson Plan Model, they will make a new les plan and assess it as a post-assessment. The difference in their score from the rubric will be quantitative data for growth. Teachers will need to do a self-reflection of their own video upload once per semester. Othe teachers on their teams will need to do a peer evaluation of the other teachers on their team at their school once per Semester. Each quarter the head facilitator, Kelli Cheesman, will meet with each grade level team each school and do a Collaborative Assessment Log (CAL) with the team. This consists of looking at what is working in the professional development, what is not working, their current goals and what support/needs th have. The video self-reflections and peer reflections and CALs will provide qualitative data showing growth. If teachers are not showing proficiency with their lesson plans and/or videos the head facilitator, Kelli Cheesman, will meet personally with those specific teachers and teams, in addition to once per quarter, as needed for specific help.Quantitative data will be reported through the pre- and posttests by each teacher, as well as the progress in self-assessment with each teachersâ€™ Personal Growth Plan. Qualitative data will be shared through teacher self-reflections and peer reflections of team lesson plans and teacher videos.

Application #	LEA	STEM Priority	How will Edivate be used?
GA--4384	San Juan School District	Science	I want to use Edivate as a means to bring teachers video examples and lessons for how STEM with new SEEd standards for science is best implemented in the classroom. Specifically for the new "design", "plan and carry out experiments", and "develop models" segments in the new 6-8th grade SEEd standards. The SEEd Standards also have the engineering component which is new to most science teachers. Edivate will provided access on ideas of how teachers can best teach this new component in their classrooms. I also want to provide teachers with lesson plans and resources so they can focus on the execution of the lessons and not on having to develop new SEEd lesson plans themselves. Edivate can help network with other LEA's so we can share ideas and resources to better support our teacher with the new SEEd Standards.
GA--4544	Carbon School District	Renewing Licenses ONLY	

Application #	Expectations and Outcomes
GA--4384	Expectations for this grant are to provide teachers with resources and professional development for the new STEM based SEEd 6-8th grade science standards. All 6-8th grade science teachers will receive training and support on using Edivate. Teachers will be exposed to model classrooms and STEM based lessons on Edivate. In addition, our school district will be able to create a part-time, no benefits, science coordinator position help carry out objectives outlined in this grant. The science coordinator will act as the teacher/trainer for Edivate, provide pertinent information for teachers through Edivate, and be able to ensure that teachers recei continued support on using and implementing information gained on Edivate. Second, a cohort of teachers, one from each grade, and the science coordinator will attend trainings on the new SEEd standards. This coh will identify concerns and needs of teachers throughout the district and the science coordinator will address these during Edivate trainings with teachers throughout the school year. All 6-8th grade science teachers w attend a two day district in-service in which information from previous SEEd trainings will be disseminated to the other science teachers. All 6-8th grade science teachers will be provided with demonstrations and materials on how to apply the new SEEd standards into their classroom. Thirdly, teachers will be provided with curriculum aligned lesson plans for the new SEEd standards. These lesson plans will come from Edivate, science coordinator, district teachers, other on-line resources, and trainings attended by the cohort. The resources will be available on our district website or google drive where it will be readily accessible to teachers after year. We will be using Jordanâ€™s School District site created by Barbra Gentry as our model.Our school district is composed of rural communities so small that teachers must teach various classes. We have scie teachers that teach multiple science subjects as well as math or social studies. All but one of our sixth grade science teachers teach every subject. Unfortunately, we also have a high rate of new teachers year after ye our reservation schools. Providing our teachers with this tool will help not only with their work load but also with our Professional Learning Communities (PLC). Teachers will be able to have common ground with thes web resources during PLC phone conferences and be better able to support one another with them. A bonus to our seclusion is that we live on the Colorado Plateau which provides us with unique teaching opportunit to incorporate lessons specific to our land and resources that will be included on the district site. Lastly, the science coordinator will also create a student on-line resource. This will contain assignments, SEEd specific activities, and/or video presentations (Khan Academy and others) that students can work on during interventions, academic skills classes, homework club, or at home. Teachers will be able to assign these to students place of missing work or in addition to class lessons to help bridge the gap in student learning. Students could also use it on their own initiative to help prepare them for class and tests on the subject. After implementation teachers will have tools and skills needed to feel confident and prepared to teach the new SEEd standards. Teachers will have district aligned resources and lesson plans on the new SEEd standards to facilitate collaboration and communication between teachers. Teachers will have receive training on new SEEd standards, materials, and on-line resources with the goal that all teachers can focus on the execution of lessons and interventions students will need and not the lesson plans themselves. The outcomes for students will be a higher level of student learning and higher achievement. Students will receive more and a higher quality of STEM based lessons than previous years. Students will have guided interventions available online to assist in their learning. Students will have access to on-line resources for science. Students will be expose using more technology for science classes. Measurable checkpoints would be:1) Teacher training and use of Edivate managed throughout the year by science coordinator.2) Cohort of teachers receiving trainings and professional development for 6-8th grade SEEd standards.3) Pre- and post videos of educators using STEM lessons in classrooms.4) District accessible web-page with new SEEd standards, lesson plans, and resources f teachers.5) Teacher in-service training on SEEd standards for all 6-8th grade teachers within the district. 6) Students will have a resource page on-line and a guided intervention for each SEEd standard.7) Goal of highe SAGE scores in upcoming years and more students pursuing STEM education.
GA--4544	

Application #	Assessment
GA--4384	1) This plan will be assessed for effectiveness by using the measureable check points below. Measurable checkpoints would be:a)Teacher training and use of Edivate assessed throughout the year by LEA.b)Cohort of teachers receiving trainings and professional development for 6-8th grade SEEd standards.c)Pre- and post videos of educators using STEM lessons in classrooms.d)District-wide web-page with new SEEd standards, lessc plans, and resources for teachers.e)Teacher in-service training on SEEd standards for all 6-8th grade teachers within the district. f)Students will have a resource page on-line and a guided intervention for each SEEd standard.g)Goal of higher SAGE scores in upcoming years and more students pursuing STEM education.2) Teachers will be expected to provided self or peer review regarding the implementation of the professional learning content twice through the 2016-2017 year. 3) If the desired outcomes are not being met incentives will be offered to the teachers. It is our hopes that teacher will be receptive to this professional developme because it will provide direction and materials for the new SEEd standards. Teachers will not need to travel or take time away from families and Jamie Carling will be able to go to their classrooms and provided assista and one-on-one guidance to make it as smooth as possible for the teachers. 4) Participants can report quantitative data by 1) recording the number of trainings attended and trainings given in the district, 2) another check point is the number of STEM lesson plans created by the LEA science coordinator and teachers on SEEd standards, 3) Teacher evaluation of web resources and trainings, and lastly, 4) assessing teacher use and reflections in regards to Edivate. Qualitative impacts would be teacher preparedness for SEEd standards. Teacher STEM lesson presentation and implementation improvement pre and post year. Skills learned from Edivate especially in regards to lesson presentation. Clarity on SEEd standards for students and quality of STEM lessons. The ease of using on-line resources for students and teachers in regards to interventions and regular course work.
GA--4544	

Application #	LEA	STEM Priority	How will Edivate be used?
GA--4644	Jordan School District - Science Curriculum Department	Science	The platform will be used to post and tag video clips of classroom lessons. It will also be used and as a platform for courses.

Application #	Expectations and Outcomes
GA--4644	Teachers will incorporate the new SEEd standards in their classrooms. This will involve significant shifts in approach for many teachers. Building a student-centered STEM classroom will require teachers to collaborate together; building standards-based, phenomenon-centered, and student-directed learning episodes. Teachers need to allow students to become fully engaged in their own learning. Measureable outcomes for teacher will be based on pre- and post- surveys of teacher attitudes and expectations. In the surveys they will be asked:Â· to estimate the amount of classroom time devoted to different types of SEEd activities, Â· what they kn about the new core and strategies related to implementation,Â· what strategies for learning they prefer to use with students,Â· about their comfort level with being videotaped through the Edivate site, andÂ· about t ability to use and learn in the online Edivate/Canvas environments.Other measureable indicators for teachers will include: course completion, Edivate video tape reflection/annotation, and attendance at during schoo afterschool workshops. Teachers will submit 3D lessons and create curriculum maps as part of the coursework. Teachers will use the Edivate platform in workshop settings, at home with online coursework, to post vid of classroom lessons, and to annotate the videos of others.Desired outcomes for students include mastery of SEEd core standards, along with increased enjoyment and engagement with science lessons. Ideally, studer will consider science for college or technical training and future employment. Measureable outcomes for students include: performance on SAGE exams, SLO assessments, and project-based formative assessments. W possible, student growth will also be examined based on pre- and post- tests.

Application #	Assessment
GA--4644	This project will be vetted by a number of professional development providers including Jordan District personnel, specialists in other districts (Granite and Alpine), and USOE experts. Assessments for the project will include measurements for teachers and students. For teachers, assessments will be pre- and post- surveys, course completion figures, completion of video tape reflection/annotation, and attendance in workshops. Student measurements include pre- and post- tests or surveys, performance on SAGE exams, SLO assessments, and teacher developed projects and tests.Teachers on the minimum plan will provide self and peer revie two times during the school year. Teachers participating in full implementation will participate in self and peer review six times throughout the school year. If the desired outcomes are not being met, adaptations will made to the plan. The project director will meet regularly with other committee members to determine if expectations are too high or too low. Course content can be adjusted as the instructors and teachers work thr it. The SEEd PD administrator will help all teachers with recording. Recordings will be necessary for passing the course, receiving the stipend, and credit. Teachers unwilling to attend the workshop sessions will be repo to their principals and appropriate action will occur at the school level. An important part of the JSD teacher evaluation is to seek and participate in professional development, so this will be a good opportunity for the do so.Participants will report quantitatively and qualitatively though their pre- and post- surveys. Verbal feedback will be sought at various times in the year and teacher videos on Edivate will be evaluated for reportin purposes. A rubric will be created and used to evaluate and monitor video lessons. The pre- and post- test requirement will establish a measurement of growth for the teacher.

Application #	LEA	STEM Priority	How will Edivate be used?
GA--4896	Canyon Grove Academy	Science, Mathematics AND CTE: Technology and Engineering	Our school is focusing efforts to the STEM subjects in response to feedback from our students and parents. However, we do not have a program in place to support our teachers with this additional focus. We believe that Edivate will fill this need and provide our teachers the needed support to be effective teachers in the STEM subjects.
GA--4984	Tooele County School District	Science	The SINet courses will be used to introduce science teachers to the shifts in learning and teaching based on the three dimensions of science.
GA--5485	Rockwell Charter High School	Science AND Mathematics	-We would like to incorporate Edivate videos into our monthly Teacher PD meetings. Allowing us to improve professional development topics.- We would like to use Edivate Review for classroom recording and PLCs.- In classroom support for our teachers.
GA--5530	Nebo School District	Renewing Licenses ONLY	
GA--5789	Alpine School District	Science AND CTE: Technology and Engineering	The grant will include 8 schools in Alpine School District that are all attempting to shift curriculum, assessment and pedagogy centered around STEM. Edivate will be used for the two purposes listed below.Foothill elementary has piloted a STEM approach to deeper learning this past year. Edivate will be used to film model STEM lessons being taught by teachers from Foothill. These lessons will be used by the other eight schools for lesson study purposes. Lesson study is a process of observing a lesson and then have collaborative conversation about what they saw from both the teacher and students as a result of the teaching.Second, when adopting schools perform a STEM lesson in a classroom, Edivate will be used with their collaborative team to discuss best practice as they learn to pursue a deeper learning on the science and engineering standards by shifting curriculum, assessment and pedagogy approaches.

Application #	Expectations and Outcomes
GA--4896	Canyon Grove Academy's goal is to improve our math and science SAGE scores. We believe higher SAGE scores reflect high quality instruction and student achievement. As a result, we will use SAGE scores to measur effectiveness of utilizing the Edivate platform.Our goals are listed below. First listed is the math scores and goals, then science.2015 Spring Math Scores - 2017 Spring Math Goals3rd - 24% -28%4th - 30%- 34%5th - 31 35%6th - 30% - 34%7th - 19% - 23%8th - 25% - 29%2016 Spring Science Scores - 2017 Science Goals4th - 35% - 39%5th - 21% - 25%6th - 33% - 37%7th - 6% - 10%8th - 25% - 29%
GA--4984	The expectation for this professional learning opportunity is that 6th, 7th, and 8th grade science teachers will become familiar with the new SEEd standards and be ready to implement the standards integrating the th dimensions of science. Teachers will be expected to participate in 90% of the assigned content on the Edivate platform and will fully participate in the self-reflection process. One outcome of this professional learning experience is that curriculum pacing guides for the new SEEd standards will be created and ready for teachers to use as they begin teaching the new science standards. Through participation, teachers will also have th background information and understanding of the pacing guides needed to implement the new standards. A second outcome is that at least 85% of all science teachers involved will indicate they are confident in thei level of knowledge and ability to implement the SEEd standards as measured through qualitative data such as surveys and self-reflections.
GA--5485	RCHS would like to allow more in-class support to our teachers without interrupting classroom learning. By allowing teachers access to the Edivate platform, it is our hope that they would be dialed into PD that fits the specific needs, all while getting support they need from their colleagues and administrative team. By receiving proper training and development we would hope that the skills would be applied to classroom teaching/learning. We would love to see an increase in student proficiency and higher college-bound rates as we are currently a Title 1 focus school.
GA--5530	
GA--5789	By utilizing Edivate to promote the work of lesson studies, teachers in the eight schools will be able to shift curriculum, assessment, and pedagogy in an effort to get students engaged in a problems based approach fo deeper learning.Teachers should be able to, identify essential standards from the science core, create a STEM task to learn that essential standard more deeply, and assess a students competency on that task. Indicatc on this will include, essential standards sheet, task, and assessment results.Student desired outcomes would include increased student engagement and learning at DOK 3 and 4 levels. The ELEOT observation tool for engagement will be used to determine increased engagement during STEM lessons as compared to a traditional approach to teaching.The SAGE assessment will analyzed as a measure to determine deeper learning.

Application #	Assessment
GA--4896	
GA--4984	Quantitative data will be collected through district developed benchmark assessments. Results data would be collected electronically through the districtâ€™s assessment system. Qualitative data will be collected monthly through surveys and the teacher reflection forms.This professional learning plan will be evaluated monthly through review of teacher self-reflection forms and collection of survey data. Benchmark assessmer teacher reflection, and survey data will be reviewed and shared quarterly with the School Improvement, Student Achievement (SASI) committee. The review will included looking at student assessment results and if teachers are attending the monthly meetings, working with the content assigned on the Edivate platform, and engaging in self-reflections. Teacher perception data related to their confidence in implementing the nev SEEd standards will be collected and evaluated to determine if the objectives of the professional learning opportunity are being met.In the event teachers are not completing the independent portion of the profession learning opportunity, including engaging in the assigned content on the Edivate platform, teacher leaders and/or the curriculum director will reach out to these struggling teachers to have a conversation with them to determine why they are struggling to meet expectations and to create a plan of action to help them be successful. When needed, individual school instructional coaches (for elementary participants) and/or the schoo administration can be brought in to help provide additional support so that the teachers can be successful. Changes will be made to future sessions if survey results show that face-to-face sessions are not being effect
GA--5485	There will be a member of our Administrative Team assigned to analyze teacher data and professional learning content. We would work an Edivate assignment into our professional development calender requiring teachers to complete assignments on a monthly basis. This would rotate through a face to face meeting where we would go over examples of specific and detailed examples of behavior seen during observations. To completion of specific recommended PD teachers would be asked to complete within a time frame on their own. If the Admin sees that teachers are not taking advantage of the PD tools given to them, we will ask for member of the SIN to come in to give further training, to both the Admin and teachers, on the benefits of using these tools. RCHS plans to have both pre and post Edivate surveys to help measure growth and effective of the PD tools available to our staff. We would also like to track test score improvements with this data.
GA--5530	
GA--5789	1. Qualitative evaluation:Survey on teacher and student perception through a survey that will be administered at the beginning and end of the year.Quantitative evaluation:1. Data from the ELEOTobservation on stude engagement will be collected twice on each participating teacher.2. SAGE results will be studied to look for patterns of learning.3. Teachers will be to attend 5 days and attendance will be taken.4. 3 sub days for lesso study--attendance and sharing of tasks.If expectations are not met on results we will analyze why. This is a first year implementation and we plan on duplicating this many times so learning about what worked and did work will be valuable for the district.

Application #	LEA	STEM Priority	How will Edivate be used?
GA--6365	District/LEA:Southern Utah Center for Computer, Engineering and Science Students (SUCCESS Academy)Schools:1. SUU SUCCESS Academy2. DSU SUCCESS Academy	Science AND Mathematics	1. Teachers will utilize Edivate to develop individual professional learning plans. 2. Teachers will be evaluated using the Edivate components with evaluations tied to the individual teacher learning plan. Teachers will utilize the swivl platform to gather video based evidence to support teacher competency based upon the teacher's professional learning plans. 3. Teachers meet in professional learning communities once a week and Edivate will be used to track teacher PLC work using the Edivate platform. Further discussion in PLC meetings will be shared using the swivl video clips highlighting quality science and math instruction.4. Cross curricular connections will be made with English, science and math through the Edivate learning programs.5. Increased understanding for Active Learning and Project Based Learning will be developed using the Edivate platform.6. Teacher understanding of best STEM teaching practices will be developed and implemented through the Edivate platform.
GA--7152	Washington County School District	Renewing Licenses ONLY	

Application #	Expectations and Outcomes
GA--6365	1. 100 percent of SUCCESS Academy teachers will develop a professional learning plan identifying strengths and weaknesses by the end of September. The professional development plan will be reviewed to ensure tha each teacher has a developed focus to increase expertise and skills which impact student academic achievement.2. 100 percent of SUCCESS Academy teachers will utilize EDIVATE to increase identified best teaching practices through exemplar videos.3. 100 percent of SUCCESS Academy teachers will submit a SWIVL teaching video of 3-5 minutes in length each month identifying teaching practices which are focused upon teacher identified weaknesses and strengths.4. 100 percent of teachers will have a formative evaluation each quarter using EDIVATE's evaluation tool. Teachers will have a quarterly evaluation to review with the administratio The administration will utilize the videos as part of the teacher evaluation.5. 100 percent of teachers will submit a self evaluation using the EDIVATE tool in September, January, and May.6. Teacher growth and development will be discussed in PLC meetings twice a month. Teachers will share videos of their progress and strengths.7. EDIVATE will be utilized for PLC notes and progress monitoring on a monthly basis.8. 100 per of teachers and administrators will participate in EDIVATE inservice in August.9. Inter-collaboration between science and math teachers and other subject teachers will be a primary focus for one PLC meeting each mo
GA--7152	

Application #	Assessment
GA--6365	1.Pre-program surveys will be given to teachers. Additional survey data will be collected in December and in May. 2. Teacher time will be measured on EDIVATE to verify total time using this tool.3. Administrator time also be measured to show time and focus on teacher professional development. Time tracking will be implemented to highlight focus on teacher evaluation and improvement.4. Qualitative review of teacher growth p will occur with expected sophistication and detail in each year cycle.
GA--7152	

Application #	LEA	STEM Priority	How will Edivate be used?
GA--7321	Early Light Academy, Ascent Academies, Hawthorn Academy (2 campuses), North Star Academy, Summit Academy, and Providence Hall, Lakeview Academy, Scholar Academy, and Wasatch Peak Academy.	Science	The charter schools included in this application will use the Edivate platform to explore the new SEEd standards adopted by the Utah State Department of Education in 2016. The change in standards will affect the 6th, 7th, and 8th grade teachers and students in our charter schools. Edivate has designed twelve learning modules designed to help teachers better understanding the new USOE SEEd standards. Over the course of the grant, teachers will be involved in blended learning opportunities, exploring the new SEEd standards. Additionally they will be engaged in five separate teaching conferences. The conferences are designed to help teacher implement the new SEEd core standards for the 2017-2018 year. Each teacher will work independently through the Edivate modules allowing them to focus their professional development on learning the new SEEd standard. Teachers will use collaborative learning when they meet together to discuss each of the twelve modules. The teachers will address four modules at a time during the collaborative meetings.While participating in completing the twelve Edivate modules, teachers will be asked to write ten formative assessment questions and two application questions for each portion of their respective grades. It is anticipated that these questions will become the basis for the 2017-2018 benchmark assessments and will reflect the change that will take place as the SAGE test then matches the new SEEd core.Additionally, the teachers participating in the grant will be asked to choose two strands of the SEEd core to develop into two complete SEEd lessons. The entire cohort will develop a total of fifty lessons by the time grant period ends. The lessons will be shared with each cohort member during four charter school SEEd conferences. The lessons developed by our teachers will include the three dimensions of science understanding: science and engineering practices, crosscutting concepts, and disciplinary core ideas; as represented in the new SEEd standards. The lessons created by the participants will include a video of the teacher teaching all or part of two different strands of the new SEEd curriculum. The participants will be required to videotape their lessons, highlighting the important steps involved in teaching the standard and strand. The participants will then present their teaching demonstration videos to the cohort.The teachers will share their videos on the Edivate platform. The intent of sharing the videos is to help 6th, 7th, and 8th grade teachers master the new SEEd standards. The objective is to develop a repository teachers can access to teach STEM, SEEd, and 3d science concepts. Each lesson posted will include assessments for each standard, a list of materials to complete the lesson, and master copies as needed.

Application #	Expectations and Outcomes
GA--7321	The assessment for teachers and students will be systematic and on going as the grant develops. A pre and post survey will be developed by the cohort members, to be given to both teachers and students prior to the implementation of the grant and at the conclusion of the grant. Each survey will ask teachers and students specific questions regarding their comfort levels with the new STEM curriculum and SEEd standards in gener The over-arching goal of the grant will be to have students to become fully engaged with STEM concepts and for teachers to become intimately familiar with the new SEEd standards. Additionally, it is our expectation teachers not comfortable teaching STEM based science will show a marked degree of confidence in teaching science concepts at the completion of the grant. Teachers will need to progress through the twelve modules developed by Edivate in order to earn the compensation set forth by the grant. The teachers are required to participate and complete all twelve blended Edivate modules. As each teacher completes four modules and participates in the collaborative conferences they will be paid a stipend. For example, modules 1-4 will be assigned and then a collaborative conference would be held. The collaborative conferences would allow teach time to discuss the learning and determine the practical considerations of teaching the new SEEd standards. The teachers will be asked to prepare and teach two complete SEEd lessons as a practicum experience. During their demonstrative teaching, each teacher will be asked to record their teaching using the cameras supplied by the grant. The process of watching oneself teach is a tremendous formative assessment teacher use to improve their instruction. Additionally, cohort members will review the recordings at predetermined times scheduled during the charter school collaborative conferences. Each teaching demonstration will be evaluated using a rubric written prior, in concert with all participantsâ€™ expectations, regarding excellent teaching practices. Every lesson developed will include a pretest and posttest. The members of the cohort expect to see gains of 40-50 percent in studentâ€™s scores between the pretest and posttest after the instruction has taken place. Additionally, teachers will set mastery levels of 80% for students in each of their clas regarding the strands they choose teach. At this time, we will not be using SAGE data to document student gains during the implementation of this grant. SAGE will still be assessing the old science standards during th time of this grant.

Application #	Assessment
GA--7321	The overall effectiveness of the grant will be measured by comparing data generated from the pre and post surveys given to both---the teachers participating in the grant and the students they serve. The grant writer would like to see both students and teachers gain an appreciation and develop a deeper understanding of the new SEEd standards. Building teacher confidence with the new standards and developing teachers comfo with video evaluation is the overarching goal of the project. The intent of the grant is to get 100 percent of the twenty five teachers to complete each of the twelve Edivate modules. The teachers participating in the gra will gain new technical skills in addition to learning about the new SEEd standards. The equipment used during the grant can be incorporated into teachersâ€™ lessons across the curriculum; as there is a minimum expectation of participation but not a maximum use policy for the video equipment. The secondary goal is to have teachers use the Edivate platform as a resource for their professional development needs. If the grant expectations are not being met, the grant writers will assess why the modules are not being completed or why the videos are not being developed. The grant writers will consistently seek evaluative responses from participants, including, "what is working" and "what isn't working". Course adjustments will be made with teacher comments used to guide the necessary changes.

Application #	LEA	STEM Priority	How will Edivate be used?
GA--7959	South Summit School District	Science, Mathematics AND CTE: Technology and Engineering	Edivate is an essential component of our professional development plan for STEM faculty. The resource has expanded to be a valuable tool for all faculty. Teachers are able to view outstanding STEM educators who model best instruction and then reflect on how to implement those strategies into their own teaching. The faculty benefit from the videos in preparing to teach new content or provide interventions with students that need additional support. The tool can also be valuable in providing faculty an opportunity to receive feedback on their own teaching of STEM content by utilizing swivel cameras and then sharing their teaching with colleagues within or outside of the District. Collaboration is the key to effective teaching and this allows many of our teachers that do not have faculty in the District that teach the same course to work with subject specific colleagues. The District is committed to expanding our plan to include the tool to be an individual and PLC resource for every STEM teacher and team. The District is planning to provide Edivate platform training during convocation (faculty professional development days before school begins). In summary, the platform will be used to provide best practice methodology and share our best practices with other teachers.
GA--8287	Channing Hall Charter School13515 South 150 EastDraper, UT 84020	Science	A central priority of Channing Hallâ€™s five-year plan calls for improvements in our science program. We currently have a good program, but we believe it can be better. We envision a program where curriculum and teaching philosophy are tightly interconnected across all grade levels and subject areas to give students a firm foundation in STEM. Our Science Agility Team will set schoolwide goals and help teachers set individual goals. We will use Edivate resources as an essential tool in meeting those goals. We expect teachers to use the Edivate resource at least once a month, and ideally more than that. We expect teachers to use Edivate by viewing the resources, discussing with peers, and incorporating ideas into the classroom. We also expect them to use the recording technology to tape themselves and look for ways to improve instruction.
GA--8961	Pacific Heritage Academy	Mathematics	The Edivate platform will allow PHA teachers to engage in cycles of inquiry and collaborate with their peers and instructional leaders more easily and more frequently.By analyzing student work teachers will identify possible next steps in content and instruction. Edivate's Instructional videos of best practices in mathematics education provide resources for teachers to collaboratively review and discuss. Teachers will use the instructional planning resources to create new lessons, which will culminate in classroom observations and model lessons. Model lessons will be recorded and published to the Edivate platform in order to facilitate feedback from peers coaches and administrators. The student work from those lessons will be used to raise topics of continued professional inquiry, and the cycle will repeat (UETS 8)
GA--9032	Summit Academy, k-8	Science, Mathematics AND CTE: Technology and Engineering	All educators will use Edivate licenses to improve instruction in the classroom. In particular, we will use the Edivate Review tool to record instruction and collaborate with other educators starting with our STEM grades 6-8 educators.

Application #	Expectations and Outcomes
GA--7959	The implementation of new science standards can be frustrating for faculty that do not have a colleague in the district that teaches the same course. Faculty, teaching any STEM course, that meet this criteria will be a to collaborate with another Edivate faculty user that teaches the course. The principle is that no faculty will work in isolation. South Summit School District provides a technology device to every student, it is our expectation that students in STEM courses utilize technology in better understanding STEM topics. The expectation for the tool is that our faculty will have the resource to to find best practices that will help students more involved and interested in STEM topics, which will reflect on their performance including increased SAGE scores in science and math.Administrators will also participate in the Edivate platform as part of the Distr educator evaluation. Administrators will be able to recommend professional development that will assist teachers in becoming more effective. Teachers will also be able to use the cameras to provide evidence to the administrator of the implementation of best practices and improvement.
GA--8287	Channing Hall has four main expectations from developing a more robust science professional development plan. We expect to see:â€¢Teachers develop more confidence and mastery of subject.â€¢Infusion of science standards into other areas of the curriculum, such as Language Arts and math.â€¢Students develop more confidence and perform better on standardized tests.â€¢A greater sense of science-instruction integration acro grade levels, with up-to-date state standards as the foundation.
GA--8961	The Desired Teacher Outcomes from this proposal are two:The teacher works with learners to create environments that support individual and collaborative learning, positive social interaction, active engagement in learning, and self motivation (UETS 3).The teacher uses multiple methods of assessment to engage learners in their own growth, monitor learner progress, guide planning and instruction, and determine whether the outcomes described in content standards have been met (UETS 5). Student Outcomes from this proposal are:All students will become mathematically proficient in engaging with mathematical content and concepts as they learn, experience,and apply mathematical habits of mind. (Standards of MP.1â€“8).Each teacher will submit four model lessons over the course of the instructional year. The Edivate platform and, particularly, th Teacher Effectiveness Framework (TEF)will be the central tools for collaborating, communicating, monitoring and planning for the achievement of these outcomes.
GA--9032	The desired outcome for STEM teachers after implementing this professional learning opportunity is for increased understanding of their own professional practice for the purpose of increasing student outcomes on formative and summative assessments and content delivery.

Application #	Assessment
GA--7959	Data is provided in the Edivate platform. The data will be reviewed by administration, both district and building and shared with PLC teams as appropriate. Educator effectiveness will increase as teachers implement t best practices and strategies available through the platform. Student performance, include SAGE scores will increase as a result of the improved educator effectiveness. Formal and informal observations will continue be used.
GA--8287	â€¢Repeat the previous yearâ€™s survey to gauge teacher perspectives on improvement and priorities.â€¢Examine student test scores compared to previous years.â€¢Survey Science Agility Team for thoughts about th effectiveness of each aspect (Edivate lessons, video-self survey, intensive professional development for middle school years, etc.)â€¢Those data will be used as the basis for setting new school-wide goals in 2017-18.
GA--8961	Every nine-week grading term, each teacher in the cohort is responsible for uploading a high-quality math lesson to the Edivate site. The quality of the lesson will be measured against the Teacher Effectiveness Framev Classroom teachers can gather feedback as many times, from as many sources as they want using the Edivate site, but must have a final lesson recorded and submitted by the end of each nine week benchmark.Numb Corner Check-ups, PHA's regular formative assessment tool, will be used to compare student achievement to the work created in the model lessons. Additional qualitative data will be collected from students on their perceived effectiveness of how they engage in mathematical practices (with an emphasis on standards 1, 4, 3 & 7) If, at the quarterly benchmarks, expectations are not being met, remedial measures (i.e. additional coaching, revised deadlines, peer observations) will be implemented.
GA--9032	The effectiveness of our plan, as well as the evaluation of our STEM teachers utilization of these technological tools will be continuously assessed by frequency of usage and individual, as well as departmental goal sett and achievement based on improvement of student outcomes. Data will be gathered using the following methods: Edivate reporting, informal and formal observations by administration, and coaching by district and school instructional coaches.

Application #	LEA	STEM Priority	How will Edivate be used?
GA--9526	Moab Charter School	Renewing Licenses ONLY	
GA-0225	John Hancock Charter School	Science, Mathematics AND CTE: Technology and Engineering	JHCS is dedicated to providing our student STEM experiences. As a result, we are adopting Engineering is Elementary and are dedicated to providing professional development in all the STEM subjects.Edivate will allow us to provide ongoing professional development to support the STEM subjects in their classroom. It will also allow teachers to find trainings to help them improve in areas they feel they need support. Edivate will allow us to "flip" our PLCs so the teachers come to the meetings prepared to discuss the information in the training.Edivate will all our teachers to film themselves so their mentors and other PLC members can provide feedback regarding their lesson content, lesson delivery, classroom management and more. This will also allow master teachers to model for teachers without removing the educators from their regular classrooms.
GA-0456	Box Elder School District	Science AND Mathematics	Educator EffectivenessNew TeachersStem
GA-0484	Summit Academy High School	Science, Mathematics AND CTE: Technology and Engineering	All educators will use Edivate licenses to improve instruction in the classroom. In particular, we will use the Edivate Review tool to record instruction and collaborate with other educators starting with our STEM education educators.

Application #	Expectations and Outcomes
GA--9526	
GA-0225	John Hancock Charter School intends to use the system weekly to help improve teacher effectiveness and content delivery of the STEM subjects. We anticipate that our science SAGE scores will increase by providing teachers the support they need to teach the state science standards. The state average on the SAGE science assessment for 2014/15 was 47% proficient. John Hancock Charter School had an overall school score of 52 By utilizing the SiNet's Edivate platform twice a month we believe we will see an increase in our science SAGE score from 52% to 56%. We also believe that with the support of SiNet's Edivate platform, teachers will be more comfortable teaching science and the other STEM subjects. We will measure this by conducting a teacher survey at the beginning of the year with a follow up survey at the end of the year. We believe that the results of the end of year survey will show an increase in teacher confidence in their ability to teach the Utah State Science Standards.
GA-0456	Administrators will use the Edivate platform with all teachers as part of the Educator Effectiveness Teacher Evaluation Process. Teachers will be encouraged to video tape themselves and reflect on their teaching strategies. This form will be shared with their building administrator and used to set individual goals for improvement. Edivate will be used by Math and Science teachers to increase rigor and relevance in their instruc These teachers will be expected to implement more rigor into their classrooms. Selected teachers will upload a minimum of two videos and review their lesson with a rubric to reflect on their instruction. Edivate will b used with our new teachers to view effective instructional practices from exemplar teachers to increase their teacher effectiveness. EYE teachers will be expected to watch a minimum of one video observation. Follow the observation they will be required to answer the Edivate reflection questions and create a plan of a positive impact, implement new teaching strategies into their classroom on specific things they learned.
GA-0484	The desired outcome for STEM teachers after implementing this professional learning opportunity is for increased understanding of their own professional practice for the purpose of increasing student outcomes on formative and summative assessments and content delivery.

Application #	Assessment
GA--9526	
GA-0225	JHCS will use the science SAGE scores from the Spring of 2016 as a baseline for the purposes of this grant. We will also provide a teacher and student survey to gauge the overall impressions of both teachers and stud regarding the science program at the school next year. In addition, teachers will utilize Mastery Connect to monitor students' progress towards the state standards. Mastery Connect is a formative assessment that wi identify student progress. If we do not see adequate progress towards student mastery of the standards, we will complete the following:Identify if it is an individual student issue or an overall teaching issueIf it is a student issue, we will provide interventions to ensure student achievement. Interventions can include reteach, pre-teach, small group instruction, on on one instruction, peer tutoring etc. If it is a whole class issue, teachers will be provide additional support through Edivate, peer collaboration, and other professional development opportunities as needed.Teachers are required to bring their assessment data to PLC meeting whic held twice a month to determine any adjustments that may need to be made by the teacher or additional support for the student/s.
GA-0456	Administrators will monitor and evaluate the teacher usage using the Edivate Reports.
GA-0484	The effectiveness of our plan, as well as as the evaluation of our STEM teachers utilization of these technological tools will be continuously assessed by frequency of usage and individual, as well as departmental goal setting and achievement based on improvement of student outcomes. Data will be gathered using the following methods: Edivate reporting, informal and formal observations by administration, and coaching by distri and school instructional coaches.

Application #	LEA	STEM Priority	How will Edivate be used?
GA-0976	City Academy	Science, Mathematics AND CTE: Technology and Engineering	The Edivate platform will be utilized for our whole staff as a component of blended professional learning opportunities around using investigative pedagogy, i.e. Teaching for Inquiry-Based Learning. The focus will be to build teachersâ€™ abilities, confidence, and consistency in implementing authentic inquiry-based instruction and providing authentic inquiry-based learning environments across the curriculum that (a) appropriately intellectually challenge and actively engage each learner in the classroom learning bell-to-bell, and (b) consistently support each student in producing high quality learning outcomes that reflect personally rigorous depth and breadth of knowledge and skills.1.All teachers, whole staff, will watch and reflect on videos from the Edivate library depicting teachers orchestrating and students participating in inquiry-based or investigative teaching and learning.2.All teachers will participate with both content area and grade level based Professional Learning Teams (PLTs) with the Edivate tool â€œGroupsâ€ to share video, questions, responses, and reflections with other members of the PLT in between PLT meetings as an integral part of teacher collaboration as well as to provide a platform for discussion at PLT meetings.3.Math 7, 8, and I teachers in particular will use Edivate as a platform to participate with the USOE secondary mathematics professional development initiative.4.Science 7 and 8 teachers in particular will use Edivate as a platform to participate in professional learning around the new SEEd Standards with our University of Utah science education mentor.5.All teachers will film themselves with their classes and save on Edivate for reflection and collaboration as a part of their personal professional growth plans.
GA-1164	Iron County School District Secondary Mathematics	Mathematics	Iron County School District seeks to utilize the Edivate platform to support effective professional learning for our mathematics teachers in the following ways:â€¢Support professional learning for mathematics educators through the recording and sharing of hand-held technology professional development trainings designed to specifically address the standards aligned to the mathematics of grades 6, 7, and 8â€¢Promote a collaborative framework for long-distance professional learning communities through the use of the review tool. Participants can watch the professional development session, stop and replay portions of the video, ask for and receive clarification at specific points in the recorded session â€¢Advance Iron County mathematics educatorsâ€™ ability to design, deliver, share and adapt instruction to address student learning strengths and needs (Utah Effective Teaching Standard 2) through the recording of software setup and trouble shooting sessions â€“ an on-line resource that will enable a teacher to quickly remember or resolve an issue without detracting from the instructorâ€™s preparation. Oft times, the use of technology is abandoned by an instructor because of a small glitch that could be resolved quite quickly if a resource was readily available.â€¢Provide access to videos of other exemplar educators utilizing the hand-held technologies to support and enhance their instruction. Specific videos will be uploaded as suggestions for later viewing in hopes that they will serve to lessen the fear of using technology in the classroom as they watch how another instructor utilized it.

Application #	Expectations and Outcomes
GA-0976	We expect that the Edivate platform, as a consistent part of blended professional learning opportunities that include online, video, classroom-based rounds, professional learning teams (PLTs), collaborative study of student tasks and outcomes, and face-to-face professional development throughout the year, will provide a key vehicle for focused reflective collaboration among teachers that can lead to creating a school-wide prac of continuous improvement toward targeted goals. By the end of the first year, we expect the reflective study of video that the Edivate platform provides will be seen by teachers as a key element that helps build tea PLTs into productive professional learning and professional improvement vehicles. We also expect that improved teacher practice will lead to raised student attainment, particularly in the targeted areas of Math 7, 8, I, and Science 7 and 8, and Engineering.1.At least 90% of all teachers meet the goal of at least 15 minutes/week on average for use of video study, reflection, and collaborative interaction.2.At least 80% of all teachers participate in classroom-based rounds at least once each quarter.3.At least 80% of PLT meeting minutes reflect collaborative study of video integrated with observations from classroom rounds and analysis of student work.4.A rubric for effective implementation of Teaching for Inquiry-Based Learning will be collaboratively developed, piloted, and implemented by the end of the first year.5.The percentage of proficient SAGE scores in Math 7, 8, and I, Science 7 and 8, and Project Lead the Way (PLTW) engineering exam scores in spring 2017 will increase by at least 10% from 2016 scores.6.Pre, interim, and post surveys during the year will indicate tha a growing percentage of students can describe the use of an investigative approach to learning.7.Pre, interim, and post surveys during the year will indicate that a growing percentage of teachers feel their abilities to orchestrate Teaching for Inquiry-Based Learning are growing.
GA-1164	The Tools and Technology guiding principle for school mathematics as outlined in the National Council of Teachers of Mathematics Principles to Actions states, â€œAn excellent mathematics program integrates the us mathematical tools and technology as essential resources to help students learn and make sense of mathematical ideas, reason mathematically, and communicate their mathematical thinking.â€It is sad to report tha integration of hand-held technology is lacking in a majority of Iron Countyâ€™s 6th, 7th, and 8th grade classrooms. To counter this trend and to support an educatorsâ€™ desire to fulfill the UETS Standards (specificall Standards 2b, 3e, 4d, 5b, 5g, 6c, 8b, and 9e) the Iron County School District seeks to offer assistance in the attainment of this technology and promote its continued use in these classrooms.Through this high-quality professional learning opportunity, the teachers within our district will be subject to sustained and systematic support in the use of this technology. The following table outlines the expected and measurable outcomes both students and teachers:Measurable Outcomes for Teachers1. Teachers will receive hands-on, face-to-face training with handheld calculators. Instruction will specifically address the utilization of such technology to enhance the personal and student study of standards found within the 6th, 7th, and 8th grade curriculums. (It is hoped that as mathematics instructors grow more comfortable with their personal use of such technol they will, in turn, be more than likely to utilize it in their instruction of students.)2. Instructors will be the recipients of face-to-face assistance in the installation of the SmartView Software that will enable a teacher to simultaneously project multiple representations of the mathematics being studied.3. Teachers will increase the number of mathematics lessons that utilize the handheld technology. Teachers will be encouraged and supported as they utilize this ability in no fewer than 2 lessons every quarter. They will make and keep a record of the lessons that were created and used after the professional training.4. Teachers will increase their collaboration, sharing of lessons, and technology strategies with colleagues using the Edivate platform. They will receive instruction in the use of this platform as part of their professional learning opportunity.5. Teac will utilize the Edivate platform to quickly review technology techniques when questions arise. They will also use the platform to reach out for assistance from others participating in this professional learning opportunity.Measurable Outcomes for Students1. As teachers become more adept at personal use, they will, provide more opportunities for the use of such technology by their students. Students will utilize the hand held technology to make connections between mathematical concepts. Also, the proper use of this technology will, in the words of a 6th grade teacher, â€œallow students to get the needed fact quickly and move on the learning of mathematicsâ€2. Students will receive mathematical instruction that is enhanced by the use of the projected multiple representations that highlight key ideas.3. The use of such technology will serve t enhance the instruction of diverse learners. Students will increase their proper use of the imbedded calculators found in the SAGE Interim and Summative.

Application #	Assessment
GA-0976	1. Individual teacher use of the Edivate platform for viewing and reflecting on teaching video will be monitored every 6 weeks. Teachers not meeting the goal of an average of at least 15 minutes/week will discuss this issue with the Executive Director and develop a plan for future completion of the goal.2. Individual teacher participation in classroom rounds will be monitored quarterly. Teachers not meeting the goal of an average of least once per quarter will discuss this issue with the Executive Director and develop a plan for future completion of the goal.3. PLT meeting minutes will be posted as a Google document and shared with the whole faculty and administration. The Executive Director and Principal will monitor meeting minutes for use of video, rounds, and student work as a part of reflective collaboration. The Executive Director and Principal will attend PLT meetings throughout the year.4. The Executive Director will utilize faculty and PLT meeting time to collaboratively develop, pilot, and implement a rubric to assess the degree of effective implementation of Teaching for Inquiry-Based Learning and excellence in learning outcomes. 5. The Executive Director will work with PLTs to identify and help provide content area professional development for each content area for at least 30 hours during the year in science and math.6. All teachers will use quick quizzes, exit tickets, and other regular formative as well as summative assessments throughout the school year to monitor student learnin progress toward SAGE and PLTW learning goals. These will be recorded and visible to students, parents, administrators on our LMS, Canvas.7. Teacher evaluation will particularly focus on the Utah Effective Teaching Standards and indicators being addressed with this project.
GA-1164	Effectiveness of this professional learning opportunity will be evaluated on its ability to entice teachers to participate and complete the training. Participants will be notified of this opportunity via the district PLC meet and through email advertisements. This communication will describe the course content, time requirement, dates, and expectations.Quantitative evaluation will occur in the following ways:1. The number of particip who enroll and number of participants who complete the training will be recorded. This will be done with the goal that participant numbers will be sufficiently high and that they will remain constant.2. Participants w increase their personal use of the hand-held technology and the use of hand-held technologies by their students and the use of SmartView in the delivery of their lessons. Participants will be asked to utilize and docur their use at least two times during every quarter. They will do this by submitting their lessons and a description of the opportunities they provide their students in an on-line format throughout the year. Qualitative evaluation will occur in the following manner:1. The instructors will frequent the online platform to assess the current needs of the class participants. They will provide that assistance or refer the participant to anoth colleague who has resolved the same issue. A record of these interactions will be automatically recorded in the platform.2. Teachers will be asked to share their personal comfort level with the technology via exit slip that will be part of the three instructional sessions. Instructors will then make adjustments in the following sessions that reflect the needs of their participants. These will serve as anecdotal and qualitative records.3. instructors will make available, on the Edivate platform, the lesson plans that were created for each training session as well as the questions and solutions that arise from the exit tickets.Not meeting expectations?1. E effort will be made to assist participants in their use of the technology. Small efforts will be celebrated.2. Instruction will be provided in the use of the Edivate platform to enable teachers to ask questions and receive immediate instruction should situations arise that would prove discouraging.3. The collaborative structure of the instructional meetings will be used to support those who are struggling. The reasons for struggles will noted and adjustments will be made on an individual basis.

Application #	LEA	STEM Priority	How will Edivate be used?
GA-1205	Rich	Renewing Licenses ONLY	
GA-1635	Utah Schools for the Deaf and Blind	Renewing Licenses ONLY	
GA-1749	Millard County School District	Science	The Edivate platform will be used by educators to: * identify and reflect on videos of exemplary educators from around the country who utilize effective strategies in creative and meaningful ways, * access hundreds of videos of Utah teachers in the classroom teaching STEM lessons, * self-evaluate, reflect, and set goals supporting personal growth and development, * collaborate with other teachers in the district and region in professional learning communities, * support the Utah State Effective Teacher and Leader Standards as they pertain to the Utah Educator Effectiveness project, and * enhance effective educational strategies through access to online tools and resources that promote educator professional learning.More specifically, participant educators will receive a one-day training about the Edivate platform in August, 2016, prior to the first day of the 2016-17 school year. This training will focus on how educators can use the tool as a self-reflection of their current practice, in peer reviews, and in PLC settings.Additionally, the Millard County School District plans to work with both Beaver County School District and Piute County School District in providing professional development to Science teachers involved in the 6-8 SEEd project.
GA-1811	South Sanpete School District	CTE: Technology and Engineering	The Edivate platform will be used to provide 210 teachers (K-12), from the 8 schools within the South Sanpete School District, including Gunnison Elementary, Gunnison Valley Middle School, Gunnison Valley High School, Manti High School, Manti Elementary, Ephraim Elementary, Ephraim Middle School and the South Sanpete Education Support Center, with online professional development learning opportunities. For example, each teacher will have the opportunity to go through 1 STEM-related PD video and related reflection questions, per month. They will also use the platform as a way to do self and peer review, by using Swivl cams to record their instruction and student engagement and share it with other teachers in their grade level and administrators (and they will use the platform to view and assess other teachers instruction).
GA-1825	Salt Lake Center for Science Education	Renewing Licenses ONLY	
GA-2095	Tintic School District	Renewing Licenses ONLY	

Application #	Expectations and Outcomes
GA-1205	
GA-1635	
GA-1749	Through the use of the Edivate platform, as well as face-to-face professional development, sixth, seventh, and eighth grade teachers will become more effective in implementing the new science standards and more proficient in utilizing technology in their classrooms. As a result of increased capacity from the SEEd professional development they will receive, it is our desire that students will be more involved and interested in the sciences, that their knowledge base will increase, and their performance on end-of-level S.A.G.E. assessments will improve.Administrators, EYE participants, and the Curriculum Cabinet will be encouraged to participat the Edivate platform as part of the district's Educator Effectiveness Project. The Educator Effectiveness Project is designed to assist teachers in self-evaluation and reflection of their teaching practices. Through the Ed platform, administrators and mentors can recommend professional development that will assist new teachers become more effective. We will encourage new teachers to review and critique video tapes of their teacl They will be encouraged to select aspects of their teaching they can improve upon. They will determine measurable outcomes and review their progress through additional observations and reflections.
GA-1811	The evaluation of the South Sanpete PD 360 (SS-PD360) is based on a continuous improvement model in which data regarding project effectiveness is collected throughout the life of the project and analyzed to inform project changes, leading to continuous improvement. Data collection activities will focus on the collection of data to measure both the effectiveness and fidelity of implementation of the strategies and activities descr in the project design and formal outcomes. Implementation and outcome objectives have been developed, and include the following:1.)ÐUTCOME - Teachers understand and implement the guiding principles learned using SINetâ€™s Edivate platform to improve the quality of their instruction; INDICATOR/INSTRUMENTS - pre/post assessment via teacher surveys (quantitative) and teacher focus groups (qualitative)2.)ÐUTCOME â€“ Increase teacher effective adoption of (and time spent using) SINet's Edivate and Swivel Cam; INDICATOR/INSTRUMENTS - pre-during/post assessments via teacher surveys and teacher focus groups, and usage report 3.)ÐUTCOME â€“ Increase Student Achievement in science; INDICATOR/INSTRUMENTS - â€“ pre/post - student survey, EOY tests4.)ÐUTCOME â€“ Increase Student Engagement ; INDICATOR/INSTRUMENTS - â€“ pre/p student survey
GA-1825	
GA-2095	

Application #	Assessment
GA-1205	
GA-1635	
GA-1749	Assessing the grant's effectiveness will rely on (1) the educator effectiveness component and (2) the sixth through eighth grade SEEd professional development. Ideally educator effectiveness will increase as teachers introduced to new teaching strategies and practices through Edivate's professional development strand. This can be measured directly through the annual Educator Effectiveness Rating that is computed by Observer The success of the sixth through eighth grade SEEd project can be measured directly through student growth on the annual S.A.G.E. assessment. Building level and district level administrators will also monitor the suc of the program indirectly through informal observations and conversations with project participants.Self or peer reviews will be required of all new teachers twice during the year, once at the beginning and once at th end of the year. Reviews can take place more often on an informal basis.Curriculum cabinet members and project facilitators will be responsible to make sure educators have the instructional and technology tools, as as adequate training, to complete project tasks. These individuals will work through any issues that may arise with district administrators to make sure desired outcomes are being met. The district will closely monito program usage to assure program fidelity.Quantitative data will be recorded in the Edivate platform. Qualitative data will be reviewed at district and building level leadership meetings and shared with school and distr level PLCs as appropriate.
GA-1811	The evaluation of the SS PD 360 Project is based on a continuous improvement model in which data regarding project effectiveness is collected throughout the life of the project (1 year) and analyzed to inform project changes, leading to continuous improvement. Data collection activities will focus on the collection of data to measure both the effectiveness and fidelity of implementation of the strategies and activities described in project design and formal outcomes. Implementation and outcome objectives have been developed. Data will be collected ongoing and review regularly (at least quarterly). In the event data feedback indicate that expectations are not being met, the Director will look for strategies and make adjustments to bring about desired change.
GA-1825	
GA-2095	

Application #	LEA	STEM Priority	How will Edivate be used?
GA-2129	DaVinci Academy of Science and the Arts	CTE: Technology and Engineering	1. Provide Personal PD Goals tied to effective researched-based instructional strategies. a. Train teachers and administrators on these instructional strategies as used in the classroom. b. Provide peer and administrator feedback to teachers on the use of these instructional strategies. c. Evaluate the effectiveness of the instructional strategy. d. Clone these effective teaching practices throughout the entire school2. Leverage the use of technology to increase student engagement and teacher effectiveness.
GA-2204	Providence Hall Charter School	Renewing Licenses ONLY	
GA-2640	Murray City School District		-Math curriculum development and professional development-Science professional development and SEEd standard training-7th grade CTE professional development and equipment-Coaching professional development and teacher support-High school course for element
GA-2855	North Sanpete School District South Sanpete School District Sevier School District Juab School District Wayne School District Tintic School District	Science	The Edivate platform will be used to provide 43 science teachers (from 6 rural school districts), who teach in 6th, 7th and 8th grade, with online professional development learning opportunities. For example, each teacher will have the opportunity to go through 12 learning modules (that are focused on the new science standards). They will also use the platform as a way do self and peer review, by using Swivel cams to record their teaching and share it with other teachers (and they will use the platform to view and assess other teachers instruction).
GA-3251	Davis School District	Renewing Licenses ONLY	
GA-3564	Alpine School District	Renewing Licenses ONLY	

Application #	Expectations and Outcomes
GA-2129	INSTRUCTIONAL STRANDDuring: Each teacher will identify effective, researched-based instructional strategies and create 3 lesson plans per quarter that incorporate these instructional strategies.Each teacher will rec self-review, and be peer reviewed on the implementation of these instructional strategies. Teachers will then fill out a log that explains what strategy they tried, feedback given, student engagement level, and areas t improve. This log will be uploaded into Edivate platform and monitored by administration. Administration will then log or give comments on lesson plan review. After: Each teacher will have knowledge of and be ab effectively implement in the classroom at least 10 research-based instructional strategies.Each teacher will compare their student quarter benchmark scores to the research-based effect score to evaluate their instructional implementation effectiveness. This comparison will be done at the end of second and third quarters only, since first quarter will give us a baseline. Students not meeting these research-gain scores will b flagged for UMTSS purposes in SIS or school LMS system for tracking purposes. TECHNOLOGY STRANDDuring: Teachers will learn and use technology (LMS platforms, computer software programs, online or cloud bas tools, and devices) to enhance learning. Each teacher will record, self-review, and be peer reviewed on the implementation of technology. Teachers will then fill out a log that explains what strategy they tried, feedba given, student engagement level, and areas to improve. This log will be uploaded into Edivate platform and monitored by administration. Administration will then log or give comments on the implementation of technology. After: Each teacher will compare their student quarter benchmark scores to the research-based effect score to evaluate their technology implementation effectiveness. This comparison will be done at th end of second and third quarters only, since first quarter will give us a baseline. Students not meeting these research-gain scores will be flagged for UMTSS purposes in SIS or school LMS system for tracking purposes.
GA-2204	
GA-2640	Math Teacher- Improved tier one instructionStudent - Improved student learningScienceTeacher - Improved tier one instructionStudent - Improved student learning7th Grade CTETeacher - Improved tier one instructionStudent - Improved student learningCoachingTeacher - Improved tier one instructionStudent - Improve student learningHigh School Course DevelopmentTeacher - Improved tier one instructionStudent - Improved student learning
GA-2855	The evaluation of the CUES PD 360 Professional Development On Demand Project (CUES-PD360) is based on a continuous improvement model in which data regarding project effectiveness is collected throughout the of the project and analyzed to inform project changes, leading to continuous improvement. Since the PD is being conducted over 4 quarterly meetings, and a 2-day summer PD, adjustments based on participant quantitative and qualitative feedback (including the use of SINet's Edivate platform). Data collection activities will focus on the collection of data to measure both the effectiveness and fidelity of implementation of th strategies and activities described in the project design and formal outcomes. Implementation and outcome objectives have been developed, and include the following:1.)ØUTOME - Teachers understand and implemer the guiding principles for science to improve the quality of science instruction; INDICATOR/INSTRUMENTS - pre-during/post assessments via teacher surveys (quantitative) and teacher focus groups (qualitative)2.)ØUTCOME â€“ Increase teacher effective adoption of (and time spent using) SINet's Edivate and Swivel Cam; INDICATOR/INSTRUMENTS - pre-during/post assessments via teacher surveys and teacher foc groups, and usage reports 3.)ØUTCOME â€“ Increase Student Achievement in science; INDICATOR/INSTRUMENTS - â€“ pre/post - student survey, EOY tests4.)ØUTCOME â€“ Increase Student Engagement ; INDICATOR/INSTRUMENTS - â€“ pre/post - student survey
GA-3251	
GA-3564	

Application #	Assessment
GA-2129	This plan will be monitored in several ways:Administration: Each administrator will ensure that teachers under their supervision are meeting plan requirements through weekly monitoring of teacher lesson plans and uploaded videos. Administrators will also review monthly teacher meetings each week with team leads to ensure that teachers are meeting plan requirements. Teachers not meeting requirements will be given assist to meet plan requirements. A teacher who fails to meet plan requirements for 2 consecutive months will be placed on administrative growth plan where they will meet with their immediate director once a week to re and monitor plan requirements. Those who fail to make adequate progress may be terminated. Team Leaders: Team Leaders will meet with and facilitate monthly teacher review meetings. Each month, team leads assist teachers in choosing the instructional strategy to be self and peer reviewed that month. They will ensure that each teacher brings both self and peer reviewed comments on instructional strategy chosen. They v guide the discussion and assist teachers in making reflective changes if necessary to the given strategy. They will also ensure that students not meeting research-based learning impact ranges are logged into schoolâ€™ LMS system so remediation can be given. Teachers:Teachers will be required to self and peer review one lesson each month and then discuss feedback during their monthly meeting. Teachers will update school LMS identify students not meeting research-based standards and course of action that will be taken to help remediate those students. They will also choose an instructional strategy each month at their monthly meetings make goals on when they will do the self and peer reviews. Administrators will review these monthly meeting during their weekly team lead meetings. Teachers will also collect quantitative data through the compari of second and third quarter benchmarks. They will compare student learning on these benchmarks to previous benchmarks to the research-based learning effect score. This will be charted for reflection during montl professional development meetings.
GA-2204	
GA-2640	MathAssessment will be done through a teacher survey and through student math score data compilation.ScienceAssessment will be done through a teacher survey and through student math score data compilation.CTEAssessment will be done through teacher and student survey.CoachingAssessment will be done by teacher/coach survey and through Edivate data compilation.Science ClassAssessment will be done by teacher and student surveys.
GA-2855	The evaluation of the CUES PD 360 Professional Development On Demand Project (CUES-PD360) is based on a continuous improvement model in which data regarding project effectiveness is collected throughout the of the project and analyzed to inform project changes, leading to continuous improvement. Since the PD is being conducted over 4 quarterly meetings, and a 2-day summer PD, adjustments based on participant quantitative and qualitative feedback (including the use of SINet's Edivate). Data collection activities will focus on the collection of data to measure both the effectiveness and fidelity of implementation of the strategi and activities described in the project design and formal outcomes. Implementation and outcome objectives have been developed. Data will be collected ongoing and review regularly (at least quarterly). Pre-surveys be administered prior to PD, and post-surveys after PD. In the event data feedback indicate that expectations are not being met, the Director will look for strategies and make adjustments to bring about desired chan
GA-3251	
GA-3564	

Application #	LEA	STEM Priority	How will Edivate be used?
GA-3656	Canyons School District	Renewing Licenses ONLY	
GA-3755	Jordan School District	CTE: Technology and Engineering	The platform would be used to post and tag video clips of teachersâ€™ classroom lessons.
GA-3767	Mountainville Academy	Science, Mathematics AND CTE: Technology and Engineering	Obtain new and innovative teaching strategies, use of teacher effectiveness framework, use of teacher effectiveness system, personalized learning for students.
GA-3965	Tooele County School District	Mathematics	Edivate will be used as a platform for teachers to collaborate and reflect. Professional development sessions will include SINet (School Improvement Network) videos hosted on the Edivate platform.

Application #	Expectations and Outcomes
GA-3656	
GA-3755	Careers and Technical Education (CTE) has new Technology and Engineering classes as well as new core standards for existing classes that have been put into place by the Utah State Office of Education (USOE). Jordan School District (JSD) CTE teachers need to incorporate these new standards into existing classes. Curriculum maps will be developed for the new Technology and Engineering classes. Teachers will work in a collaborativ environment to create pacing guides, common formative and summative assessments, as well as new common activities for classes around the district. Curriculum for the new courses will require teachers to work collaboratively developing common formative and summative assessments as well as a common pacing guide.Measureable outcomes for teachers include: a pre- and post- attitudinal survey of the teachers, professior development course completion, Edivate video submissions and reflections, and development of a district wide common pacing guide for each new or reorganized CTE Tech and Engineering Course.
GA-3767	Teachers will access professional learning support via Edivate a minimum of 15 minutes per week. Teachers will access webinars, blogs, and resources. Teachers will collaboration with other educators via Edivate's LumiBook and blogs. Teachers will use standards based resources including but not limited to downloadable lessons provided through Edivate on a weekly basis. Teachers will use the 360 Framework to enhance stud learning by creating visible learning targets, a culture of learning, administer formative assessments, empower students with self-assessments, use the Big Rock Concept, implement backward design, utilize the Learnir Design, and use powerful learning strategies. Teachers and students will set quarterly goals based on the 360 Framework and write down the goals in their Leadership Notebooks. Students will write a reflection of the success or needed improvement based on the quarterly goal(s). Mountainville Science, Math and CTE Teachers will participate in the courses specifically designed to introduce teachers to the shifts in learning based c the 3 dimensions of science as well as courses that prepare students specifically for the 6th, 7th, and 8th grade SEEd standards. Mountainville willl work with other schools around them to form cohorts that will use th SINET courses and face-to-face time to prepare teacher for the shifts described in the standards. Secondary Mathematics professional development for mathematics teachers in the following courses: 7th grade, 8th g Secondary I, and AP Calculus will participate in courses that address key concepts in each grade level as well as how to implement the instructional shifts in National Council for Teachers of Mathematics (NCTM)â€™s Teaching Practices. Mountainville Math Teachers will be participate in Mathematics Academic Coaching professional learning. Administrators will work with a Partner Success Manager at the School Improvement Network to create templates for purposes of teacher observations and evaluations. Administrators will evaluate teachers quarterly, make meaningful observations that encourage and track teacher growth. Administrators will provide ongoing training and expectations for the implementation of specific training by attaching a video from the Edivate PD library to the observations. Accountability with professional learning plans will increase with the use of Edivate. Reports will be generated to prove professional development compliance both by the teacher and the administrator. Administrators and the Board will build a school self-improvement program based on the Educators Effectiveness System as detailed in the implementation plan.
GA-3965	The expectation for this professional learning opportunity is secondary math teachers will incorporate the math practices into their teaching strategies in order to increase the quality of their instruction through collaboration and multiple coaching opportunities. Teachers will be expected to participate in 90% of the assigned content on the Edivate platform and will fully participate in the self-reflection process. One outcome this professional learning experience is that updated curriculum pacing guides will be created. Through participation in the professional learning opportunity and collaborating through the coaching experience, teache will have the a better understanding of the content and math practices needed to follow the pacing guides and provide quality instruction for all students. At least 85% of all math teachers involved will indicate they a confident in their level of knowledge and ability to teach the math standards after participating in the professional learning opportunity as measured through qualitative data such as surveys and self-reflections. As teachers refine their teaching practices, more students will become proficient in understanding math. The number of student proficient on math district benchmarks should increase by at least 7% from last years resu In addition, proficiency on SAGE should also increase by at least 7% to where the district is at or above the state average.

Application #	Assessment
GA-3656	
GA-3755	This plan will be assessed by Jordan District personnel after each workshop is complete. Using feedback surveys from teachers and analysis of the workshops, changes can be made to improve the approach.Teachers v provide self and peer review four times during the 2016-17 school year. If desired outcomes are not met, the committee will make adjustments to the expectations of teachers in the course. School principals will be informed and appropriate action at the specific school would be taken. Professional development is an important piece of teacher evaluations.Participants will report quantitatively through formative and summative student assessment scores. They will also report an overall yearly score and growth measurement on the student learning objective assessment given at the beginning and end of the year.
GA-3767	At the beginning of the school year, Professional Development pre-self assessments will be issued to all teachers to determine the way teachers think and feel about their past experiences with professional developme Subsequently in the last month of the school year, a post-self assessment will be distributed and collected to gather data about whether Edivate improved their over all experience. Teachers will be required to report weekly participation on Edivate via a google doc with the following required information: (1) total minutes on Edivate (2) resource(s) used on Edivate (3) report helpful resources with room for additional comments (report which standard based lesson plans were utilized (5) report the part of 360 Framework being integrated into the classroom culture and/or being created (6) report quarterly on class goals based on 360 Framewo (7) STEM teachers will be required to participate in all courses available. Administrators will report to the Board with the following: (1) schedule of calendared quarterly observations for each teacher (2) monthly repo completed observations and required professional development (Edivate PD Video Library) (3) monthly accountability report of completed professional development (4) yearly report on all completed observations an completed individual professional development plans (5) provide quarterly report of overall teacher participation and improvement based on google doc data (6) provide a yearly report to teachers based on the pre a post self-assessments. Board Members will maintain the ongoing development of a school wide self-improvement plan following the phases of the Educators Effectiveness System. If expectations are not met by teac an improvement plan will be provided by Administrators. If the expectations are not met by the Administrators an improvement plan will be provided by the Board. If the expectations are not met by the Board an improvement plan will be provided by the Administrators.
GA-3965	Quantitative data will be collected through district developed benchmark assessments. Results data would be collected electronically through the districtâ€™s assessment system. Qualitative data will be collected through surveys and the teacher reflection forms.This professional learning plan will be evaluated through review of teacher self-reflection forms and collection of survey data. Benchmark assessment, teacher reflecti and survey data will be reviewed and shared quarterly with the School Improvement, Student Achievement (SASI) committee. The review will included looking at student assessment results and if teachers are workin with the content assigned on the Edivate platform, and engaging in self-reflections. Teacher perception data related to their confidence in implementing math teaching practices will be collected and evaluated to determine if the objectives of the professional learning opportunity are being met.In the event teachers are not completing the independent portion of the professional learning opportunity, including engaging in the assigned content on the Edivate platform, the curriculum director will reach out to these struggling teachers to have a conversation with them to determine why they are struggling to meet expectations and to create plan of action to help them be successful. When needed, school administration can be brought in to help provide additional support so that the teachers can be successful. Changes will be made to future sessions if survey results show that coaching sessions are not being effective.

Application #	LEA	STEM Priority	How will Edivate be used?
GA-4185	Provo City School District	Mathematics	The Provo City School District has been engaged in an intensive re-organization of the work of professional development(PD) as a centerpiece to the work with teachers across the district. We have designed all of our work around the development and implementation of Edivate Courses to provide a framework/platform for all of the professional development across the district. All of the PD work in the district revolves around Joyce and Showers (2002) research that indicates that if PD combines 4 essential elements: theory; demonstration or modeling; practice; coaching. When PD involves only theory, participants may gain knowledge, but less than 5% of that knowledge makes it into classroom practice, when theory and demonstration are combined, teacher knowledge and understanding moves up to 15-25% but the implementation in the classroom is still less than 5%, when practice is added, knowledge increases to 60% but classroom implementation still lingers below 20%, when coaching is added, the combination results in 95% of the information that has been presented at a given training translates into implementation into classroom practices. Based on this information, we have developed a multi-layered professional development approach in the Provo City School District that relies on the combination of all four factors. Our delivery model has also been redesigned. As a district, we have been working on creating Edivate courses as a means to provide resources and norms for professional development. The District Improvement Plan is focused on the implementation of effective instructional practices in every classroom. To that end, our district has provided district-wide training 5 times a year at each school site on research-based, high-yield, instructional strategies: Learning Targets and Teacher Clarity; Feedback; Formative Assessment. Every teacher in every school has been engaged in this training with varying levels of implementation. We are moving to utilization of the EDIVATE platform to provide the basis for a hybrid, menu driven approach and we will add microcredits (badges) to this approach for the 2016-2017 year in order to differentiate instruction and to provide greater opportunity to provide coaching at the building level for teams and individuals.

Application #	Expectations and Outcomes
GA-4185	â€œEvery Child Deserves to Sit in Our Best Teacherâ€™s Classroomâ€ The Provo City School District is currently engaged in an intensive re-organization of the work of professional development (PD) as a centerpiece for work with teachers across the district. We have designed all of our work around the EDIVATE framework/platform. This application describes both the districtâ€™s comprehensive Professional Development plan for al teachers in our district, our principals, administrators and district employees (930 licenses), as well as, highlights our plan to utilize EDIVATE to address specific math initiatives. As we engaged teachers, principals, di administration, the association, and our school board in this expansive work to coordinate and carefully design the Professional Development plan, we also conducted research in leadership, school improvement, char and professional development to ensure the effectiveness of our resulting plan to produce significant student achievement. We will outline the components of Provoâ€™s Professional Development process with resea to make the point that, without a comprehensive plan for Professional Development that combines content AND coaching, Professional Development does not ultimately result in changes in classroom practices. Our thus far has been to bring this conversation forward and begin to design Professional Development courses and micro-credits that can be utilized in a hybrid manner. The STEM Action Centerâ€™s High Quality Professi Development grant (HQPD) will provide the missing funding needed to implement our Professional Development plan and allow us to shorten our K-12 math implementation timeline dramatically from 5-7 years to tw years. Secondary Math will serve as the subject of first implementation and start immediately. Furthermore, the additional resources and support structure created through the HQDP grant for Secondary Math, will enable us to scale-up in years 2-5 to expand Professional Development offerings and support across multiple curricular areas. Our goal is improvement in ALL classrooms. Truly, â€œevery child deserves to sit in our b teacherâ€™s classroom.â€ Our funding request reflects this goal, expanding EDIVATE licensing to all teaching staff, as well as to supervisory and district-level employees--making it possible to improve the professional development--both content offerings & content depth--that are available to every classroom.The Provo School District Professional Development model will be explained in a manner that outlines how the district as a whole will continue and expand use of EDIVATE as a platform for the PD work throughout the district and throughout all initiatives. The description of the model will put into contextthe district-wide use of EDIVATE; t concept of course design as a means for delivery of consistent and differentiated PD content and tasks starting with Secondary Maththe central role of coaching in the implementation of PD throughout all initiativesth importance of video as a way to reflect, improve the learning environment, and provide evidence for micro-credentialingutilizing PLCs as a vehicle to work together and complete courses and receive micro-creditsProvoâ€™s High Quality Professional Development 2016 (Provo HQPD16) grant proposal will focus on two primary elements: 1. District-wide Professional Development for all teachers with a focus on Visible Learning high-yield instructional strategies in every classroom.2. K-12 Math Initiative with an emphasis on Secondary Math (Math I, Math II, 7-8th grade math in 2016-2017). Established Need:Provo City School Distric utilized a variety of sources and types of student, educator and system data to re-design and plan the approach to professional development throughout the district and created a specific focus on K-12 math. The Pro City School District has put forth a significant focus on Visible Learning Â© (VL) high-yield instructional strategies as a particular focus. This focus has created a common conversation and common goals across the dist Provo City School District has the highest teacher turn-over in the state; 48% of teachers are in their first 3 years of teaching. Provo is also among the fastest growing population of at-risk/high poverty students in Utah Also significant, we have a substantial number of students that are at the high achieving end of the spectrum. Of particular concern for the district is the pass rate for SAGE in math across the district and Secondary Ma (SM-I) specifically. We recognize that pass rates in SM-I serves both as a predictor readiness for higher levels of math success and an indicator of needs in K-8 math programs. With only 38% of students taking SM-I scoring in the proficient level this is our area of greatest concern. Proficiency levels for other Secondary Math courses also raise concern:7th grade: 45% 10698th grade: 43% 918Secondary Math I: 38% 1170Second Math II: 41% 990Secondary Math III: 55%. 505Equally concerning, the NUMBER of students scoring in the proficient range for Math III is less than Â½ of the number of students proficient in any other math course. W it is likely that there are less students taking Math III, these students that have been successful enough in Math II to take Math III do not appear to be adequately prepared. The comprehensive Professional Developme approach outlined in this proposal will speak to an existing systemic need to ground high quality professional development with sufficient coaching to change classroom practices, increase levels of student engagemer and raise levels of student achievement. We contracted with MCREL to perform an audit of our K-12 math with a particular focus on secondary math. We have conducted teacher surveys concerning PD needs, and ha recently conducted classroom observations in 30% of our classrooms to determine the degree to which the work and focus on VL has impacted classroom practice and student engagement. The results of our

Application #	Assessment
GA-4185	How will this plan be assessed for effectiveness?We will use a multi-tiered approach to evaluating the planâ€™s effectiveness. number of teachers engaged in each professional development activitynumber of course completed and micro-credits earned number of teacher videos createddistrict-wide classroom observations utilizing a rubric specifically designed to align to PD goalsobservation of all secondary math classes to track student engagement and use of math tasksnumber of coaching sessions % of teachers engaged in coaching and peer coaching during the year% increase in the use of learning targets, success criteria and performance understanding, feedback, formative assessment (VL focus)MCREL evaluationNumber of courses created% use of EDIVATEteacher exit tickets and surveys of PD opportunities and coaching interactionsHow frequently w teachers be expected to provide self or peer review regarding the implementation of professional learning content?All of the teachers in the district will be expected to provide self or peer review of the VL target for tl district wide professional development as part of the assignment for each session. There will be 6 sessions during the school year and each teacher would provide self or peer review 6 times. The Secondary Math Initiative teachers will complete a self review according to the course rubrics 1x monthly and a peer review as part of the courses 4x annually. If the desired outcomes are not being met, what will happen next?We wil collect and review the implementation data monthly with the Teaching and Learning Department and quarterly with the District Executive Counsel. With frequent review, we will be able to assess concerns and addres needs to ensure that we can stay consistent with the goals and commitments of the grant. How will participants report both quantitative and qualitative impacts?As stated above, we will measure both the frequency involvement and the teacher reactions and perceptions of their involvement. Dr. Karen Brock (director of PD) and Dr. Ron Twitchell (Director of Research and Data) will work together to create a data collection prot for coaches, principals and teachers to utilize to track all aspects of the project. Dr. Brock and Dr. Twitchell will review each aspect of the grant monthly and the Provo District Executive Counsel will review the grant da reports quarterly. The work outlined in the grant is the central work of the Provo City School District. This application summarizes the Professional Development focused application with Secondary Math as the focus area of first implementation. We have outlined the components of the Professional Development process and utilized the research to make the point that, without a comprehensive plan for Professional Development that combines content and coaching, the work Professional Development does not result in changes in classroom practices. With the additional resources provided by the STEM Action grant, the resources and support structure created for Secondary Math can be scaled-up in years 2-5 to expand Professional Development offerings and support across multiple curricular areas. â€œEvery child deserves to sit in our best teacherâ€™ classroomâ€ KJ Brock

Application #	LEA	STEM Priority	How will Edivate be used?
GA-4377	Weilenmann School of Discovery	Science AND Mathematics	Weilenmann School of Discovery: Professional Learning Proposal and Implementation PlanThe Weilenmann School of Discovery (â€œWSDâ€ has initiated the implementation of scale-based assessment, aligned with priority standards and supported with project-based, authentic learning that integrates science and math throughout the curriculum. WSD anticipates the implementation of this assessment, the priority standards, and the integration of science and math through project-based learning to take three years and the realization of final goals to take five years. This professional learning proposal assumes that SINetâ€™s Edivate platform would allow science and math teachers training on new standards for the development of priority or â€œpowerâ€ standards and would also provide lesson plans, best practices, and observation assessment rubrics for teachers in their development of project-based learning in classrooms.WSD kicked off this initiative with yearlong, internal professional development related to the qualities of master teachers, including the practice of differentiated instruction, and an introduction to the elements of project-based learningâ€”with an emphasis on the integration of math and science. WSDâ€™s faculty also received professional training on scale-based assessment and priority standards from the Marzano Institute during the school year 2015-16. At this time, WSDâ€™s faculty are developing priority standards by grade level and department in the effort to begin scale-based assessment and to align WSDâ€™s vertical curriculum. In this process, teachers are planning the interdisciplinary projects that will support authentic learning and assessment of the priority standards.Weilenmann School of Discovery proposes to utilize the Edivate platform to support the development of priority standards related to the Utah Core standards through Common Core 360 and the Teacher Effectiveness Framework (TEF) provided by the platform. The Edivate platform will provide a framework for the effective implementation of learning and assessment tied to priority standards through the Educator Effectiveness Learning 360 resources and Edivate's webinars on the successful implementation of educational initiatives. The platform will also provides resources that support interdisciplinary, project-based learning by which science and may be taught throughout the curriculum to support S.T.E.M. instruction.

Application #	Expectations and Outcomes
GA-4377	Expectations an OutcomesWhile the proposal is subject specific, WSD plans to utilize the professional development opportunity for math and science teachers to promote and enrich science and math throughout WSDâ€™s curriculum and project-based learning. Expectations for this professional development training through SINetâ€™s Edivate will be the development and completion of all priority standards for science and m subject/s and grade level/s during the 2016-17 school year as assessed and evaluated each term. As part of the realization of this grant, WSD would expect the completion of one interdisciplinary project-based initiati during each of the trimesters of the school year. The qualitative and quantitative measure of these goals would occur at formal, evaluative meetings between teachers and administration. Science and math teachers would be required to participate in WSDâ€™s regular internal professional development in order to inform colleague of the resources and learning in SINetâ€™s Edivate platform.WSD would also expect its teachers to watch one to two STEM videos each month related to integrated, student-driven, authentic learning in interdisciplinary projects. Teachers would verify their fulfillment of this expectation through the formal, teacher evaluations and process of goal setting currently in place at WSD.It is expected that students will increase their individual understanding in measurable ways in all priority standards. WSD will measure studentsâ€™ individual progress and average progress through its internal assessment tool for reading and math, as well as based on a yearly comparison of studentsâ€™ performance on summative assessments from last year to t end of the coming school year.

Application #	Assessment
GA-4377	AssessmentWSD would assess this professional development plan for effectiveness by evaluating teachersâ€™ development of priority standards and interdisciplinary projects during the 2016-17 school year. WSD wi assess the qualitative effectiveness of teachersâ€™ achievement of this phase of the initiative by qualitative analysis related to each teacherâ€™s professional goals (aligned with WSDâ€™s Charter). This evaluation wi occur in approximately October and April. In addition, grade-level and department heads, overseen by the Middle School Dean and Lower School Director, will provide the list of priority standards for each trimester a prior to the beginning of that trimester. Grade-level and department heads will quantitatively demonstrate the alignment of these priority standards to WSDâ€™s vertical curriculum and goals related to S.T.E.M. and project-based learning. Teachers at every level will need to verify their accessing of SINetâ€™s Edivate platform and its relationship to the development of particular priority standards and project-based learning at ye end, evaluation meetings and/or during review of formal, administrative evaluations.Meeting WSDâ€™s goals related to scale-based assessment, the development of priority standards for each grade level, and projec based learning based on S.T.E.M. instruction will be tied to teachersâ€™ professional goals and evaluation in order to ensure that expectations have been met. WSD will also measure studentsâ€™ individual progress a average progress through its internal assessment tool for reading and math, as well as based on a yearly comparison of studentsâ€™ performance on summative assessments from last year to the end of the coming sc year.

Application #	LEA	STEM Priority	How will Edivate be used?
GA-4598	Hillcrest Junior High and Riverview Junior High in Murray School District.McMillan, Longview, Horizon, Liberty, Viewmont, Parkside and Grant Elementary Schools in Murray District. (particularly the 6th grade teachers)	Science	Edivate will be used individually by involved educators as well as in group settings. One example is that participating teachers will review a number of videos independently and will identify strengths present in a video that align with either a practice or a cross cutting concept that are part of the SEEd standards. Teachers will then be able to share the analyzed video on Canvas. Teachers will participate in a short online discussion of the shared videos. This will be done in preparation for meetings to be held throughout the school year. At in person meetings the instructional coach will have additional materials from Edivate prepared to review as a group. Participants will look for ways practices and cross cutting concepts can be emphasized and explicitly taught with any standard. Additionally as many teachers will be engaging in teaching new content we will use Edivate as a resource for activities and lessons related to the new content. Following review of Edivate materials participating teachers will do additional research and collaborate on new lesson plans to use in their classrooms.
GA-5236	Pinnacle Canyon Academy	Renewing Licenses ONLY	
GA-5279	Ogden School District	Mathematics	7th grade, 8th grade, Secondary I, and AP Calculus Teachers will work with District Math and Curriculum specialists to map their curriculum and formulate an effective lesson planning format that address key concepts in each grade level as well as how to implement the instructional shifts in National Council for Teachers of Mathematics (NCTM)â€™s Teaching Practices. They will then record their execution of these lessons in their classroom and review their performance using the Edivate platform. ICs and District Math specialists will lead grade level teams in a review of the lesson videos and will provide feedback to the teachers utilizing a rubric that outlines essential lesson delivery objectives.

Application #	Expectations and Outcomes
GA-4598	Teachers will be able to identify practices and cross-cutting concepts found in the SEEd standards and begin incorporating them in their lesson plans. Edivate videos and other materials will be used in this process. Teachers will be able to navigate Canvas and implement its use in their classrooms. Participating teachers will use Canvas and other programs, such as NearPod, to assess students and inform instruction. Students will able to use Canvas as instructed. Students will use a variety of programs to submit content to Canvas. Students will recognize and begin to use vocabulary associated with the practices and cross-cutting concepts of th SEEd standards.
GA-5236	
GA-5279	Outcomes for teachers would be to increase their proficiency in the creation and delivery of lesson plans that address both the NCTM teaching practices and the USOE Teacher Effectivenes standards. This will be measured using a rubric that has been generated through consultation with national Math specialists that will come out during the year to train the teachers and ICs. This rubric will be filled out by the teachers as they review each other's performances on the Edivate platform and will be shared out during the monthly collaboration meetings. A supervising adminstrator or instructional coach will be in attendance to guide the discus and to offer additional feedback regarding the teachers' progress toward proficiency of the NCTM standards and related lesson planning and delivery. Student outcomes will be measured by improved performance or district generated Math CIAs (Common Interim Assessments.) Data on student performance for these exams will happen within the cohort on a quarterly basis.

Application #	Assessment
GA-4598	The effectiveness of this project will be evaluated formally once each term, and informally throughout. The teacher's ability to use Canvas, and the frequency at which they incorporate it in their classes, will be one measure. Another measure used will be quarterly discussions about the benefits and challenges of the project goals. In these discussions proper and frequent use of the practices and cross-cutting concepts will be not Also, quarterly involved teachers will complete a reflection of their use of the content provided. Teachers who are not meeting expectations will work with the instructional coach one-on-one and will be given additior opportunities to show engagement with the project.
GA-5236	
GA-5279	How will this plan be assessed for effectiveness? -Outcomes for teachers would be to increase their proficiency in the creation and delivery of lesson plans that address both the NCTM teaching practices and the USOE Teacher Effectivenes standards. This will be measured using a rubric that has been generated through consultation with national Math specialists that will come out during the year to train the teachers and ICs. This r will be filled out by the teachers as they review each other's performances on the Edivate platform and will be shared out during the monthly collaboration meetings. A supervising adminstrator or instructional coach be in attendance to guide the discussion and to offer additional feedback regarding the teachers' progress toward proficiency of the NCTM standards and related lesson planning and delivery. Student outcomes will b measured by improved performance on district generated Math CIAs (Common Interim Assessments.) Data on student performance for these exams will happen within the cohort on a quarterly basis.How frequently teachers be expected to provide self or peer review regarding the implementation of professional learning content?- Teachers will be expected to review their recorded lessons on a weekly basis (30 min/week minimu They will also be required to fill out a rubric of their own lesson prior to the monthly cohort meeting where they will review other teachers' reviews and lessons.If the desired outcomes are not being met, what will hap next?- If we find that progress is not up to our desired expecations, the district curriculum specialists will meet with ICs and Teacher leads from each school to determine what obstacles are preventing the succesful implementation of the PD plan, and or teacher participation in the program. An action plan will be developed based on the data gathered by this group and then an additional training with the entire cohort will occur address concerns and roll-out the improved implementation plan developed by the leadership team.How will participants report both quantitative and qualitative impacts?- At the end of the year, the final cohort me will review the progress of all teachers toward achieving highly-effective status as designated by the Math Instructional practices rubric. They will review the changes in student performance on the CIAs throughout th year and use this data to compare against their proficiency gains in their Math practices. They will also participate in a survey at the end of the year to evaluate their perception of the program as well as self-assessing their own growth as they participated in the process.

Application #	LEA	STEM Priority	How will Edivate be used?
GA-5492	Channing Hall	CTE: Technology and Engineering	The Channing Hall CTE program is looking for new ways to meet the needs of students by exploring a wider range of CTE offerings, especially in the area of technology. Edivate resources, paired with in-person professional development, will help us create modern program that helps students understand and make good choices among the vast array of options in their future.
GA-5806	Salt Lake City School District	Science	f.Edivate will be utilized multiple ways:1.Science coach will use as a resource to emphasize effective science pedagogy and 3D implementation in trainings.2.Science coach will use video clips as instructive feedback to target needs of the teacher (i.e. if a teacher is weak in using cross-cutting concepts, then find a video clip of exceptional teaching for that teacher to view and respond to).3.Teachers will film, mark and post videos of lessons once a quarter that that will be viewed and responded to by a science coach.4.Teachers will receive individualized feedback from quarterly postings via Edivate by science coach.5.Teachers will use Edivate for self-reflection and peer reflection on posted lessons. 6.Teachers respond to reflective questions posed by science coach in regards to science lesson observation via Edivate.7.Principals may use recorded science observations to facilitate ECAP goals and progress with individual teachers.
GA-6008	Beaver County School District	Science	A one-day training with all staff. The training will focus on self-reflection towards implementing STEM into the curriculum. In addition we will work with the Piute and Millard School Districts to implement the new science standards.
GA-6115	Uintah River High School	Science, Mathematics AND CTE: Technology and Engineering	We will use Edivate for specific training based on our specific initiatives and our STEM focus. We would use Edivate to train our teachers on effectively assessing students, collecting data from those assessments, and using the data to drive further instructions. We also plan on using Edivate to train teachers and staff in the area of classroom management. This area would also include classroom engagement and teaching models. We also look to use Edivate to train our teachers and staff on differentiated learning. This will help us better meet the individual needs of our diverse students.

Application #	Expectations and Outcomes
GA-5492	Expectations and OutcomesChanning Hall has three main goals in developing a more robust CTE and Technology professional development plan. We want to see:â€¢Teachers develop more confidence and creativity in subject offerings.â€¢Students gain insight into a wider variety of future options.â€¢A proposal for changes in CTE and Technology education at Channing Hall that addresses student needs in the 21st century.
GA-5806	The purpose of this proposal is to prepare 6-8th grade science teachers to implement new SEED standards in 2017-18 school year through 3D-based professional development and coaching. The aim is to develop teac leaders at individual school sites that can assist fellow colleagues in implementing new SEEd standards. Develop lessons and curriculum for new standards using all stakeholders: teachers, instructional coaches and LEA.100% of teachers will submit a video of a science lesson via Edivate each quarter.100 % of teachers who submit videos via Edivate will identify places where they successfully addressed science practices in a lessor reflected on places where they could integrate science practices in the future.100% of teachers will have a science coach observe at least two lessons and give feedback each quarter (one in person, one via Edivate).Student use of Cross Cutting Concepts will increase throughout the course of the year as measured via a 3D observation rubric.Coach will maintain records to mark progress of teacher using 3D framework ove time and quantitative interim data will show positive growth.
GA-6008	The BCSD is a one-to-one district. All science teachers will become effective in implementing the new science standards and become proficient in utilizing technology in their classrooms. All science teachers will be act involved in participating and completing the face to face and online learning opportunities. All teachers in the BCSD will be encouraged to participate in learning about Edivate, STEM, and using technology in the classroom. Teachers will begin to utilize Edivate and technology to develop and design STEM lesson plans.
GA-6115	We would like to see an increase in student engagement in the classroom. We would also like to see an improvement in the teachers' ability to better plan and implement lessons catered to meet specific needs of dive students, based on specific evidence and data.

Application #	Assessment
GA-5492	We will assess our progress in April 2017 by surveying students and their parents about their satisfaction with the quality and breadth of CTE and Technology offerings at the school. Administration will also assess prog by reviewing CTE and Technology Department proposals for change, based on creativity, feasibility, and relevance to the issues our students face.
GA-5806	Short-term effectiveness for the PD will be measured through feedback gathered at the end of every PD session via a survey. The teachers will respond to what went well for them, what did not go well, whether or nc timing and content was appropriate, any suggestions to improve the experience in the future and how the PD will affect your practice in positive way. Formative assessments will also be used throughout each PD sess to guide the delivery of content.Short-term effectiveness for the teachers will be measured after every observation, either in person or via Edivate. Effectiveness will be determined by the focus of that observation, determined before-hand by coach and communicated to teacher. A rubric based on three dimensional teaching will be utilized. A special focus on student learning and active engagement will also be present. Long-ter effectiveness of the program will be determined by pre and post teacher observations using a rubric aligned to the three dimensions. It is a simplified rubric using the NGSS rubric as a model. We will administer a pre- observation using the rubric and then a post- observation with the same rubric at the end of the program. We will compare both for growth over time. Long-term effectiveness will also be measured by recording a cha in the occurrence and frequency of Science and Engineering Practices used by students during an observation (i.e. a shift in instructional practice). FREQUENCY OF TEACHER SELF OR PEER REVIEWTeachers will be expe to provide self or peer review monthly in regards to a science observation via Edivate. This could include a reflection on a teacherâ€™s own teaching, a peerâ€™s teaching or a preselected video of a lesson. Teacher s videos will be uploaded quarterly. WHAT HAPPENS IF OUTCOMES ARE NOT BEING MET?Each subsequent PD will be adjusted to the needs of the learners based on feedback from the prior session about what is and is working. The Science Leadership Team will also meet on a monthly basis to monitor progress of individual teachers and the program in general and evaluate progress toward objectives. Necessary adjustments will be made at that time. If teachers and students continue to not make progress in the three dimension area of focus, future programming will target the trouble areas. REPORTING QUANTITATIVE IMPACTSWe will also surv teachers quarterly in regards to the effectiveness of Edivate. This survey will be anonymous and include Likert scales regarding the three dimensions and implementation of each. We will also monitor Salt Lake City Sc District Science interims administered three times a year. Content in the interim is based on the Salt Lake City School District pacing guide and the Utah Core Standards. The assessment process will support teachers ir providing evidence that teachers are shifting their practices by incorporating the three dimensions in their classroom with required content. Supporting teachers in their science content knowledge will also be measur using both pre and post content assessments. REPORTING QUALITATIVE IMPACTSObservational data will be utilized to help progress monitor teacher performance and student learning as it relates to new SEEd stand A standard rubric will be used to standardize data and to build in interrater reliability. We will report percentages in changes over time in use of the three dimensional framework by both teachers and students.
GA-6008	The monitoring of teacher participation and effectiveness in the platform will be monitored by building and district administration.Science teachers will have clear and specific instructions regarding SINET courses. The instructions will include the content expected and a specific timeline as it relates to self-evaluation.Facilitators will be responsible to make sure teachers have the instructional and technology tools and adequate traini to complete the tasks of the project. These facilitators will work through any issues that may arise. Administrators will follow district policies as it relates to noncompliance.Quantitative data will be recorded in the Edi platform. Qualitative data will be recorded and discussed in the District Leadership Team meetings as well as the appropriate school PLC meetings.
GA-6115	As principal, I will monitor staff implementation of things learned with the STEM Edivate training videos.

Application #	LEA	STEM Priority	How will Edivate be used?
GA-6197	Weber School District	Science AND Mathematics	The platform will be used to post and tag video clips of classroom lessons. It will also be used as a platform for courses, including 6th - 8th grade SEEd Science courses, Eight Mathematics Practice Standards and EYE mentoring. The courses produced will be used to evaluate teachers' progress. We are also exploring the option for teachers to use the courses to earn micro-credentials. Teachers could use such credentials for evaluations, career opportunities and teacher leadership positions. All teachers will be encouraged to use the video and review tool for self-reflection and self-evaluation. Some groups, such as science and math teachers, first-year teachers and teachers on improvement plans, will be required to use the tool.Teachers and administrators will be trained on how to use this platform for PLC-level, school-level, district-level and inter-district-level collaboration. Principals of elementary schools will be encouraged to use the video library to integrate STEM education throughout the school.

Application #	Expectations and Outcomes
GA-6197	SCIENCETeachers will incorporate the new SEEd standards in their classrooms. This will involve significant shifts in approach for many teachers. Building a student-centered STEM classroom will require teachers to collaborate with one another in building standards-based, phenomenon-centered and student-directed learning episodes. Teachers will need to allow students to become fully engaged in their own learning. Measural outcomes for teachers will be based on pre- and post- surveys of teacher attitudes and expectations. They will be asked:Â· to estimate the amount of classroom time devoted to different types of SEEd activitiesÂ· what they know about the new core and strategies related to implementation Â· what learning strategies they prefer to use with studentsÂ· their comfort level with being videotaped and reviewed by peers throu the Edivate siteÂ· their ability to use and learn in the online Edivate environmentOther measurable indicators for teachers will include course completion, videotape reflection/annotation and attendance at during school and after school workshops. Teachers will submit lessons based upon the new SEEd standards and will create curriculum maps as part of the coursework. Desired outcomes for students include mastery of SEEd core standards and increased enjoyment and engagement with science lessons. Ideally, students will begin to consider science as a possibility for their college or technical training and future employment. Measurable outcomes for students include performance on SAGE exams, SLO assessments and teacher-developed projects and tests. Where possible, student growth will be examined based on pre- and post- tests and by using th SGP metric from SAGE. MATHTeachers will continue to help students develop deeper understanding of both mathematics content and the Eight Mathematics Practice Standards in their classrooms. This will involve significant shifts in approach for many teachers. Building a student-centered classroom will require teachers to collaborate with one another in providing standards-based, authentic and student-directed learning. Teachers will need to allow and guide students to become fully engaged in their own learning. Measurable outcomes for teachers will be based on pre- and post- surveys of teacher attitudes and expectations. They wi asked:Â· to estimate the amount of classroom time devoted to different types of authentic, student-centered learning experiencesÂ· what they know about the core and strategies related to teaching for deeper levels of understandingÂ· what learning strategies they prefer to use with studentsÂ· their comfort level with being videotaped and reviewed by peers through the Edivate siteÂ· their ability to use and learn in online Edivate environmentOther measurable indicators for teachers will include course completion, videotape reflection/annotation and attendance at during school and after school workshops. Teachers will submit lessons highlighting authentic applications and will create curriculum maps as part of the coursework. Desired outcomes for students include mastery of core standards and increased enjoyment and engagement with mathematics lessons. Ideally, students will begin to consider STEM as a possibility for their college or technical training and future employment. Measurable outcomes for students include performance on SAGE exams SLO assessments and teacher-developed projects and tests. Where possible, student growth will be examined based on pre- and post- tests and by using the SGP metric from SAGE. When the mathematics courses designed by USOE are available, we plan to implement district-wide as appropriate.PROFESSIONAL LEARNINGThe Edivate platform is a great venue for professional learning involving numerous aspects of education. O desired outcomes are: 1. Building a collaborative network among our STEM elementary schools to facilitate sharing of resources, instructional strategies and a focus on standards. This will be evaluated using a pre- an post-survey model with participating teachers.2. Improving the capacity for quality, experience-based STEM instruction among our provisional teachers by providing tools that support their understanding of what qua instruction should look like and offering peer and administrative review/input. This component will be evaluated by pre- and post-survey tools and by reviewing videos through the Edivate platform.3. Fostering a collaborative relationship among secondary math and science teachers in an effort to make real-world connections for students by aligning content/instruction in both courses. Again, the effectiveness of this portion v be evaluated via pre- and post-surveys and through uploading and analyzing videos of classroom instruction in Edivate.

Application #	Assessment
GA-6197	A variety of outcomes are expected for teachers. As they work to incorporate deeper conceptual understanding of the standards in their classrooms, teachers will experience significant instructional shifts. Building a student-centered STEM classroom will require that teachers collaborate with one another to build standards-based, real-world, student-directed learning experiences. Teachers will need to allow students to become f engaged in their own learning and facilitate this process through quality instruction. Measurable outcomes for teachers will be based on pre- and post- surveys of teacher attitudes and expectations. They will be asked to estimate the amount of classroom time devoted to authentic, student-centered experiences Â· what they know about the core and strategies related to implementationÂ· what learning strategies prefer to us with students and which strategies have the greatest impact on student achievementÂ· to expand their comfort level with being videotaped through the Edivate siteÂ· about their ability to use and learn in the Edivate environment.Other measurable indicators for teachers will include course completion, videotape reflection/annotation and attendance at during school and after school workshops. Teachers will also submit detailed lessons and create curriculum maps as part of the coursework. As the micro-credentialing becomes available, we will monitor teacher achievement and growth.Desired outcomes for students include mastery core standards and increased enjoyment and engagement with STEM-based lessons. Ideally, students will begin to consider STEM as a possibility for their college training or technical training and future employment. Measurable outcomes for students also include performance on SAGE exams, SLO assessments, and teacher developed projects and tests. Where possible, student growth will be examined based on pre- and post- tes and student growth percentiles from SAGE assessments. Teachers will provide self or peer review multiple times during the school year. Adaptations will be made to the plan if it appears that the expectations are too or too low. Course content can be reduced or enriched as we work through it. Participants will report quantitatively and qualitatively though their pre- and post- surveys. Verbal feedback will be sought at various time throughout the year and teacher videos will be evaluated for reporting purposes. A rubric will be used to evaluate and monitor video lessons. The pre- and post-survey requirement will establish a measurement of gro for the teacher.

Application #	LEA	STEM Priority	How will Edivate be used?
GA-6651	Southeast Education Service CenterDistricts Applying: 1) Emery County School District 2) Grand County School District3) Pinnacle Canyon Academy4) Carbon County School District(Carbon and Pinnacle Canyon Academy Educators will be involved in the SESC Cohort but their numbers are not included in Edivate license requests)	Science	Edivate will be used to assist 6th through 8th grade Science teachers to identify and reflect on science standards tailored to their specific content area and specific needs. Edivate will allow the teacher to have access to hundreds of videos of Utah teachers in the classroom teaching STEM lessons and to self-evaluate, reflect, set goals, plan and track their growth and development in teaching science standards. Teachers will be able to use the Swivl camera to record their own teaching experiences to share with other teachers as well as to be able to view videos of other teachers to help them improve their own teaching skills. Edivate will provide opportunities for teachers across school, district, and regional boundaries to provide a collaborative process for science standard implementation and improved instruction. Edivate will provide access to strategic and research-based professional learning.

Application #	Expectations and Outcomes
GA-6651	Outcomes to be measured will include the level of understanding of the Science Core Standards as well as the shifts in learning, based on the 3 dimensions of science - Practices, Cross-Cutting Concepts, Disciplinary Co Ideas. Improved cross-curricular connections will be observed and measured in various content areas, using science content as the baseline. Students outcomes will include understanding of science principles and content as assessed on end-of-level tests. Students will be observed making connections between science concepts across science areas as well as between science and other core subject areas. Edivate platform will b used to provide professional development to teachers to be able to affect student opportunity for exposure to a broad range of science concepts and integrated learning.

Application #	Assessment
GA-6651	A rubric will be developed to measure quantitative and qualitative data through self and peer review. Teachers will be required to provide self and peer review regarding the implementation of professional learning content at least every two months. If expectations are not being met, teachers will be required to revisit the modules, videos, and reflections notes and present a new video for review.

Application #	LEA	STEM Priority	How will Edivate be used?
GA-6970	Ogden School District	CTE: Technology and Engineering	Edivate licenses are for the Science and Math proposals for OSD and not applied to the CTE submission
GA-7029	DaVinci Academy of Science and the Arts	Science	Edivate will be used as the platform for this professional learning project. This will facilitate the development of professional development videos, sharing and evaluation of teacher effectiveness.
GA-7216	Whitehorse HS	Renewing Licenses ONLY	
GA-7718	Box Elder School DistrictCache County School DistrictRich County School District	Science	As SEEd lesson plans are developed and then piloted, they will be recorded using swivel cameras and SINet;s Edivate platform. Grade-level science teachers will then review the lesson through the Edivate tools and critique, as a group, for improvement and eventually for future reference and training. The resulting exemplary lesson plans will then be housed in SINet's Edivate.

Application #	Expectations and Outcomes
GA-6970	This CTE focused grant is designed to boost our STEM pipeline for the district through teacher training. We are not offering the number or breadth of technology or engineering courses that we need in order to includ more students in career pathway programs that lead to high demand STEM careers. The biggest content training needs that we have in this area are in k-6 engineering education needs as defined by the Utah SEED standards and NGSS standards along with a lack of middle school engineering and computer science programs. This PD program will provide teachers with the pedagogical and content knowledge necessary to implem these practices and courses in their grade level programs. Desired outcome for the program will be the certification of teachers in research proven programs (PLTW engineering and computer science.) This will also l to increased enrollment of students in our middle school and high school engineering and computer science programs. The Industry Teacher Externships and PD programs thru USU and OWATC will also serve to give teachers a greater exposure to real-world applications to their classroom curriculum that will help them to bring greater relevance to their instruction which will lead to greater student engagement.
GA-7029	Our measurable outcomes will be the science teachers will complete the courses provided to them on the SEED standards.
GA-7216	
GA-7718	â€¢Form a consortium between Box Elder, Cache, and Rich school districts to prepare for the new 6th- 8th SEEd standards.â€¢During the 2017-2018 school year, all 6th â€“ 8th grade science teachers in the consortium experience significant professional development in preparation for the implementation of the Utah Science with Engineering Education Standards (SEEd).â€¢Using SINetâ€™s Edivate, and associated technology, new lessons for the SEEd curriculum will be created, piloted, reviewed, and raised to the level of exemplary.â€¢Using the library of exemplary lessons and SINetâ€™s Edivate, new and experienced teachers will have a curriculum library that supports the SEEd standards, well into the future.

Application #	Assessment
GA-6970	How will this plan be assessed for effectiveness?- Effective Outcomes for this plan will be shown as teachers gain their certifications in the previously mentioned Engineering and Computer Science Programs. We will a measure the effect on student learning by measuring the number of students who pass the CTE performance exams and enroll in advanced courses in these CTE programs.How frequently will teachers be expected to provide self or peer review regarding the implementation of professional learning content?- Teachers will meet monthly in a CTE content PLC to review these programs, their alignment with each other and the match Industry partners. All Externship, STEM-U and OWATC course participants are required to submit a unit plan outlining how they will implement this industry experience into their classroom. They will report to each ot in their monthly content PLCs and be formally held accountable to the district CTE coordinators.If the desired outcomes are not being met, what will happen next?- If teachers do not meet the certification requiremen they will meet with the district CTE coordinators to work up a remediation plan to achieve a level of proficiency within and extended timeline. If as a CTE PLC we determine that we are not seeing gains in our student performance nor enrollment we will perform a root-cause analysis with the district CTE director and assistant superintendent to evaluate the flaws in the program and to formulate an action plan that will help us reac level of teacher and student performance that is acceptable.How will participants report both quantitative and qualitative impacts- Teachers will be required to submit proof of completion of the training if applicable. They will also report the student completion rates in their CTE programs and performance exams. Teachers will also fill out a survey at the end of each of these programs to highlight the positive outcomes of their experiences and offer up suggestions for future changes.
GA-7029	Administrators and facilitators will monitor the usage and implementation of instruction that allow incorporation into current teaching practices. Clear expectations will be provided as it relates to self evaluation. At specific intervals in the year, reflection will be expected. If intended learning outcomes are not met, administrators will adhere to school policies to address these situations. Quantitative data will be evaluated for effectiveness on the EDIVATE platform. Qualitative data will be discussed in face to face conferences trough our cohort discussion meetings.
GA-7216	
GA-7718	â€¢ A team of district-level curriculum specialists/directors and teacher-leaders will administer the program and evaluate its effectiveness:oWork with the SEEd consultant in the planning and implementation of the rolloutoManage program fundsoCollect and review data oEnsure the SEEd rollout is successfulâ€¢ Data PointsoParticipation and reports by teachers in trainings, workshops, and other professional development opportunitiesoLessons createdoLessons pilotedoLessons vetted as exemplary and posted in SINetâ€™s EdivateoGrade-level professional learning community reportsoRegular teacher surveys to assess readiness, understanding, and to seek guidanceoSAGE test results

Application #	LEA	STEM Priority	How will Edivate be used?
GA-7732	Salt Lake City School District	Mathematics	Edivate platform will be utilized in multiple ways by teachers and facilitators. Teachers will record and post videos of a lesson three times a year through Edivate. Teachers will reflect on their lesson and their implementation of effective teaching practices demonstrated through the lesson. Coaches will review, respond and provide feedback on recorded lessons. Coaches will use Edivate as a resource to share examples of effective instruction. Coaches will use Edivate to post and respond to discussion questions and assignments. Teachers may choose to share recorded lessons with administrators as evidence of progress in the teacher evaluation process.
GA-7852	Iron County School District	Mathematics	Iron County School District seeks to utilize the Edivate platform to support effective professional learning for our mathematics teachers in the following ways:â€¢Support professional learning for mathematics educators through the recording and sharing of classroom and tutoring sessions for secondary mathematics teachers who are seeking to upgrade their mathematics endorsement from Level I to Level II â€¢Provide a collaborative framework for long-distance professional learning communities through the use of the review tool. Participants can watch the classroom and tutoring session, stop and replay portions of the video, ask for and receive clarification at specific pint in the recorded sessionâ€¢Advance Iron County mathematics educatorsâ€™ effectiveness in classroom instruction due to their access to videos of other exemplar educators. Specific videos will be uploaded as suggestions for later viewing in hopes that they will serve as models for teachers desiring to improve their effectiveness.
GA-7968	Channing Hall	Mathematics	A central priority of Channing Hallâ€™s five-year plan calls for improvements in our math program. We currently have a good program, but we believe it can be better. We envision a program where curriculum and teaching philosophy are tightly interconnected across all grade levels to give students a firm math foundation during their time here, in grades K through 8, and beyond. Our Math Support Team will set schoolwide goals and help teachers set individual goals. We will use Edivate resources as an essential tool in meeting those goals. We expect teachers to use the Edivate resource at least once a month, and ideally more than that.

Application #	Expectations and Outcomes
GA-7732	Participating 7th, 8th, and Sec I math teachers will attend monthly professional development to deepen their math content knowledge related to their core, increase their use of effective teaching strategies, and successfully utilize their core program materials.All participants will film a lesson they teach and upload the video through Edivate three times a year. All participants will reflect on their posted lesson and receive feedl from their peers and facilitators on the lessons through the Edivate program. Facilitators will use Edivate as a resource to share examples of effective teaching. Facilitators will document lesson feedback to teachers ar changes over time using the Comprehensive Mathematics Instruction (CMI) Framework observation rubric. Student ability to successful demonstrate effective student behaviors will increase based on the CMI Framew
GA-7852	The Utah Effective Teaching Standards (UETS) expressly states in Standards 4a and 8b that teachers should know and convey accurate information and actively seek professional learning opportunities that will support such. These, too, are the clear expectations for this experience. Through this learning opportunity, teachers will receive face-to-face tutoring and support in the courses for which they are enrolled as they increase the mathematics endorsement levels. The following outlines the expected and measurable outcomes for both mathematics teachers and their students:Measureable Outcomes for Teachers1. Teachers will receive tutorii hours that coordinate with their course attendance. It is expected that this free service will be utilized to its fullest. An accurate record of those participating in this service will be kept (name, date, time in/out).2. Participating teachers will form a cohort that will strive to support and assist one another as they increase their content knowledge. They will be asked to keep a record of times that meetings take place and items studied.3. To increase the effectiveness of the tutoring sessions, the classroom instruction will be recorded and uploaded onto the Edivate platform. This will enable students and tutor to access portions of lessons w questions have been posed and answered. It is expected that participating teachers can then view material as needed. 4. Participating teachers will use the platform as they reach out for assistance from instructor, t and peers.Measurable Outcomes for Students1. As teachers become more confident in their content knowledge there will be an enhancement of classroom instruction that will, in turn, increase studentsâ€™ proficier as communicated by the National Comprehensive Center for Teacher Quality. They state: â€œTeachersâ€™ knowledge of mathematics matters for student learning in mathematics at all school levels, but particularly the secondary level.â€Student performance can be measured prior to and at conclusion of teacher engagement.2. It is an expectation that due to a teachersâ€™ growing mathematical confidence, they will be more li to elevate their studentsâ€™ learning and confidence levels. Teachers will be asked to keep anecdotal records describing such instances (perhaps, asking their students to do the same).
GA-7968	Channing Hall has three main expectations from developing a more robust math professional development plan. We expect to see:â€¢Teachers develop more confidence and mastery of subject.â€¢Students develop m confidence and perform better on tests.â€¢A greater sense of math-instruction integration across all grade levels, with up-to-date state standards as the foundation.

Application #	Assessment
GA-7732	Short-term effectiveness for the PD will be measured through feedback gathered at the end of every PD session via a survey. The teachers will respond to what went well for them, what did not go well, whether or nc timing and content was appropriate, any suggestions to improve the experience in the future and how the PD will affect your practice in positive way. Formative assessments will also be used throughout each PD sess to guide the delivery of content.The CMI Framework observation rubric will be used to evaluate progress in teacher lessons over the course of the year. Student ability to successfully demonstrate successful student behavior will increase based on the CMI Framework observation rubric. Teachers will provide self and peer reviews three times during the year. Each subsequent PD will be adjusted to the needs of the learners based feedback from the prior session about what is and is not working. The facilitating math coaches will also meet on a monthly basis to monitor progress of individual teachers and the program in general and evaluate progress toward objectives. Necessary adjustments will be made at that time. Quantitative Impacts: We will survey teachers three times a year in regards to the effectiveness of Edivate. This survey will be anonymous include Likert scales regarding the three dimensions and implementation of each aspect of Edivate. We will also monitor Salt Lake City School District Math interims administered throughout the year. Content in the interim is based on the Salt Lake City School District pacing guide and the Utah Core Standards. The assessment process will support teachers in providing evidence that students are having increased success with requ content. Qualitative Impacts: Observational data will be utilized to help progress monitor teacher performance and student learning as it relates to core concept, implementation of effective instructional practices an effective utilization of the core program.
GA-7852	The effectiveness of this professional learning opportunity will be evaluated on its ability to entice teachers to participate and make positive contributions towards collaboration. Participants will be notified of the tut opportunities via the district PLC meeting and through the syllabus provided by the SUU instructor. The communication will describe the available times and places for assistance.Quantitative evaluation will occur in t following ways:1. The number of participants who participate in the tutoring sessions will be recorded. It will be the goal that the sessions prove to be valuable enough that attendance will remain constant. Accurate records will be kept (date, time in/out, name, etc.) in a tutoring logbook.2. As participating teachers work to increase their personal content knowledge, the tutoring sessions will help to alleviate fear of content and provide further clarification of concepts. Because the course and tutoring sessions will be on the Edivate platform, participants can use the Review Tool to ask and receive answers to questions. These interactions will have an online record.Qualitative evaluation will occur in the following ways:1. Participating teachers who seem to be falling behind will be encouraged to participate in the collaborative tutoring sessions and to acces the online portions of the sessions. These interventions will also be recorded in the logbook.2. An accurate record of questions asked and solved will also be kept in the logbook. These will then be photographed and uploaded to the Edivate platform. In this way, the quality and effectiveness of the tutoring sessions can be evaluated.3. Participating teachers will be asked reflect on the usefulness of the tutoring sessions and record their thoughts in their class notebooks. These will be shared at midterm so that adjustments in tutoring can be made. Adjustments will also be made for the next termâ€™s courses.
GA-7968	The Math Support Team will do a final assessment in April 2017. This assessment will:â€¢Repeat the previous yearâ€™s survey to gauge teacher perspectives on improvement and priorities.â€¢Examine student test sco compared to previous years;â€¢Summarize teamâ€™s thoughts about the effectiveness of each aspect (Edivate lessons, video-self survey, intensive professional development for middle school teachers, etc.)â€¢Be use the basis for setting new schoolwide goals in 2017-18.

Application #	LEA	STEM Priority	How will Edivate be used?
GA-8095	Iron County School District	Renewing Licenses ONLY	
GA-8272	Ogden School District	Science	All of our 6-8 grade science teachers and Science specialists will use these to record their delivery of 3-d Science lessons. This is a large part of the transition to the new SEED standards, and we are finding that more than a few teachers are struggling with the transition on their own. We will form cohorts of teachers who will go through an initial training on the new standards and 3-D science lessons. We will then schedule out times for all teachers for their lessons to be video recorded. Teachers will meet in their cohorts on a monthly basis to review their videos and offer feedback to each other on the progress toward effective delivery of the 3-d science lessons.
GA-8387	Noah Webster Academy	Renewing Licenses ONLY	
GA-8416	Canyons School District	Science	Science teachers in Canyons School District will utilize Edivate for a lesson study project, which will help them incoporate 3D science practices into their lesson planning. Teachers will be assigned to work in cohorts, and will plan a 3D science lesson together. The lead teacher will then video the lesson, upload it to Edivate, and then the other teachers will watch the video on Edivate, and make any changes necessary to the lesson. The remainder of the cohort will teach the lesson, again using video and posting to Edivate, and again the teachers will discuss and reflect on the lesson. Once teachers have gone through the lesson study process and refined all materials, these lessons will be housed in an exemplar lesson plan location for all teachers to access. Edivate clips from Canyons School District teacher videos/and teachers across the nation will be used to show best practices during Face-to-Face and technology based professional learning.
GA-8448	Utah Virtual Academy	Science, Mathematics AND CTE: Technology and Engineering	As a virtual school we have teachers spread out all over the state. We currently host 6 virtual professional development (PD) sessions a year, and 4 face to face professional developments a year. Edivate is a logical evolution of our virtual PD's that will allow us as a school to do more virtual PD throughout the year. With prepared content it will save us time developing resources, and allow us choose exactly what we want our teachers to be working on. It will be a great collaborative way to standardize our virtual PD's for the whole school and to ensure that teachers of all subjects get training on how to incorporate STEM into their classrooms.

Application #	Expectations and Outcomes
GA-8095	
GA-8272	Outcomes for teachers would be to increase their proficiency in the creation and delivery of lesson plans that address both the new SEED standards and 3-D Science teaching techniques. This will be measured using a rubric that has been generated thru the NUSTEM teacher consortium with Weber, Davis, Granite, Jordan and Ogden science teachers. This rubric will be filled out by the teachers as they review each other's performa on the Edivate platform and will be shared out during the monthly collaboration meetings. A supervising adminstrator or instructional coach will be in attendance to guide the discussion and to offer additional feedba regarding the teachers' progress toward proficiency of 3-D science principles and related lesson planning and delivery. Student outcomes will be measured by improved performance on district generated science CIAs (Common Interim Assessments.) Data on student performance for these exams will happen within the cohort on a quarterly basis.
GA-8387	
GA-8416	1. Improve daily science instruction through the use of lesson study and reflection utilizing the Edivate platform, as measured by a pre and post self assessment.2. Build teacher capacity in 3D science instruction, lesso planning, and assessment through instructional Professional Learning Community cohorts district-wide. Teachers will collect student data from common performance assessments, discuss the data, and make adjustm to assessments and instruction based on student performance data. Teachers will submit meeting minutes to project facilitator for feedback. 3. Create a bank of exemplar 3D science lesson plans for teachers acro the district, state, etc. to utilize, measured by the number of lesson plans in the bank.
GA-8448	We will measure the effectiveness of professional development by conducting surveys of teachers asking them how they implemented the topics given through Edivate. We will expect at least 70% of teachers will rep that they used the PD from that month in their instruction. It is expected that academic proficiency and growth will increase as a result of teacher use of these trainings.

Application #	Assessment
GA-8095	
GA-8272	How will this plan be assessed for effectiveness? -Outcomes for teachers would be to increase their proficiency in the creation and delivery of lesson plans that address both the new SEED standards and 3-D Science teaching techniques. This will be measured using a rubric that has been generated thru the NUSTEM teacher consortium with Weber, Davis, Granite, Jordan and Ogden science teachers. This rubric will be filled out by teachers as they review each other's performances on the Edivate platform and will be shared out during the monthly collaboration meetings. A supervising adminstrator or instructional coach will be in attendance to guide the discussion and to offer additional feedback regarding the teachers' progress toward proficiency of 3-D science principles and related lesson planning and delivery. Student outcomes will be measured by improved performance on district generated science CIAs (Common Interim Assessments.) Data on student performance for these exams will happen within the cohort on a quarterly basis.How frequently will teacher expected to provide self or peer review regarding the implementation of professional learning content?- Teachers will be expected to review their recorded lessons on a weekly basis (30 min/week minimum). They wi also be required to fill out a rubric of their own lesson prior to the monthly cohort meeting where they will review other teachers' reviews and lessons.If the desired outcomes are not being met, what will happen next we find that progress is not up to our desired expecations, the district curriculum specialists will meet with ICs and Teacher leads from each school to determine what obstacles are preventing the succesful implement of the PD plan, and or teacher participation in the program. An action plan will be developed based on the data gathered by this group and then an additional training with the entire cohort will occur to address conce and roll-out the improved implementation plan developed by the leadership team.How will participants report both quantitative and qualitative impacts?- At the end of the year, the final cohort meeting will review tl progress of all teachers toward achieving highly-effective status as designated by the 3-D science practices rubric. They will review the changes in student performance on the CIAs throughout the year and use this da compare against their proficiency gains in their Science practices. They will also participate in a survey at the end of the year to evaluate their perception of the program as well as self-assessing their own growth as th participated in the process.
GA-8387	
GA-8416	The effectiveness of the professional development plan will be assessed using several different methods. To assess the implementation of 3D instruction, teachers will complete the Instructional Leadership for Scienc Practices (ILSP) rubric, as a self-assessment at the beginning and end of the school year. This data will allow us to determine how science instruction has changed throughout the course of the school year. Coaches w also complete an informal pre and post walkthrough in each classroom using a walkthrough tool aligned with 3D practices. Teachers will work in PLC cohorts for their lesson study. Coaches will facilitate and provide feedback during these PLC meetings. Teachers will submit meeting minute notes and reflections on the lesson and the process, which will help determine effectiveness of the lesson study cycles. Teachers will submit lesson plans to the Middle school leads team, who will review each lesson using the EQuIP rubric to determine lesson quality. Videos of exemplar lesson plans will then be made public for all teachers to access. In PL Cohorts, teachers will review student data from common performance assessments. These data sets will be submitted with their meeting minutes through CANVAS. Teachers will submit self-reflections after the completion of each of the 6 online learning modules in SINET. These reflections will help project facilitators and leads teams determine future PD needs in order to fully implement 3D science in every classroom.
GA-8448	The program will be assessed via monthly Google surveys of teachers asking how they are implementing techniques and resources learned from Edivate into their classrooms. We will also follow students academic achievement to assess if teachers who use Edivate more have better passing rates and academic mastery than teachers who use it less. Trainings for teachers, support from leadership and support from the STEM coordinator will take place if expectations are not being met.

Application #	LEA	STEM Priority	How will Edivate be used?
GA-8537	Quest Academy Technology Charter K-9	Science	Edivate General Grant: Quest Academy Charter will be using Edivate in a variety of ways this upcoming school year and in the future. We have had our bootcamp 3 day training and have completed our 3 year plan. This upcoming 2016-2017 school year we will be using it as a Platform for ALL of our Professional Development Needs and we will also be using Edivate Observe as our drop in tool and our formal evaluation tool. Administration has already created our templates and observation forms for the upcoming school year. We have geared them to our PD development monthly plan. The two areas of Professional Development that we are focusing on is continuing education in STEM (we just become certified as a Silver STEM school) and classroom management using Teach Like a Champion Strategies. We as administrators are going to create courses for our teachers to complete each month to track our PD. We will also assign videos to watch that fits the needs of their specific grade level classes or subject areas. Our mentor will use the Swivel cameras and set up a "group" with each of our provisional teachers so that they can use the "review" tool while watching the videos. This will be an awesome way for our teachers to learn and grow. (We are also applying for the SEED Sinet courses for our Science teachers in 6,7,8,9.) We will also be using Edivate with our Science Teachers who are taking the Sinet Courses.Science Grant: Edivate will be used as the platform in the SINET course and our Science teachers will complete the courses, watch videos and answer questions as instructed in the class.
GA-8745	Iron County School District	Science	We will be using the science courses and discussion groups on Edivate within our established teams district, school, and grade level teams to learn about and be able to fully implement the new SEEd science standards. Teams will meet monthly to participate in the Edivate learning modules. They will use the discussion groups to, collaborate, seek assistance, share ideas, and provide feedback. On a rotating basis teachers will teach a lesson and upload a video to the Edivate platform to be used for discussion and feedback.
GA-8758	Park City School District	Science, Mathematics AND CTE: Technology and Engineering	Edivate will be used to support our SEED training for our 6th-8th grade teachers, as well as a platform for us to highlight exemplary science, technology, engineering and mathematics lessons across all grade levels. We currently have 14 teachers enrolled in the elementary STEM endorsement course, and would like to video some of their lessons next year. We'd also like to highlight teachers using our Engineering is Elementary (1st-5th grade)lessons, our coding lessons (1st and 2nd grades next year), PCCAPS and upper level science and math (9th-12th grades) and our integrated ELA/science lessons (K-5th) next year. We're also using Edivate as a tool for our EYE teachers, and will develop both focus objectives and courses for sustainability this summer for their use beginning SY 16/17.Edivate will also be used to provide professional development coursework to CTE, Secondary Math I, and Engineering teachers. If we have the opportunity to download additional USOE courses to Edivate, we will also utilize those along with district-created courses in our EYE work as well as on our differentiated professional development days.

Application #	Expectations and Outcomes
GA-8537	Edivate General Grant: *Administration will use Ediviate Observe for all of their drop in's and formal evaluations. Teachers will know where to go to check on the outcome of each one. The teachers will know the desi outcomes before administration does the drop in's and or evaluations happen. They will provide a rubric with the measurable outcomes on it. *Administration will model and launch the new PD plan with the teacher August of 2016 and explicity go over the expectation and requirements to earn PD at Quest Academy using Edivate. Teachers will be required to watch 40 minutes of Ediviate STEM Videos, answer the reflections quest at the end of the video, implement them and then reflect 72 hours later. When they complete the above they can earn 1 hour of PD. Teachers will also be required to complete a Teach Like a Champion (classroom management) course each month during the 2016-2017 school year. Administration will run reports the last Monday of the month to see if teachers have completed the course and earned PD. Science Grant- Our measurable outcomes will be the Science teachers will complete the courses provided to them on the SEED standards. We will run reports often to make sure they are working at the pace they need to to complete the course.
GA-8745	Iron County School District 6-8th grade science teachers will be confident and competent in their understanding of and ability to fully implement the new SEEd standards in order for students to be assessed on them during the year of 2017-2018. In order to accomplish this, grade level teams will establish at least one Student Learning Objective (SLO) based on the new SEEd standards to implement and assess for mastery during th coming year. Students will be expected to show at least 50% growth based on their pre and post common assessments. In addition, teachers will increase their ability to collaborate, seek assistance, and provide feedb by demonstrating regular use of the Edivate platform. Teachers will be required to post a minimum of 4 comments per module, and to provide quality peer feedback on each uploaded video. A district created rubric w be used by the district facilitator to evaluate the comments and feedback.
GA-8758	6th-8th grade science teachers will access the Edivate SEED training modules at least 8 times per year as part of their pre-implementation professional development.6th-8th grade science teachers will also be able to articulate and demonstrate identified knowledge and skills learned in the courses as they work with colleagues in PLC sessions and with students in lesson study activities.CTE teachers in grades 7-12 will utilize Edivate videos and USOE courses in PLC's for professional development, with an emphasis on Technology and Engineering courses. Teachers will demonstrate use of content learned through Edivate in lessons captured on swi cameras and critiqued individually, with a coach, or during a PLC.Mathematics teachers in grades 7-12 will utiilize Edivate videos, USOE courses, and district-developed Edivate courses in PLC's for professional development, with an emphasis on Secondary I and AP Calculus.Elementary teachers (K-6) will utilize existing Edivate videos and district-developed videos during PLC's and professional development to analyze integra ELA/Science and Engineering lessons. Edivate will also be integrated into the work of the STEM endorsement classes for SY 16/17.All teachers utilizing Edivate videos will identify best practices with their instructional coaches and/or interventionists and will select at least 2 of those practices for classroom implementation.Instructional Coaches at each school and the Associate Superintendent for Teaching and Learning will develop focus objectives and courses aligned to Science, Mathematics, and CTE for use throughout the school year by PLC's and departments for professional development. These courses will be integrated into the menus of differentiated professional learning that will take place at least once/month at each school site from September-April.

Application #	Assessment
GA-8537	Edivate General Grant and Science Grant: Administrators will monitor usage and implementation of instruction. Clear expectations will be provided as it relates to self-evaluation. At specific intervals in the course pee reflection will be expected. If desired outcomes are not met, administrators will follow school/charter policies as it relates to situation. We will be using quantitative data for the effectiveness of the edivate platform. qualitative data will be discussed through our cohort discussion meetings. *Administration will meet on the last Monday of the month to print reports and go over the usage data, and the course assignments to make the teachers are where they are required to be. Administration can make this PD a requirement and put it in their "one-year contract" and the teachers will follow the instructions. Quest is an "at will" school, and as mentioned above can make arrangements for the teacher to no longer work at Quest if they are not being effective, using best practice, and or receiving the professional development credits they need.
GA-8745	Qualitative data will be collected through a survey related specifically to the professional development sessions and their ability to apply the material from the sessions. It will be given to participating teachers and dat will be collected in November and May. Teachers will be required as part of the grant as well as district policy to develop a team student learning goal. This team will develop their learning goal based on the new SEEd standards. They will be required to show effort and growth related to that goal and determine intervention options for those students not meeting the goal. Data will be collected on these learning targets using their common assessment data and the district SLO evaluation rubric in November and May. Teachers will be given participation points based on their attendance, participation in class and on the Edivate discussion board, for uploading at least one self-evaluation video for peer discussion and reflection throughout the year. Teachers will be asked to peer review a video monthly as part of their discussions beginning in November. The dis facilitator will use a rubric to evaluate both the discussion participation as well as video feedback throughout the year. Stipends will be issued in May and will be based on full participation in the program. If desired outcomes are not met, a district team will evaluate the data and determine the needed steps to continue training these teachers on the core the following year and beyond if needed.
GA-8758	The plan will be assessed for effectiveness by analyzing usage data, participants' reflections, observations of teachers applying learning based on Edivate, and professional development evaluations. For the 6th-8th scie teachers, we will also collect annecdotal and survey data on the effectiveness of pre-implementation work connected directly to Edivate. Instructional Coaches will have a data reporting form and will present their information on the 3rd Wednesday of each month at their meeting. Data will then be collated by the Associate Superintendent for Teaching and Learning and will be presented to administrators the following Wednes If expectations are not met, the Assistant Superintendent for Teaching and Learning will review the implementation plan with the Instructional Coach and building administrator, and will monitor usage at that school c weekly basis. If the performance expectations continue to be an issue, the problem will be discussed with the Superintendent, building administrator, and Instructional Coach, and an individualized plan to remediate t problem will be developed. The Assistant Superintendent for Teaching and Learning will work closely with staff at that building to resolve the problem.

Application #	LEA	STEM Priority	How will Edivate be used?
GA-8839	Granite School District	Science	The Edivate platform will be used as a central component of NSSI. Teachers will use the Edivate course to access articles, exemplar three dimensional (3D) science lessons, and videos of STEM classroom instruction. Teachers will use the discussion tool to participate in online discussions of 3D science lessons and instructional strategies with a grade level PLC. Additionally, teachers will use the Edivate plateformâ€™s video tool to upload at least two videos of classroom instruction. Teachers will analyze their own videos for components of 3D science as part of as a self-reflection. Teachers will also be required to share the videos with the district science specialists. The science specialists will use the videos to coach teachers in 3D science instruction by providing them with specific feedback. Teachers will also have the option of sharing their videos with members of their grade level PLC to receive additional feedback.
GA-9173	Cache County School District	Renewing Licenses ONLY	
GA-9598	Spectrum Academy	Science	The Edivate platform will be used as a professional development tool for all 6-8 grade science teachers and the science department chair. Teachers will view Edivate videos for 30-45 minutes per week and then participate in structured work groups led by the science department chair. The work groups will participate in collaborative discussions on the videos and the shifts in the 3 dimensions of science. Participants will also engage in curriculum mapping, and creative lesson planning based on the new State SEEd Standards.

Application #	Expectations and Outcomes
GA-8839	The overarching goal of the NSSI professional learning opportunity is to prepare 6th through 8th grade teachers to teach the new Utah Science with Engineering Education standards effectively. To achieve this goal we focus on: Preparing teachers to shift their instructional practice in order to align with the vision of science learning embedded in the 6th through 8th grade SEEd Standards. Increasing teachersâ€™ ability to develop a teach three dimensional science lessons. Developing an online professional learning community that allows for peer support in three dimensional science instruction through the use of the Edivate platformâ€™s cours and video tools. As a result of the NSSI, the students of participating teachers will demonstrate increased engagement in science and interest in pursuing STEM fields.
GA-9173	
GA-9598	

Application #	Assessment
GA-8839	Both quantitative and qualitative measures will be used to assess the impact of the NSSI on teachersâ€™ ability to effectively teach the new SEEd standards. Quantitative measures will include a pre and post Likert-sca survey which evaluates teachersâ€™ knowledge of and confidence in teaching science and engineering practices, crosscutting concepts, and disciplinary core ideas. Additionally, teachers will submit a 3D lesson plan th will be scored using a rubric based on the Educators Evaluating Quality of Instructional Products (EQuIP) rubric. The use of the Edivate platform will also be analyzed, specifically the number of discussion prompts the participants have actively posted, the number of Edivate video uploads, and the number of times participants have provided feedback to peer discussion posts and videos. Qualitative measures will include the use of teachersâ€™ two classroom videos and monthly discussion posts and peer responses to analyze how teachers are shifting their instructional practice to meet the vision of the Utah SEEd standards. Teachers will also complete informal evaluations throughout the program. After the summer institute, and again after the first three monthly workshop sessions, teachers will provide written feedback on how the program is meeting t needs and improvements to the program that would make it a more effective learning experience. Information from these evaluations will allow the district science specialists and teacher facilitators to adapt the mor workshops and online course components to improve teachersâ€™ learning outcomes. At the end of the NSSI program teachers will fill out a survey regarding how specific program activities impacted their learning of SEEd standards and their studentsâ€™ engagement in science. Information from this survey will be used to inform the design of future NSSI programs.
GA-9173	
GA-9598	

Application #	LEA	STEM Priority	How will Edivate be used?
GA-9643	Beehive Science and Technology Academy	Science, Mathematics AND CTE: Technology and Engineering	Edivate will be utilized for professional development in several specific methods as described below. Firstly, our Administrative staff intends to have teachers submit videos of their lessons twice annually in which we utilize the video feedback tool in Edivate to provide feedback to the teachers and use these lessons in formal assessments in conjunction with in-person teacher observations. We will use Edivate's Assessment tool for our formal assessment templates moving away from a different software that does not have the ability to set goals and suggest resources such as courses and videos like Edivate does to help build skills in our teachers. Secondly, we will use Edivate and the SWIVL cameras to boost our Teacher Learning Communities for providing support and feedback on curriculum design, effectiveness of learning activities, teaching methods, classroom management and methods to improving adding STEM related information cross curriculum. Our teacher's will view videos of other teachers as well as their own lessons and make observations and comments in their TLC groups in Edivate using the tools available in the Group sections. This will be supported by 5 face to face meetings per school year where the groups will be facilitated to discuss the new SEEd standards and curriculum development as well as effective teaching methods. Our goal is for teachers to support and provide valuable feedback, suggest additional resources and help each other develop outstanding curriculum that effectively teaches students in an engaging manner. Finally, we will utilize Edivate for Professional development by requiring every teacher to set their own professional development plan and goals in Edivate in coordination with Administration. The teacher's will guide their own personal learning by setting goals, choosing courses, videos, and activities to support their learning objectives. The teacher's progress will be tracked in Edivate and Administrators will support these goals by meeting with teacher's quarterly to discuss progress and help provide resources.
GA-9799	Uintah School District	Science	Edivate will be used as a resource for teacher professional development for 6th, 7th, and 8th grade teachers in regards to the new State SEEd standards. This professional development will be the main opportunity for the middle school teachers in the Uintah School district and will also be utilized by the district science specialist. The cohort of teachers, along with the science specialist, will meet 2x a month in order to gain a common understanding of the expected shift in standards. This will also give the cohort an opportunity to work together in developing the vision for which the new standards will be delivered.

Application #	Expectations and Outcomes
GA-9643	The desired measurable outcomes Beehive Science and Technology Academy intends to accomplish are as follows:Teachers will work in Professional Learning Communities in which they will help to review, evaluate a provide feedback on videos of lessons submitted by peers. The videos will be made in the classroom by utilizing the SWIVL cameras. There will be 5 lessons reviewed annually by each teacher. There should be a signifi improvement from the first lesson to the 5th based on a standard rubric using Utah State Effective Teacher and Leader Standards and expectations for 3D lessons in Middle School Science. By participating in this proce the teachers will be given specific feedback on their own lessons and will observe both effective and less effective methods in the process of evaluating other teachers. The teachers will support each other in this proc of developing new content and activities related to the new Science strands. The written curriculum will also be submitted and evaluated for implementing the new SEEd 3D Science standards in ALL subjects. This curriculum will be evaluated on how effectively it contains current content, practices (ILO's) and literacy ideas. This knowledge combined with the Edivate resources of courses, videos, discussions and reading research provide teachers the perspective to be successful and improve their teaching methods, classroom and lesson experiences and help other teachers do the same. Teachers will be expected to improve their score on the rubric by 20% from their first observation to the last based on the scoring rubric. Beehive Science and Technology teachers will be formally evaluated by Administrators using the Observation tool during the 2016-2017 school year. This will provide the Administrators to provide feedback to the teachers and set learning and development goals for the teachers immediately following the evaluation. This Professional Learning grant wo enhance our teacher observation by allowing Administrators to view two additional lessons for each teacher annually and make comments and provide feedback using the video tool in Edivate.
GA-9799	The desired outcome of this opportunity is that all 6th, 7th, and 8th grade science teachers in the Uintah School District will be prepared to fully implement the new SEEd standards by the 2017-2018 school year. In or to determine success participating teachers will be required to develop (as a cohort) student learning objectives that align with the new standards. The cohort will work on grade level as well as vertical alignment betv the three schools in which 6th, 7th, and 8th grade are taught. The district science specialist will also present the SLOâ€™s to the district secondary science committee as well as to the curriculum director in order to er alignment with the district vision for STEM education.

Application #	Assessment
GA-9643	This plan will be assessed as follows:Phase I:There will be one half day of training provided in August for all teachers regarding the new SEEd 3D Science standards. This will be facilitated by our Science Department cha We will examine the SEEd Strands individually to determine 3D activities we can best use in lessons. The second half day of training will be to establish TLC groups and begin the process of developing curricula.The teachers will support each other in this process of developing new content and activities related to the new Science strands and even our upper level teachers will incorporate elements from these into the higher grad curriculum. The goal is to develop curricula driven by problem solving, discovery and exploratory learning that actively engage students. For this curricula there will be two survey evaluations. One will be completed by teacher after teaching the newly crafted curricula or lessons and the other will be completed by the students. These surveys will reflect on the content, understanding and engagement level of the students. The writte curriculum will also be submitted and evaluated for how well it is implementing or supporting the new SEEd 3D Science standards in ALL subjects taught at the school. This curriculum will be evaluated on how effectiv contains current content, practices (ILO's) and literacy ideas. The evaluation tool will be a rubric with a scale of 1-10, 10 being a perfect score. Any curricula evaluated not obtaining an 80% will have to be revised and r submitted until it is evaluated at an 80%.A second evaluation will be for effectiveness of the curricula created. The goal is to develop curricula driven by problem solving, discovery and exploratory learning that activel engage students. For this curricula there will be two survey evaluations. One will be completed by the teacher after teaching the newly crafted curricula or lessons and the other will be completed by the students. The surveys will reflect on the content, understanding and engagement level of the students. If the survey indicates students are not comprehending content or engagement level is low (below 70%) the teacher must evalu the curricula with their TLC group and provide revised lessons based upon recommendations. Phase II:Secondly, teachers will work in Professional Learning Communities, in which they will help to review, evaluate and provide feedback on videos of lessons submitted by peers. The videos will be made in the classroom by utilizing the SWIVL cameras. The teachers will receive a $250 stipend for participating in this phase of Professiona Development as it requires preparation time and evaluation time outside of contract hours (5 lessons+ $250). There will be 5 lessons reviewed annually by each teacher. These are done individually by the teacher usin prepared rubric. The teacher is required to review the video of the lesson and make comments using the tool in Edivate.The teacher must then attend the two semi-annual meetings which a facilitator will coordinate t discuss the findings in their evaluations and possible areas in need of further training. There should be a significant improvement from the first lesson to the 5th based on a standard rubric which evaluates by using Uta State Effective Teacher and Leader Standards, strands, and expectations for 3D lessons in Middle School Science. By participating in this process the teachers will be given specific feedback on their own lessons and wi observe both effective and less effective methods in the process of evaluating other teachers. This knowledge combined with the Edivate resources of courses, videos, discussions and reading research will provide teachers the tools and perspective to be successful and improve their teaching methods, classroom and lesson experiences and help other teachers do the same. Teachers will be expected to improve their score on th rubric by 20% from their first observation to the last based on the scoring rubric. If this goal is achieved they will receive an additional $250 stipend. Beehive Science and Technology teachers will be formally evaluate Administrators using the Observation tool during the 2016-2017 school year. This will provide the Administrators to provide feedback to the teachers and set learning and development goals for the teachers immediat following the evaluation. This Professional Learning grant would enhance our teacher observation by allowing Administrators to view two additional lessons for each teacher annually and make comments and provide feedback using the video tool in Edivate. If an evaluation indicates a need for improvement the teacher will be assigned activities such as viewing videos, up to full courses in Edivate they must complete within 30 days being assigned as part of their consideration for continuing contract.
GA-9799	The effectiveness of this PD will be formally assessed through teacher surveys given three times during the length of the project. At the end of each trimester the teachers will be expected to provide evidence that the have used the content of the courses in their classroom, either through lesson plans, classroom observation, or student work. Common assessments will be developed and given at the end of each trimester. Participa who decline to attend or who do not follow through with commitments will meet with the science specialist and the proper action will be taken dependent on each situation. The expectation is that all teachers will participate fully.

Application #	LEA	STEM Priority	How will Edivate be used?
GA-9803	Merit College Preparatory Academy	Science, Mathematics AND CTE: Technology and Engineering	To develop horizontal and vertical integration with our non-STEM course and STEM courses. In other words blend STEM into the curriculum throughout the entire 7-12 program.

Application #	Expectations and Outcomes
GA-9803	We use a concept called fusion in our classrooms. Meaning instruction in one area is fused as part of another instruction area. The challenge with a STEM fused curriculum is having the resources to back up the instructors. Our desired outcome for instructors is to have presented additional projects that tie in STEM related resources.Which drives more STEM related projects that bleed over into different content areas. Mear the math teacher begins a STEM related project that is focused on negative numbers. Build a framework that allows the English department that supports that research in classic literature.

Application #	Assessment
GA-9803	Every Term STEM courses should have a tie into a non-STEM class. So the simple math is one fused STEM project per term for Science, Math and CTE. As the teacher's increase in confidence the overall depth and technical scope of the projects should grow. The on-site leads will review each fused STEM project in order to determine effectiveness. If the projects do not increase the student populations curiosity, STEM investiga skills and awareness of STEM related professions further actions will be taken to hone instruction and teacher confidence.

Appendix K: STEM AC Strategic Plan

Core Impact	Projects (*Strategic Objective*)	Operation	Outcomes (aligned metrics)	Funding Source
Math Proficiency	K-12 Math (*Enhance*)	**2016-17 Fiscal Year** 1) Acquisition of SAGE test scores from USOE for 2015-16 school year (Sept, 2015) 2) Final analysis and report of math outcomes (Nov, 2016) 3) LEA applications received and awarded for 2016-17 school year (Aug, 2016) 3) Product provider contracts completed for 2015-16 school year implementation (July, 2016) 4) License distribution and teacher training completed (Aug, 2016) 5) data collection begins (Sept, 2016) 6) data collection ends (May,2016) 8) Final analysis and report of math outcomes (TBD)	• Students receive individualized, supplemental instruction in math to meet their needs (license distribution, usage) • Teachers receive real time data to inform instruction (completed training, teacher surveys) • Students improve their math performance on assessments within the products (SAGE scores) • Increase math achievement on state assessment, closing achievement gaps (SAGE scores) • Improve high school math readiness • Increase student interest and engagement in math (student surveys)	$3M (OG)*

High Quality Instruction	Professional Development (*Enhance*)	1) Solicit LEA grants; review and award selected grants (completed July 1, 2016) 2) Monitor grants during 2016-17 school year 3) Determine the number of Edivate licenses that are included in LEA grants 4) Finalize School Improvement Network contract for Edivate licenses (Aug 2016) 5) Implement LEA grants (Aug 2016) 6) Determine next steps for videos, learning experiences and other supporting resources (TBD) 7) Create and implement a comprehensive assessment strategy around new grants	• Increase teacher effectiveness in STEM-specific content areas • Increase teacher content knowledge • Increase teacher recruitment and retention • Create a video library of best practices in instructional methods by Utah teachers • Create learning experiences	HB150; $4.6M (OG)*
	STEM Endorsement (*Enhance*)	1) First cohort completes endorsement	• Increase teacher effectiveness • Increase teacher content and	HB150; $1.5M (OT)

		(2017) 2) work with third party evaluator to track outcomes	pedagogy knowledge • Increase teacher and retention in STEM disciplines	
Applied STEM	Middle School Applied Science (*Enhance and Partner*)	1) Funding completed and all projects closed out 2) Continue to track outcomes in classrooms	• Increase rigor, relevance and cross-disciplinary content in applied science curriculum materials and courses • Increase STEM content mastery • Increase teacher effectiveness • Increase collaboration between STEM educators	HB150;
	High School STEM Certification (*Enhance and Partner*)	1) Completed monitoring site visits to all projects and create final report (July 2106) 2) Identify and work with LEAs that need a no cost extension (June 2016) 3) Close out all grants that did not request a no cost extension (June 2106) 4) Solicit pilot grants for Computer Science Pathway initiative (Oct 2016)	• Increase job readiness of high school graduates • Increase student access to certificate programs • Improve alignment of certificate programs with employment demands • Increase secondary and post-secondary partnerships	HB150; $1M (OT)

		5) Review and award pilot grants (Nov 2016) 6) Monitor pilot grants and track outcomes		
Outreach, Engagement, Recruitment	Classroom and Summer Camp Grants *(Motivate and Promote, Enhance and Partner)*	1) Completed grant solicitations for classroom and organization grants 2) Track the number of students and teachers impacted by the grants 4) Document XX press releases related to classroom grant or summer grant projects (June 2016)	• Increase access to STEM programs • Improve student achievement through applied learning activities • Increase student engagement and interest in STEM programs • Increase awareness of education and career pathways • Increase partnership opportunities	STEM AC#; amount varies
	Fairs, Camps and Competitions *(Motivate and Promote)*	1) Temporary cessation of FCC grants (June 2016) 2) Determine if more effective way to administer grants	• Support student participation in camps, fairs and competitions • Increase student engagement in STEM areas	STEMAC#; amount varies
	Communications and Marketing (*Motivate and Promote*)	1) Media campaign (STEMatch) 2) Website 3) Event sponsorships 4) Conferences hosted by Center (STEMFest	• Increase awareness of STEM and STEM based activities (track traffic to website and social media portals) • Increase public understanding of STEM subjects	STEMAC

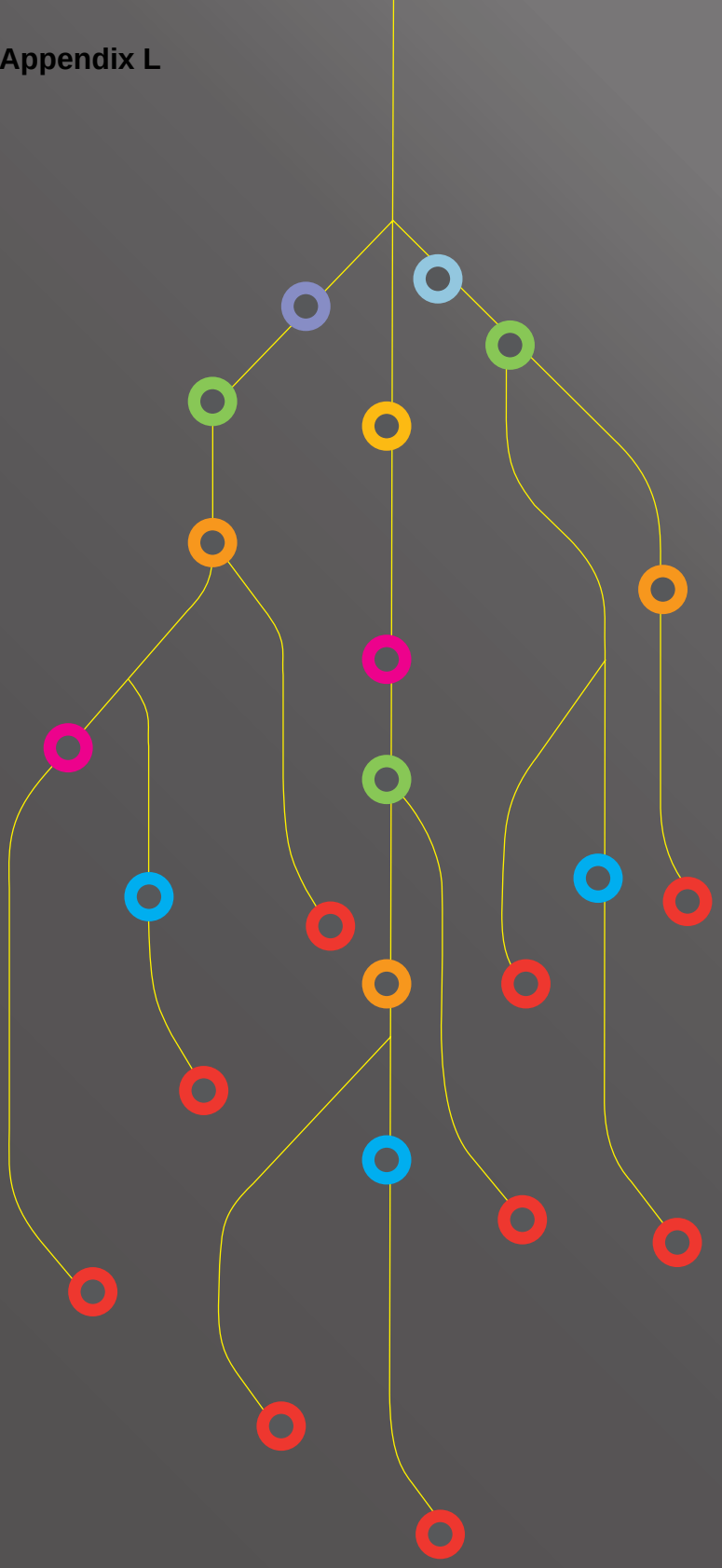
	and Best Practices) 5) Social media 6) STEMi recognition awards 7) Engagement with national organizations (STEMx, Education Commission for the States, National Conference for State Legislatures and STEM Connector) 8) Statewide mentoring network 9) School assemblies	• Promote advocacy of STEM • Serve as a clearinghouse to facilitate partnerships and access to STEM activities (track and document sponsored events) • Provide a venue for creating opportunities for STEM dialogue (document number of STEM AC hosted and sponsored events) • Promote more effective leveraging and use of resources • Connect stakeholders to STEM opportunities • Promote national presence for Utah STEM (document number of presentations/recognitions at national events) • Provide resources to parents (track volume of distributed materials) • Engage students (track the number of participating students in student-related events such as school assemblies)

Advocacy	Fund Raising (*Partner*)	1) Investors STEM Coalition 2) Involve industry partners in Center activities 3) Establish foundation board	• Increase corporate support of STEM (track corporate engagement) • Creation of additional program opportunities	STEMAC
Collaboration	Grant Participation (*Partner*)	1) Formation of grant coordination sub-committee 2) Grant clearinghouse/database creation 3) Grant submission and award	• Increase funding for STEM from federal, state and private extramural sources (track funding) • Increase partnership opportunities (track number of partnerships and grant awards, both direct to the STEM AC and through partnerships) • Improve leveraging and use of resources (track indirect increase in resources for STEM AC and stakeholders)	STEMAC

* OT and OG, One Time and On Going, respectively
# STEM AC, STEM Action Center operational funds

NOTE: The math proficiency, high quality instruction, applied science, classroom, summer camp and fairs, camps and competitions all have third party evaluation mechanisms in place to determine effectiveness and impact.

Appendix L



STEM ACTION CENTER
U · T · A · H

HIGH SCHOOL INDUSTRY CERTIFICATION PROGRAM

Mid-year Evaluation Report by
Sarah Brasiel and Clarence Ames

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Recommended Citation:

Brasiel, S. and Ames, C. (2016). High School STEM Industry Certification Program: Mid-Year Evaluation Report. Logan, UT: Utah State University, Department of Instructional Technology and Learning Sciences.

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KEY FACTORS FOR SUCCESSFUL CERTIFICATION PROGRAM

Background The STEM Action Center's High School STEM Industry Certification grant program began with a College and Career Subcommittee meeting in August 2014 to determine important considerations to include in the request for applications. The STEM Action Center released the application information in September 2014, and they gave districts time to develop partnerships with universities, applied technology colleges, and local industry partners. A majority of the programs were in their planning phase during spring 2015 and some began training the instructors summer 2015. Most of the programs have been going strong this fall 2015 and spring 2016.

This preliminary report is based on conversations with grantees about where they are at with their implementation, some of the success stories that represent what is going well and some of the challenges and barriers they are facing. This information can inform the work of all grantees as a way to learn about what others are doing. This information can also guide the STEM Action Center in understanding the state of the current grant program and to inform any future funding opportunities related to this area of increasing the number of students prepared for STEM workforce careers and post-secondary STEM education.

Cache Valley Districts & Bridgerland ATC

- Engineering Pathway
- IT Pathway
- Health Science Pathway

SOAR into STEM Ogden & Ogden Weber ATC

- Rocketmade Launchpad certificate
- Busy Busy Launchpad certificate
- Velocity Launchpad Cert.
- Y Draw Launchpad Cert.
- Start-Up School
- Start-Up Derby
- Job Developer training
- Marketing training

Davis and Morgan District & Davis ATC

- Robotics industry certification
- Automated Manufacturing certification

Tooele County School District & Tooele ATC

- Information Technology

Success Academy & Washington & Iron County School District with Southwest ATC, Dixie State, & SUU

- Computer Information Technology Pathway
- IT: CompTIA A+ Certification
- Computer Programming Pathway
- IT Pathway
- Web Development Pathway
- Graphic Design Pathway

AM STEM at Dixie ATC

- Manufacturing Pathway
- Welding Pathway and certifications
- IT Pathway and certifications

STEM Series (Launchpad with Success Academy & AM STEM Students)

- Life Sciences

Summit Academy STEM IT

- IT
- Construction Technology
- Advanced Manufacturing
- CNA Healthcare Services
- EMT

Nebo Advanced Learning Center

- Computer Programming Pathway
- IT Pathway
- Pre-engineering Pathway
- Digital Media Pathway
- Biomedical/Healthcare Pathway

Southeast Consortium

- Engineering pathway (to increase capacity-Aerospace, Mechanical and Electrical)
- IT software pathway (to add functionality)
- Advanced composites pathway (new)

Wasatch Front Consortium

- Manufacturing

Granite District

- Manufacturing

It is important to note that the STEM Certification or Pathway programs listed are the ones that have either been made possible with this grant program funding or have been strengthened or extended in some way through the grant funding. These districts may offer additional certification programs not listed, but they are operating with other funding sources.

STEM INDUSTRY CERTIFICATION PROGRAM

Needs Assessment

Before beginning a program or initiative it is beneficial to begin with a needs assessment. To do a needs assessment one should start with a knowledge of what components are needed for successful implementation of a program. Then a survey can be given to key stakeholders (administrators, parents, teachers, and students) to understand their perception of whether those components are in place or not. This can help to identify needs and target funding to the areas of greatest need. In addition to surveys, data could be collected through a review of documents, interviews with stakeholders, and/or observations. The High School STEM Industry Grant program came out of a a need in the state, but what was not clear were the specific needs within each district. Therefore, some districts conducted their own needs assessment to best focus their efforts with the funding from the state. Below are examples from two grantees about how they included a needs assessment component to guide their work.

STEM Series (Launchpad with Success Academy and AM STEM Students)- *Rocketmade software developers were frustrated by college seniors with Computer Science degrees from Dixie State, but no useful skills or practical experience. They designed this program in coordination with Washington County School District, as an afterschool program located at an industry company site. The goal is to get young talented programmers working in an office while going to college, but the pipeline needs more people in it. They decided that high school provided an opportunity for students to learn in an after school context.*

Davis and Morgan District *– Teachers were offered a three-day training at the Davis ATC, and twelve teachers took advantage of this opportunity. They learned based on a survey that teachers did not know much of anything about what programs and industry certifications were available to their students at the DATC. The premise was: How can teachers teach something they do not know or understand with this case being the promotion of industry and UCAT certificates. Also when students were surveyed about STEM, they had very little knowledge of what STEM meant. A decision was made to focus on pathways and professional development. They believed that they first needed to understand STEM, contemporary STEM, and what opportunities are in STEM. Even the CTE directors had a misunderstanding of what DATC offers in terms of certifications. They learned that they do not offer many. What they do offer is completion certificates. The challenge of this grant was to connect to actual industry certification. While the CTE pathways are great on the website for the district from USOE resources, most students and teachers do not know about them. Mesa advisors are now using the CTE pathways.*

STUDENT ENGAGEMENT

In the past, CTE course were perceived as a place where students might get dirty or where students who were not planning to go to college went to learn job skills. There is a need to rebrand CTE and these STEM Industry certification programs so that they more accurately portray the diverse doors of opportunity they can open for all students. In talking with grantees they mentioned several factors and strategies for recruiting more female students and other students who normally may not have selected to participate in the STEM industry certificate program.

Cache Valley Districts and Bridgerland ATC – *Box Elder and Bear River high school report a variety of students enrolled. Some are AP Math, some from auto shop. One teacher in Box Elder had a ladies lunch with female engineers to talk to female students, but so far that has not impacted enrollment. There are not a lot of female students in the program, probably 5 of the 100, but if you expand out to engineering classes, in the feeder classes there are more girls. Current enrollment of girls matches industry ratio, but the concern is that there is a 50/50 ratio in AP Calculus of boys to girls, so the numbers could be better. BATC has hired some female instructors which has increased female enrollment at BATC. The first intern to be at Nucor Steel is a female BATC student. They are seeing that they lose the girls from STEM in junior high. Half of the robotics or other STEM team in elementary school is female. Then in junior high they are losing girls from these programs. A student is on track to graduate with a 900-hour robotics certificate and an associates degree who drives 30 minutes to BATC. One student is a wrestler who was academically unmotivated and now is the top student in the robotics program.*

STEM Series (Launchpad with Success Academy and AM STEM Students)- *There are more girl applicants to the design track, 2 to Y Draw certification and 1 to Busy Busy certification. They recruited the first wave of participants from a code camp mailing list. This year at the college they are doing a girls/women only hour of code which they hope will recruit more females into this career path.*

Nebo Alternative Learning Center – *The district holds a girls only field trip during hour of code week. If students complete a pathway they get to wear a white chord at graduation. Often students ask what it is and that word of mouth recommendation gets them students, but it is not enough. The grant funds have paid for a full time STEM coordinator to bring STEM Activities and some equipment to students in elementary and middle school and training for teachers.*

SOAR Into STEM (Ogden and Ogden Weber ATC) *- All of the afterschool STEM League and FTC robotics clubs boast a diverse set of participating students from multiple socioeconomic backgrounds, races and genders.*

POSITIVE RELATIONSHIP WITH INDUSTRY PARTNERS

A key area of focus for this grant program was to have a partnership with industry. This work is easier for some districts than others due to existing relationships with industry. However, for an industry certification program to be successful, this relationship is vital to open up internships and job opportunities to students. It can also provide valuable information to high schools about the kinds of job skills that are needed, and an opportunity to learn from industry experts. Next are a few examples of the ways grantees are building relationships with industry and post-secondary partners.

Tooele County School District and Tooele ATC- *Carlisle SynTec has one student doing an engineering internship. Carlisle SynTec is paying his salary (minimum wage), and they have increased his hours since he did so well. He did the engineering class and welding at his high school. He was all over the place on his transcript and now he has stepped up and is improving in school. The Granite Welding Advisory group has met at the Tooele School District offices twice which engaged the Tooele ATC and industry which has been good for the program. Lincoln Electric gave the Tooele District a discount on virtual welders and donated jackets, gloves, etc. for students in the welding pathway and certification program.*

Success Academy and Washington and Iron County School District with Southwest ATC, Dixie State, and SUU *– The program leaders are involved with an occupational advisory committee and have monthly meetings with Dixie Tech in St. George, and Tech Up in Cedar City.*

Nebo Advanced Learning Center *– Nebo has a positive relationships with the following local industries and businesses: Nestle, Dannon, IM Flash, US Synthetics, Exact Wear. US Synthetics and IM Flash in conversations with Nebo about how to train teachers for these 21st century work skills.*

Cache Valley Districts and Bridgerland ATC - *Hill Field is planning on hiring 2,000 engineering technicians, and those positions provide a good income. The pathway program takes 2 years. There is a 1-year certificate and a 2 year certificate. If students do not complete the certificate in high school, they can take the rest at BATC and then move on to USU. AutoLiv was recruiting from Indiana and California, but the people they hired did not like Utah, so they have been a great partner providing internships to students in this certification program. AutoLiv will hire interns after the 900 hour certification is complete but wants them to finish the more advanced 1500 hour certificate, so the students have to come back for hours while doing their internship before being hired full time, but Autoliv will provide tuition reimbursement. Other industry partners interested in hiring students with certificates: JBS Meat Packing Plant, Schriebers, Proctor and Gamble, Gossners, and Pepperidge Farms. The BATC has a Free start program where any high school student can get summer tuition for free after graduation.*

Davis and Morgan District *- The convergence of the UAP Aerospace pilot in Davis district has allowed the region to become strong partners with OrbitalATK, Janicki, Boeing, Hexcel, Harris, and Hill Air Force Base relative to advanced composites training and industry-recognized certification. Boeing, a key player in these grants, suffered disappointing results in the Seattle area for 4 years straight. The economic base of the Wasatch attracted them to work with CTE and other educational partners with high-rate success in just months. The re-focus on health science certifications allowed for students to expand opportunities at partnerships with Lakeview Hospital and local physical therapists. The region has also just begun discussion with Layton City and Code.Org regarding a similar proposal to the UAP pilot, but for IT certifications.*

STEM Series (Launchpad with Success Academy and AM STEM Students)- *Several companies are involved in teaching different components of the program. Rocketmade taught mobile development. Why Draw taught marketing skills and social media. Provo location taught mobile development. Rocketship taught engineering. Go launchpad.org is the website that recruits students and industry partners for this tech apprenticeship program. Students fill out the application online. Students are ranked on qualifications and experiences (1,2,3). A section of each application group (1,2,3) is shared with each industry partner to select for participation in the apprenticeship program. Initially industry partners were paid. But after the first round of Launchpads only the person managing the Launchpad.org website and recruitment of students and industry partners was paid by the grant.*

Ogden School District*- Ogden district formed a partnership with several local industries and post-secondary training institutions in order to ensure the alignment of the pathways with current workforce needs. Partners include engineers and technicians from Orbital ATK, Boeing, L-3 Communications, Williams International, Hill AFB, Purch, Petersen Inc, BAE Systems, Parker Aerospace, and Northrup-Grumman. The greatest gap that needed to be addressed was in Engineering , Computer Science and Composites Technology. The industry-education teams reviewed current offerings and determined that there was appropriate coursework in the district and OWATC to get the high school students to an entry-level certification that could then lead into further stackable credentials with on-the-job training and/or additional coursework at OWATC or WSU.*

MARKETING & K-12 RECRUITMENT

Not all parents and students are aware of the benefits offered by STEM pathways or certification programs offered by districts. In fact, there are many industry jobs that students have not been exposed to and have not considered as options for their future. Therefore, to engage students in thinking about pursuing a STEM pathway or taking courses that are part of a STEM industry certification it is helpful to have a recruitment strategy and marketing materials that can be shared with students and their families that highlight the value of these programs. Several of the grantees have focused on this marketing and recruitment effort with part of their grant funding in order to make sure their program is sustainable with students continuing to enter the pathway or certification developed through this program. A few examples are highlighted next.

Davis and Morgan District – *The grant funded 50 students per high school and also for Morgan district to attend the district-sponsored STEM Expo (see http://www.stemexpoutah.org/ and http://kutv.com/archive/northern-utah-stem-career-and-college-expo). Another 50 students are being awarded scholarships for industry certifications through DATC programs. These were competitive scholarships awarded based on student goals in long-term program completion. There were additionally a series of STEM-related field trips where transportation was funded by this grant program. STEM promotional events and marketing campaigns in STEM were held region-wide.*

STEM Series (Launchpad with Success Academy and AM STEM Students)- *A larger part of the grant pays a person to develop and manage the launchpad.org website that recruits students and industry partners for this tech apprenticeship program.*

Cache Valley Districts and Bridgerland ATC - *At registration instructors did recruitment for zero hour. The program was also promoted at a robotics summer camp. There are students in Project Lead the Way that were the core group recruited at Box Elder and Bear River high school, because the teachers caught the vision for the value of this program, 42 students are enrolled at Box elder high school. Similarly due to interest from a teacher at Sky View, 25 students are now involved.*

SOAR Into STEM (Ogden and Ogden Weber ATC)- *Ogden district is pushing STEM into elementary to build awareness and intent by training teachers. Carl Lyman from USOE trained 16 elementary teachers in computer coding curriculum. They used grant funds for a STEM Access Library of STEM resources. This way every teacher does not need their own class set of equipment. The materials are in a library, and teachers can check out materials such as little bits to do STEM Activities with their students. Teachers have used Robotics systems with classes as low as kinder and 1st grade. The goal is to create the interest to build the pathway kids will enter at 9th grade. The grant also allowed them to put 3-D printers in all secondary schools which aligns the pathway courses with current industry technology. Currently the enrollment in the pathway is done by advertising them on posters and brochures with QR codes. Students scan the QR code and sign up using a Google Form. So far 48 students have done the Google form to declare enrollment in a pathway. The grant program manager presented in all feeder or pathway courses to market the program. The grant has also supported the expansion of STEM afterschool program in all secondary schools with a focus on STEM related competitions like First Tech Challenge, Coder Dojo and Ogden's STEM League. Students from these programs are also recruited into the Pathways program. Specific training was given to all counselors along with promotional materials so that they can steer students into pathway programs as they hold scheduling conferences with their students.*

Nebo Advanced Learning Center – *The district assessment department has been working on ways to message the value of the Advanced Learning Center as saving money due to the concurrent enrollment option. They are working on a cultural shift to get kids to take more than 2 classes at the ALC. Some seniors either go home early or work half of the day rather than taking advantage of the concurrent enrollment options at the ALC.*

Tooele County School District and Tooele ATC- *The 8th grade students get to take a trip to see USU Tooele campus and the TATC in May. The Tooele District also invites people from TATC for an annual event called "reality town." The seniors in the Pathways programs also take a trip to TATC to learn more about the program. There is also a Pathways night at the three high schools. There are high school specific Pathways posters that show connection to USU Tooele campus and TATC as well as future career opportunities. Tooele District is working with the TATC to get additional larger posters made for recruitment and marketing purposes.*

Success Academy and Washington and Iron County School District with Southwest ATC, Dixie State, and SUU – *During class sign-ups, the internship coordinator had a table with candy to recruit students. She went to computer classes to recruit students and made announcements over the loud speaker. She also held a parent night and a counselor meeting to market the program. They have also found success in recruiting through students already in the program and having meetings with computer science teachers. Some high school computer teachers are worried about losing funding, since their funding is based on enrollment in their courses at the high school. So the meeting with teachers is to explain that the courses in this pathway program are different, so it is not taking funding from the high school.*

AM STEM at Dixie ATC *– They advertise the program to students and parents with a focus on the exciting careers as a maintenance tech or in advance manufacturing. They have developed brochures and magazines about what they can do with this type of certification. One student drives 40 minutes to get to this early morning program, because he knows it will change his life. They even get kids enrolled who do not know how to turn on a computer, since the program has been explained as so accessible.*

PARENT EDUCATION & INVOLVEMENT

Involving parents is important for the success of most educational programs. Parents are often over focused on students pursuing a 4-year college degree right after high school and the requirements for entry into those degree programs. Many parents are not aware of the opportunities offered by the Applied Technology Colleges or the certification programs that start in high school and can be finished at the ATCs and sometimes colleges in Utah. Parents also may not be aware of concurrent enrollment course offerings at the high school which can save families money in the future. It is important for a successful STEM industry certification program to have a component focused on parent education and involvement. Below are two examples of ways the grantees are engaging parents.

AM STEM at Dixie ATC – *They host AM STEM Night for parents. They have made the program competitive. Students need to apply and have an in person interview. Kids take it seriously and show up for their interview in suits. This recruitment process has helped them to get top students into the program. This year there were 107 parents who came on the tour and even parents signed up for classes. They have created an "I can" video, which helps engage parents and students.*

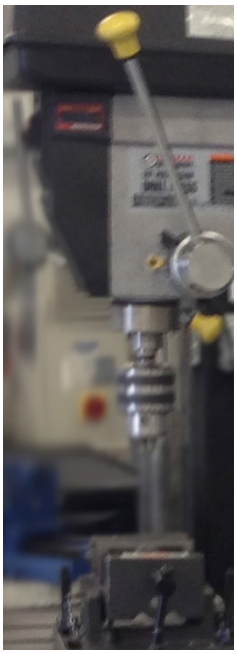
Cache Valley Districts and Bridgerland ATC *- Parent interest is high and they want to learn and get their own Robotics kits. Seven of the sixteen students have parents who have called to share how they cannot believe that their kids are getting up early in the morning on their own to get to their class.*

AM STEM at Dixie ATC – *They host AM STEM Night for parents. They have made the program competitive. Students need to apply and have an in person interview. Kids take it seriously and show up for their interview in suits. This recruitment process has helped them to get top students into the program. This year there were 107 parents who came on the tour and even parents signed up for classes. They have created an "I can" video, which helps engage parents and students.*

Davis and Morgan District *– In addition to the 400 students directly sponsored to attend the STEM Expo (see http://www.stemexpoutah.org/ and http://kutv.com/archive/northern-utah-stem-career-and-college-expo), the Expo was purposely extended until late evening so as to allow parents and other community partners to receive an opportunity to attend. Over 2,000 attendees entered the STEM Expo in the evening hours.*

SOAR Into STEM (Ogden and Ogden Weber ATC) *- Information for the program was presented and distributed at parent-teacher conferences at the high schools. Parents are also involved through volunteer efforts for the after-school STEM League activities.*

EQUIPMENT (RELEVANT TO CAREERS)



A successful high school industry certification program needs up to date equipment and resources relevant to the career pathways for which they are preparing students. Many high schools have older equipment and may not even be aware of the advancements in technology and equipment for the courses they offer for the certification program. This is one area where a grant program can be helpful to fill the gaps in equipment or replace outdated equipment. Below are a few examples of how grantees were able to leverage grant funding to make sure their students had appropriate equipment for their industry certification program.

Tooele County School District and Tooele ATC- *A large part of the funding went to buy 2 virtual welding machines for Tooele School District Welding courses. These machines save costs in terms of materials, but also develop muscle memory so that students do much better work in person. An example of what the virtual machine can do is to simulate for students what it is like to weld on a high beam. In addition, they purchased grinders and a few other pieces of equipment to support the pathways program. The grant funding also provided CNC equipment for TATC. The TATC benefited by the equipment provided by the grant and the articulation which should bring more kids there to complete more certifications in the future.*

AM STEM at Dixie ATC – *The program leaders worked with equipment manufacturers and were able to obtain a million dollars in equipment for the $330,000 grant and donations. For example, they were able to get $90,000 lathes for $20,000. The grant paid teacher time, and also for computers, Cisco trainers, and server rack components. Then they used those components and built racks for $12,000 that would have cost $30,000. Relevant equipment was the key to the program success. They believe in courses that are 30% classwork and 70% lab, so having relevant equipment for the lab is vital. They have also used grant funds to purchase EKG machines and Resuscitation dummies for the healthcare AM STEM and IT and graphics equipment*

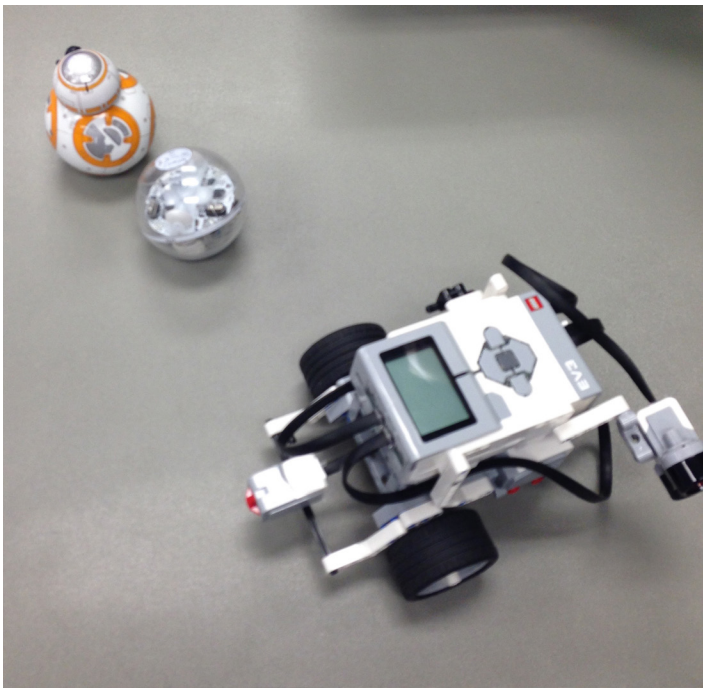
Nebo Advanced Learning Center *– Using grant funds Nebo purchased 3D printers, digital media equipment, and server stacks for IT. They also were able to support some of the costs associated with the implementation of Project Lead the Way.*

Cache Valley Districts and Bridgerland ATC *– The largest part of the funds granted were in the creation of industrial level trainers that would be located at all 8 locations. Students have labs that are done on industry level equipment in the areas of, programmable logic controllers, microcontrollers, hydraulics, pneumatics, robot simulations, and CNC simulation.*

Davis and Morgan District *– A large portion of funding has gone to preparation of the state's first Composites 1 high school program (Layton High School) based on the overwhelming response of students now enrolling in DATC Advanced Composites due to the STEM grant bringing them and their teachers into awareness of composites' existence, place, and purpose. Additional funding has provided teachers across the region with contemporary, STEM-rich options such as 3D printers, robots, injection molding trainers, and technology.*

SOAR Into STEM (Ogden and Ogden Weber ATC) *- Grant funds have been utilized to build the STEM library with purchase of classroom Robot competition kits, Spheros, 3-d printers, wind farm experimentation kits. Equipment for the startup of Project Lead the Way Launch will also be used.*

COUNCELOR EDUCATION



Counselors play a vital role in getting to know junior high and high school students and guiding them to select courses that will prepare them for their future careers and college. However, without education, counselors may not be aware of the latest career opportunities for students or industry needs in the state. In addition, counselors may make suggestions to students based on factors such as prior course grades, gender, or personal interests reducing the number of students guided into STEM pathways. Therefore, it is very important to educate counselors about the STEM certification programs and the diversity of students who can be successful in such programs. Also it is important for them to see that it is not a two track system, college or industry certification/ career. Students can get a certification to get a higher paying job to have while they complete a college degree or to fall back on if they cannot find a job once they get their degree. Next are a few examples of ways grantees are working with counselors to educate them about these STEM industry certification opportunities.

SOAR Into STEM (Ogden and Ogden Weber ATC)- *There are 49 students between the three pathways programs grades 10-12. The incoming 9th graders will have presentations at their junior highs with counselors. Oct 2015 was the first meeting with counselors, asking them to put the pathways at the front in discussion with students. They also had a follow-up training and discussion with counselors. Now the district student information system has a place where they select a career path and includes these 3 plus all other CTE pathways. Once a student declares a pathway the counselor and the program leaders can pull reports and connect with students and parents about the pathways and courses in those pathways.*

Tooele County School District and Tooele ATC- *The Tooele counselors are not tracking "high-end" students into Pathways, so the district Pathways leaders are trying to educate them. Often college bound students do not have job skills, so they end up working minimum wage at a grocery store, when their peers in CTE become certified and are working high paying jobs and also pursuing a college degree. So it is a need to rebrand the CTE Pathways. TATC meets with Counselors at their facility and they do a tour.*

Success Academy and Washington and Iron County School District with Southwest ATC, Dixie State, and SUU –*Counselors see the pathway program as a place to put kids they do not have anything to do with, so they have had to work to educate counselors. The involvement of the internship coordinator to engage counselors has been vital to keep them involved in the process. Students now approach the counselors after the internship coordinator did recruiting. The program leaders also made entrance to the program harder by adding a required letter of interest and application. This way students who are serious about the program are enrolled and not just a place for students with nothing else to do. This has raised the caliber of the students in the program, where students are more motivated and focused.*

Nebo Advanced Learning Center – *The STEM Coordinator provides counselor education meetings for junior high and high school counselors. They build connections with the counselors and share opportunities to learn and be involved in local and statewide STEM events. Local companies come to the district and say they need manufacturing and IT workers, and it has been helpful to have the STEM Coordinator to provide this information to teachers and counselors.*

Cache Valley Districts and Bridgerland ATC – *BATC instructor went to each high school and met with Counselors. They also brought them in to the BATC and fed them. A key part of the program is to educate the Counselors. They have taken some counselors on tours to see all of the classrooms and equipment. The challenge is that counselors are busy and they need to be reminded of this opportunity. Bridgerland has presented to school boards, had a booth at registration night, and also created a promotional video.*

Davis and Morgan District *– Counselors were invited to STEM expo to get exposed to STEM careers and heighten their awareness of what constitutes a STEM career and how to align student awareness and understanding of STEM as a potential pathway. Additionally, counselors have been trained by site-based CTE Coordinators regarding what STEM is, what local options exist for STEM and STEM-related programs and certificates, and training to address student interest in STEM fields. DATC student services staff are working to identify and track STEM students for their purposes, as well.*

21ST CENTURY CURRICULUM

It is important for district programs to review the curriculum currently in use for courses that lead towards an industry certification to make sure they are up to date and able to prepare students for the skills that industry needs. One way is to collaborate with industry to review curriculum to see if it meets their needs. Some of the grantees have determined that an appropriate curriculum does not exist, and so they are using grant funds to collaborate with industry or the ATC to create an appropriate curriculum. Below are a few such examples.

AM STEM at Dixie ATC – *They use a national curriculum for advanced manufacturing. They start the program with How Things Are Made for the 1st 9 weeks. For Industrial Maintenance they use a reliability tech motion curriculum. Level 1 students do Solid Works training. They have robotics programming for automation.*

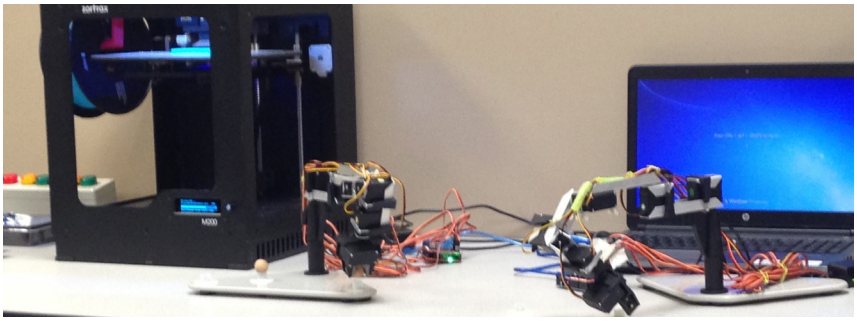
STEM Series (Launchpad with Success Academy and AM STEM Students)- *In software development, the tools change rapidly. Swift is what they use for mobile app development and it came out 3 months ago. So the challenge is staying up to date with the latest tools so that students are prepared for industry jobs.*

Cache Valley Districts and Bridgerland ATC –*Students learn PLCs, drone technology, program industrial robots, build small robots, solid works software, and more. The important thing is that they are learning transferable skills for multiple careers. They use a competency based model, where a student cannot progress to step 2 until they have mastered step 1. The program is Individually paced. The instructor from BATC says that the curriculum is teaching direct application of mathematics principles. When they are talking about 3D space they talk about geometry, trigonometry, and the application of algebra and the kids think it is cool. It is important to have industry participation to inform the curriculum design. They have an advisory committee that meets every 6 months. The Utah manufacturing companies are hurting for employees, since many current employees are set to retire. They see the benefit of this pipeline.*

Davis and Morgan District *– The nature of the intent of this grant lends itself directly to the need for teachers to identify curricular ignorance and be willing to address the void with their own classroom/ laboratory training. In doing so, it allowed teachers to comprehend current STEM pedagogy and practice, in comparison to their own actual instruction. Many have since returned and contemporized their curriculum with modern, relevant context and scope relative to STEM training.*

SOAR Into STEM (Ogden and Ogden Weber ATC) *- Grant funds are used to increase the rigor and relevance of the existing engineering pathway Ogden District by expanding the Project Lead the Way offerings at all Grade levels. At the Elementary Level, 6 teachers will be trained in PLTW Launch. At the Jr. High level Teachers will receive training to teach Gateway to Technology (Design and Modeling as well as Automation and Robotics.) At the High School level two teachers will receive training in the Aerospace Curriculum which includes a unit in composites fabrication. Teachers are also trained in Code. org curriculum as well as Defined STEM as supplementary instruction materials.*

INSTRUCTION DELIVERY

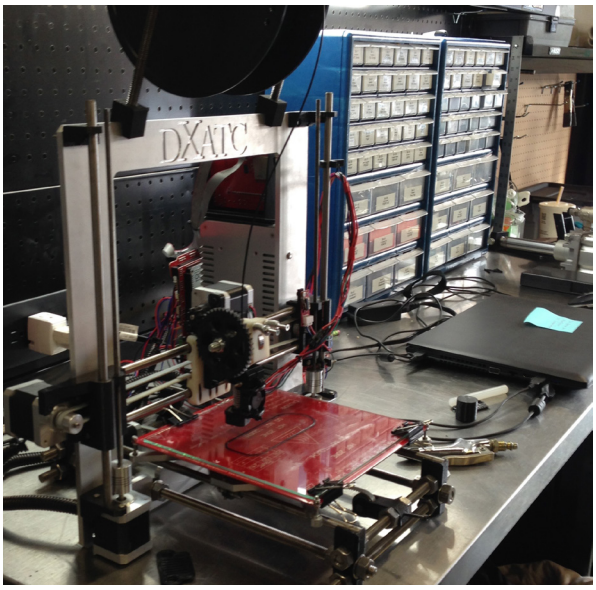


Due to the need to make instruction available to students at different times of the day, an industry certification program should think about innovative ways to bring instruction to students, such as broadcast courses, online courses, or opportunities for personalized learning with technology software. Next is an example of how one grantee is doing just that with some of their grant funding.

Cache Valley Districts and Bridgerland ATC – *An instructor from BATC broadcasts the course during zero hour through UEN. Then first and second period watch the recorded lesson. Year 1 course (2015-16), Level 1, is now in Canvas with the instruction recordings to be used in Year 2 and beyond. Course 2, Level 2, will be live broadcast and recorded during 2016-17. Fall 2016 new broadcasts Level 2 will not require Level 1 as a prerequisite. Students can finish any incomplete work in the summer at the BATC by filling out a scholarship application. One student is doing Level 1 at zero hours and Level 2 for 3 hours at BATC to get the full certificate done.*

PATHWAYS

While some students may enroll in an IT course to get a few quick certifications, others may take many courses along a pathway towards a STEM Career. In some cases, it may be too soon to start a certification program when currently no students would enroll due to lack of knowledge or interest. Therefore, starting a pathway, even as early as the middle grades, is one way to get students interested in a career and then on the path to certification and training for that career. For example, engineering is a field where people traditionally think that you complete most of your preparation in college. However, pre-engineering courses now begin as early as the middle grades. Students in middle school can do robotics activities that engage them in engineering and then can begin a STEM pathway that can prepare them for a future career in engineering. The same is true for manufacturing, computer science and other career pathways. There is much to learn from the grantees for how they are using grant funds to establish or strengthen STEM pathways programs within their districts.

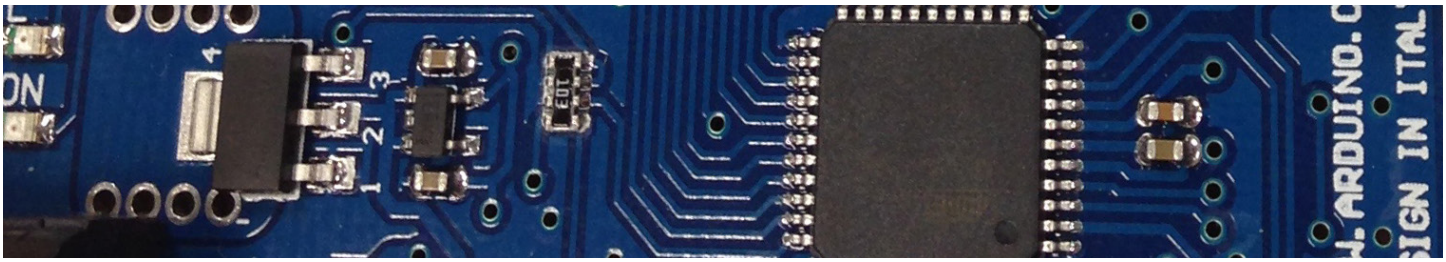


SOAR Into STEM (Ogden and Ogden Weber ATC)- *The pathway development was due to a CTE and OWATC collaboration. This began with an articulation discussion about what does a HS pathway look like, vs certificate completion at the ATC. The district preferred to have something students complete only in HS, so they focused on pathways and articulation to Weber or OWATC. Completion of Ogden district pathways are not sufficient for trade certification. Completion of a pathway shows up on their diploma, so it adds a recognition chord at graduation. It is not formalized yet, but they are looking into workplace readiness certificate that ATC can grant and Ogden district can design the program to meet the ATC standard. The Pathways lead to mentorships and site visits. Pathways are not enough for employability in a related industry, but enough for a meaningful work experience. When they use the word intern they are thinking juniors in college ready to be employed. So another word may be needed for exposure to industry on the job with workplace experience.*

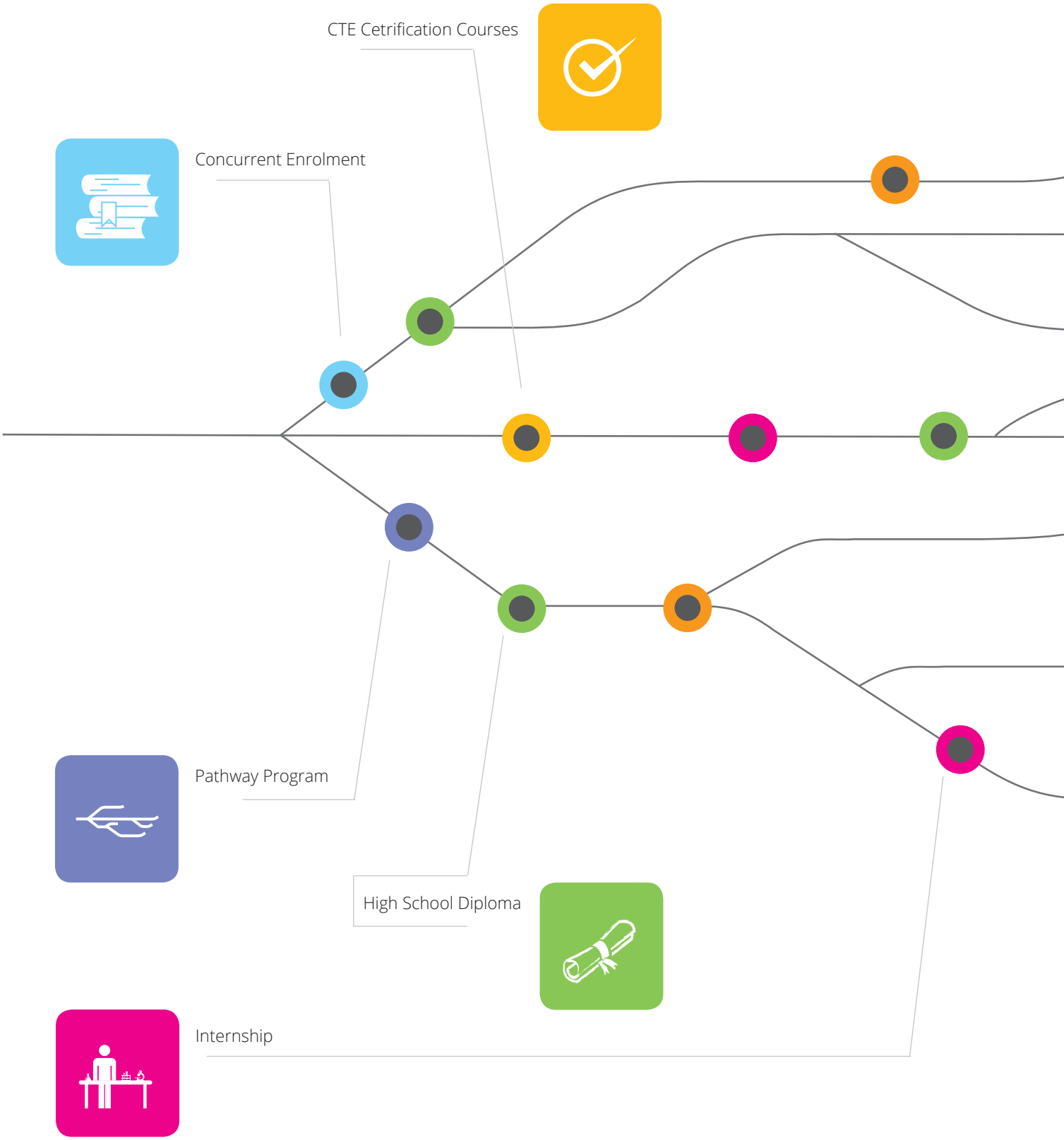
Davis and Morgan District - *Based on the needs assessment there was a need to begin with career pathways that would lead to UCAT and other industry certifications. There are three pathways supported by this grant program: Engineering, IT, and Health Science. Inclusive and where available, students are encouraged to consider internships as a critical 'capstone' pathway experience. Limitations in the form of industry interest, availability, security, etc. tend to drive to opportunity for internship obtainability.*

Success Academy and Washington and Iron County School District with Southwest ATC, Dixie State, and SUU *–It has been challenging making connections to establish the computer science pathway. They have a CIW certification for web design that is nationally recognized. They have a 2 year Comptia certification program that includes A+, Lynx +, security, network technology for a total of 8 industry recognized certificates that are part of this Computer Information Technology Pathway. Students are able to take classes their senior year on the SUU campus to finish their general education requirements.*

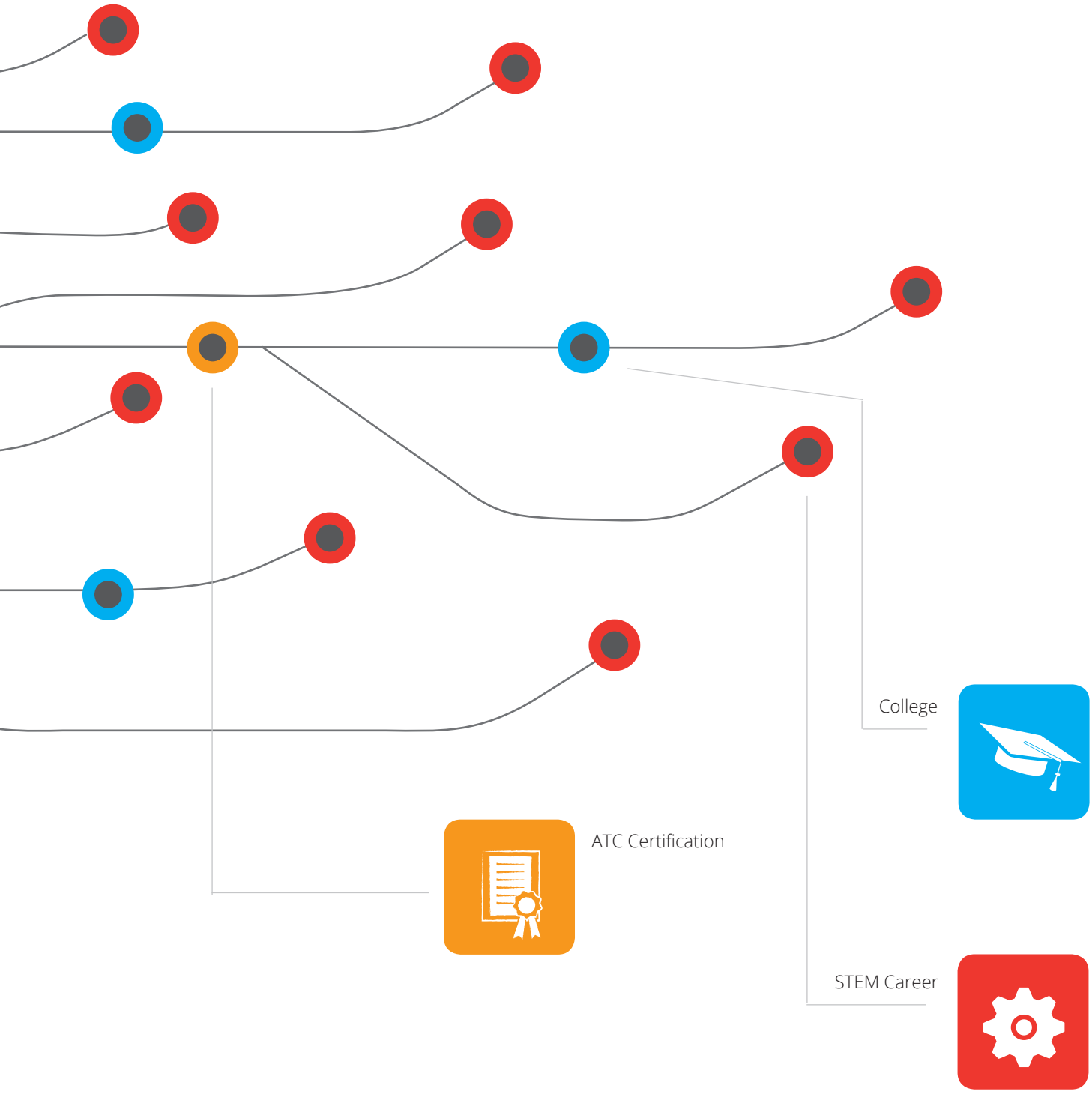
Nebo Advanced Learning Center *– The Nebo Advanced Learning Center is in its fourth year. Students from local high schools can go there for up to 8 periods. All of the courses offered are concurrent enrollment college courses. They realized there was a need to build the pipeline starting in the younger grades to recruit more students into engineering, healthcare, IT, CS. Every region has $50,000 for a pathway coordinator. The STEM Coordinator paid for by the STEM Action Center grant works with this pathway coordinator. The pathways are not in the student information system, but they are in the course guidebook for College and Career Readiness that Junior High and High School Counselors have to guide students and their parents.*



MORE THAN JUST TWO PATHWAYS



These are just a few of the many pathways being made available to today's high school students.

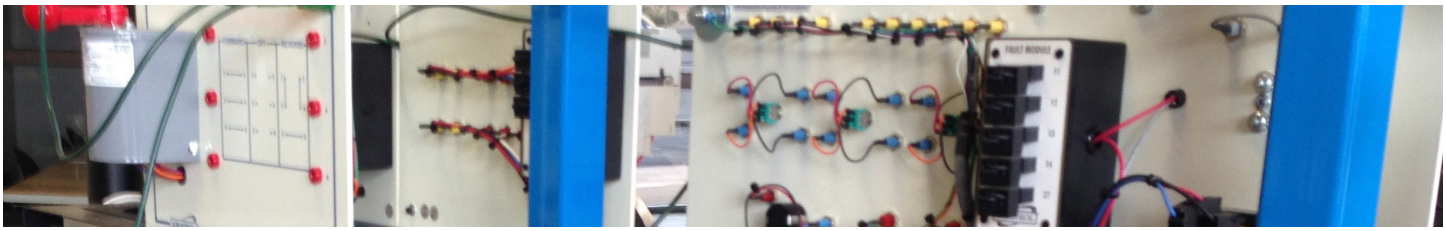


STUDENT INFORMATION SYSTEMS

Once pathways are in place with an outline of course options for students to complete to prepare for a particular career, how do students, their parents, counselors and teachers get that information to make sure the student maximizes their time in high school to complete the necessary coursework? Using the district student information system is one innovative approach Ogden district is using to share that information with all people working with a student towards their college and career goals.

SOAR Into STEM (Ogden and Ogden Weber ATC)- *The student information system (SIS) has pathways built in, connected to the related required courses. Once a student declares a pathway the counselor and the program leaders can pull reports and connect with students and parents about the pathways and courses in those pathways for IT, Welding, and Manufacturing.*

ARTICULATION TO ATC & COLLEGE



One challenge to having a successful high school industry certification program is collaborating with the local ATC or colleges around articulation. These post-secondary programs need to accept the credits for certification coursework completed at the high school in order for students to continue on to complete the full certification, which sometimes cannot happen until they reach the post-secondary institution. In some cases, students are able to begin taking courses at the ATC while in high school or complete dual enrollment courses at the high school that will count once they reach their local college or university. These relationships are vital to the success of these programs. Next we share a few examples of how grantees are collaborating with their local post-secondary institutions.

Tooele County School District and Tooele ATC- *This grant has made possible funding for part of a district person to be a liaison with the TATC to work on the articulation of the pathways. When a student completes 900 hours at TATC, it counts as 30 credits towards an Associates degree at USU. According to Tooele District leaders, 53% of seniors in the CTE program in high school are now in post secondary programs compared to only 48% of seniors not in the CTE program. Graduation rates, math scores and language scores are higher for CTE students, which the district believes is because relevancy is key, which CTE provides. Tooele County School District has an agreement with TATC, that while the district has a robust program for CTE, students can go to the TATC after school or in the summer to go quicker through the certification program. An important outcome of the articulation work is that whatever students complete in high school is waved at TATC During their high school years students do not have to pay tuition for TATC, but they have to pay fees.*

Success Academy and Washington and Iron County School District with Southwest ATC, Dixie State, and SUU – *Students in the pathway program at Success Academy are able to get college credit at Dixie State.*

Nebo Advanced Learning Center – *At the ALC all of the courses offered are concurrent enrollment college courses. Utah Valley University processes the course credits. Weber state has health care and engineering program articulation for credits completed at the ALC. The ALC students can get up to half of a year of their certification completed in Computer Science, Information Technology and Digital Media. Although there are 15 course articulation agreements, this has taken the time from the STEM Coordinator to work with Higher Education to make this happen. Students go to the Mountainland ATC for auto, dental, and medical, but those students usually do not go to the Advanced Learning Center since the focus is more on articulation to colleges (UVU or Weber). The Nebo district is working with MATC to have welding, manufacturing skill center. UVU is also creating a manufacturing pathway and will work on articulation with MATC and ALC. Currently MATC and Nebo have a strong partnership for welding. MATC instructors were judges at the district welding competition. District welding teachers work hand in hand with MATC teachers.*

AM STEM & Dixie ATC - *If students start the certification program as sophomore, they can do 3 years in high school and complete their capstone IT or digital media certification, and then they can articulate to Dixie State University with 30 transferable elective technical credits. They are not having issues with course articulations. They have a bachelor track in healthcare, billing, and coding with Dixie ATC.*

Davis and Morgan District *– The Davis/Morgan region have been thankful for this grant, because it has allowed them to provide grants for students to increase opportunities in STEM pathways/careers while bringing teacher skill and ability 'up to speed' and outfitting their facilities with current technology. The unforeseen benefit of the grant has also included the networking that has occurred between all levels and all organizations. Davis has increased strength with Morgan School District by their inclusion in the grant program. CTE, Math, and Science supervisors at the district level work hand-in-hand and not competitively to maximize utilization of time, resources, personnel, etc. The Davis and Morgan School Districts have enjoyed a strong relationship with the DATC in collaborating for the sake of students. More students are now registered for DATC STEM programs and certificates than ever before.*

SOAR Into STEM (Ogden and Ogden Weber ATC) *- 24 of the 32 pathway courses for Ogden's STEM pathways are Concurrent Enrollment through either WSU or the OWATC. Some of the I.T. courses are new this year so articulation agreements are still in the development process. All of these courses plus those that students can elect to take to get further industry certificates are offered at no cost while they are in high school. Students who complete the HS pathway requirements will also be eligible for scholarships from both post-secondary institutions in order to complete full industry certifications.*

INDUSTRY EXPERT TO TRAIN TEACHERS

One challenge of having a high school industry program is finding trained teachers with the latest industry skills. Many high schools are competing with industry for the same skilled people, but cannot pay the same salary. An alternative is to send current teachers to training or have an industry expert come to them to conduct a training. Leveraging the resources of trained experts working at the ATC or local colleges is another resource. Next we share a few strategies used by grantees to train their teachers.

SOAR Into STEM (Ogden and Ogden Weber ATC) *- OWATC will open up all of their courses for OSD teachers to come in and take in order to increase their skills in industry related to the courses that they teach. All OWATC instructors also carry significant industry experience.*

Cache Valley Districts and Bridgerland ATC – *The BATC instructor is a great resource according to teachers. BATC has spent a quarter million dollars in setting up the lab and high end training for this instructor. High School instructor training last summer for 2 weeks and this summer for 2 weeks is vital to transfer the knowledge from the BATC expert to these high school instructors.*

Nebo Alternative Learning Center –*Teachers in the district and at ALC lack the needed skills for manufacturing and IT. The district is discussing with IM Flash the option of offering distance classes for the district. US Synthetics has also connected with them about training some of their teachers, since what they focus on is a type of problem solver they need as an employee.*

TEACHER TRAINING FOR NEW INDUSTRY TOOLS, SKILLS & NEEDS

Teachers need to be trained in the skills that are needed by industry so that they can provide courses that will prepare the students. Grantees know this is important and below are a few examples of how they are preparing teachers.

Cache Valley Districts and Bridgerland ATC – *Just having the expert from BATC broadcast the course through UEN is not enough. If the UEN broadcast crashes, it is important to have a teacher live in class to support the students learning. The high school teacher also learns from this work with the BATC instructor.*

Davis and Morgan District - *Teachers did a variety of training where they learned about certificate programs. For example, one teacher who teaches Principles of Engineering has used grant money to get more kids interested. This teacher is a huge advocate for programs that will help you get a skill to make money to pay for college. The DATC course this teacher attended helped him learn more to share about certificates with his students and now even his son is in the process of picking a pathway. This teacher has an engineering background and shared how technical skills make a person more valuable. He recommends just a half day exposure for teachers in the future instead of the 3 days that he received. He explained how as a teacher you need to walk the DATC facility rather than just getting a list of programs. His repeated statement of, "I had no idea what was over at the ATC" cemented the need for focused PD coupled with accountability in instructional change and practice.*

SOAR Into STEM (Ogden and Ogden Weber ATC)- *ATK has committed to 2 teacher externships. Teachers have to apply and there is a coordinated selection process. Currently they are finalizing the pay requirements. For Engineering, with grant funds, they are sending 2 teachers to aerospace engineering training to bridge composites and engineering.*

Nebo Advanced Learning Center – *The STEM Coordinator has also created training for CTE teachers in areas where they report they have needs. For example, one training brought in business leaders to talk about the importance of coding. The STEM Coordinator also coordinated training from the Buck Institute on project based learning with grant funds for teachers at the ALC.*

Success Academy and Washington and Iron County School District with Southwest ATC, Dixie State, and SUU – *They have had a real challenge to find professors to teach the courses, which limits the growth of the program. It is hard to compete with industry for qualified people.*

SOAR Into STEM (Ogden and Ogden Weber ATC) - *Two of the industry partners, ATK and Petersen, have committed to offer a 6-week teacher externship training opportunity for 3 teachers. Teachers will work along Engineering and Manufacturing professionals at each of these facilities to gain real-world experience that they can bring into their classroom. They will document their experience and create lesson plans to define how they will work this experience into their classes. Grant funds will be used to pay teachers for their time working at these facilities. Other partners are looking into offering the same program at their sites.*

FUNDING FOR POSTSECONDARY TRAINING & CERTIFICATION

Some of the certifications require additional hours beyond high school, but this can be challenging for students who are not prepared for this financial burden. Several grantees shared opportunities for students to obtain scholarships or other funding to continue their certification after they graduate from high school.

Cache Valley Districts and Bridgerland ATC – *Seniors can have free tuition over the summer after their senior year at BATC. They also tell the seniors about BATC scholarships available and the application process. Many students are going on to USU. The AutoLiv internship provides tuition for BATC or USU. The 900 hour certificates qualify as the 1st year of 30 credits at USU for the AAS in General Technology, and USU is working on approval of a bachelors' degree in General Technology right now.*

SOAR Into STEM (Ogden and Ogden Weber ATC)- *They are working on, but not yet approved a plan for incentives. If a student completes a pathway they would get offered a presidential scholarship to complete the certificate program at the ATC. Also they are pursuing awarding the students a $500 scholarship for Weber St.*

Davis and Morgan District – *The districts included in their proposal a plan to offer $1,000 scholarships to support postsecondary costs of completing certifications. One scholarship winner will use her scholarship for $800 for DATC tuition, so she will not need to worry about tuition. She received the award after writing a 1-page paper on how the scholarship would help meet her goals for dental assisting. She will do an externship at DATC after completing her high school diploma. Another female student will use her scholarship to complete the DATC medical assisting certificate then continue on to UVU for general education. Finally she will complete an ultrasound program at Weber State. The DATC coordinating office pulls students in to recruit them for a scholarship. As students complete courses in their pathway in Davis district, they earn points that are accepted at Weber state. The Medical assisting program takes a year and a half and then they complete the externship. There is a bridge scholarship offered by DATC, but only for students already in the program.*

Nebo Advanced Learning Center - *Students after their senior year need to pay for any courses taken at the MATC unlike other areas in the state where the summer after their senior year is free. There is a CTE scholarship at MATC that students for which students may apply.*

Tooele County School District and Tooele ATC- *A real issue is that TATC has been open for 10 years and yet it still does not provide FAFSA for students to receive financial aid for tuition. They offer a $500 scholarship program students can apply for in addition to funding from family foundations. This is a limiting factor, and many students choose to go to Salt Lake Community College instead where they can get financial aid.*

AM STEM and Dixie ATC - *Dixie ATC provides bridge scholarships for their 1st year of tuition after they graduate from high school, which comes out of Dixie ATC funding.*

CERTIFICATE TESTING COSTS

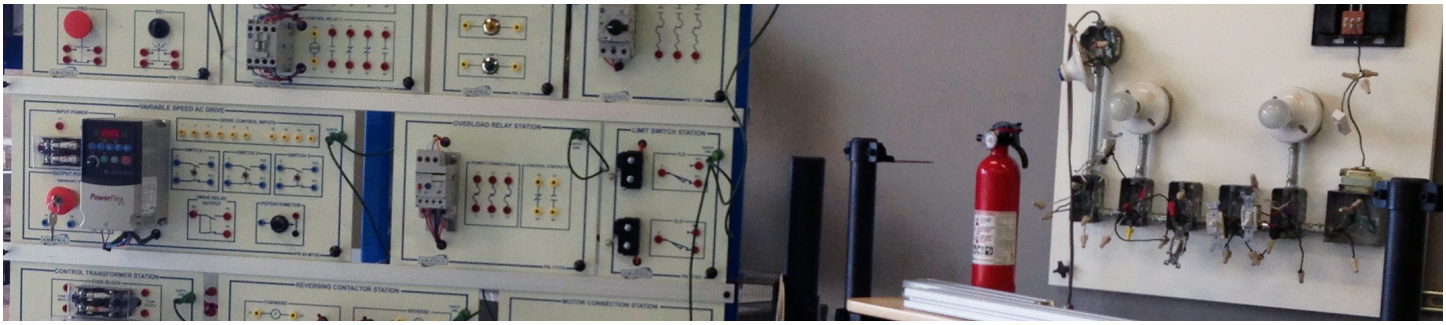
Some certificate programs can be completed through coursework, but others are not complete until an assessment is given. Many of these assessments are given by an outside vendor that charges a fee either per students or a rate for a number of students. This cost of certificate testing can be a burden to districts. The grant funds have been used by several districts to support the cost of these certificates which are vital to the certificate program.

Davis and Morgan District *– The Davis and Morgan district leaders wrote into the grant proposal money for a Certaport contract with Adobe because they need to continue with Adobe certification. Smaller districts like Morgan cannot afford to do the Certaport contract for Adobe certification. For sustainability this is an issue, because this is an ongoing need, and a cost of $90 per student.*

Tooele County School District and Tooele ATC- *One drawback of the A+ certification is the cost. Students get a 50% reimbursement once they pass and submit their certificate to the district. The district goal is to increase certifications by 30%. They purchased Test Out (less recognized as Comptia exams) and Cisco with the grant funds, but they are concerned long term with sustainability. The reason they do not use Comptia is that it does not have a Lynx certification test. Comptia is $90 per student. However, one negative about Test Out is that it does not articulate cleanly with TATC; however, more kids are testing through test out. There is a need for future funding for Test Out.*

Davis and Morgan District *– The Davis and Morgan district leaders wrote into the grant proposal money for a Certaport contract with Adobe because they need to continue with Adobe certification. Smaller districts like Morgan cannot afford to do the Certaport contract for Adobe certification. For sustainability this is an issue, because this is an ongoing need, and a cost of $90 per student.*

INTERNSHIPS



While providing an industry certification is important, it is also valuable to have internships available for students to gain on the job experience. There are many challenges and barriers to internships for students when they are under 18 years old. However, several of the grantees are finding ways to overcome these challenges and provide internship experiences for their students.

Cache Valley Districts and Bridgerland ATC - *AutoLiv Internship program for students provides a minimum of 16 hours and maximum of 29 hours at $15 per hour. The students receive tuition at BATC or USU. The current seniors in the program will need to finish over the summer. To qualify for the internship, the students must complete a 900 hour program. Students that complete Level 2 certificates , are ready for an internship, but not necessarily employable. Students must be 18 to start an internship.*

SOAR Into STEM (Ogden and Ogden Weber ATC)- *Hill Air Force base is working on an internship opportunity for students not yet 18. There will be 6 opportunities in composites with potential expansion to Computer Science and engineering. Students have to complete the pathway to do the internship. The Composites requirement courses are half of the required courses for the trade certificate through ATC, so if the students finish this portion it shows commitment and more than likely they will complete the trade certificate at OWATC. Introduction to Advanced Composites will be in high schools starting next year but this year students had to go to OWATC for the courses. Currently industry is not paying any of the internship costs, the district is. Hill Air Force base says after they finish the full certificate, they will pay the internship. Petersen Inc. has also agreed to offer an internship to one student in the engineering pathway. OSD is pursuing further internship opportunities with other industry partners.*

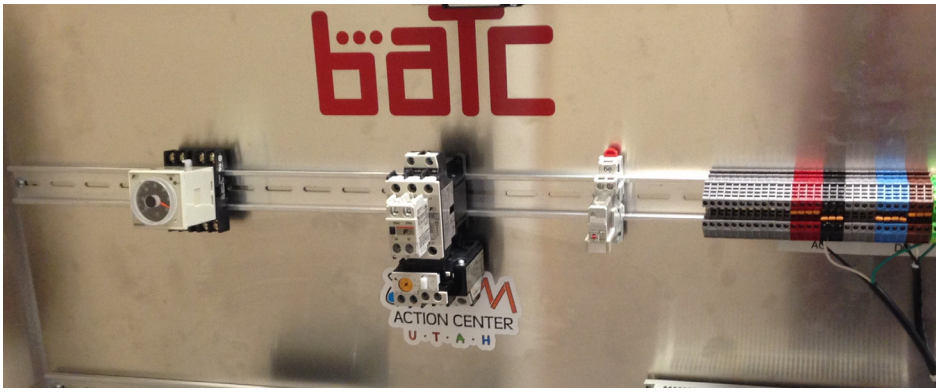
Success Academy and Washington and Iron County School District with Southwest ATC, Dixie State, and SUU – *Success Academy has spent grant funds on an internship coordinator who places students in the internships. While the students earn their Associates degree at Success Academy, they need job skills. The internship coordinator also develops relationships with the Southwest ATC, Dixie State, and Southern Utah University. There are more internship opportunities for students in St George. SynTec and G.O. Green have internship opportunities in Cedar City. So far only one student has engaged in an internship, since the program has just started. They also work with students on their resumes, hold mock interviews, and talk to students about how to behave in the workplace. Students worked on a commercial for Star Wars, and industry leaders were involved in voting for the winner.*

AM STEM at Dixie ATC – *An important part of the grant has been funding a placement coordinator. This provides internship opportunities for students. In the summer AM STEM Students have the opportunity to have paid internships. Students pay $1,000 fees for the program normally, but industry has stepped up and paid fees for many students and have provided internships. One of their students who had no pathway before AM STEM, took AM STEM and now works at a jewelry store doing wax models for thousand dollar rings. He programs the equipment and designs the rings. The student of the year at Dixie ATC is an AM STEM student. The instructors nominated him, and he received $1,000. He has been so strong Dixie ATC has hired him to help with their website and write curriculum.*

STEM Series (Launchpad with Success Academy and AM STEM Students)- *Grant funding is used to provide paid internships for student participants to intern with partner organizations. Internships are $2,000 and cover a 10 week paid internship. However, the technical requirements for the internship lend itself best to seniors or first year college students realistically.*

Nebo Advanced Learning Center *–The biggest struggle Nebo has had is with industry partnerships to provide internships for students. Every high school has a half time person who coordinates internships. They have had some success working with parents to place students with their companies. Health is the area where they have the most internship opportunities. However, it is somewhat of a challenge due to a requirement that students have shots, HIPPA, and some recent changes where Dr. offices no longer allow internships. They have had the most success with Mountain View Hospital. IM Flash has not been able to provide internships, but they do provide a field trip for students and teachers to visit their facility and also provide guest lectures to the high schools. They have worked with Launchpad and found internships for 13 of the 22 Launchpad slots. At the end of year Launchpad celebration, the industry partners were positive about the experience. They need to figure out a way to have local businesses provide internships so students don't have to drive to Provo.*

TRANSPORTATION

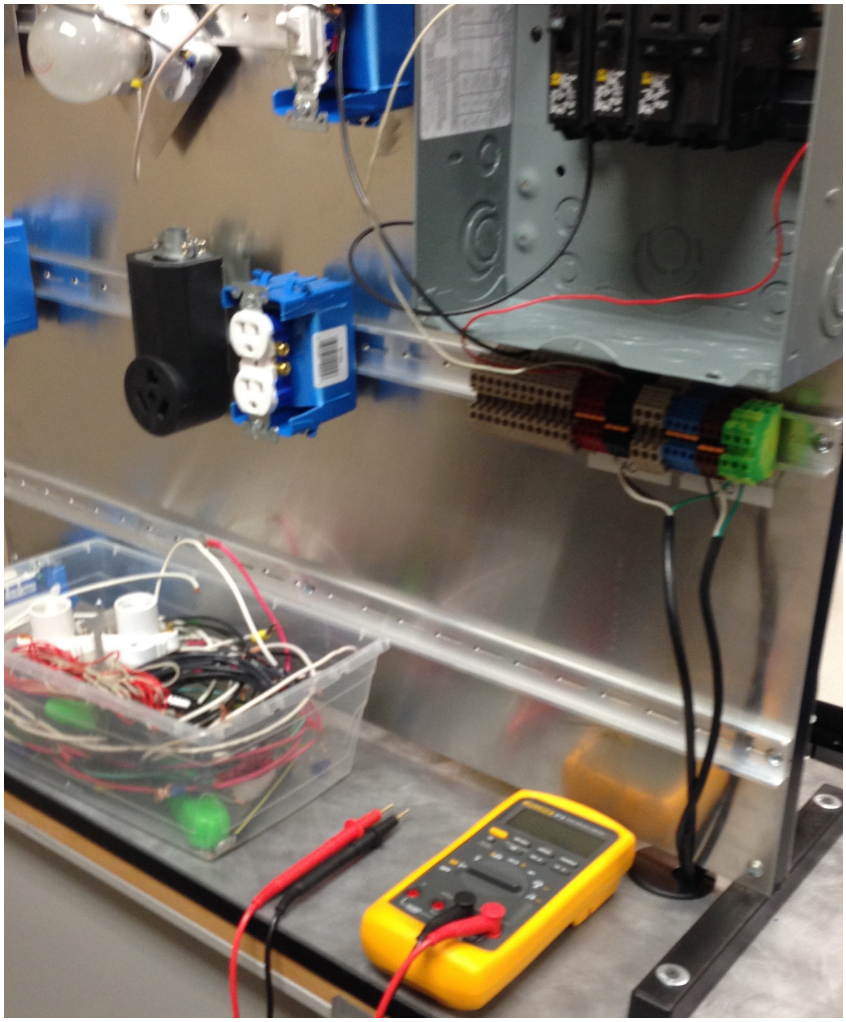


To complete the full certification program, often students need to travel to their local ATC or college campus. They may do this for part of their day during high school or after they graduate. Transportation is important to ensure that students have the opportunity to take advantage of these programs. Here is what is happening in two districts with transportation for students in the certification programs.

SOAR Into STEM (Ogden and Ogden Weber ATC)- *The ATC is conveniently located a 9 min drive max, and all students are provided transportation through a bus pass. The OWATC is also walking distance from Ben Lomand and Highland High Schools.*

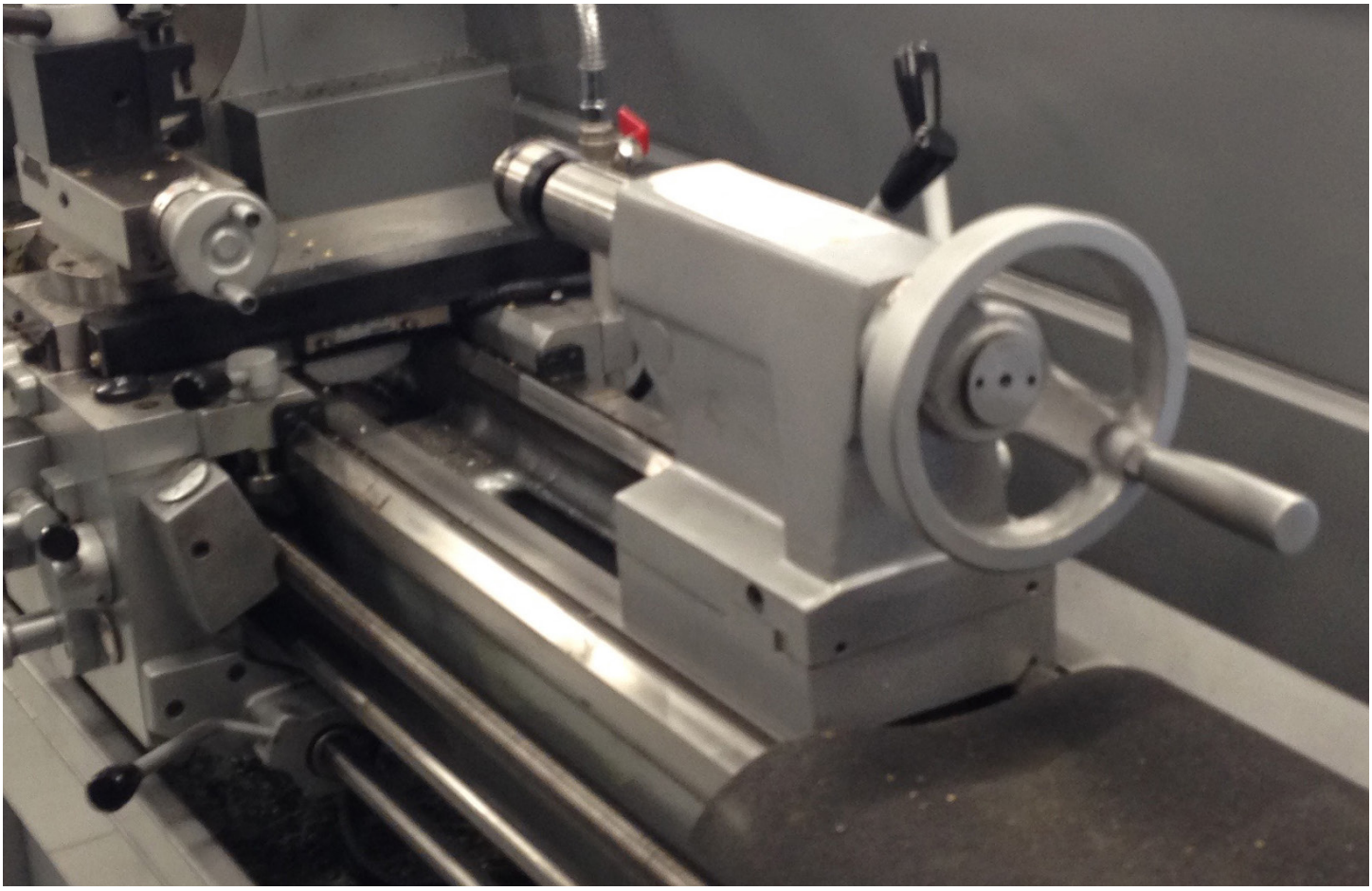
Davis and Morgan District *– The grant funded 50 students per high school and also for Morgan district to attend the district-sponsored STEM Expo (see http://www.stemexpoutah.org/ and http://kutv.com/archive/northern-utah-stem-career-and-college-expo).*

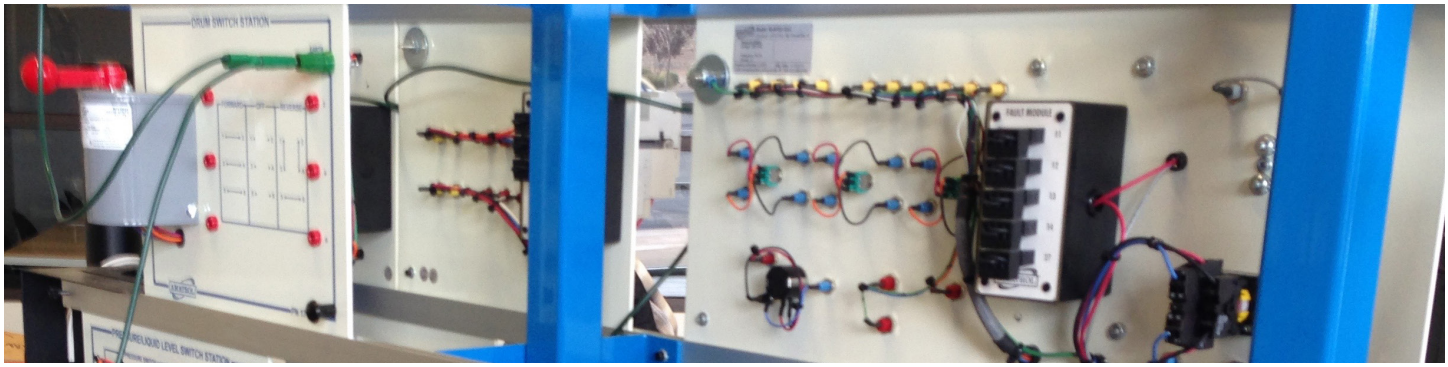
Nebo Advanced Learning Center– *The district provides busses from the high schools to the ALC and students can drive there on their own.*



SUSTAINABILITY

The STEM Action Center has been meeting with the grantees to engage in conversations about sustainability of these programs. For many the equipment is in place, the teachers are trained, and as long as students continue to select courses in the pathway there is sustainability. For others, more funding may be needed to continue to build the program, to train more teachers, and to support internship costs as well as certification testing costs. At the end of this grant program, there will be an opportunity to learn more about the ways each grantee is moving forward with a sustainability plan and also what other sources of funding and resources they have been able to access to sustain the program.





OUTCOMES

The main outcomes of interest for this grant program are the number of STEM industry certificates completed and the number of internships completed. Other valuable outcomes include enrollment in post-secondary education and employment; however, it may take another year or two to have data for those outcomes. We present the data available as of February 2016 for these outcomes and any other data the grantees have shared with us.

Grantee Partnership	*STEM Industry Certificates*	*Internships*	*Other Outcomes*
Cache Valley Districts and Bridgerland ATC (Data as of 2-1-2016)	• 118 students in progress towards Automated Manufacturing and Robotics Certificate	• 0 internships	• None submitted
SOAR into STEM Ogden and Ogden Weber ATC (Data as of 1/28/2016)	• 52 students in one or more STEM pathways. 44 of the students have completed one or more courses as part of the pathway	• 0 internships	• 18 students enrolled in concurrent enrollment courses
Davis and Morgan District and Davis ATC	• 802 students in the Media Design Pathway enrolled in a course where they can take an Adobe Industry Certification Test (Photoshop, Illustrator, InDesign, Premiere, Flash, and Dreamweaver) • Spring 2016 New enrollees in DATC Certification programs due to grant funding activities • 1 Chairside Dental Hygiene Assistant • 32 Composite Materials Technology • 2 Digital Media Design • 3 Emergency Services • 3 Information Technology • 19 Nurse Assistant	• No data submitted	• 50 scholarships awarded to students in STEM Certification programs
Success Academy and Washington and Iron County School District with Southwest ATC, Dixie State, and SUU (Data as of 12-6-2015)	• 15 Information Technology-AM STEM in progress • 14 A+ certificates completed • 11 Network + completed • 11 Security + completed and 6 in progress • 6 A+ CompTIA certificates completed 10 in progress • 1 CompTIA Network + completed, 4 in progress • 1 CompTIA Security + completed • 4 CompTIA Linux+ in progress • 6 MCSA Windows Server in progress	• 10 internships in progress • 1 student graduated and is interning with the city of St. George	

Grantee Partnership	*STEM Industry Certificates*	*Internships*	*Other Outcomes*
Summit Academy STEM IT (Data as of 1-28-2016)	• 16 STEM IT Certifications completed • 2 out of 16 passed TestOut PC ProA+Computer Repair • 67 IT certifications in progress	• 0 internships	• 1 senior going to college for mechanical engineering • 1 student in 9th grade may be accepting a summer IT job in California
Nebo Advanced Learning Center (Data as of 10-22-2015)	Students in Pathways • 103 Computer Programming • 46 Digital • 73 Health Science • 35 IT • 69 Pre-engineering (266 unique students, some are enrolled in more than one pathway)	• 0 internships	
STEM Series (Launchpad with Success Academy and AM STEM Students) (Data as of 2-1-2016)	• 73 Launchpad certificates completed • 17 Launchpad certificates in progress	• 31 internships completed spring 2015	
Southeast Consortium	• The program will not begin until fall of 2016. Standards and objectives for the three classes in the pathway are currently under development	• 0 internships	
AM STEM at Dixie ATC	• No data submitted	• No data submitted	
Granite District	• No data submitted	• No data submitted	
Tooele County School District and Tooele ATC	• No data submitted	• No data submitted	
Wasatch Front Consortium	• No data submitted	• No data submitted	

CONCLUSION

The goal of this preliminary report is to share the diversity of strategies districts are using to address the needs for high school STEM Industry Certification Programs. Hopefully some of the strategies being used by one district can inform the work of another. Also issues such as the challenges of funding the certification tests, transportation costs, and costs of completing the program at the ATC can be areas to consider for future funding. Grantees should share resources, such as teacher training materials and curriculum written for pathways and courses to sustain these programs statewide. There is also a role for industry to support these programs by providing internships, being available to train teachers and counselors about career options in their field. There are great things going on in the state around STEM industry certification supported by this grant program that people should take interest in, visit, and learn more about.

For questions contact Sarah Brasiel
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February 2016

February 2016

Appendix M: Sponsorships Summary

Date	Organization	Event	Est. Reach	Amount requ	Amount	Amour	Description	Benefits to AC	STEM Mission Connection
8/29/2015	Self ESTEAM	Self ESTEAM	70	$1,049.94	$1,049.94	50	The SELF-ESTEAM organization was established to help increase the number of women and minorities that go into STEAM fields. The SELF-ESTEAM conference will reach out to students and help them build their self-confidence while preparing them for academic and professional success. The event will take place on August 15, from 7:30 a.m. to 5 p.m. Location to be determined.	The STEM Action Center will be featured on the SELF-ESTEAM website, all social media platforms, in the conference program books, on the banners, student conference tote bags, all conference advertisement materials (digital and print). In addition the STEM Action Center will be mentioned in all official press releases.	This event introduces students to local STEAM community leaders, academia professionals and industry representatives. These leaders, professionals and representatives will have the opportunity to be a part of this conference by presenting session modules and discussing what their company/organization does in terms of STEAM. The target audience for this event is junior high and high school minority girls. This is an all day event that will take place quarterly.
09/24-25/2015	USU STE2M Center	Making Innovation Conference	200	$2,000	$2,000	350	The Utah State University STE²M Center is organizing Utah's first Making Innovation Conference. The mission of the Making Innovation Conference is to gather local and national researchers, educators, policy makers, designers, and makers to present, share, and discuss innovative maker activities and related research that promotes STEM learning. The STEM Action Center has been invited to attend, exhibit and to submit a proposal for presentation.	The Utah State University STE²M Center is organizing Utah's first Making Innovation Conference. The mission of the Making Innovation Conference is to gather local and national researchers, educators, policy makers, designers, and makers to present, share, and discuss innovative maker activities and related research that promotes STEM learning. The STEM Action Center has been invited to attend, exhibit and to submit a proposal for presentation.	Researchers and advanced practitioners will provide sessions about teaching and learning with STEM through Making. Roundtable breakout sessions will stimulate discussion and collaboration between academics, teachers/schools/districts, and policymakers from around the state who might help to support the movement and integration into traditional schooling venues.
10/28/2015	SLCSE	STEM Fun Run	300	$870	$870		This is a fundraising/community building event for the Rose Park community on October 10 from 8 a.m. to 12 p.m. SLCSE is a Title I charter school within the Salt Lake School District. The money raised from this Fun Run will go to provide needed supplies within our science and math classes and scholarships for our seniors. They struggle with getting their large Hispanic community involved with their school events, so we are hoping to provide a great family outing and have contacted area STEM supporters such as Thanksgiving Point, The Leonardo, Red Butte Gardens, and Utah Museum of Natural History.	They would use the STEM Center logo to show support on banners, flyers, signage, website,etc. They hope to make this an annual event and expect 150-250 participants this first year.	They would use the STEM Center logo to show support on banners, flyers, signage, website,etc. They hope to make this an annual event and expect 150-250 participants this first year.
11/5/2015	Bio Utah	Bio Utah Summit	300	$1,500	$1,500	400	BioUtah hosts the Utah Life Science Summit at which they have an awards ceremony luncheon for those dedicated to the life sciences industry on November 5, 2015. High school students are recognized at this event for their efforts in STEM related subjects, along with individuals in the community who have excelled in promoting life sciences through service and other contributions.	• BioUtah reserves two tables for STEM students and awards finalists. • Verbal recognition of the STEM Action Center at the event • STEM Action Center welcomed to share promotional materials at the event	This is an opportunity to encourage life science individuals to think about how they can impact STEM education and to take advantage of and participate in STEM related opportunities and education.

Date	Organization	Event	Est. Reach	Amount requ	Amount	Amour	Description	Benefits to AC	STEM Mission Connection
11/9/2015	Davis Education Foundation	Northern Utah STEM College and Career Exposition	5000	$5,000	$5,000	4000	The Davis, Weber, Ogden and Morgan school districts will host the Northern Utah STEM College and Career Exposition on November 9, 2015 at the Davis Conference Center in Layton, Utah. Our event is divided into two sessions; a high school session and a community STEM Family Night. We anticipate 800 high school students, teachers, administrators, and counselors will participate from the school districts during our high school session.. A Family STEM Exposition will run from 5:00 – 9:00 PM and will be open to parents, junior high students and elementary students of Davis, Weber, Morgan and Ogden school districts. We anticipate more than 6,000 to be in attendance.	• Name and company logo on all print materials (registration, news, flyers, posters etc.) • Name and company logo on event banners. (See last year example) • Name and company log on all electronic signage at the Davis Conference Center. • Verbal recognition at the event and all media coverage. • Name and company logo on student event materials (bags, notebooks, name tags) • Prime booth location in the EXPO Hall • The invitation to provide a specialty workshops (repeated six times) for the students. • Name and logo on all four school district's (Foundation) websites. • Invitation for membership on the planning event committee	The event is specifically promoting science, technology, engineering and mathematics through best practices, by directly engaging students with industry.
11/13/2015	Utah School Counselor Association (USCA)	Utah School Counselor Association (USCA) Conference	500	$1,500	$1,500		The Utah School Counselor Association (USCA) is holding their annual conference. The event will take place on November 13, 2015, from 7:00 a.m. to 5 p.m. at Utah Valley Convention Center.	The STEM Action Center will have a half page ad in their on-site conference program booklet, a half-page ad in the USCA Magazine, a link on the USCA Conference website and a listing on the Silver Sponsor sign in the registration area. We will also be provided with exhibitor space at the event.	This event is an opportunity to talk with counselors about STEM opportunities in the State of Utah. It's an opportunity to give student counselors resources that they can use to help students with career choices in STEM.
11/13/2015	Boys and Girls Club	Northern Utah STEM Fair	2,000	$5,000	$2,500	3754	The Boys & Girls Club of Northern Utah, with the support of many of the businesses in Northern Utah have to together a STEM Fair on November 13 from 9:30 a.m. to 6:00 p.m. for our students and families. The goal of this event is to educate kids and families the many local careers and job opportunities available in STEM and the existing educational and training paths available and accessible.	The STEM Action Center's logo will be added to the posters and to the promotional materials handed out at the event. They will be setting up on-line promotions and communication before the event with a huge boost during the event with the STEM Action Center's logo and information included. A booth will be available with premium positioning. They will also add to the event systems that ensure ALL students and families visit the STEM Action Center's booth.	This event will expose attendees to STEM, research and practical implications. Connect that exposure to existing STEM related careers and jobs and then to the education and training opportunities available to attain those jobs. Workforce alignment is the main purpose of this event
12/5/2015	Eagle Mountain City	Youth Tech Jam	300-500	$1,000	$1,000	475	Eagle Mountain City is planning the 1st Annual EMCity Tech Jam for all kids and youth (ages 9-18) in Eagle Mountain City and surrounding areas on Saturday, December 5, 2015, from 1 p.m. to 5 p.m. At this event, they have partnered with local developers to teach the participants how to code and develop their first App and Video Game. Each kid will be required to bring their own laptop to follow along and code. They expect 300-500 kids at this event.	The marketing material will contain STEM Action Center logos. STEM Action center will have a complimentary booth. STEM Action Center will also be put on the event agenda to speak to parents and students.	This event will teach youth between the ages of 9 and 18 years to develop both an App and Video Game. Their goal for this event is to attract new coders to the programming world and inspire more kids to pursue coding. It will also be an opportunity to educate parents about the opportunities and economic prosperity in coding.

Date	Organization	Event	Est. Reach	Amount requ	Amount	Amour	Description	Benefits to AC	STEM Mission Connection
12/5/2015	Kidnected	Adobe Coding Event	300+	$2,500	$2,500	500	250 under-served students are attending for a full day of activities, discovery and inspiration! Classes / Projects for : Graphic Design, Web Design, Game Design, Robotics, Digital Publishing, and Code.org; a maker space with 3D printers, CNC Mills, an Egg-bot, A WaterColor-bot, 10 different other kinds or robots, and much much more; a Creative space using all the Adobe creative tools to create artwork and express your voice; A conference, with teachers / celebrities and activities (including a world record attempt for the largest virtual village!); Industry, News & Media, and non-profit organizations will all be on hand. This will be a high profile event, generating a lot of excitement. All funding will go directly to the benefit of the kids, through travel, food/refreshments, and swag/prizes.	**?** Website logo, booth availability (maker space) and T-shirts/banners with logo	Sparked by Computer Science Education week, the first annual I Heart Tech conference is specifically dedicated to STEAM (STEM + Arts) education. All classes, projects and activities will focus on STEM-related skills, and discovery of opportunities for kids. This is especially true, because the event is targeting under-served populations (refugees, the economically disadvantaged, and girls). This event is also a "pilot" for future events, and the prototype for the sponsorship and promotion of maker spaces in schools.
1/13/2016	GOED/USTAR	Governor's Science Medals	300	$500	$500	240	The Governor's Medal award program was initiated in 1987 to recognize those who have provided distinguished service or made significant career achievements that have benefited the State of Utah in the areas of science and technology. This year's event will be held on January 13.	Sponsors will be featured on video screens before and during the event. Also listed on the program and literature. Sponsor will be given a table at this event. Sponsor is welcomed to have promotional material on lobby table.	The Governor awards medals to science and technology leaders who have improved the lives of people in the state and nation through their research and/or years of service. This includes academia and science education and those striving to educate the science leaders on future generations.
1/21/2016	Utah Technology Council	UTC Legislative Meet & Greet	100	$500	$500	1400	Tech industry members and legislators have the opportunity to interact with each other at the Utah Technology Council's Legislative Meet and Greet at the Capitol Building on January 21, 2016.	The Utah STEM Action Center will have a 10X10 space to present to industry on the significance of STEM in Utah.	This is an opportunity to show legislators and other industry members how the STEM Action Center is promoting science, technology, engineering and mathematics through best practices in education to ensure connection with industry and Utah's long-term economic prosperity.
2/1/2016	Horace Mann Elmentary School	Science Fair and STEM Night	300	$50	$50	325	School's first-ever Science Fair & STEM Night. On February 4th, 2016. Their 5th and 6th grade students have prepared science fair projects to present to a panel of judges. At their event, the entire student body and their families will have the opportunity to view projects, as well as see demonstrations by our First Lego League teams.	STEM Action Center will be promoted through posters, programs and school marquee. All promotional materials will also show the STEM Action Center logo. Individual classroom presentations the week of the event will also mention the STEM Action Center.	Their target audience and goal of this event is to promote a love and genuine interest of all aspects of the STEM organization. Their school is firmly rooted in continuing these organizations and promoting further interest in all STEM-related fields for years to come. With this STEM night, they will highlight, celebrate and promote all aspects of STEM and instill a love of learning into all students who attend Horace Mann Elementary.
2/2/2016	STEM Fest	STEM Fest	21,000	$15,000	$15,000	20000	For four full days, March 25 - 28, 2015, at the UCCU Center on UVU campus in Orem – students and families can immerse themselves in a free festival that's been uniquely designed to spark children's imagination through science and technology.	Benefits include: • 20 x 50 Booth • Be included on all printed materials • Giant Ceiling Banner • Billboard Event Advertising • Broadcast Event Advertising • Social Media Campaign • Festival Entitlement • Included on Website	This free event engages over 20,000 students with science, technology, engineering and math through hands-on STEM activities.

Date	Organization	Event	Est. Reach	Amount requ	Amount	Amour	Description	Benefits to AC	STEM Mission Connection
2/2/2016	Craft Lake City	Craft Lake City	20,000	$1,500	$1,500	20000	As the only multi-day annual arts festival in Salt Lake City that is free to the public and the only arts festival that exclusively features Utah-only artists, the Craft Lake City DIY Festival seeks to broaden the term “craft” to encompass all things handmade. The event will take place August 12 (5 p.m. - 10 p.m.) & August 13 (12 p.m. -10 p.m.) at the Gallivan Center.	Benefits include: 4 onsite benefits, 4 pre-event exposure opportunities and 6 post-event exposure opportunities, including: Line listing on the Back Page of the Craft Lake City DIY; Festival Program; Two (2) tickets to Craft Lake City’s DIY Festival VIP Patio; Logo and link archived on CraftLakeCity.com 2016 Sponsor and an exhibitor booth.	Benefits include: 4 onsite benefits, 4 pre-event exposure opportunities and 6 post-event exposure opportunities, including: Line listing on the Back Page of the Craft Lake City DIY; Festival Program; Two (2) tickets to Craft Lake City’s DIY Festival VIP Patio; Logo and link archived on CraftLakeCity.com 2016 Sponsor and an exhibitor booth.
2/5/2016	Utah Science Teachers Association	Utah Science Teachers Association Conference	700	$150			School’s first-ever Science Fair & STEM Night. On February 4th, 2016. Their 5th and 6th grade students have prepared science fair projects to present to a panel of judges. At their event, the entire student body and their families will have the opportunity to view projects, as well as see demonstrations by our First Lego League teams.	STEM Action Center will be promoted through posters, programs and school marquee. All promotional materials will also show the STEM Action Center logo. Individual classroom presentations the week of the event will also mention the STEM Action Center.	Their target audience and goal of this event is to promote a love and genuine interest of all aspects of the STEM organization. Their school is firmly rooted in continuing these organizations and promoting further interest in all STEM-related fields for years to come. With this STEM night, they will highlight, celebrate and promote all aspects of STEM and instill a love of learning into all students who attend Horace Mann Elementary.
2/13/2016	SUU STEM Center	Southern Utah STEM Fest	3,000	$5,444	$5,000	2200	The Southern Utah University Center for STEM Teaching and Learning, the Orchestra of Southern Utah, Cedar City Library in the Park, Iron County School District and Southern Utah Sustainable Operations Partnership are collaborating to plan a two-day STEAM festival in early 2016. We are inviting STEM and art organizations and businesses, from across the state, to set up booths in the Heritage Center conference center for two days of hands-on learning.	The Utah STEM Action Center will have a booth during the event. Additionally, the STEM Action Center logo would be used on all promotional materials including posters, websites, and press releases.	Our event will be very similar to other STEM festival-type events held throughout the state, the interactive nature of this event will undoubtedly promote long-term interest in the STEM disciplines. Additionally, the SUU Center for STEM Teaching and Learning has a whole cadre of programming that we facilitate for these same schools. The STEAM Festival would just be one more piece of a whole array of professional development, student engagement, and college and career readiness options provided by the center.
3/11/2016	UVU & Women's Tech Council	SheTech	900	$5,000	$5,000	1000	SheTech Explorer Day is a conference for high school girls 9th through 12th grade. They expect over 1,000 girls to attend this event. Students will interact with different companies that have technology at their core and see if it is a right fit for them. This day-long event will include hands-on activities in science, technology, engineering and math (STEM).	• STEM Action Center presence on all marketing collateral, website and apparel • Booth to showcase STEM Information	This event directly engages female students with science, technology, engineering and math subjects through hands-on STEM activities.
3/13/2016	Girl Scouts	Stand Beside Her Mentor Luncheon	300	$2,500	$2,500	328	More than 300 business, civic, and community leaders will come together to celebrate female leadership and honor individuals and corporations who are making positive changes in our communities. The luncheon will feature 2016 Stand Beside Her Champions: accomplished women who are making a difference in their communities—including women in STEM fields. The afternoon also celebrates their Emerging Leaders and each table host pins these outstanding Girl Scouts.	Our logo/name on luncheon collateral; 1 Emerging Leader Mentor; 1 Table at event; we will be highlighted in Girl Scouts of Utah publications; our logo on their website with their Community Partners	Our logo/name on luncheon collateral; 1 Emerging Leader Mentor; 1 Table at event; we will be highlighted in Girl Scouts of Utah publications; our logo on their website with their Community Partners

Date	Organization	Event	Est. Reach	Amount requ	Amount	Amour	Description	Benefits to AC	STEM Mission Connection
3/16/2016	Moutainland Code Camp	Moutainland Code Camp	50	$1,500	$1,500	100	Code Camp is a programming, design and entrepreneurship 24-hour contest event. Teams ranging in size from two to four participants compete against other teams to build the best web or mobile app. Code Camp is for High School students interested in, aspiring to become or just exploring programming and design throughout the Mountainland region (Summit, Wasatch, and Utah County). Industry mentors will work with participants throughout the event to discuss app ideas, give insight and share strategies.	Code Camp is a programming, design and entrepreneurship 24-hour contest event. Teams ranging in size from two to four participants compete against other teams to build the best web or mobile app. Code Camp is for High School students interested in, aspiring to become or just exploring programming and design throughout the Mountainland region (Summit, Wasatch, and Utah County). Industry mentors will work with participants throughout the event to discuss app ideas, give insight and share strategies.	The Utah Department of Workforce services recently rated Computer Programmers as a high wage high demand five star occupation. With a greater demand for a skilled workforce, the region recognizes the need to cultivate knowledgeable employees and recognize our responsibility to educate our students on high wage, high demand occupations; this event is an opportunity to excite students about Coding and potentially affect their career decisions.
3/21/2016	Bridgerland Applied Technology College (BATC)	BATC Career Days	2,000	$500	$500	4000	Career Days is designed to expose youth in the Bear River region to a comprehensive-hands-on experience with STEM/technology careers. The event includes interactive acclivities, competitions and demonstration highlighting technology education and STEM career options. The two-day event, May 4-5, is now in its' 9th year and has introduced over 28,000 middle and high school students to STEM/technology related careers.	BATC will include our logo on all printed- promotional materials as well as a website link and presence, along with the opportunity to exhibit.	BATC Career Days is usually the first introduction to students in the Bear River region to considering and pursuing educational options that are STEM based. This includes stimulating and encouraging students to pursue classes, clubs and activities that provide skills in the STEM careers. With the participation of local businesses, our attendees make the association between technology and the skills required in the workforce.
4/13/2016	Utah Association of Public Charter Schools	Utah Association of Public Charter Schools Conference	500	$1,500	$1,500	604	As Utah's largest gathering of charter school leaders and educators; we are excited to once again come together on June 13-14th at the Davis County Convention Center and put into reality the above sentiment by cultural anthropologist, Margaret Mead as they celebrate the innovative efforts of dedicated teachers, administrators and board members across the state in providing educational opportunities for the 60,000+ students in Utah who attend public charter schools.	The STEM Action Center will have a booth, promotion on t-shirts and the opportunity to network during meals and work on future collaborations with the Charter Schools to increase STEM awareness.	The STEM Action Center will have a booth, promotion on t-shirts and the opportunity to network during meals and work on future collaborations with the Charter Schools to increase STEM awareness.
4/15/2016	Jordan Applied Technology Center	JATC and SLCC Biotechnology Symposium	150	$2,500	$2,500	150	Biotechnology students from Jordan and Canyon's School Districts and from the Salt Lake Community College participate in inquiry based hands on independent projects in state of the art biotechnology facilities. These projects will be displayed and presented in poster format in the Health Sciences Building at the Salt Lake Community College Health Sciences Building. On May 20, students will describe their research to academic and industry professionals that will judge the posters in a number of categories. They invited local biotech companies and gave them the opportunity to set up tables to share information to help students.	Approximately 40-50 students will participate and will be judged by 12-15 professionals in the biotechnology community. They advertised this event three weeks before the event and acknowledge the STEM Action Center. They also acknowledged the STEM Action Center as a contributor in all their advertisements.	Approximately 40-50 students will participate and will be judged by 12-15 professionals in the biotechnology community. They advertised this event three weeks before the event and acknowledge the STEM Action Center. They also acknowledged the STEM Action Center as a contributor in all their advertisements.

Date	Organization	Event	Est. Reach	Amount requ	Amount	Amour	Description	Benefits to AC	STEM Mission Connection
4/18/2016	Windridge Elementary School	Super Science and Math Night	300	$500	$500	500	The First Annual Super Science and Math Night will be a free event where Windridge students and their families can explore different areas of science, technology, engineering and math. They will invite area business, teachers and special guests to provide an evening of fun-filled activities and presentations centered around STEM concepts for Windridge Elementary Students and their families. The purpose of this event is to provide fun and engaging ways to present STEM concepts outside of the classroom environment.	Prominent position of STEM Action Center logo on signage/programs/promotional materials: Option to bring your own sign (however large you'd like) to display at event, or one can be provided for you; feature in School Newsletter; feature on School Marquis; booth at Event with opportunity to distribute materials and host an activity; opportunity to address guests at beginning and/or close of event; mention in any press release or media.	Super Science and Math Night will showcase STEM concepts in a fun and exciting way, going beyond classroom learning to illustrate real-life applications. The goal of the event is for every child to leave feeling like they could make scientific discoveries, engineer a rocket, or create cutting edge technology.
5/7/2016	Beehive Science and Engineering Academy	STEM Expo	4,000	$6,000	$2,500	4000	Utah STEM Expo has been put together with the attendance of students in 6th through 12th grade with their projects and demonstrations. There will be projects from science, math, engineering and computer science performed by students from Beehive and other schools. The event will take place April 25.	Utah STEM Action Center will be highlighted as the sponsor and supporter of the event in all promotional materials and communications and news. There will be tables assigned to STEM Action Center for set up and promote itself during the event. After the event STEM Action Center will be provided with videos and pictures and again will be highlighted in media and communications.	STEM focused programs are increasingly recognized as playing a valuable role in improving science, technology, engineering and mathematics (STEM) education. Utah STEM Expo is designed to increase active engagement and focus in STEM learning activities, pursuit of in-school STEM learning opportunities, active inquiries into STEM topics, concepts or practices, active information-seeking about mechanical or natural phenomena or objects. In addition, demonstration of STEM knowledge, skills, understanding of STEM method of investigation, mastery of technologies and tools that can assist in STEM investigations, ability to work in teams to conduct STEM investigations, and applied problem-solving abilities to conduct STEM investigations.
5/11/2016	Stoel Rives	STEM Innovation Awards	350	$7,500	$7,500	450	The 14th annual Utah Innovation Awards, presented by Stoel Rives LLP and the Utah Technology Council, recognizes significant innovations and the Utah companies that created them. STEM Action Center will join their awards event, where we will present this year's STEM Innovation Awards. Created by the STEM Action Center, the Utah STEM Innovation Awards (STEMi Awards) are designed to recognize and reward individuals who excel in and contribute to STEM learning and achievement. Principals, teachers, parents, students, school counselors, and mentors may nominate someone for a STEMi. The event will occur May 11 from noon to 2 p.m.	UTC and Stoel Rives have agreed to let the STEM Action Center's STEM Innovation Awards be a part of the Utah Innovation Awards. They will be putting our logo on their printed materials, as well as having an ad from the STEM Action Center in the program. They're also creating the trophies for the awards.	As part of our role to promote STEM through best practices; the STEM Action Center has been tasked to award those that are excelling in STEM. UTC's Innovation Awards coincides well with what the STEM Action Center hopes to achieve by this event because they are promoting innovation as well in the STEM fields.
			62320	Total:	$64,470				
				FY2016 Budget	$75,000				

Appendix N: "Lessons Learned" Summary - Digital Math Tools

Targeted Areas	Observations --Year 1 (2014-2015)	Observations - - Year 2 (2015-2016)	Operational changes	Potential process or contractual changes
Application Process	**(1) Buy in**: The application process was created as a "district" application. District math coordinators were asked to submit a district-wide application based on the need for schools in their district. Feedback from LEAs indicated that they wanted the district math coordinator to be the point of contact. However, the Center determined that the lack of buy in from school principals was problematic and resulted in having a negative impact on awareness and ultimately usage. **(2) Lengthiness of application process**: The STEM AC strives to find a balance between local control and choice and effective process. The process includes an Request for Proposals (RFP) for products, a rigorous review, contract negotiations and the final selection of the products. This is followed by state wide "road shows" that allow district representatives to review the various products. Finally, applications are submitted from districts for license requests. The licenses are distributed and the product providers are responsible for training educators on the use of the licenses. This was the first year of a state wide implementation and required a considerable amount of time. Thus, usage did not begin until November 2014 and for a majority of schools usage it really ramped up in February 2015, after they attended training and determined the appropriate implementation plan. It took longer than expected for some product providers to finalize their contract with the STEM AC, due to a back and forth process of discussing language in the contract until it was acceptable.	**(1) Application Detail**: As we met with teachers and administrators in Year 2, it became clear that usage expectations and other grant expectations needed to be communicated more clearly in the application. **(2) Oversight:** In Year 2, we also learned that teachers and administrators did not always know exactly who to contact to receive support or get their questions answered.	**Changes for Year 2 (Based upon Year 1 observations):** **(1) Buy in:** The application was again a "district" application but required school principals to sign a letter of commitment to ensure students have access to technology for at least 45 minutes per week to use the software in the second year of the grant program. District math coordinators submitted the applications with all letters of commitment attached to the application. We also required the LEA IT Director's signature to ensure they were made aware of the licenses being provided to the school and to hold them accountable for access to devices for Year 2 implementation. **(2) Length of Application Process**: The fact that the products were all the same for Year 2 it resulted in a shorter time to implementation. **Changes for Year 3 (based upon Year 2 observations):** To mitigate some of the challenges teachers had in Year 2, the Year 3 applications included more detail regarding all grant expectations, and a link to a concise list detailing all grant requirements was emailed to all participants. Participants also received a list providing contact information for representatives from each product provider, and the contact information of an employee at the STEM Action Center. In addition, emails were sent out to all participants early in October to ensure everyone was receiving the support they needed.	If the STEM Action Center were to enter into a lengthy contract for a software product it could preclude a district or school from the opportunity to integrate new and or improved products. One recommendation is to pursue a three year R&D cycle where products are selected, with district involvement, through an RFP process. The products would be piloted at small scale while being evaluated for the first year, and then scaled up for two years of implementation to understand impact. In addition, few students will want to use the same program for multiple years, because they may get tired of the interface or other design features (possible "product fatigue"). Therefore, we could use an approach that allows local decision-making and the option of different product selection for different grades, every few years, to maximize the benefit from education technology.
Oversight & Communication	The STEM Action Center worked primarily with the district math coordinators to communicate requirements of the grant. This is related to the buy in issue described in the previous section.	The STEM AC notifies district math coordinators and ALL principals and teacher contacts regarding requirements of the grant. It became clear that greater oversight by the STEM AC was necessary in order to ensure that effective communication could support successful implementation.	**Changes in year 2 (based upon Year 1 observations):** The application required an "on-site" contact for every school so that the STEM AC and product provider could work directly with the principals regarding professional development and license distribution. Product providers put forth extra effort to ensure training on the product was scheduled during the summer months so that teachers were ready to utilize the products on day 1 of the school year. **Changes in Year 3 (based upon Year 2 observations):** The STEM AC team is spending more time in direct communication with educators and principals to identify additional professional learning support that can be provided. One action that will be taken, based upon educator input, is to create a library of videos that highlight best practices for the integration of the digital learning tools into every day instruction. The STEM AC has identified a few videos already that are specific to a product, STMath. We are working with STMath to determine if they have any useful qualitative data that help guide as we scale this to all products.	One of the issues noted by teachers in their end of year survey (from both years) was the lack of access to computers as the largest constraint to implementation. This was a direct result and the reason why we required the principal to commit and ensure students have access to technology for at least 45 minutes. This is also why we required the IT Director's signature to ensure they were aware of the principal's commitment. We cannot use STEM AC funds for the purchase of devices but we are working with industry partners to secure funding for computers or donations of high quality machines.
Unused Licenses	The STEM Action Center relied on district applications to determine how many licenses were needed. This reflects the STEM AC's commitment to respecting local control and choice. Once the applications were received, the STEM AC determined how many licenses could be funded for the first year of the project. Several issues arose for year 1: (1) Over-Requesting: Districts over-requested real need. It is difficult to tell a district that they are over-requesting and at some level we must trust their judgment. It is not easy to determine the reason behind this phenomenon, but it was real and widespread across many districts. (2) Lengthiness of the process: This has been discussed in previous sections and impacted implementation during Year 1.	The over-request for licenses was mitigated and for Year 2 the unused license issue had less to due with over-requested licenses and was concentrated on general adoption issues. Preliminary data from product providers indicates that overall usage and adoption rates (at fidelity) increased significantly in Year 2. An additional observation was made based upon educator feedback. Educators indicated that it would useful to them to see how other educators, that had higher level of success with adoption and outcomes, were integrating the learning tools into their every day instruction.	**Changes in Year 2 (based upon Year 1 observations):** Licenses were ONLY provided to schools who USED products in year 1 of the grant. If a school had ZERO usage, they weren't allowed licenses for year 2. Unfortunately, limited funding didn't allow for new schools to be added to the project. **Changes in Year 3 (based upon Year 2 observations):** Again, the STEM AC was faced with the inability to fulfill all licenses requests from LEAs. We were able to increase the total number of licenses by negotiating credits from product providers for unused licenses in Year 2. However, this still did not allow the Center to meet 100% of the requests. The STEM AC prioritized requests for licenses to those schools that had usage from Year 2. The STEM AC received $3M in ongoing funding for the math project. This has allowed the Center to have more directed conversations with LEAs about long-term sustainability. The STEM AC believes that usage, or adoption, with continue to increase with the implementation of videos for educators that highlight best practices in integration.	The STEM AC is working with their third party evaluators to stratify the usage, or adoption, data. In other words, we want to track schools that are within certain benchmarks of the defined fidelity threshold. We know those that are at or above fidelity, but how many are within 5 or 10 minutes of fidelity. This will allow the Center team to be more targeted with their support.

Appendix O: STEM Press Releases and Media Highlights

STEM FEST (2016):

- http://www.sltrib.com/news/3491649-155/utah-students-enjoy-science-at-second
- http://www.deseretnews.com/article/865646805/STEM-or-STEAM-Is-there-room-for-both-in-Utah-schools.html?pg=allhttp://www.heraldextra.com/news/local/utah-stem-fest-huge-success-with-utah-county-students/article_940f0208-3140-5a9a-92e2-ca5fe3a3d7e6.html
- http://utahpulse.com/index.php/features/technology/3304-students-experience-stem-through-hands-on-activities-at-utah-s-second-annual-stem-fest
- http://kutv.com/features/stem/casey-live-from-the-stem-fest
- http://kutv.com/features/stem/stem-fest-at-south-towne-expo-center

STEM Schools Designation:

- http://www.deseretnews.com/article/865654592/19-Utah-schools-receive-official-state-STEM-
- http://www.stgeorgeutah.com/news/archive/2016/05/20/pdd-state-board-of-education-awards-
- http://news.hjnews.com/allaccess/woodruff-elementary-gets-state-gold-stem-
- http://www.thespectrum.com/story/opinion/blogs/educationitself/2016/05/06/r2-d2-star-wars-
- http://kutv.com/features/beehive-academy-receives-platinum-designation-for-stem-curriculum
- http://www.thespectrum.com/story/news/2016/09/16/students-learn-stem-through-schools-greenhouse/90514872/
- http://www.utahbusiness.com/19-schools-receive-stem-designation/

STEM Digital Math Learning Program:

- https://www.youtube.com/watch?v=aKjB4VrguxA&feature=youtu.be
- https://www.youtube.com/watch?v=aKjB4VrguxA&feature=youtu.be
- http://www.standard.net/Education/2016/04/04/Columbia-Elementary-

students-named-co-champions-in-math-competition

- https://www.facebook.com/plugins/post.php?href=https%3A%2F%2F

Carnegie Melon University Partnership with STEM AC
http://www.good4utah.com/news/local-news/cedar-city-elementary-unveils-extensive-robotics-program
https://www.suu.edu/news/2016/10/carnegie-mellon-partnership-stem-education-create-lab.html
http://business.utah.gov/news/carnegie-mellons-create-lab-expands-education-network-utah/
http://www.utahbusiness.com/carnegie-mellon-partnership-suu-stem/

STEM Action Center Shout Outs
http://www.ecs.org/a-state-policymakers-stem-playbook/
http://www.ecs.org/what-are-u-thinking-stem-challenges-and-a-state-model/
http://www.utahbusiness.com/articles/view/science_in_the_classroom/?pg=3#sthash.jfTs48Ad.dpuf
http://businessfacilities.com/2015/07/metro-and-global-rankings/
http://www.ksl.com/?nid=757&sid=33354952

STEM Innovation Awards
http://kutv.com/features/stem/stem-innovation-teacher-of-the-year-makes-mineral-toothpaste
http://stem.utah.gov/2016/05/09/2016-stem-innovation-awards-recipients-announced/
http://www.usu.edu/today/index.cfm?id=54854
http://www.kutv.com/features/features/stem/stories/STEM-Innovation-Awards-126933.shtml#.VUknR2RVhBd

STEM Jazz Awards
http://www.nba.com/jazz/news/centurylink-donates-10000-stem-education-0

STEM Mentor Exchange
http://kutv.com/features/stem/stem-stem-partner

STEM Ambassador Program

http://kutv.com/news/2news-this-morning/bio-rad-bringing-science-to-utah-schools
https://student.societyforscience.org/article/teens-take-home-huge-awards-their-research
http://dailyutahchronicle.com/2016/04/05/miss-beaver-county-advocates-for-science-in-stem-ambassadors-program/
http://www.ksl.com/index.php?sid=35944537&nid=148&title=miss-utah-international-from-poverty-to-stem-advocacy

Sponsored Events:
http://kutv.com/news/2news-this-morning/finding-the-fun-in-science-at-shetech
http://kutv.com/news/2news-this-morning/stem-all-you-need-to-know-to-attend-stem-expo
http://www.ksl.com/?sid=38858588&nid=1012

Code.org Partnership
http://kutv.com/features/stem/escalante-elementary-school-award
http://kutv.com/news/local/gov-herbert-learns-to-code-with-utah-kids
http://stem.utah.gov/utah-stem-code/
http://blog.code.org/
http://business.utah.gov/news/utahs-escalante-elementary-school-to-receive-10000-from-code-org/
http://www.ksl.com/?sid=37070934&nid=1194

STEM Best Practices
"https://www.facebook.com/plugins/video.php?href=https%3A%2F%2Fwww.facebook.com%2Fhollymeninokutv%2Fvideos%2F834756639988475
http://kutv.com/news/local/utah-teachers-getting-schooled-on-effective-stem-instruction

STEM Foundation:
http://kuer.org/post/stem-foundation-aims-bring-industry-resources-utah-schools
http://business.utah.gov/news/utah-stem-action-center-establishes-foundation-appoints-director/
http://stem.utah.gov/stem-action-center-takes-road-tesoro-stem-bus-grant/

Classroom Grant:
http://business.utah.gov/news/classroom-grant-opportunity-inspires-teachers-provide-hands-stem-learning/

Fairs , Camps and Competitions
http://www.sandyjournal.com/2016/04/07/107431/beehive-academy-wins-state-lego-robotics-title-to-compete-at-internationals
http://www.sandyjournal.com/2016/04/07/107431/beehive-academy-wins-state-lego-robotics-title-to-compete-at-internationals
https://www.facebook.com/plugins/post.php?href=https%3A%2F%2Fwww.facebook.com%2Fstemutah%2Fposts%2F1652433841692935
http://news.hjnews.com/allaccess/up-up-and-away-young-girls-to-launch-micro-satellite/article_71c8848b-0e20-5c8d-b5f5-c99180137339.html
http://www.deseretnews.com/article/865629550/After-school-robotics-program-creates-success-story-for-middle-schoolers.html
http://kutv.com/news/local/bennion-elementary-stem-students-launched-space-balloon#.VUkm7itEbf9.facebook
http://stem.utah.gov/classroomgrantexamples/

Organization Grant
http://kutv.com/features/stem/robots-take-over-the-maverik-center-for-three-days

Pathways:
http://business.utah.gov/news/utah-aerospace-pathways-program-takes-flight/

STEM Bus
http://www.utahbusiness.com/stem-action-center-takes-to-the-road-with-tesoro-stem-bus-grant/

STEM For Life
http://www.utahbusiness.com/intermountain-healthcare-donation-brings-health-science-learning-to-classroom/

STEM Fest (2015)

- http://www.kutv.com/features/features/stem/stories/STEM-Festival-103767.shtml#.VRriJjTF86J
- http://stem.utah.gov/utahs-first-annual-stem-fest-will-let-students-get-hands-science-technology/

- http://www.deseretnews.com/article/865623623/Utah-to-hold-first-annual-STEM-fest.html?pg=all
- http://utahpolicy.com/index.php/features/featured-articles/4896-utah-s-first-annual-stem-fest-will-let-students-get-their-hands-on-science-and-technology
- http://business.utah.gov/news/utahs-first-annual-stem-fest-will-let-students-get-hands-science-technology/
- http://utahpulse.com/index.php/features/technology/1840-utah-s-first-annual-stem-fest-will-let-students-get-their-hands-on-science-and-technology
- http://utah.justgoodnews.biz/2015/02/24/first-stem-fest-will-bring-science-technology-youth/
- http://www.kutv.com/features/features/stem/stories/Students-fill-UCCU-Center-for-STEM-Fest-107133.shtml#.VRrhRjTF86J
- http://www.kutv.com/features/features/stem/stories/Utah-holds-first-STEM-Fest-107024.shtml#.VRrhezTF86J
- http://fox13now.com/2015/03/25/utah-students-testing-skills-in-space-mission-simulator-at-stem-fest/
- http://www.heraldextra.com/business/local/controlled-chaos-first-stem-fest-encourages-kids-to-be-hands/article_0df3dc8d-3457-5db8-835f-34df00262763.html
- http://www.deseretnews.com/article/865625007/First-annual-STEM-Fest-geared-towards-fun-engagement.html?pg=all

STEM Press Releases

http://business.utah.gov/news/carnegie-mellons-create-lab-expands-education-network-utah/
http://business.utah.gov/news/utah-schools-receive-official-state-stem-designation/
http://business.utah.gov/events/event/stem-best-practices-conference/

STEM Action Center Publications

J. Dounay-Zinth and T. Goetz. Promising Practices: A State Policymakers' STEM Playbook. 2016. Education Commission of the States
http://www.ecs.org/ec-content/uploads/A_State_Policymaker_s_STEM_Playbook.pdf