



California AfterSchool Network

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Final Report:
California Department of Education
CDE Agreement
#CN090200
Task 10 and 11 Augmentation
Campaign for Quality and JumpStarting STEM
Reporting Period: June 1, 2012 – June 31, 2012

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Executive Summary

The JumpStarting STEM Pilot was a one year project aimed at increasing the frequency, intensity, and duration of high-quality Science, Technology, Engineering and Mathematics (STEM) learning opportunities for students in California's publically funded after school programs. With support from the California Department of Education's After School Programs Division, the AfterSchool Network has implemented a pilot effort operating in 17 after school programs in all 11 regions throughout CA (*see appendix A*), representing over 280 sites (*see appendix B*). Participating programs received access to curriculum and ongoing in-person and virtual professional development. These efforts supported site level implementation of 30-60 hours of quality STEM curricular programming with consistent student participation. Staff survey results indicated positive feedback from the in-person as well as virtual professional development offered by the California AfterSchool Network Professional Development Team.

Process evaluation results conducted by the Center for Education and Evaluation Services indicated the successes of the program included the training, professional development, and curriculum. Additionally, program directors overwhelmingly indicated that increased student engagement was the biggest impact of JumpStarting STEM within their program, and that the program has had a positive impact on program directors, site staff, and most notably, students.

Furthermore, outcome evaluations of the UC Irvine evaluation team found that staff beliefs are positively correlated to student outcomes. Where staff felt that STEM was important, student outcomes were higher. In addition, where youth perceived higher program quality and quality relationships, there was a positive correlation with desired student outcomes. In all, you cannot separate program quality and youth development principles from STEM outcomes.

Campaign for Quality

Summary of Task 10 Deliverables:

The California Afterschool Network will implement a one year process to increase after school program quality self-assessment and program quality improvement efforts in California's publically funded (After School Education and Safety and 21st Century Community Learning Centers) after school programs. The desired outcomes are Reprinted California After School Program Quality Self-Assessment Tool (QSA), user guide, and Campaign for Quality publications disseminated to over 4,000 ASES and 21st CCLC program sites in CA; the offering of up to 44 trainings (4 per region) on the use of the QSA Tool; the creation of twelve unique online training modules surrounding the content of each section of the revised QSA including a training on how to best utilize the QSA for planning and program quality improvement; Reprinted High School After School Quality Self-Assessment Rubric (QSAR) disseminated to over 300 High School ASSETs sites; and a series of videos highlighting promising practices linked to each section of the High School ASSETs Quality Self-Assessment Rubric (QSAR).

Campaign for Quality

The CAN Professional Development Team has developed and implemented training on the Network Campaign for Quality. This training offers an overview on how to utilize the California After School Program Quality Self-Assessment Tool (QSA), Promising Practice Guides (based on the sections of the QSA Tool), QSA promising practices videos, as well as webinars featuring experts and practitioners tied to each of the sections of the QSA tool to incorporate into their plan for continuous program quality improvement

What does a Campaign for Quality Training look like?

Delivered by the Network's Professional Development team, this training offered practitioners the opportunity to share their promising practices with each other, learn promising practices from a variety of California's after school programs, engage with Network Campaign for Quality print and video resources, and formulate action plans (*see Appendix C*) to utilize assessment resources, videos, and promising practice guides to strengthen program quality (*see Appendix D for sample training agenda*).

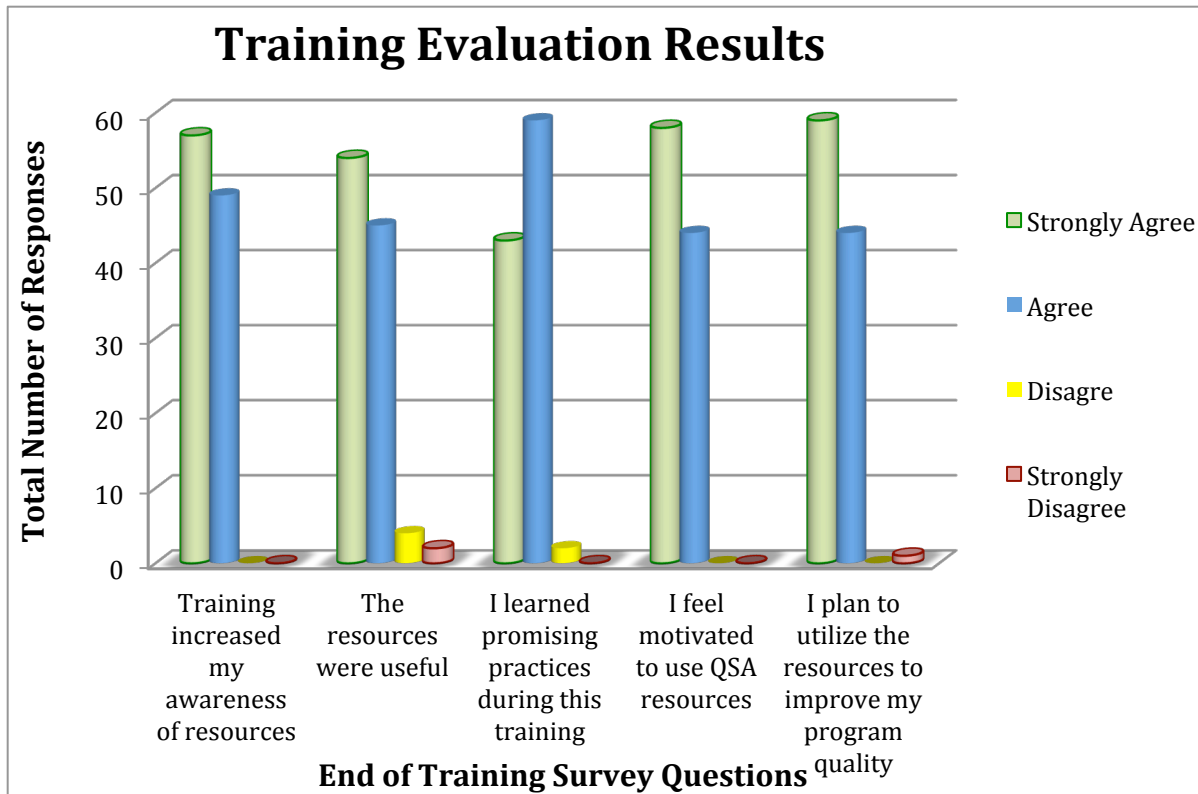
October 2011 to June 2012:

- QSA Tool, User's Guide, High School Rubric, and Campaign for Quality (High School and Elementary) have been mailed to all eleven regions, encompassing all the more than 4,000 publicly funded ASES and 21st CCLC after school programs.
- Four sets of trainings of the QSA tool have been offered to each of the eleven regions.
- 10 trainings have occurred at the following regions: 1, 4, 5, 7, 9, 10, and 11.
- Region 2 and Region 3 declined training during the funding period, but have requested trainings to be scheduled for August 2012 and October 2012 respectively.
- Trainings were offered to the following regions but declined during the grant period: 6 and 8.
- 11 webinars on promising practices of the eleven section of the QSA have been recorded and posted on the Network's website and available at <http://www.afterschoolnetwork.org/network-webinars>
- Online training of the utilization of the Quality Self-Assessment tool webinar is also available at the AfterSchool Network website at <http://www.afterschoolnetwork.org/network-webinars>
- 5 videos highlighting each of the sections of the High School Quality Self-Assessment Rubric were created and posted on the AfterSchool Network website at <http://www.afterschoolnetwork.org/overview/campaign-quality-videos-0>

Campaign for Quality Training Evaluation Results

Participants who completed the training were asked to complete a satisfaction survey, and results showed positive impacts on participant’s understanding and awareness of Network resources, as well as an increase in motivation to utilize the resources to improve program quality.

Figure 1. QSA Training Evaluation Results



These positive results were further supported by the open-ended responses completed by several staff. For example:

“Training was informative & fun - so many new ideas and strategies to help our students benefit from & enjoy the program.”

“Thank you for doing this w/ us. I feel it may have saved our site and put us back on the road to being a team again.”

“I appreciate your knowledge and enthusiasm. I am going to take it back to my school and hope everyone comes aboard with me.”

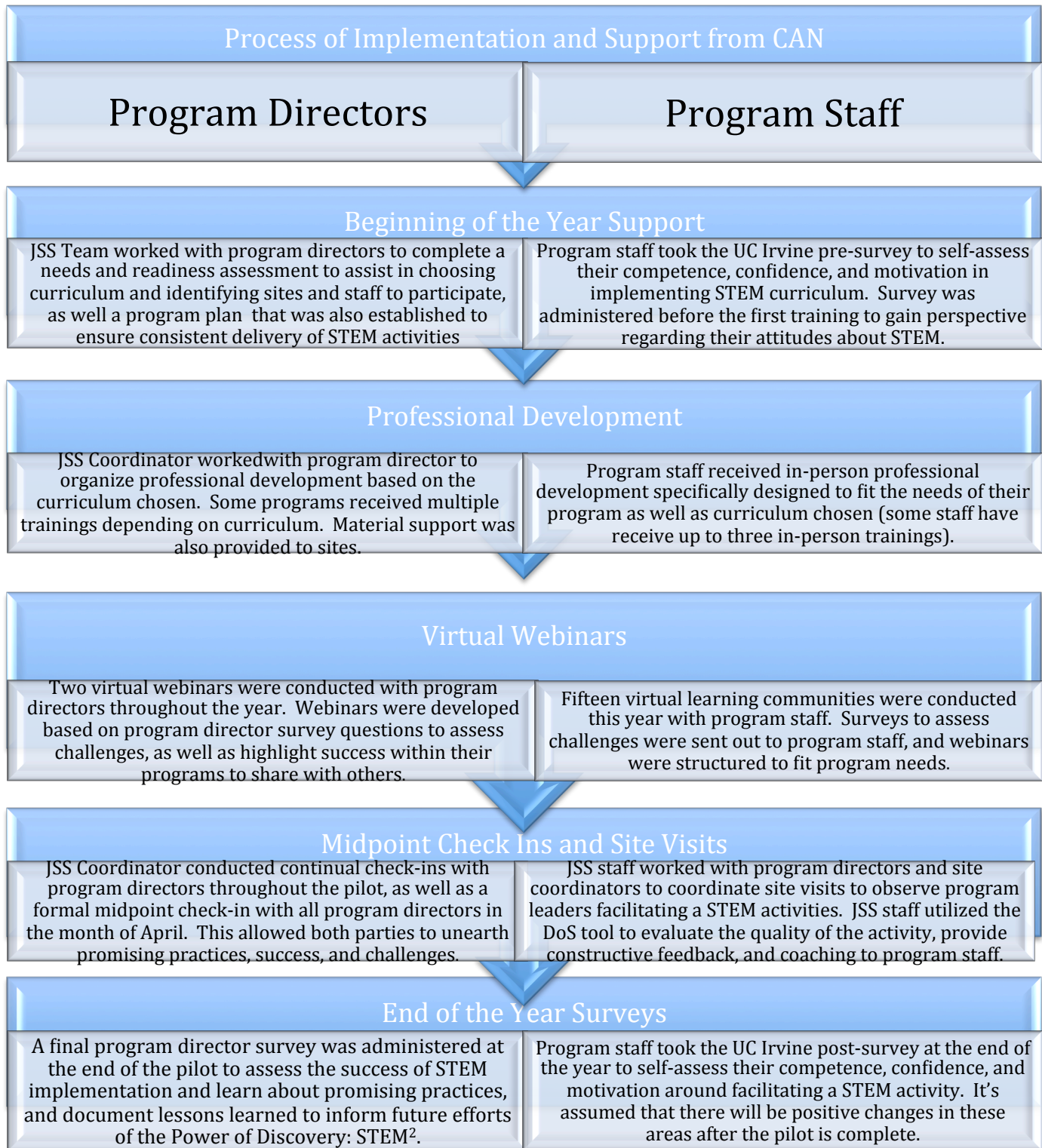
JumpStarting STEM

Task 11: Increase High Quality STEM in CA Afterschool Through Jumpstart Program Deliverables

The California Afterschool Network (Network) will facilitate a one year project to increase the frequency, intensity, and duration of high quality Science, Technology, Engineering, and Mathematics (STEM) learning opportunities for students in California's publically funded (After School Education and Safety and 21st Century Community Learning Centers) after school programs. The desired outcomes for the project are to increase the frequency and quality of STEM learning opportunities in California's after school programs; increase program staff competence and positive outlook in providing STEM learning opportunities; and increase student interest, engagement, and knowledge in STEM processes and concepts.

Processes of Implementation and Support

The JumpStarting STEM (JSS) team worked to ensure that program directors as well as site staff felt supported throughout the JumpStarting STEM pilot in doing so, these processes of implementation was set up to ensure continued conversations and support took place throughout th pilot phase.



***Continued efforts with these programs will be discussed in later sections**

****A monthly newsletter is sent to both Program Director and staff to provide regular updates on the JumpStarting STEM pilot (see Appendix E)**

In-Person and Virtual Professional Development

The JumpStarting STEM Pilot began in early October of 2011. Since then, the JumpStarting STEM staff has trained over 500 unique after school program staff including Youth Leaders, Site Directors, Academic Alignment Coaches, and Program Directors. Of the 26 trainings that have been provided, 7 were provided directly by the curriculum partners (*see Appendix F*), with the California AfterSchool Network staff present to provide the introduction to the JumpStarting STEM Pilot (*Table 1*).

Table 1. Summary of JumpStarting STEM efforts

Number of Different Curricula Being Implemented	Number of In-Person Trainings Provided Through the JumpStarting STEM Pilot	Number of Virtual Learning Communities Hosted by the California AfterSchool Network	Number of After School Sites Participating in the JumpStarting STEM Pilot	Number of Staff Trained through the JumpStarting STEM Pilot	Estimated Number of Students impacted through JumpStarting STEM
13	26	15	281	506	15,218*

* As estimated by program directors

For a thorough break down of trainings by programs and curriculum, please see Appendix G and H

In-Person Trainings

In-person trainings were provided as part of the JumpStarting STEM’s ongoing professional development model, and were coordinated based on the needs of individual programs. Some programs received multiple trainings depending on curricula chosen (*see Appendix F*). Trainings were open to any staff in the after school program implementing the curriculum or are interested in STEM education. Trainings were specifically designed to fit the needs of the program, curriculum, and participants through guided conversations with program directors and site staff (*see Appendix I for sample agenda*). Initial anonymous evaluations from trainings indicate that staff was positively engaged and feel confident that students in their program will benefit from STEM curriculum.

“I feel enthusiastic to incorporate these into my lesson plans. More of these trainings would be great.”

“I really enjoyed the lessons. The instructors were engaging and effective. I look forward to implementing these lessons. Thank you.”

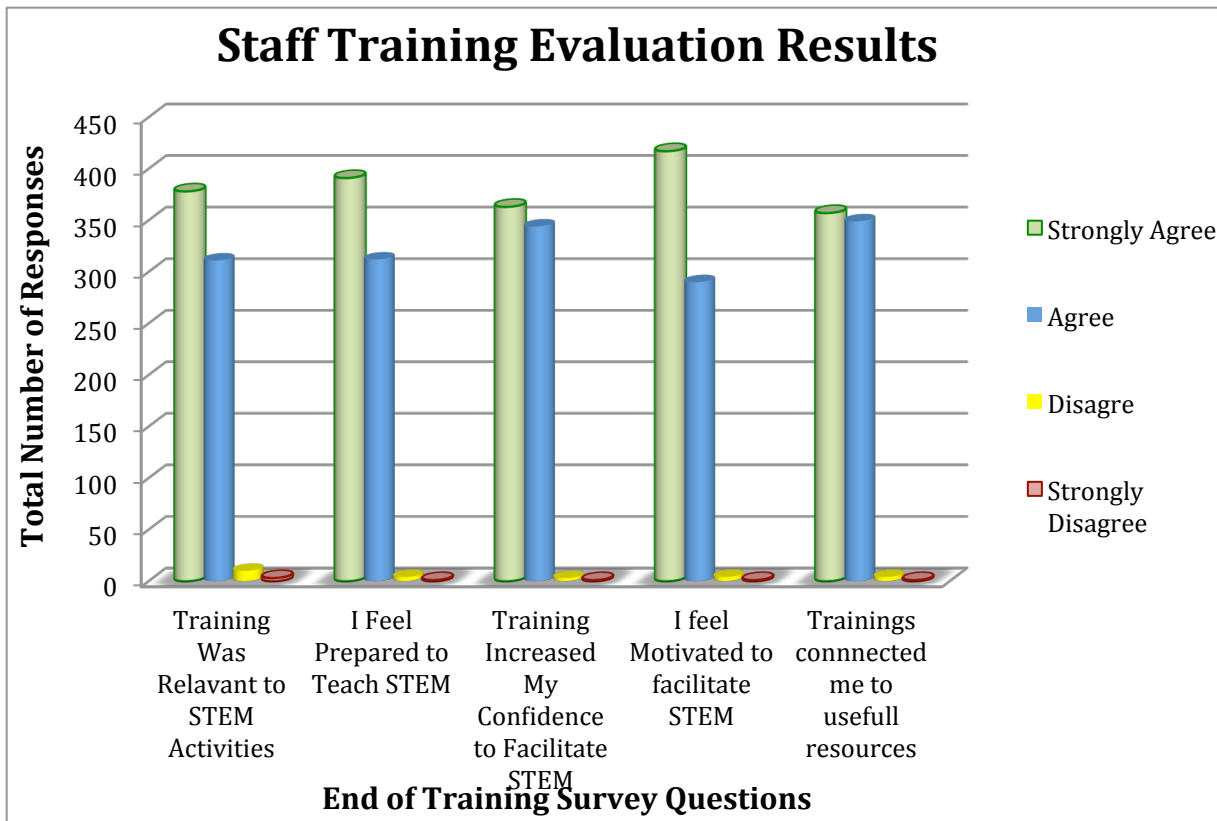
“Thank you for this training. Feel better prepared and motivated to start these activities with the kids.”

“I love how the activities interested me which will interest the students.”

Staff Training Evaluation Survey

The JumpStarting STEM Pilot partnered with multiple curriculum providers to provide 26 trainings to over 500 unique staff since the beginning of October 2011. Staff was asked to complete satisfaction surveys at the conclusion of each training. These brief surveys were administered to determine if staff felt that the trainings were effective in helping them feel more prepared, confident, and motivated. The overwhelming response from staff was agreement, with 99% of staff trained indicating agreement across all five survey items.

Figure 2. Staff Training Evaluation Results



For disaggregated data, please see *Appendix J*.

- 99% of staff felt the STEM training they received was relevant to the STEM activities that they do in their after school programs.
- 99% of staff felt that the STEM training has helped them feel well prepared to teach hands-on STEM activities.
- 100% of participants reported that they feel more confident in their ability to facilitate STEM activities after receiving a STEM training.
- 100% of staff indicated that the STEM training they received has increased their motivation to facilitate STEM activities in their programs.
- 100% of staff felt that the trainings connected them to useful STEM resources.

“I feel better prepared and motivated to start these activities.”

“I enjoyed the training, there are many great activities for kids.”

Virtual Learning Communities

The California AfterSchool Network's JumpStarting STEM staff also hosted 15 webinars throughout the pilot phase (see Appendix K). Each webinar focused on curriculum-specific success, challenges, and lessons learned. The webinars were structured with input from Youth Leaders, Site Coordinators, and Program Coordinators through a survey distributed to the field (see Appendix L). A JumpStarting STEM Staff facilitated each webinar, with presentations from a Curriculum Provider guest speaker, and a Youth Leader guest speaker from one of the participating programs. Guest speakers were asked to speak on challenges they've faced, and successes they've seen with the curriculum and implementation. They were also asked to give recommendations and resources for participants on the webinar depending on live poll results and live chat questions.

Through these webinars the JumpStarting STEM were able to bring to light valuable lessons:

- After school program staff appreciated the opportunity to speak directly with each other as well as curriculum provider to unearth challenges, successes, and resources.
- Many programs are choosing to view these webinars (hosted on the California AfterSchool Network's JumpStarting STEM website: stem.afterschoolnetwork.org) at a later date and are using the webinars as a discussion point for staff meetings.
- Many programs attended multiple webinars to obtain valuable information about different curriculum that are available.

"The meeting was very helpful and insightful. It did a great job at addressing all the little issues that we may have been having with the curriculum, and it was really nice being able to put in our own stories and ask questions to be addressed. I can definitely say that I have come out of this meeting with many ideas and plans for getting my kids interested in the KidzMath activities. I took a lot of notes and plan to take them to work today and immediately start implementing what I've learned. The stories and information were fantastic, and really helped me to come out of this with a better understanding of what's going on and what to do. Thank you for your time and for providing this meeting."

-Markelle Palmer, Anaheim Achieves

"Well presented, I so agree in the importance of providing STEM activities and opportunities for all students of all levels, and yes, females in particular. I'm going to check in to your resources, looks great. We haven't used TechBridge but have been really getting the most out of the TechXcite program at BCOE ASP Central Middle School, where I'm a Site Coordinator. I'm also an Education Specialist Teacher, MM & MS and your way of thinking is in my opinion the very best way to reach our students and hopefully encourage them to want more..."

-Karen Palmerlee, Butte County Office of Education

"Great meeting! I was so happy to hear that our partnership with DSC is equally fulfilling for both parties. Thank you so much for your constant support and the amazing opportunity you are providing for our students!"

-Ashley Walden, THINK Together

Process Evaluation - CEES

Program Director Survey Results

Program director survey results

Program directors were administered an online survey in December 2011 (pre), administered at the beginning stages of program training and implementation, and an online survey in May 2012 (post) to assess their perceptions of the JumpStarting STEM trainings and the implementation of JumpStarting STEM activities. The results of the analysis of the pre and post program director survey suggest an overall positive response to JumpStarting STEM. Furthermore, there is a general trend of improvement across responses from pre to post as described in the sections below.

What worked well

Program directors were asked to report what aspects of JumpStarting STEM were working well for their program. The most common responses were in the areas of training, professional development, and curriculum.

“The trainings were really great. Staff were very interested in being trained.”

“The professional development for staff was the best aspect of the program.”

Additionally, program directors indicated that student engagement was a positive aspect of the program:

“Getting students interested in scientific activities... kids liked what was offered.”

Program directors were also asked to indicate what they believed to be the biggest impact of JumpStarting STEM on their program. The overwhelming response from program directors was student engagement. Program directors reported that students within their program were interested, excited, thinking, and learning to love science, for example:

“The kids love to do science!”

“Kids are excited and there is discovery around STEM.”

Challenges

When asked to identify any challenges being experienced within their program related to JumpStarting STEM, there was some variation in responses across programs. The two most commonly cited challenges were related to staffing (e.g., staff turnover, identifying qualified staff) and materials (e.g., curriculum, obtaining materials, cost of materials). For example one program director stated:

“Getting curriculum on time and getting all materials in place before implementation. It would have helped to have a pre-planned schedule/timeline in advance so that we could better plan around that.”

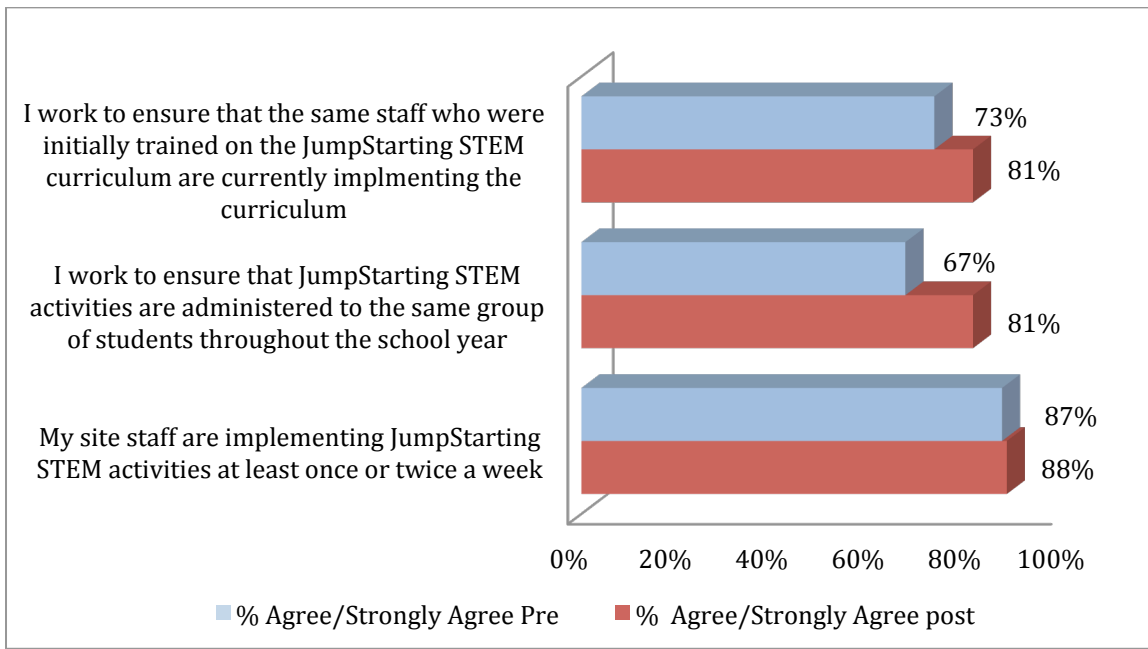
Additionally, less commonly cited challenges included engagement of middle school students, the time required to plan and implement activities, and the appropriateness of some curricula for lower grade levels. For example, one program director indicated:

“We experienced a few challenges early on with the curriculum and tweaking it for the younger grades.”

Program fidelity

Improvement was seen in program director's responses regarding program fidelity from pre to post (Figure 3). It is promising that the majority of program directors indicate that their program is implementing the JumpStarting STEM program with fidelity (e.g., at least once a week, to the same group of students, by trained staff).

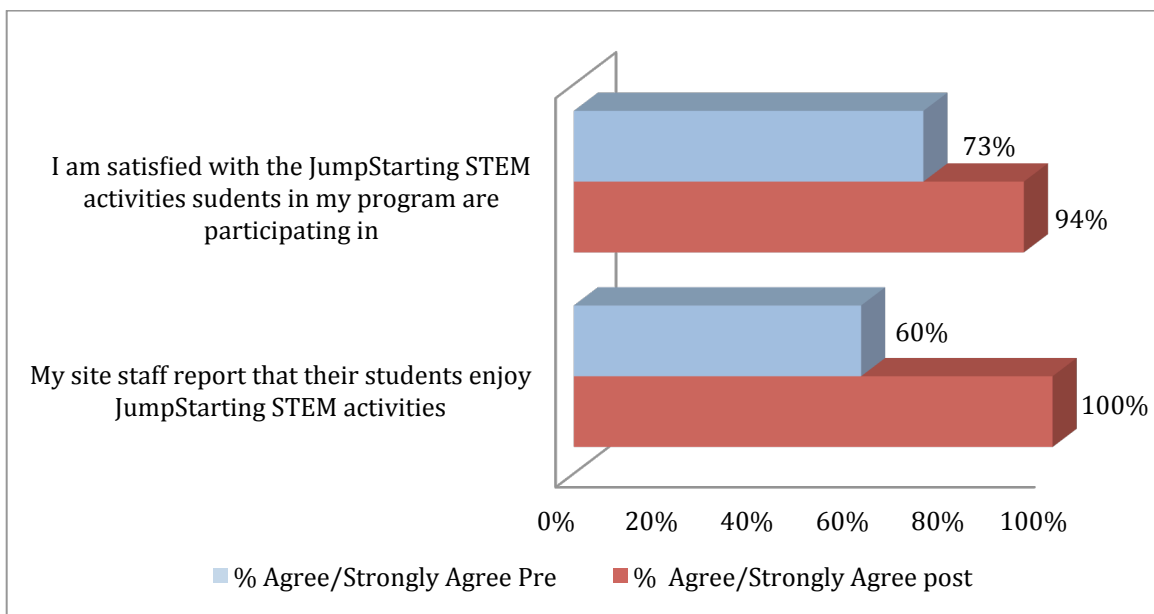
Figure 3. Program fidelity, pre post comparison



Student experiences

Program directors rated the experiences of students within their program participating in JumpStarting STEM as very high on the post survey, showing a marked improvement in their responses from pre to post (Figure 4). This can particularly be seen on the survey item "My site staff report that their students enjoy JumpStarting STEM activities" on which there was a 40% increase in overall agreement from pre to post.

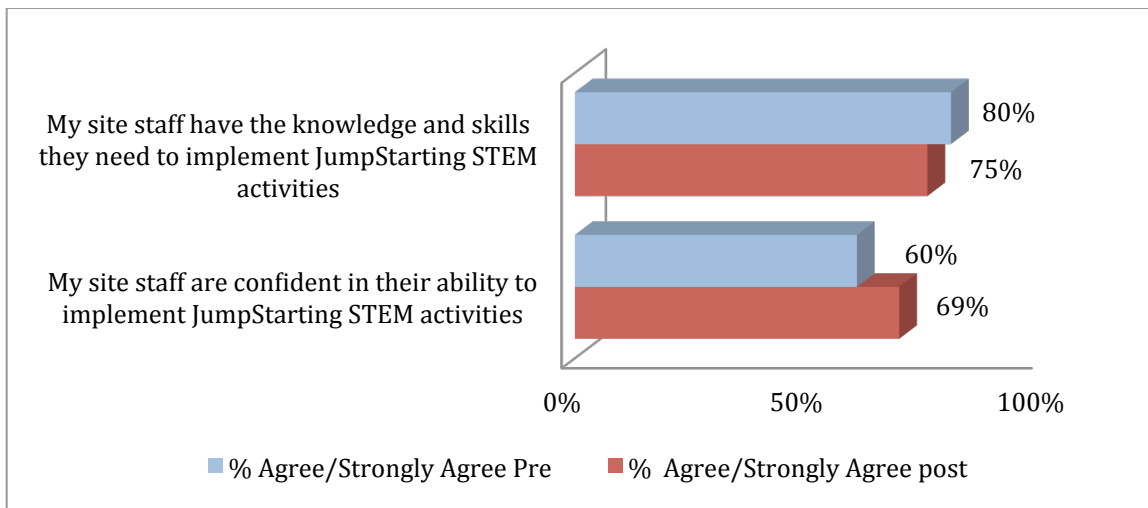
Figure 4. Student experiences, pre post comparison



Staff abilities and confidence

Overall, program directors rated their site staffs' abilities and confidence relatively high, and a 9% increase in agreement was found in site staff confidence (Figure 5). However, a decrease was found in program directors rating of staff knowledge and skills. Multiple program directors indicated that staff turnover and staffing in general were challenges within their program, which may be a possible reason for the slight decrease in program directors' perceptions of staff knowledge and skills.

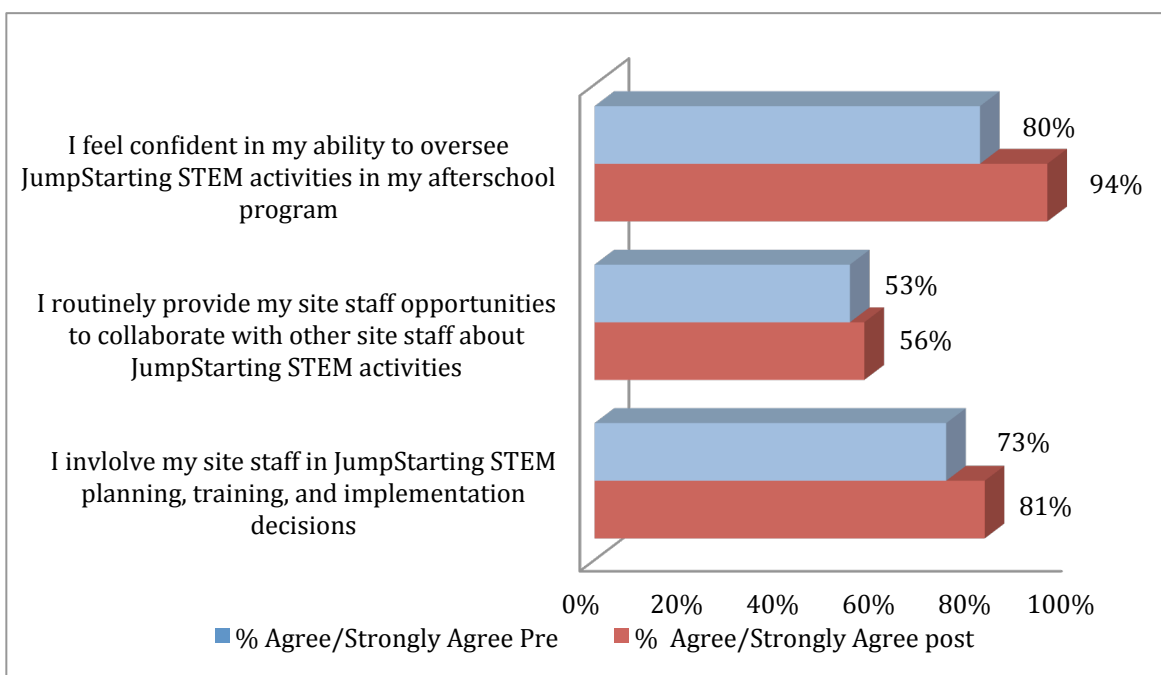
Figure 5. Staff abilities and confidence, pre post comparison



Program oversight

Improvement was seen in all survey items related to program oversight, with the largest gain in agreement in the area of program director confidence (Figure 6). Ninety-four percent of program directors indicated that they agreed or strongly agreed to the item "I feel confident in my ability to oversee JumpStarting STEM activities in my after school program" in the post-survey compared to 80% at pre.

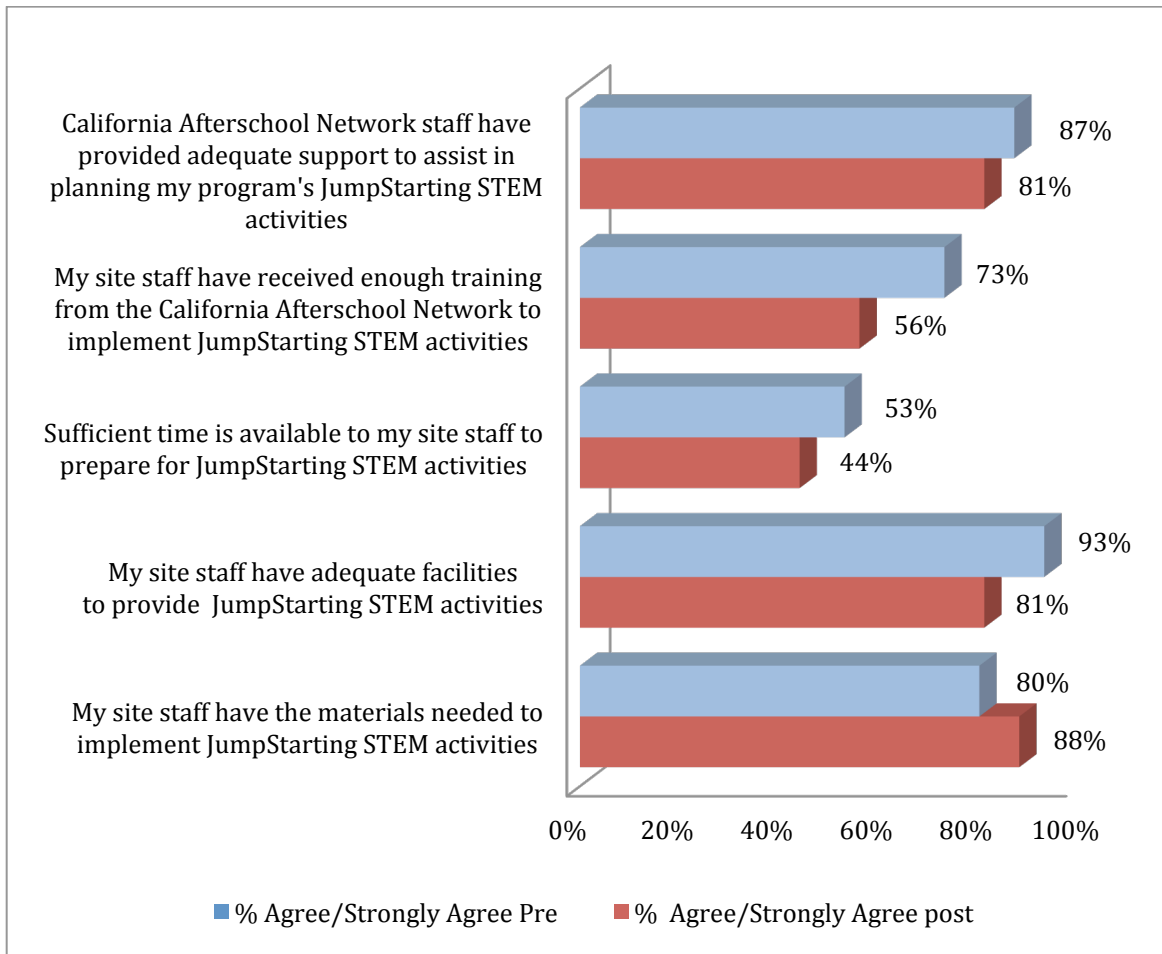
Figure 6. Program director oversight, pre post comparison



Support

While improvement was generally seen within most of the survey areas discussed above, a slight drop in agreement to survey items was seen in the area of perceived support (Figure 7). Most notably, 73% of program directors indicated that they agreed/strongly agreed to the survey item “My site staff have received enough training from CAN to implement JumpStarting activities” at pre, while only 56% indicated that they agreed/strongly agreed at post.

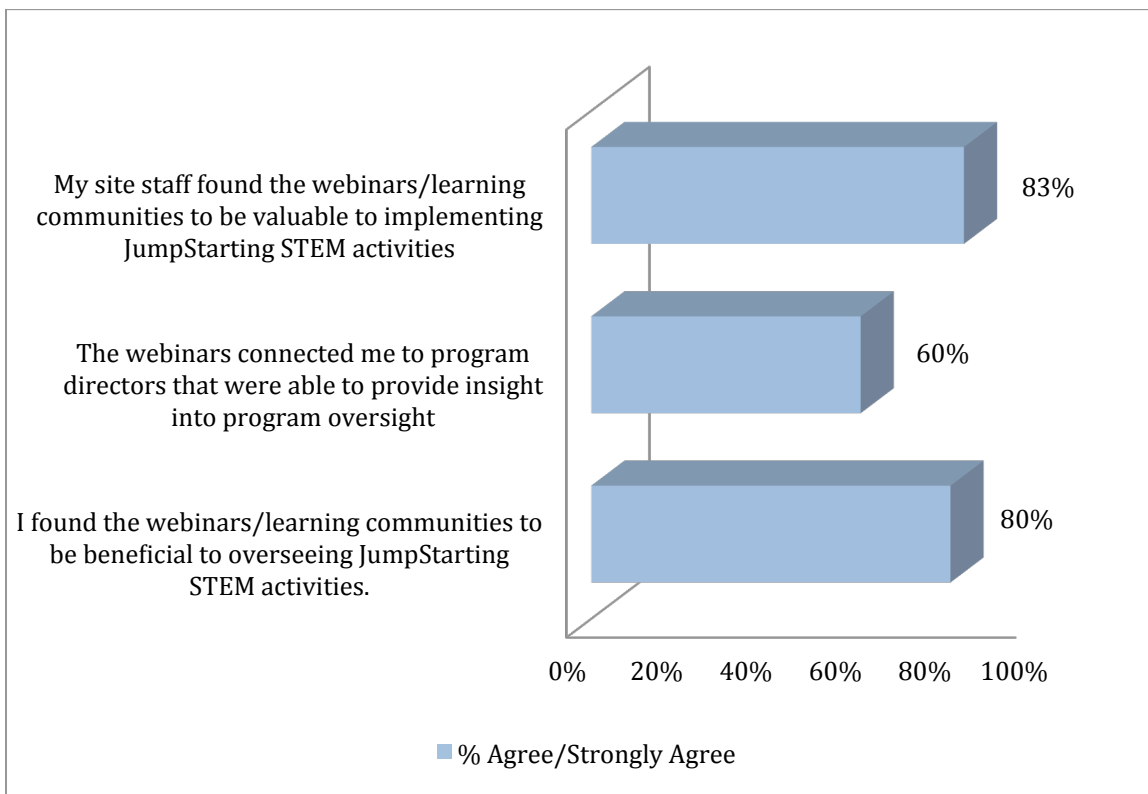
Figure 7. Program support, pre post comparison



Online Opportunities

Online learning and support opportunities were available to program directors and site staff through webinars and online learning communities. However, program directors indicated that it was challenging to get staff excited about, and to participate in, webinars. Sixty-two percent of program directors indicated that their site staff participated in these online training and support opportunities. The participation rate in webinars and learning communities was even lower for program directors, with only 50% of program directors indicating that they participated in these opportunities. In future years it may be necessary to make a greater effort to generate interest in webinars and online learning communities as, overall, those who did participate in online opportunities seemed to find them valuable (Figure 8).

Figure 8. Online opportunities, post survey responses



Comments from those staff that did participate in webinars also indicate that they found the experience beneficial, for example:

“Thank you so much for taking the time to provide us with great information and suggestions to make our lessons run smoother.”

Additionally, it may be that supplementary face-to-face trainings need to occur later in the school year, a crucial time to boost staff knowledge and morale, to help staff and directors feel supported. This is consistent with program directors responses to the survey item, “What additional support would you find to be helpful from CAN?” where the most commonly cited response was the need for more follow-up trainings, and professional development, as one program director noted:

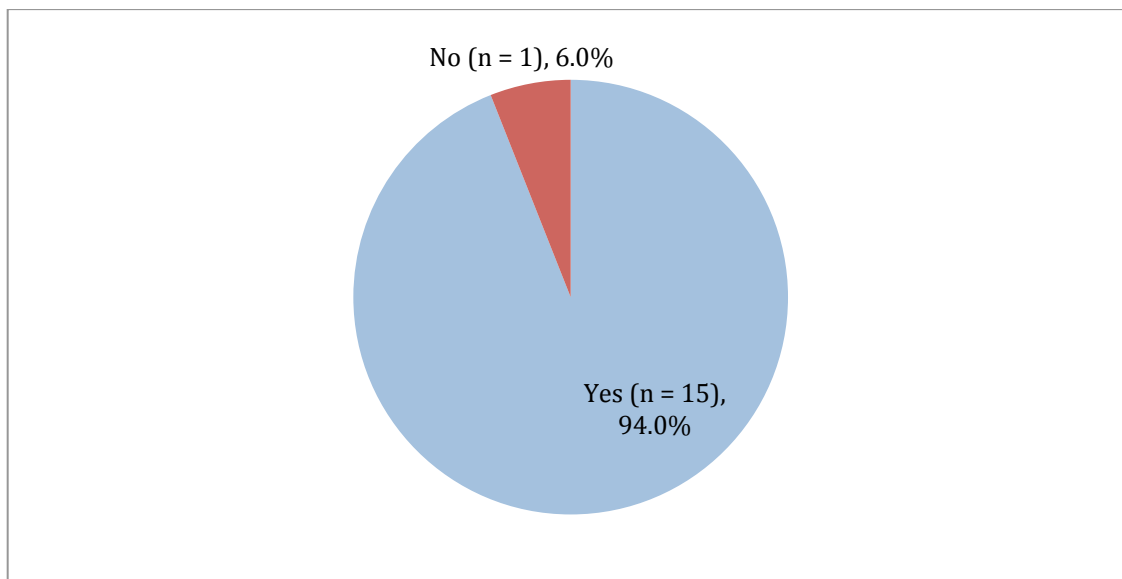
“More ideas, training opportunities and information are needed.”

Time commitment

Program directors indicated that time was one of the challenging aspects of JumpStarting STEM. Particularly the time required to plan for and implement JumpStarting STEM activities. At both pre and post the majority of program directors indicated that the time required for site staff to implement JumpStarting STEM activities (e.g., set-up, clean-up) was somewhat or too time intensive, 60% and 70% respectively. Similarly, when asked to rate the time required for program leadership and the time to plan for JumpStarting STEM activities, the majority of program directors indicated that it was “somewhat” to “too time intensive” both at pre (53%) and post (62%). However, when asked if the benefit of having these activities available to their students was worth the time required to implement the activities, program directors overwhelmingly answered yes (94%, see Figure 9). When asked to elaborate as to why or why not, program directors indicated that the opportunity for students was invaluable. For example, one program director wrote:

“The extended learning time is the prime space for students to participate and engage in STEM. For some students, this may be the only time they get exposed to STEM.”

Figure 9. Do you feel that the benefit of having JumpStarting STEM activities available to your after school participants is worth the time required to plan and implement the activities? Post survey



Summary

The JumpStarting STEM pilot has had an expansive breadth; training over 500 staff and providing high quality STEM experiences to over 15,000 students. Results of the process evaluation indicate that the program has had a positive impact on program directors, site staff, and most notably, students.

In Short

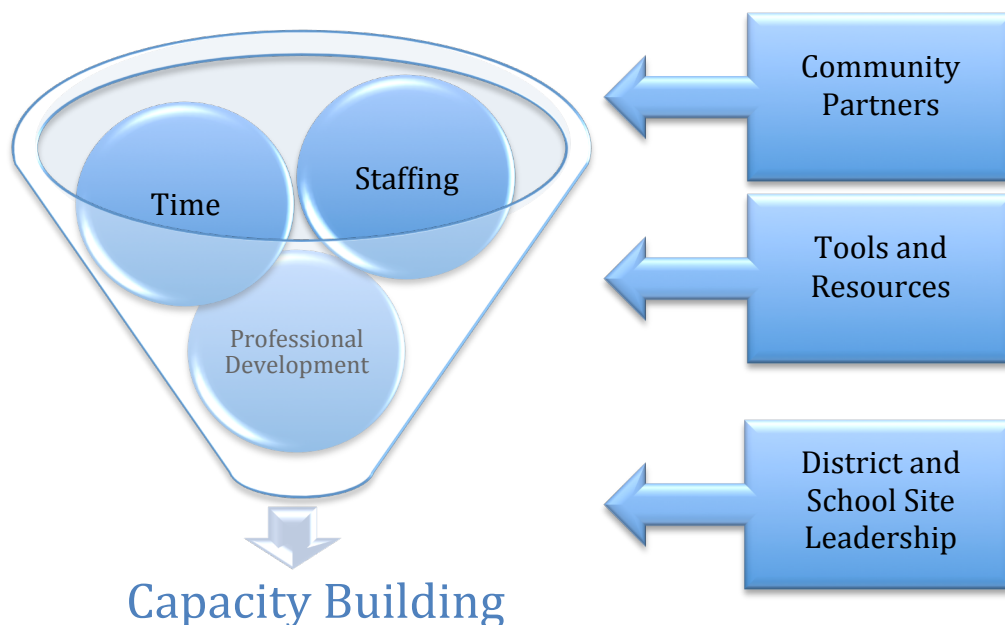
- Student engagement was reported to be the biggest impact of JumpStarting STEM.
- Program directors showed an increase in confidence related to program oversight.
- Program directors indicated that having JumpStarting STEM activities available to their students was worth the time required to plan and implement JumpStarting STEM activities.
- Program fidelity appears to be a critical factor; specifically for staff confidence & ability, and perceived support.
- There is a need for ongoing support to program staff.
83% of program directors felt their staff found these opportunities valuable, however it was challenging to engage staff in these opportunities.

Lessons Learned

The JumpStarting STEM pilot has allowed the California AfterSchool Network to continually document valuable lessons learned from on-going communications with after school staff. Through multiple conversations with Program Directors, Site Directors, as well as Youth Leaders via phone calls, surveys, webinars, and in person, the JumpStarting STEM Pilot was able to unearth challenges around three main areas: time, staffing, and professional development.

Program Directors need increased assistance to address these programmatic issues to further build capacity within their program. This assistance should involve the development of a detailed program plan for STEM programming that engages district, school site leaders, and community partners. Programs need to work with individual sites to create a detailed overall program plan which includes aligning with the school calendar, obtaining input from school site leaders as well as take into account staff input and student engagement.

Figure 10. Capacity Building



Professional development should be provided on approaches to STEM Learning (inquiry, project-based learning, equity, quality, complimentary alignment) so that a comprehensive system can be created that utilizes any STEM resource or activity in a cohesive, intentional, annual, and on-going approach.

Leaders must be tapped and their capacities built to move planned STEM initiatives forward within their program, districts, schools, etc. in order to reduce dependence on outside technical assistance providers. These leaders should represent all levels of the organization.

Promising Practices

Working with multiple programs throughout California has allowed the JumpStarting STEM team to uncover a multitude of promising practices that are invaluable to after school programs that have adopted these promising practices. Through multiple conversations and interviews with program directors, site coordinators, and youth leaders, the STEM team was able to document promising practices learned from the field.

What the JumpStarting STEM pilot has learned from programs

- **Creating a Time Line / Calendar**

Creating a timeline and calendar for programs and sites was important in implementation. Once a calendar has been established, after school staff has a roadmap of expectations for their particular program and site. In thinking about a program calendar, it is also important to align closely to the regular district calendar to ensure students are receiving consistent educational opportunities. In doing so, programs not only need to have an over all calendar and plan, but each individual site should adjust their calendar accordingly.

- Pro Youth HEART: Designs a block scheduling so that students rotate through each block specifically designed to fit the needs of the grade level.
- THINK Together Ontario Montclair: District STEM coordinator provides trainings based on the district calendar and alignment with district pacing guide and content standards. Contracted certificated teachers provide monthly trainings to after school staff. Currently working on compiling binders that will correlate with standards and school calendar.
- THINK Together Tustin Santa Ana: Works with Discovery Science Center to create a year-long calendar over the summer to have ready by fall.

- **Complementary Alignment**

Alignment and linkages with the school day is important to address the needs of teacher's and principals, in turn school site leaders will see after school program as an asset to their school in helping students learn valuable content standards. After school programs should be aware of district and school pacing guides as well as how to gain access to these pacing guides as a means of complementary alignment. When creating a calendar, know what units are taught will allow after school programs the opportunity to assist districts, schools, and teachers.

- Bright Futures Lucia Mar: Sends certificated teacher along with youth leader to trainings together. Certificated teacher then works with youth leader and staff to develop activities, classroom observations, and provide coaching
- THINK Together Ontario Montclair: District STEM coordinator provides trainings to after school staff based on district calendar. After school staff receive monthly professional development from district STEM coordinator as well as contracted certificated teachers
- Pomona Unified School District: Hires certificated teachers as site coordinators.

- **Creative Staffing Models**

After school programs generally have high turn over rates, therefore establishing creative way to staff programs will be crucial in maximizing the resources and talent in the after school program. Consider training one staff at each site to become “STEM specialists” or a group of “STEM specialists” that will rotate from site to site to implement STEM activities. Be sure to select staff based on their interest and desire to teach STEM as well as their ability to complete the task.

- Pro Youth Heart: Designated “STEM specialists”. Hired specific individuals to rotate among schools to provide STEM programming to students twice a week at each school.
- All other programs: youth leaders are providing STEM activities directly to their students. Some programs have one designated “STEM specialist” at site that facilitates STEM activities to all students.

- **Scheduling STEM**

Scheduling STEM activities as an enrichment activity will allow consistent implementation as well as consistent student participation. STEM activities encourage students to use inquiry practices to learn about new STEM content.

- Bay Area After School All Stars: Students attend programming on a block schedule. They are with one youth leader for four days in a row during enrichment hour. Fridays are club days in which they also provide STEM activities
- All other programs: Provide STEM as part of the enrichment hour.

- **Professional Development**

Providing staff with on going, sustained professional development will ensure that staff feels supported in their pursuits to provide quality STEM programming to students. This professional development can take on many forms and it is important to remain consistent in providing opportunities for staff to continually learn. Professional development can take on many forms; formal in-person training, informal check ins, and site visits that take advantage of on site coaching to staff.

- THINK Together Tustin/Santa Ana: Partners with Discovery Science Center to provide monthly trainings to staff. Staff are trained and walk away with all materials needed for a month long implementation
- All THINK Together Programs: Provide directly on-site in-person coaching. Quality Assurance Coaches are trained to provide coaching to site directors, site directors provide coaching to youth leaders.
- Bright Futures Lucia Mar: Joint professional development with certificated teachers and youth leaders.
- Pro Youth HEART: Peer-to-Peer mentoring. STEM specialists come to the school site and facilitate activity with program leader present and provide peer-to-peer mentoring on the spot.
- Give Every Child a Chance: Program Director is trained in all curricula and provides professional development to staff on a monthly basis.

What the JumpStarting STEM pilot has learned from coordination efforts

- **Planning is key**

It is important to work with program directors prior to beginning of STEM implementation to ensure that a program plan is put together that would best suit the needs of the program and program staff. As part of the planning process, some programs have more than one STEM point person, it is important to ensure that communication among all program directors are consistent so that everyone is receiving the same message.

- **Ensuring local adoption, implementation, and local flexibility in implementation is Key**

In our program director interviews, many of the program directors have indicated that a “one-size-fits-all” approach would not have worked as effectively for them. They appreciate that the JumpStarting STEM effort started with their needs, and supported them in making a plan that was adaptable to their context. The diversity of implementation strategies of each program is evident in their program plan.

- **Regular communication allows for:**

- Reflection on practice
- Re-focusing on the initiative
- Understanding needs
- Lifting out promising practices
- Addressing and acknowledging challenges

- **Peer Learning is Effective**

Mentoring and coaching are important aspects of professional development, and peer-to-peer learning is also very effective. Informal peer-to-peer learning happens regularly at sites, but creating opportunities for formal conversations also increases the quality of the learning experience. CAN staff have provided webinars in which program staff was asked to present their success, challenges, and offer any support and resources to other program staff implementing the same curriculum. Based on input from the webinars, we were able to note that program staff appreciated the opportunity speak with each other to gain support, information, and helpful resources.

- **Training Staff**

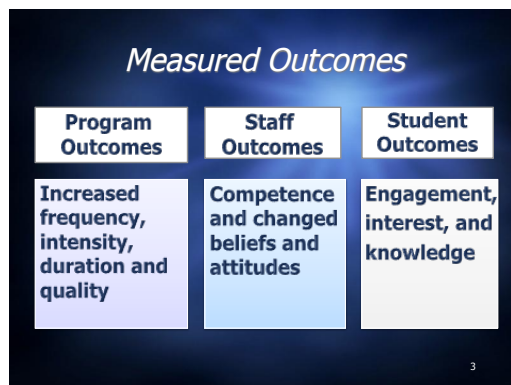
Through many conversations with after school staff, we have found that it is important to ensure that those who are implementing STEM programming are the same individuals that receive professional development in implementation. When scheduling staff training, CAN staff worked to ensure that staff supervisors are also present at trainings to facilitate success for all program staff.

Outcome Evaluation – UC Irvine

Staff and Student Data

Outcomes Evaluation

In addition to the process evaluation conducted by CEES, the outcome evaluation team at the University of California Irvine assessed program, staff, and student outcomes. The measured outcomes are outlined below. The following will briefly summarize their findings. A more full analysis can be found in *Appendix M*.



Outcomes Evaluation Summary

Staff and student outcomes were assessed by pre-and-post surveys. The surveys utilized tested reliable and valid measures. Evaluation data were collected from 15 programs and 45 of the 280 JumpStarting STEM sites. A total of 135 staff surveys (88 pre and 47 post), and 2,298 total student surveys (1020 pre and 1278 post) were gathered.

Evaluation data indicate significant shifts in program outcomes including, time per week implementing STEM, staff meeting time dedicated to discussing STEM, staff engagement with teachers and school administrators regarding STEM learning, as well as increased staff engagement with parents around the value of STEM activities in the after school program.

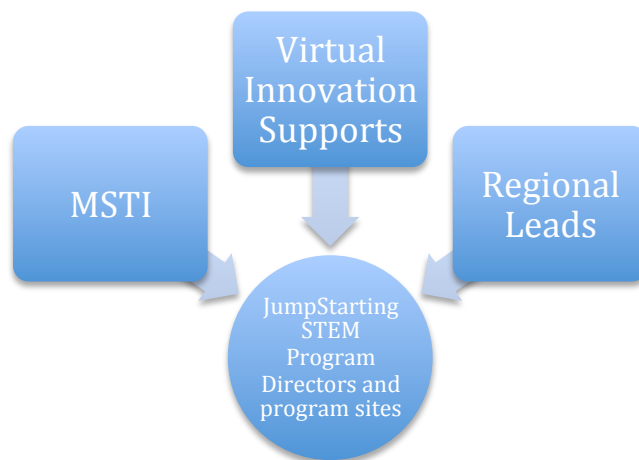
Preliminary analysis of student outcomes show relatively flat scores at baseline and follow-up for science and math efficacy, as well as student interest in science or science careers. However, regression analysis of the data reveals interesting changes from baseline to follow-up for some groups of students. Those students who reported more positive experiences in their afterschool programs (a reflection of higher program quality) demonstrated gains in the desired STEM outcomes. In addition, desired student outcomes were associated with students' positive perception of the quality of their relationships with staff and their peers in the program. In summary, the UCI team found that STEM outcomes are linked to overall program quality, and the quality of relationships between staff and students and their peers in the program. What can be concluded from this is that STEM outcomes cannot be separated from positive and support adult and peer relationships and the quality of program experiences for participating students.

The JumpStarting STEM pilot allowed the UCI team to test a measure called the STEM Activity Documentation Form to gather site-level data on the types of JumpStarting STEM activities being implemented, along with other STEM learning activities that were conducted with students in their programs. The data gathered utilizing this tool was compiled regularly by program staff and mailed in hard copy or electronically to the UCI evaluation team. Over 900 individual STEM activities were documented recording the types of activities, and perceived levels of student engagement, challenge, and success. The UCI team is currently analyzing these data collected during the Jumpstarting STEM pilot and assessing the effectiveness of the tool as an evaluation measure.

Continued efforts with JumpStarting STEM programs

MSTI project and the After School Regional Lead System

In recent conversations with the programs, nearly all have expressed an interest in continuing working with CAN in the implementation of STEM learning opportunities. Joan Bissell also took an interest in the program as something to leverage with the CSU Math & Science Teacher Initiative (MSTI). Conversations have also taken place with Michael Funk, the After School Programs Division Director at the California Department of Education and some of California's After School Regional Leads. The strategy to continue the engagement of JumpStarting STEM programs, and the improve the quality of STEM implementation is matching them with their After School Regional Lead as well as MSTI fellows in the implementation of an updated STEM plan.



Goals of this effort

- Increase quality and intentionality of STEM learning opportunities in JumpStarting STEM programs.
- Understand how continued participation affects program, staff, and student outcomes.
- Work with MSTI to update / develop guides for effective implementation of STEM learning opportunities in collaboration with higher education institutions and pre-service teachers.
- Learn more about the value of after school programs as clinical practice for pre-service teachers.

Role of Regional Leads

Work with JumpStarting STEM programs to utilize the Needs / Readiness Assessment, and Program Planning Document to create a comprehensive STEM plan incorporating MSTI fellows in the professional development and implementation of STEM learning activities. Regional Leads may also assist JumpStarting STEM programs in the implementation of their plans.

Role of MSTI Coordinators

Coordinate with JumpStarting STEM programs to create the “best fit” relationship and structure for the MSTI implementation.

Role of Virtual Innovation Supports

Provide access to a Needs / Readiness assessment, program planning tool, online resources, and assistance in making appropriate connections to needed resources.

Role of JumpStarting STEM Program Directors and Sites

Implement an annual STEM plan and participate in the outcome evaluation.

The Power of Discovery: STEM²

Building on the JumpStarting STEM Pilot efforts, the Power of Discovery: STEM² is part of the California After School Network (CAN) and California STEM Learning Network's (CSLNet) effort to mobilize a broad coalition of stakeholders who will work together to increase quality STEM (Science, Technology, Engineering and Math) learning opportunities in Out-of-School Time (OST) programs. This initiative focuses on the creation and implementation of a robust, statewide system that can deliver high quality STEM experiences during the critical out-of-school time (OST) hours. Programs that operate during these hours include after school programs and summer learning programs.

This initiative is made possible with the generous support and partnership from the S. D. Bechtel Jr. Foundation, the Noyce Foundation, and the Samueli Foundation.

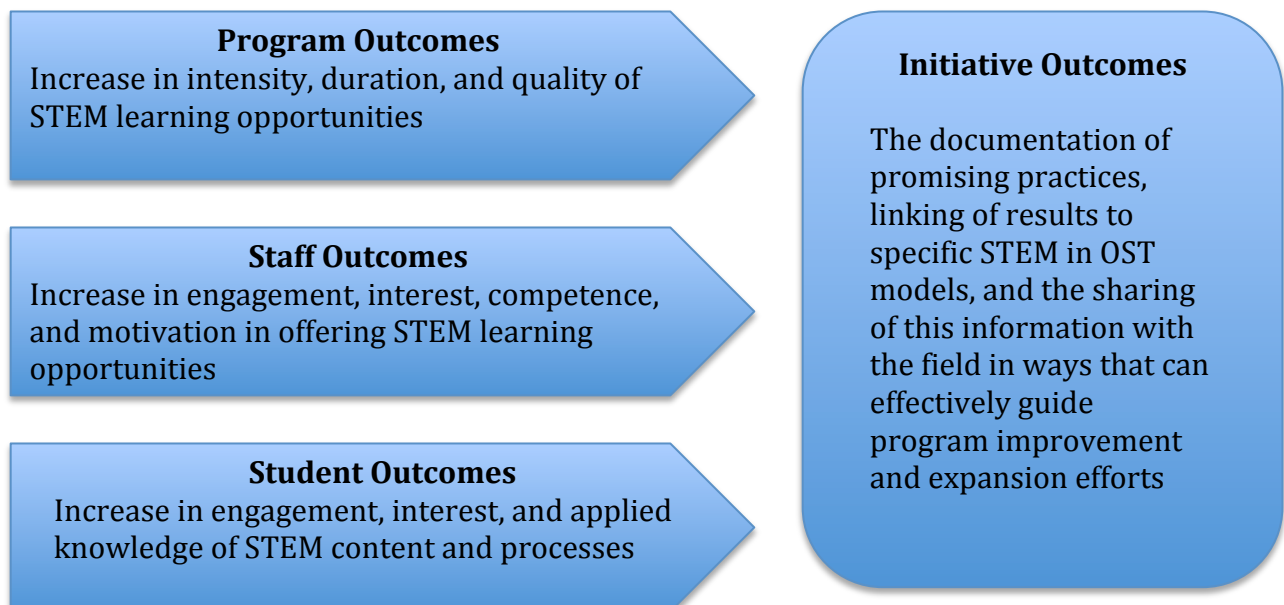
What we will advance:

CAN and multiple partners will implement a comprehensive multi-year strategic plan involving the creation of STEM ***Regional Innovation Support Providers and Virtual Innovation Supports***. These support systems will facilitate cross-sector partnerships and increase the professional capacity of OST programs to offer high quality STEM learning opportunities through:

- Student-centered activities designed to engage and nurture student interest and curiosity
- Project and inquiry-based learning
- Activities that complement the academic curriculum and incorporate Common Core Standards and Next Generation Science Standards
- Offering diversified subject matter
- Offering equitable access to all students (i.e., students of all socioeconomic statuses, genders, ethnicities, linguistic abilities, and exceptional needs)

What outcomes will be achieved?

The Power of Discovery: STEM² seeks to realize key program, staff, and student outcomes:



Appendix A

JumpStarting STEM Programs

The California Afterschool Network Launches STEM in Out-of-School Time Initiative

Region	Name of Program	LEA Grantees	Number of Participating Sites
1	Boys and Girls Club of Central Sonoma County	Cloverdale USD, Geyserville USD, Healdsburg USD, Windsor USD	9
2	Butte County Office of Education	Butte County Office of Education	24
3	Twin Rivers Unified School District	Twin Rivers Unified School District	6
4	Bay Area Community Resources	AUSD, OUSD, WCCUSD, San Rafael Unified, SFUSD	30
4 and 5	Bay Area After School All Stars	San Jose Union SD	5
6	Give Every Child A Chance	Manteca Unified School District, San Joaquin County Off. Of Ed.	10
7	Pro Youth Heart	TCOE	12
8	Bright Futures After School Program	Lucia Mar School District	10
9	Anaheim Achieves	Anaheim City, Magnolia, Anaheim Union and Savanna School Districts	23
9	Harmonium	San Diego County Office of Education	9
9	Social Advocates for Youth	San Diego County Office of Education	11
9	THINK Together	Santa Ana and Tustin Unified School Districts	21
10	THINK Together	Ontario Montclair School District	21
10	Creative After School Programs for Success (CAPS)	San Bernadino Unified School District	21
10	THINK Together	Moreno Valley School District	19
11	Woodcraft Rangers	LAUSD, East Whittier School District	23
11	Pomona Unified School District	Pomona Unified School District	27

Appendix B

JumpStarting STEM Sites

JumpStarting STEM



Region 1

CONNECT. CONVENE. INSPIRE.

Regional Lead	Participating Program(s)	Participating Sites	
Susan McConnell	Boys and Girls Club of Central Sonoma	JX Wilson Elementary Sheppard Elementary Roseland Elementary Cali Calmecac	Healdsburg Geyserville Jefferson Elementary Cloverdale

Region 2

Regional Lead	Participating Program(s)	Participating Sites	
Gloria Halley	Butte County Office of Education	Biggs Elementary Richvale Elementary Four Winds School Nord Country School Sycamore Middle Woodrow Wilson Concow School Manzanita Elementary Bird St. School Central Middle Ishi Hills Middle Oakdale Heights	Stanford Avenue Wyandotte Avenue Golden Hills Elementary Helen Wilcox School Honcut Elementary Palermo Middle Cedarwood Elementary Berry Creek Nelson Avenue Poplar Avenue Plumas Avenue Sierra Avenue

Region 3

Regional Lead	Participating Program(s)	Participating Sites	
Barbara Metzok	Twin Rivers Unified School District	MLK Jr. Technology Academy Rio Linda Prep	Norwood Jr. HS Rio Tierra Jr. HS Allison Elementary

Region 4

Regional Lead	Participating Program(s)	Participating Sites	
Joe Hudson	Bay Area Community Resources	Emerson Martin Luther King Elementary Sankova Academy Hoover Elementary Lafayette Elementary Bay View Elementary Highland Elementary Riverside Elementary Wilson Elementary Stege Elementary Washington Elementary Grass Valley Henry Haight Ruby Bridges Parker Elementary	SF Community School Guadalupe Elementary Junipero Serra Elementary Cleveland Lakeshore Bret Harte Longfellow Sanchez Laurel Dell Bahia Vista Davidson Middle Venetia Valley Elementary San Pedro Elementary Prescott Elementary Jefferson Elementary
	Bay Area After-school All-stars*	Hubbard Elementary Gardner Academy Grant Academy	Adelante Dual Language Academy Lowell Elementary

*Region 4 and 5 share programs

Region 5

Regional Lead	Participating Program(s)	Participating Sites	
Mara Wold	Bay Area After School All Stars*	Hubbard Elementary Gardner Academy Grant Academy	Adelante Dual Language Academy Lowell Elementary

Region 6

Regional Lead	Participating Program(s)	Participating Sites	
Lori Ward	Give Every Child a Chance	El Portal Middle Ripon Elementary Banta Elementary Lathrop Elementary Golden West Elementary French Camp Elementary Shasta Elementary	Sequoia Elementary Lincoln Nile Garden Great Valley George Kumore August Nodt

Region 7

Regional Lead	Participating Program(s)	Participating Sites	
Diane Wilcock	Pro Youth Heart		

Region 8

Regional Lead	Participating Program(s)	Participating Sites	
Marcella Klein-Williams Wendy Ropes	Bright Futures After School Program	Oceano Elementary Nipomo Elementary Lange Elementary Mesa Middle Judkins Middle	Fairgrove Elementary Grover Beach Elementary Grover Heights Elementary Dana Elementary

Regional Lead	Participating Program(s)	Participating Sites	
Helen Gonzales	Anaheim Achieves	Mann Elementary Ross Elementary Loara Elementary Gauer Elementary Stoddard Elementary Ponderosa Elementary Roosevelt Elementary	Jefferson Elementary Cerritos Elementary Hansen Elementary Ball Jr. High South Jr. High Magnolia High Baden-Powell Elementary

		Westmont Elementary Price Elementary Orange Grove Elementary Olive Elementary Henry Elementary	Disney Elementary Maxwell Elementary Low Elementary Pyles Elementary
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Region 9

	Harmonium	Wegeforth Prime Webster Primetime Perry Primetime Perkins Primetime Hamilton Primetime	Cadman Primetime Adams Primetime Walker Primetime Beyer 6" to 6"
	Social Advocates for Youth	Chesterton Spreckels Euclid Dana Rosa Parks Encanto	Jones Chollas Tierrasanta Whitman Bayview Terrace
	THINK Together- San Diego	Beswick Elementary Estock Elementary Heideman Elementary Lambert Elementary Thorman Elementary Veeh Elementary Davis Elementary King Elementary Lincoln Elementary Pio Pico Elementary Washington Elementary	Jackson Elementary Muir Elementary Thorpe Fundamental Elementary Greenville Fundamental Taft Elementary Garfield Elementary Hoover Elementary Wilson Elementary Walker Elementary Adams Elementary

Region 10

Regional Lead	Participating Program(s)	Participating Sites	
Martha Hall	THINK Together-Ontario Mont Clair	Berlyn Elementary Bon View Elementary Corona Elementary Del Norte Elementary Edison Elementary Haynes Elementary Lincoln Elementary Mariposa Elementary Sultana Elementary Vineyard Elementary/Middle	Buena Vista Elementary Central Elementary/Middle Elderberry Elementary Euclid Elementary Hawthorne Elementary Vista Grande Elementary De Anza Middle Oaks Middle Vina Danks Middle Wiltsey Middle Allison Elementary
	Creative Afterschool Programs for Success (CAPS)	Romona-Alessandro Elementary Bradley Elementary Burbank Elementary Cole Elementary Cypress Elementary Fairfax Elementary Highland Pacific Elementary Hunt Elementary Ingrahm Elementary Kendall Elementary	Lincoln Elementary Lytle Creek Elementary Monterey Elementary Bonnie Oehl Elementary Parkside Elementary Rio Vista Elementary E. Neal Roberts Elementary Vermont Elementary Wilson Elementary Bing Wong Elementary Lankershim Elementary
	THINK Together- Moreno Valley	Bear Valley Elementary Butterfield Elementary Honey Hollow Elementary Seneca Elementary Box Springs Elementary Armada Elementary Creekside Elementary Chapparal Hills Elementary Edgemont Elementary	Serrano Elementary Sunnymead Elementary Laselle Elementary Manuel L. Real Elementary MM Bethune Elementary Mead Valley Elementary Rainbow Ridge Elementary Triple Crown Elementary Victoriano Elementary

Region 11

Regional Lead	Participating Program(s)	Participating Sites	
Mary Jo Ginty	Woodcraft Rangers	Holmes Elementary 99 th St. Elementary Dolores Elementary Mullberry Elementary La Colima Elementary Elizabeth Learning Center Sharp Elementary Nevada Elementary Plainview Elementary Temple Intermediate School Emerson Elementary	Miles Elementary Gage Vernon Gompers Rice Pacific South Gate MS Nimitz Independence State HP ES Willard Elementary
	Pomona Unified School District	Marshall Middle Palomares Middle Simons Middle Roosevelt Elementary Pueblo School Philadelphia Elementary Montvue Elementary San Antonio Elementary San Jose Elementary Yorba Elementary Westmont Elementary Washington Elementary Vejar Elementary Madison Middle	Lopez Elementary Kingsley Elementary Lexington Elementary Kellogg Polytechnic Elementary Lincoln Elementary Alcott Elementary Allison Elementary Arroyo Elementary Barfield Elementary Cortez Magnet School Harrison Elementary Emerson Middle Fremont Middle

Appendix C

Campaign for Quality Action Planning Guide

CAMPAIGN FOR QUALITY - ACTION PLANNING GUIDE

QSA Sections Which element of the QSA do you feel needs to be addressed immediately in your program?	WHO Who are the stakeholders that you need to engage? (Principals, Parents, Students, etc.)	WHAT What Network resources will be valuable to use when starting conversations with your stakeholders? (i.e. QSA, Videos, Campaign for Quality tool, Webinars, etc.)	HOW What are some first steps you need to take in order to start these valuable conversations?	WHEN What is a reasonable timeline? Short-term goals as well as long-term planning

Additional Guiding Questions:

What are some additional data that needs to be gathered? (i.e. CELDT scores, API, APY, Attendance, etc.)

What are some challenges I might face when using these tools?

Will I use this tool as a “Survey-to-Discussion” or “Consensus-Based” method? (pages 8-10 of the QSA User Guide)

How can I ensure I continue the cycle of assessing, planning, improving, and celebrating program quality?

Appendix D

Sample Campaign for Quality Training Agenda

Campaign for Quality

<p>Goal:</p> <ul style="list-style-type: none"> To provide a Campaign for Quality training that engages key stakeholders in meaning conversations about program quality and continuous program improvement. <p>Outcomes:</p> <ol style="list-style-type: none"> Learn about the origins of CAN QSA. Review QSA resources, content & how to use the guides. Explore 11 sections & share promising practices. Create action plans for organization or sties in triads. 	<p>Materials:</p> <ul style="list-style-type: none"> Campaign for Quality Booklets Quality Self-Assessment Tool Guides Quality Self-Assessment Tools QSA PPT Projector Speakers Video on File Flip Charts / Markers Blue Tape Laptop Nametags <p>Handouts:</p> <ul style="list-style-type: none"> PPT handouts Action Planning Guides Markers 	<p>Trainer Forms:</p> <ul style="list-style-type: none"> Sign in/ out Trainer Reflection Form QSA Evaluation
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<p>Room setup: Room with large tables facing each other to encourage dialogue about promising practices and program quality.</p>	<p>Session Dates & Times:</p>	
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Time	Activity Steps	Facilitator	Materials	Notes
Set Stage:	Sign in Introduction upon entrance			
10 min	Opening/ Introduction Warm up		Projector Speakers Sign in	<ul style="list-style-type: none"> - Have participants sign in and create a nametag - Shake hands, smile, and learn participants names - Have everyone do a 3 question meet and greet: <ul style="list-style-type: none"> o Name / site / grade level o Why is after-school programing important to you? o What are you proud of at

				<p>your program?</p> <ul style="list-style-type: none"> o What does quality mean to you? <ul style="list-style-type: none"> - Thank everyone for his or her hard work and dedication to youth development. - Emphasize that they just met their best program quality-improvement resource – their peers. (5 min).
10 min	<p>Phase 1:</p> <p>Slide 2 – Goals</p> <p>Slide 3 – New Resources Online</p> <p>Slide 4 – QSA Tool History</p>		Ask current knowledge of the tools.	<ul style="list-style-type: none"> - Develop awareness of tools - Engage with resources & tool content - Learn & share promising practices - Create a plan to utilize resources - Tools are self-assessments, conversation starters, and ways to create a common language. - Overall there are four free resources that are available online: QSA Tool, Quality Guides, Campaign for Quality Videos, and Webinars. - All online, downloadable, and viewable. - They are intended to be adapted for your needs. A multiyear effort from 2007 – 2009 by CDE. - The framework was developed by practitioners from the field, field-tested and revised multiple times. - The goal was to create a shared language and a starting point for quality self-assessment. - Not an external evaluation tool - The tool is designed to be flexible and non-linear.
10 min	<p>Phase 2:</p> <p>Slide 5 – Continuous Cycle of Improvement</p> <p>Slide 6 – Program Elements</p>			<ul style="list-style-type: none"> - The goal if for the tool to be a continuous cycle of program improvement. - Eleven elements – could there be more? - Use the special needs example

	<p>Slide 7 – A Closer Look</p>			<ul style="list-style-type: none"> - The paragraph about the section & examples in the program are the most important sections, not the score.
<p>10 min</p>	<p>Phase 3:</p> <p>Slide 8 – I got a 2? Now what? The Campaign for Quality Promising Practices Guide is a new tool.</p> <p>Slide 9 – Videos and Webinars – Now exist on each topic. Watch the video.</p> <p>*Watch Video “Alignment & Linkage with the School Day.” Debrief: Each of these videos is on afterschoolnetwork.org. Can utilize in several different ways. Suggestions: to watch video in weekly staff meeting and take assessment with staff, get ideas before talking with stakeholders, get a better understanding, etc.</p>			<ul style="list-style-type: none"> - Once you’ve identified your strong areas and areas that need improvement you can use the new tools to start a conversation with key stakeholders. - Practitioners invested in the field of afterschool created the promising practices guide.

40 min	<p>Phase 4:</p> <p>Break into groups and set near sections</p> <p>Digging into the tool: start with alignment and linkages</p> <ul style="list-style-type: none"> - Read the paragraph then pick any indicator that pops <ul style="list-style-type: none"> - Give yourself a score - Provide evidence <p>Carousel</p> <p>*Break into groups:</p> <ul style="list-style-type: none"> *Explain activity: On each chart (explain charts) *Look into tool by themselves *Group and add *Look over PP Guide * Last group will share out 2 major ideas *Carousel walk 		<p>Rotation Notes:</p> <p>5 min – Intro</p> <p>10 min – Self / Group</p> <p>10 min – PP Guide / Add</p> <p>10 min – Share out</p> <p>5 min – gallery walk</p>	<ul style="list-style-type: none"> *Hang up posters spread up around room prior to training *Set up laptop, projector and speaker *To divide into groups, participants will count off (large groups will have sticker on agenda that will indicate what poster to go to) *Chart headings: 1) Alignment & linkages with the school day 2) Program Environment & Safety 3) Family Involvement 4) Nutrition and Physical Activity *Large groups will also have: Community Partnerships and Collaboration, Youth Development, Staff Recruitment and Professional Development * Who shares out in each group? Person with smallest foot, picks who shares out.
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40 min	<p>Action Planning:</p> <p>Explain the plan Work alone Create triads Share your plan and write down other's ideas.</p>			<ul style="list-style-type: none"> - Have everyone line up by birthday - Create triads - Individually, participants will pick one indicator in a section and write an action plan using one Campaign for Quality tool - After participants have time to work alone, they will share their plans with other triad members - If the another's action plan resonates with the other participants, they should borrow their ideas and record it in their action plan - After triads have shared internally, there will be a group share out asking for 3-5 groups to share at least one action plan that was very strong.
5 min	<p>Next Steps and Closing</p> <p>Thank you for attending Fill out evaluation Sign out</p>		<p>Evaluation Sign out</p>	

Appendix E

JumpStarting STEM Sample Monthly Newsletter

Jumpstarting STEM Newsletter

Welcome to the third edition of the Jumpstarting STEM Newsletter, created just for you! The webinars that took place mid March were a great success, thank you so much for all of you who were able to attend! If you weren't able to attend, you can view the webinars at: <http://www.stem.afterschoolnetwork.org/webinars>. The second set of webinars will be coming up in May, more information to come!

In addition to helpful tips, numerous resources and opportunities will be made available to you in the monthly newsletters that will make great additions to any STEM program.

Did You Know?

Earth day is celebrating its 42nd anniversary on April 22nd! Get involved by organizing an Earth Day Event with your students.

A little history:

Earth Day was created due to hazardous waste polluting our environment. Before 1970, anybody could dump their trash into a nearby stream or a factory could spew black clouds of toxic into the air and it was not breaking any laws! The picture below is of Cuyahoga River located in Ohio. This river caught on fire in 1952 due to it being completely full of toxins and waste. At that time, there were no laws in place to protect our environment such as the Clean Air Act, Clean Water Act or the Environmental Protection Agency.



Since this fire, we have come a long ways! In 1970, Senator Gaylord Nelson created Earth Day as a way to force this issue onto the national agenda. In December 1970, Congress authorized the creation of a new federal agency to tackle environmental issues, the United States Environmental Protection Agency. Check out: www.earthday.org, <http://www.epa.gov/earthday/> to get more information or get Earth Day lesson plans at: <http://www.epa.gov/students/teachers.html>.

Want to do more? Here are some great opportunities to make a difference for your school and community:

Green Curriculum & Related Online Tools - [Keep California Cool](#)

With a mission to “provide resources to all Californians in order to reduce their environmental impact and take action to stop climate change”, CoolCalifornia.org offers a wide variety resources such as toolkits for individuals, small businesses, local government, and most importantly, [schools](#). Toolkits include money saving tips, [grants](#), [carbon calculators](#), and much more. The Earth Day Network offers another take on carbon calculation by sending youth on an [animated voyage](#) to discover their carbon consumption.

Green Challenge – [Green Your School Challenge](#)

[DOSOMETHING.ORG](#) has launched their Green Your School Challenge with Nestle, which aims to inspire schools & students “to go greener than the competition”. Schools are eligible to win **\$5,000 green grants** and students have an opportunity to win **\$500 scholarships**. Watch this short [YouTube](#) video with Olivia Munn to get a snapshot of the challenge or visit their website for more details. On the [website](#), you’ll find project ideas on recycling, energy, green agriculture, and going green at home. **The deadline is April 22nd**.

Assessing & Improving Practice

From a recent survey administered, Youth Leaders all over the state have requested additional support with keeping the students engaged and behavior under control when implementing STEM curriculum. So, for the month of April, we will be looking at the 40 developmental assets that have been identified as the essential building blocks that help children grow up healthy, caring, and responsible individuals. To check out the entire list of developmental assets created by the Search Institute, click [here](#).

Boundaries are important to young people because it gives them clear messages about what’s expected. By the same token, caring adults who expect young people to do their best help them learn good judgment. Every day, young people face many options and choices. Boundaries and expectations provide young people with the support they need to make better decisions.

Asset #15 Positive Peer Influence

How will this look at my site?

*Pair students up who have had trouble making the right decisions with other students in the program. This will give them positive peer role models and allow the students to have a partner to keep them on the right track!

*Encourage students to acknowledge their peers. Set time aside every week for students to thank other students for positive behavior. Or, you can create a “Thank You Box” where students can write positive comments about one another throughout the week and you can review them as a class.

Asset #16 High Expectations

How will this look at my site?

*Not only review the expectations with the students on a regular basis, but go in depth about each expectation. Have them brainstorm what behaviors should and should not be exhibited for each expectation during the activity.

*Use positive reinforcement to recognize those students who are making the right choices. Just a simple “thank you” to a student who is following directions will encourage other students to make better decisions too.

*Follow through is very important in regards to behavior management. As a leader, you set the expectations, the consequences and if your students are not following directions, you need to follow through! Otherwise, if they realize there is no consequences for their actions, they will continue making poor choices.

In the Spotlight

- CAPS staff who participated in the NASA training. Thank you for being engaged and coming up with great ideas! Keep up the good work!
- For all of the site staff who presented in our webinars! All of the Site Staff Presenters did a fantastic job and we appreciate all of your hard work and dedication!
- Peter from BACR for being a fantastic participant at the Techbridge Training held in San Francisco. Keep up the good work continue to think outside the box to challenge your students!
- Annie from Bay Area Afterschool All Stars for working so hard to coordinate the training and for ensuring that it was a success!
- Jen May Pastores from Pro Youth Heart for being a great help with coordinating the webinars and upcoming site visits.

Dear CAN

Dear CAN Team,

What can I do to ensure that the teachers at my school fully support the STEM work being done at my school?

Signed,
Unsupported

Dear Unsupported,

Support from your school community comes from forming a relationship with the faculty members and letting them know that their voice and opinion is valued.

* Be sure to attend any staff meetings so you can talk about the current activities you are implementing with the students, highlights of your program, and support needed, etc.

*Respect shared classroom space. A lot of times, STEM activities can get messy or you might have to rearrange the classroom in order to complete the activity. Always make sure and leave the classroom in the same condition, if not better condition, than you found it. Showing appreciation through a simple “thank you” card or small gift will go a long way!

*Be sure to openly share successes with the school staff and invite teacher feedback. Always address any concerns or input they might have.

Your CAN team

STEM Opportunities/ Resources

- **Online Virtual Field Trips** – [National Park Foundation](#) Take your after-school program to the Everglades, the Grand Teton, or Even the Grand Canyon National Parks. The National Park Foundation offers [electronic field trips](#) to America’s National Parks along with commentary and background information from park rangers. Students will learn about the natural environment as well as habitat and wildlife conservation. You will find additional resources such as [stewardship grants](#) and [professional development opportunities](#).
- **Astronomy Day & Interactive Scale of the Universe** – [Explore the Universe!](#) Zoom down to the size of quantum foam or blast off to the outer limits of the observable universe. This virtual model is an exciting way to show youth the scale of inner and outer space. If you are planning on celebrating

Astronomy day with your students, visit the [Astronomical League's](#) blog to download event ideas or subscribe to [NASA's education newsletter](#) for monthly updates on NASA programs, news, & events.

- **Professional Development - [Supporting Students With Social-Emotional Needs!](#)** Kids Included Together (KIT) is a non-profit organization based in San Diego. Kit's goal is to "increase the understanding and acceptance of disabilities as a natural part of life". Explore the KIT [website](#) for informational [booklets](#), best practices, and [webinars](#) to enrich the lives of students with disabilities.
- **Online Tools & Curriculum – [STEM Kits for Students with Autism](#)** Resource Area for Teaching (RAFT) recently partnered with a student from Stanford University to create hands-on, pre-assembled STEM activity kits for students with autism. The kits are affordable and ready to go, making them a great resource for after-school program. Each kit also contains the step-by-step process for implementing the activity and a materials list. Visit www.raftbayarea.org for more information.

Reminders

- Site visits are coming soon! The Jumpstarting STEM team will be observing STEM programs to see all of the great work you are doing! Please keep in mind, these observations are strictly to assess the programs, offer resources and make suggestions to help ensure quality STEM programming.
- We will be having our second set of webinars coming up in May! Please be on the look out for important information regarding scheduling and sign ups!
- For those sites who are working with the evaluation team at University of Irvine, please make sure and send in the weekly STEM Activity Documentation.

Appendix F

JumpStarting STEM Training Calendar

JumpStarting STEM Summary of Trainings

Training Date	Name of Program	Name of Training
10/4/11	WoodCraft Rangers	TechBridge
10/13/11	CAPS	KidzMath
*10/14/2011	Bay Area Community Resources	KidzScience & KidzMath
*10/18/2011	Butte County Office of Education	Tech Xcite
*11/3/2011	Pro Youth Heart	NASA Jewel of the Solar System
*11/4/2011	Twin Rivers	Fantasy Baseball
11/5/11	SAY San Diego	Project WILD
11/10/11	Pomona Unified School District	KidzMath & Junk Drawer Robotics
11/11/11	Boys and Girls Club of Central Sonoma County	KidsScience & KidzMath
11/16/11	Bay Area Community Resources	KidzScience
11/17/11	Bay Area Community Resources	KidzMath
11/17/11	Lucia Mar Bright Futures	TechBridge
*11/19/2011	Give Every Child a Chance	Project Learning Tree
**11/21/2011	THINK Together Santa Ana	Discovery Science Center
11/29/11	Anaheim Achieves	Fantasy Baseball & KidzScience
12/2/11	Harmonium	KidzScience
*12/10/2011	Bay Area After School All Stars	NASA Jewel of the Solar System
12/10/11	SAY San Diego	Project Learning Tree
12/19/11	THINK Together Santa Ana	Discovery Science Center
1/5/12	Pomona Unified School District	TechBridge
2/2/12	THINK Together Ontario Montclair	Project WET
2/4/12	CAPS	NASA Jewel of the Solar System

2/11/12	SAY San Diego	Project WET
3/3/12	BAASAS	TechBridge
3/9/12	BACR (SF/Marin)	TechBridge Training
3/24/12	BACR (East Bay)	TechBridge Training

* Training provided by curriculum provider/partner

**Training provided by curriculum provider on a monthly basis

Appendix G

Overview of JumpStarting STEM Trainings by Program

Overview of JumpStarting STEM Trainings by Program

Program	Region	Number of Curricula	Number of Training Hours	Number of Staff Trained	Number of Sites
Anaheim Achieves	9	2	6	43	28
Bay Area After School All Stars	5	2	12	7	6
SAY San Diego	9	3	20	24	12
Bay Area Community Resources	4	2	16	67	32
Give Every Child a Chance	6	1	5.5	26	16
Twin Rivers	3	1	3	27	15
Lucia Mar Unified	8	1	7	14	8
THINK Together Moreno Valley	10	1	4	20	18
Pro Youth Heart	7	1	4	5	12
Woodcraft Rangers	11	1	6	20	17
THINK Together Ontario - Montclair	10	1	8	41	27
CAPS	10	1	7	59	39
Boys & Girls of Central Sonoma	1	2	6	19	12
Harmonium	9	1	4.5	17	11
THINK Together Tustin/Santa Ana	9	2	5	22	8
Pomona Unified School District	11	3	16.5	71	24
Butte County Office of Education	2	1	6	24	7
TOTAL	-	-	136.5	506	280

Appendix H

Overview of JumpStarting STEM Trainings by Curriculum

Overview of JumpStarting STEM Trainings by Curriculum

Curriculum	Number of Programs Implementing	Number of Training Hours	Number of Staff Trained	Number of Sites
Science Explorer	1	6	43	28
Fantasy Baseball	2	3 - 6	34	19
NASA Jewel of the Solar System	3	6 - 7	70	46
TechBridge	4	6 - 7.5	87	45
Project Wild	1	6	21	12
Project WET	2	4 - 7	52	33
Project Learning Tree	2	5.5 - 8	43	25
Kid Science	3	3 - 4	87	53
Kid Math	3	3 - 4	113	67
TechXcite	1	6	24	7
Discovery Science	1	5	12	7
Junk Drawer Robotics	1	6	47	27

Appendix I

Sample JumpStarting STEM Training Agenda

California AfterSchool Network

<p>Goal:</p> <ul style="list-style-type: none"> Provide quality STEM training for youth leaders in the field of after-school. <p>Outcomes:</p> <ul style="list-style-type: none"> Programs: Want quality STEM curriculum implemented on a regular basis Staff: Want staff to feel competent, confident and motivated Students: Want to invoke interested, engagement and knowledge 	<p>Materials: Pipe tubes, tape, marbles, calculators, cups, rulers, string, paper towel</p> <p>Handouts: *Roller coaster packet (1per group) *Activity guide</p> <p>Posters: Materials Calculations Poster</p>	<p>Trainer Forms:</p> <ul style="list-style-type: none"> Sign in/ out Trainer Reflection Form Evaluation
<p>Room Set Up: Set up is long, stationary tables that fit about 20 people.</p>	<p>Session Dates & Times: March 3rd from 9:30-3:30 with a 30 minute lunch.</p>	

Time	Activity Steps	Facilitator	Materials	Notes
Set Stage:	Sign in Introduction upon entrance			Outside space?
9:30-10:00	<p>Opening/ Introduction: Agenda, housekeeping, agreements, ice breaker</p> <p>STEM review & questions:</p> <ul style="list-style-type: none"> *What does STEM stand for? * How many hours do you need to be implementing STEM curricula to your group of students? *What organization are we from? 		Sign In Agenda Pens/ lanyards	rulers, pipe tubes, roles of painters tape, marbles, calculators, cups, roll of string, *Hang up materials posters and calculations poster
10:0-11:300	<p>Activity 1: Roller Coaster</p> <ul style="list-style-type: none"> *Introduction to roller coaster. Challenge: 1 loop & 2 hills going as fast as possible. Break into groups and decide roles: materials/researcher, designer (10 minutes) *Brainstorm (write out) with team your design/plan (10 minutes) *Get materials and build (35 minutes) *Regroup & test in small groups (10 minutes) *Regroup, model and calculate in large group (15 minutes) **Debrief:*What worked? What didn't work? Tight loop? Why? Small hill? Why? What was the objective? What did you do to generate speed? How? How can you alter this activity for the different grades? Extensions? As a 		*Handouts	

	facilitator, what did I do during the activity? How as the materials handled? Why? Debriefing (10 minutes)			
11:30-11:50	Rollercoaster Challenge *Working with another group, combine your rollercoasters to make a larger, faster rollercoaster.		Curriculum guides?	
11:50-12:05	Hike Through the Guide			
12:05-12:35	Lunch			
12:35-2:15	Fun with Polymers *Introduction: What is a polymer (refer to scripted questions in curriculum). Explain activity. Group break out. Roles: Materials, researcher, designer. (10 minutes) *Mixing solutions (35 minutes) *3 solutions w/ small group discussion What's happening? What do you notice? What is the texture like? What do you think the borax does in the mix? Glue? What happens when there's more borax? Glue? Less borax? Glue? *Add cornstarch w/small group discussion (10 minutes) What do you notice now? How is the texture different? What happens when there is more cornstarch? Less cornstarch? Why is this? *Explore formulas (20 minutes) *Small group reflection & modeling activity (15 minutes) In circle, have everyone link arms: A polymer is a repeating chain of bonds. When we expand, we are like a bouncy ball. Why? When we pull in tight, we are like a		*Handouts (1 packet per group)	*Have precut pieces of saran wrap and tap so participants don't have to wait: grab and go *Have washing stations set up at each table after materials have been acquired. Newspaper under bins of water with paper towels next to bins *Student role: saran wrap tables *Clean up: participants will be asked to combine all mixtures to make a large, solid polymer, which will then be put in the trash. After, they will proceed to clean all items and put away.

	piece of plastic. Why? *Clean up (15 minutes)			
2:15- 2:45	Planning guide have participants fill out planning guide. They can utilize the activities learned in training (break down into numerous sessions) or go through curriculum and pick new activities		Planning guides & Pens	
2:45- 3:15	Carousel			*Flipcharts: How to adapt curriculum for: younger/older students, extensions, challenges with potential solutions, promoting youth leadership *Facilitators: make sure to be roaming around to the different groups to make sure they are on task and understand. Ask questions to get them thinking outside the box?
3:15- 3:30	closing			evaluations

Appendix J

Disaggregated Summary of Evaluation Survey

This training was relevant to the types of STEM activities that I currently do with students

Strongly Agree	378	54%
Agree	311	44%
Disagree	10	1%
Strongly Disagree	3	0%
Total	702	100%

This training has increased my confidence in facilitating STEM activities

Strongly Agree	363	51%
Agree	344	48%
Disagree	3	0%
Strongly Disagree	1	0%
Total	711	100%

This training has helped me feel well prepared to teach hands-on STEM

Strongly Agree	391	55%
Agree	312	44%
Disagree	4	1%
Strongly Disagree	1	0%
Total	708	100%

This training has motivated me to facilitate STEM learning opportunities in my program

Strongly Agree	417	59%
Agree	290	41%
Disagree	4	1%
Strongly Disagree	1	0%
Total	712	100%

This training has connected me to useful STEM resources

Strongly Agree	357	50%
Agree	349	49%
Disagree	4	1%
Strongly Disagree	1	0%
Total	711	100%

Disaggregated Summary of Evaluation Survey

Appendix K

Schedule of Virtual Learning Communities

Schedule of Virtual Learning Communities

Curriculum	Date of Webinar	Time of All Webinars
1. Centerstage Math	Wednesday, March 21	12:00-1:30pm
2. Discovery Science Center	Monday, March 19	12:00-1:30pm
3. Fantasy Baseball	Friday, March 23	12:00-1:30pm
4. Junk Drawer Robotics (JDR)	Tuesday, April 3	12:00-1:30pm
5. Kidzmath	Tuesday, March 20 OR Wednesday, March 28	12:00-1:30pm
6. Kidzscience AND/OR Science Explorer	Thursday, March 22 OR Monday, March 26	12:00-1:30pm
7. Nasa	Monday, March 19	12:00-1:30pm
8. Project Wet, Project Wild, AND/OR Project Learning Tree	Wednesday, March 21 OR Monday, March 26	12:00-1:30pm
9. Techbridge	Friday, March 23 OR Wednesday, March 28	12:00-1:30pm
10. TechXcite	Tuesday, March 20	12:00-1:30pm
11. Creative Staff Models and Staff Development	Monday, May 21, 2012	12:00-1:30pm
12. Complementary Alignment	Thursday, May 24, 2012	12:00-1:30pm
13. Family Involvement	Wednesday, May 30, 2012	12:00-1:30pm

***Some webinars were conducted twice**

Appendix L

Virtual Learning Communities Survey

Jump Starting VLC

JumpStarting STEM Virtual Learning Community.

Question 1 - Choice - One Answer (Bullets)

What curriculum are you implementing at your site?

- Kidzscience / Explorer
- Fantasy Baseball
- Center Stage
- Kidzmath
- Junk Drawer Robotics
- TechXcite
- DSC
- Techbridge
- Project Wet, Wild, and Learning Tree

Question 2 - Choice - One Answer (Bullets)

[Up To 2 Answers]

Of the times offered, when is it most convenient to participate in a webinar?

- 12:00 - 1:30 pm M - F
- 6:30 - 8 pm M-F
- Saturday 10 am - 11:30 am

Question 3 - Choice - One Answer (Bullets)

What has been your biggest challenge implementing STEM?

- Space
- Preparation time
- Consistent students
- Competing choices
- Content and materials
- Other, please specify

Question 4 -

Would you be interested in helping facilitate a STEM webinar with our trainers and sharing out your successes, barriers, and solutions?

- Yes
- No
- If Yes, what is your name, curriculum, organization, school site you are working at and email address

Appendix M

UC Irvine Preliminary Report



STEM in OST Jumpstart Pilot
2011-2012

July 2012
University of California, Irvine

JUMPSTART PILOT
(2011-2012)

- Pilot test of evaluation at multiple sites, serving diverse programs
 - **STAFF SURVEYS**
Staff reports of STEM activities
Staff beliefs about the value of STEM
Perceived competencies in delivering STEM activities
 - **STUDENT SURVEYS**
STEM beliefs, attitudes, curiosity & engagement
STUDENT BACKGROUND CHARACTERISTICS
 - **PROGRAM ACTIVITIES** (analyses in progress)
STEM Activity Documentation Forms

Data Collected October 2011-June 2012

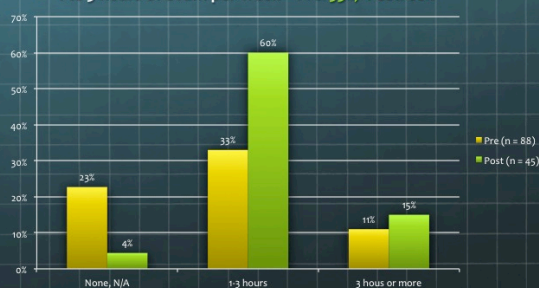
- 15 programs at 45 sites across the State
- 135 Staff Surveys (88 staff pre; 47 post)
Online pre/post measure of staff interests and program offerings
- 2,298 Student Surveys (1020 pre; 1278 post)
Online pre/post measure of student interest, engagement, skill development and STEM career aspiration & student experience with staff and activities
- Over, 900 Individual STEM Activities Documented
Items reported by STEM implementers about daily activities include:
 - Date and Duration of Activity and number of students
 - Name of activity and STEM content area addressed
 - 4 point ratings of
 1. Level of student Engagement
 2. Level of challenge
 3. Overall assessment of success of activity

Summary
Program STAFF Survey Data

Time per Week Implementing STEM

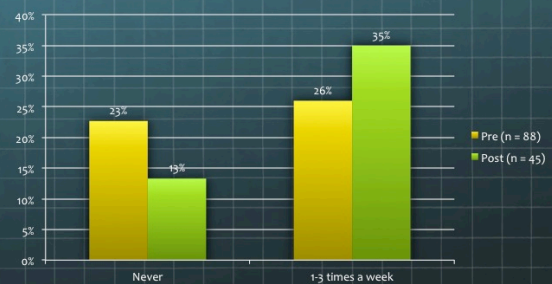
Prompt: In your current position, how much time per week do you spend implementing STEM activities with students?

- NO time implementing STEM – Pre: 23%; Post: 4%
- 1 to 3 hours of STEM per week – Pre: 33%; Post: 60%



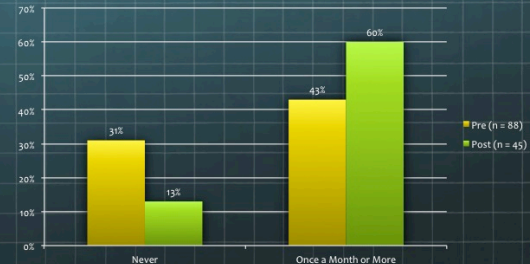
Staff Meetings About STEM

- Never discussing STEM at staff meetings – Pre: 23%; Post: 13%
- Discuss STEM at staff meetings 1-3 times a week – Pre: 26%; Post: 35%



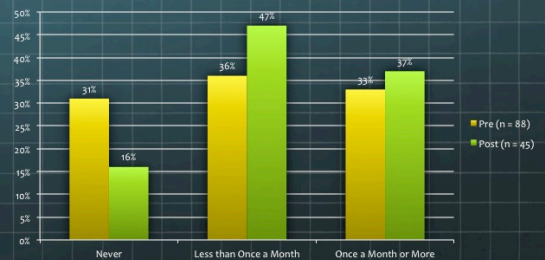
Staff Interactions with Teachers About STEM Topics

Decrease in proportion who **never** talked with teachers about STEM concepts taught in the classroom **31% Pre; 13% Post**
 Increase in proportion who talked with teachers about STEM concepts **once a month or more 43% Pre; 60% Post**



STEM-Related Events with Parents

Decrease in proportion of staff who reported **NO** STEM-related events for parents; **31% pre; 16% post**
 Increase in proportion of staff who reported STEM-related events for parents **once a month or more; 33% pre; 37% post**

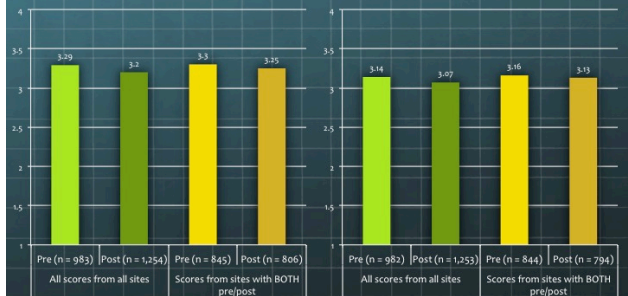


Student Self-Reports

Student Outcome Scores

Math Efficacy

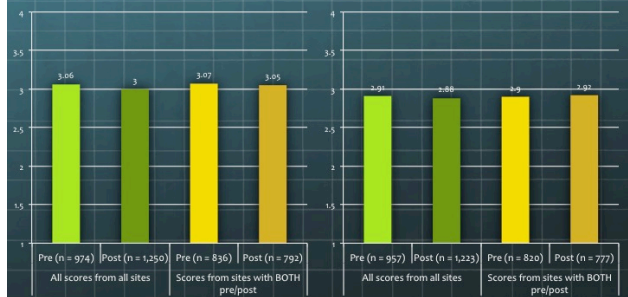
Science Efficacy



Student Outcome Scores

Science Interest (PEAR)

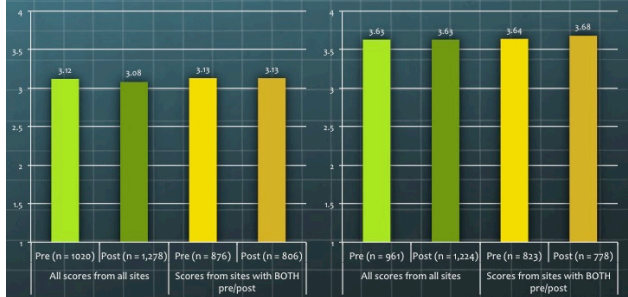
Science Career



Student Outcome Scores

Work Habits

View of Future



Regression Analyses

Staff and Student Reports

PRE



POST

Student Outcomes

Regression Model

Control Variables

Gender
PRE Outcome Scores
(Site-Level)

Predictor Variables

POST Staff Efficacy
POST Staff Beliefs
POST Time on STEM
(<1, 1-2, >2 hours)

Outcome Variables

Math Efficacy
Science Efficacy
Science Interest (PEAR)
Science Career
View of Future
Work Habits
Social Competencies
Misconduct

Significant Predictors of Changes in Student Outcomes

Staff Beliefs about STEM

Outcome	Beta
Science Efficacy	0.20
Science Interest (PEAR)	0.13
Work Habits	0.13

Time on STEM

(>2 hours vs. 1-2 hours)

Outcome	Beta
Math Efficacy	0.15
Science Career	0.11

Staff Efficacy in STEM

Outcome	Beta
Science Efficacy	-0.17

Student Reports of Program Experiences



Student Outcomes

Regression Model

Control Variables

Gender
PRE Outcome Scores
(Site-Level)

Predictor Variables

POST Staff & Activities
POST Peer Affiliation

Outcome Variables

Math Efficacy
Science Efficacy
Science Interest (PEAR)
Science Career
View of Future
Work Habits
Social Competencies
Misconduct

Regression Analyses Results

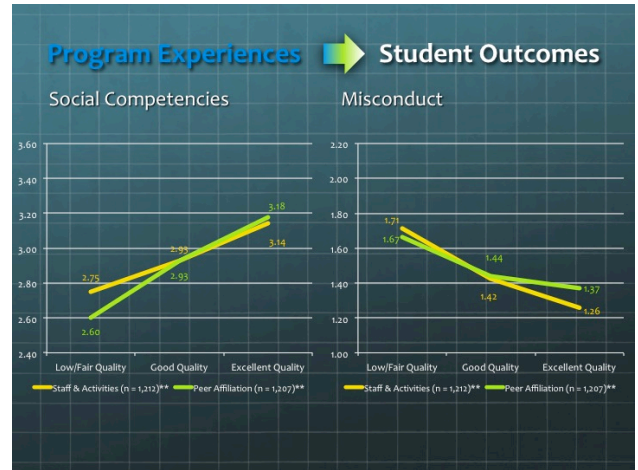
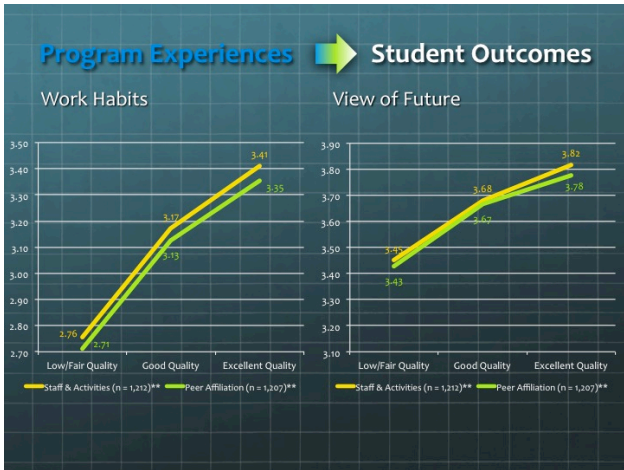
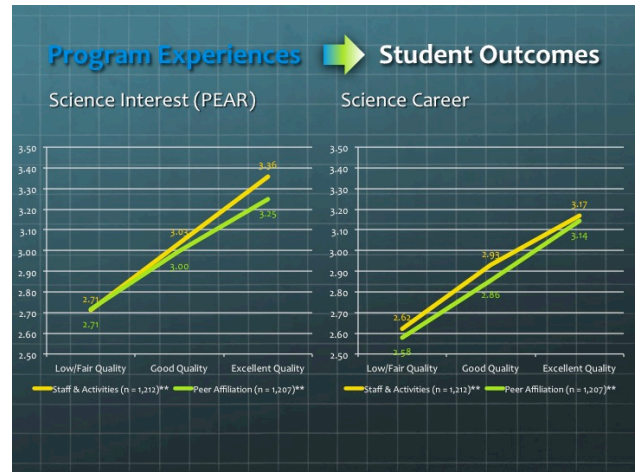
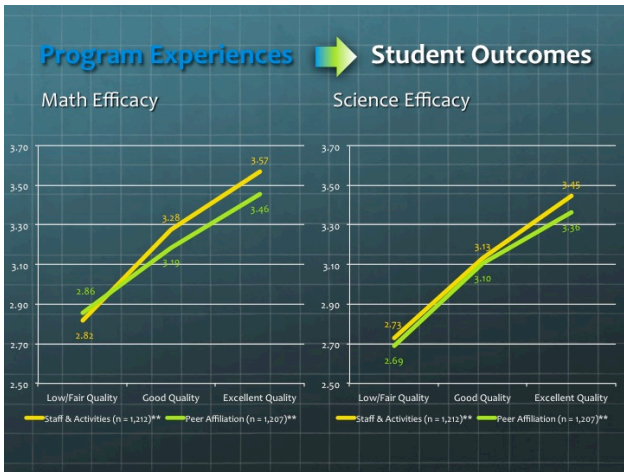
Program Experiences → Student Outcomes

Staff & Activities

Outcome	Beta
Math Efficacy**	.21
Science Interest (PEAR)**	.29
Science Efficacy**	.26
Science Career**	.16
Work Habits**	.21
View of Future*	.10
Social Competencies	NS
Misconduct**	-.30

Peer Affiliation

Outcome	Beta
Math Efficacy**	.20
Science Interest (PEAR)**	.19
Science Efficacy**	.22
Science Career**	.19
Work Habits**	.26
View of Future**	.21
Social Competencies**	.41
Misconduct	NS



Next Steps

- 🌐 Analysis of Activity Documentation Forms from 2011-2012 feasibility pilot
- 🌐 Refine evaluation plan for 2012-13 STEM in OST