

STEM CLUB REPORT

Spring 2015



SFAz's Current STEM Club Initiatives:

Three years ago, defining STEM clubs as “any gathering of students that meets regularly in an informal environment to work on inquiry-based STEM related activities,” Science Foundation Arizona piloted STEM clubs in eleven schools. What we learned from this pilot was that there was an interest in STEM clubs across the state and that STEM clubs opened up possibilities that other types of specialized clubs, such as full robotics clubs, did not. Unlike such specialized clubs, STEM clubs appealed to all grade levels, especially K-8, and they allowed teachers and students to adjust the level and focus of the club in order to meet student needs and interests. With this knowledge in hand, we set out to develop a STEM club model that could be replicated on a large scale. To continue this process, during the past two years, SFAz has facilitated two statewide STEM club conferences, coordinated the creation of an online *STEM Club Guide*, provided seed funding for 187 STEM clubs, and helped to network almost 200 STEM clubs across Arizona. These efforts have directly impacted over 2000 students, and the momentum surrounding these efforts is growing rapidly.

During the Fall 2014 we expanded these efforts using the lessons learned from the previous years to improve the potential impact of our efforts. Specific tasks completed this fall included:

1. Working with a statewide committee to update and expand the online *STEM Club Guide*. Updates that have been made include adding videos and testimonials from existing clubs, adding in links to additional support resources for clubs to access, and adding in an easier navigation system for the guide. The *STEM Club Guide* can be found at <http://stemclubguide.sfaz.org>
2. Initiating the creation of a *STEM Club Mentoring Program*, which will provide STEM undergraduate students an opportunity to mentor STEM clubs in order to receive service learning college credit while giving back to the community and exploring the idea of becoming a STEM educator. This program will be piloted in Fall 2015.
3. Designing a *STEM Club Sponsorship Program* that allows business and philanthropic organizations to sponsor block of STEM Clubs that can be designed to meet the needs and interests of the funders, while maintaining the format and quality of the SFAz STEM Club Model and networking the new clubs with the others around the state.
4. Initiating planning for the *3rd Annual STEM Club Conference* that will be held *June 8, 2015* and will be co-hosted by Arizona State University (ASU). Following from the format of the previous two conferences, this year's conference will allow participants a chance to learn about STEM opportunities around the state, learn about the *SFAz STEM Club Model*, and apply for seed funding to initiate and/or expand a STEM club at their school. In addition, this year's even will provide participants expanded opportunities to explore STEM mentoring programs, and select from specialized tracks organized by content, grade level, and geographic conditions.

With all the activity this fall, we are excited to see what the future will bring for SFAz's STEM club efforts.

Future Plans for SFAz's STEM Club Initiative:

Within the next year, SFAz's STEM Club activities will include ...

- Hosting the 1st Arizona STEM Club Student Showcase in Spring 2016,
- Expanding avenues for clubs to connect to include connection by focus area, geographic region, demographics, and more,
- Expanding *STEM Club Sponsorship Opportunities* for funders,
- Completing a 2nd comprehensive evaluation of the clubs for 2014-2015,
- Expanding the online STEM Network to connect all STEM clubs in Arizona,
- Expanding collaboration activities for all STEM clubs across Arizona,
- Continuing to share the lessons learned from SFAz's STEM clubs efforts through print, electronic medium, social media, and presentations to help expand the reach and sustainability of these efforts.



Impact of SFAz STEM Clubs:

In the fall of 2014, SFAz began a comprehensive evaluation on the impact of our STEM club initiatives. The major findings from this evaluation were as follows:

- Interest and confidence in STEM was found to be higher in the students attending an SFAz supported STEM club as compared to their counterparts in control groups who were not in an SFAz supported STEM clubs.
- 2014 AIMS Math and Science pass rates of the students in SFAz supported STEM clubs were found to be higher than the state average in all grades

AIMS Pass rates*		Grade 3	Grade 4	Grade 5	Grade 6	Grade 7	Grade 8	Grade 10
Math	State wide pass rate	70%	62%	63%	61%	64%	59%	64%
	STEM Club pass rate	78%	83%	77%	79%	73%	81%	75%
Science	State wide pass rate		59%				62%	39%
	STEM Club pass rate		77%				84%	92%

* Pass rates by grade represent state data publically available by the Arizona Department of Education

In addition, SFAz STEM club facilitators were surveyed in the spring of 2015 and with 92% of the club facilitators responding, the main findings were as follows:

- **Club Focus:** The majority of clubs focusing at least partially on Engineering/Robotics (50%) followed by General STEM (46%), STEAM (21%), Coding/Programming (19%), and then General Technology (18%). Less than 10% of clubs focus on math (8%), plants (7%), energy/conservation (7%), astronomy (3%), or sustainability (3%).
- **Club Size:** 21% of clubs reported to have less than 10 students and 43% reported to have 11-20 students
- **Grade Level:** Grades PK - 20 were represented with some overlap. The largest representation was in grades 7-8 (60%) followed by grades 4-6 (55%). Only 9% of STEM clubs were in high schools.

Arizona's 3rd Annual STEM Club Conference:

Following in the traditions of the first two statewide STEM Club Conferences, **Arizona's 3rd Annual STEM Club Conference will be held June 8, 2015 in Tempe, Arizona on the Arizona State University (ASU) campus,** and will be co-hosted by ASU. This conference will provide participants an opportunity to:

- Learn about informal STEM education opportunities in Arizona,
- Learn about and from existing STEM clubs in Arizona
- Learn about the *SFAz STEM Club Model*,
- Apply for seed funding to initiate and/or expand a STEM club at their school,
- Learn about mentoring opportunities available to STEM clubs as of August 2015
- Select some sessions organized by focus, geographic location, and/or student demographics
- Interact with more STEM providers and educators than ever before

STEM Club Sponsorship Opportunities:

Beginning in Spring 2015, Science Foundation Arizona (SFAz) invites local businesses and philanthropic organizations to sponsor SFAz-supported STEM Club Blocks, and take part in an inquiry-based learning model that is so successful it is inspiring replication in numerous other states. Sponsors now have the opportunity to support STEM Club Blocks — groups of clubs selected by geographic, demographic or content focus. Sponsorships can be tailored to meet the specific needs and interests of the sponsors. **However, all sponsored clubs will adhere to the SFAz STEM Club Model and high standards. SFAz will ensure quality control and maximum impact of all sponsor investments.**

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