Mission

SARSEF’s mission is creating Arizona’s critical thinkers and problem solvers through science and engineering. Our values are innovation, equity, and engagement.

In the 2020 – 2021 school year, 53,990 Arizona students participated in one or more of SARSEF’s critical thinking programs.

As schools went virtual, SARSEF found ways to get hands-on activity supplies to students’ homes. We worked to support teachers in navigating science education under difficult circumstances. As we continue to experience the impact of the pandemic, we will be there to support and to be in awe of what teachers and students can accomplish.
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2020-2021
By The Numbers

$127,534
in scholarships and awards to students to attract and retain their interest in STEM fields

53,990
Arizona students participated in one or more of SARSEF’s critical thinking programs

27,815
students directly benefit from SARSEF’s in-school programs

160
schools participated in SARSEF’s goal to provide quality STEM education to students

71%
of participating students are from areas of poverty

88
zip codes served
In-School Outreach

Shifting to a virtual format allowed SARSEF to update our in-school programming to take entire classrooms through the research process based on a question that mattered to the class.

In the new format, called What Do We Wonder?, a SARSEF educator works with a class for four sessions to transform student curiosity into a polished research project.

Through these workshops, the class discusses and identifies their interests, selects a single research question or problem from the class’s collective curiosities and wonderings, and designs a method for gathering data to answer the question.

In-school outreach is offered at no cost to schools.

- 27,815 students directly benefit from SARSEF’s in-school programs from 51 schools
- 1,439 teachers participated in a professional development offering
- 192 parents received direct guidance from SARSEF educators

ACES Camp

Applied Career Exploration in STEM (ACES) Camp for Girls is a week-long summer camp for middle school girls from the Sunnyside Unified School District held every July. The camp is designed to explore a wide variety of careers, provide a path to potential success, and spark their interest in higher education in the STEM fields. ACES stresses teamwork, use of technology, and hands-on learning, while giving students a feel for the college experience at a critical time in their lives.

In the summer of 2020, ACES Camp was completely virtual. SARSEF staff prepared bags of supplies and fun surprises for students to pick up from their schools before the program began. This allowed for the program to be hands-on from the safety of the students’ homes early on in the pandemic. Topics of programming included relationship building, molecules, photography, lenses, light and color, weather, wildlife, engineering, nursing, and much more. Women in professional STEM careers joined the Zoom meetings to answer questions about their career paths.

- 26 girls attended camp
- Campers demonstrated a 38% increase from the pre- to the post-assessment when asked how much they liked learning.
- Post-assessment results indicated that every activity had a student/students that liked the activity “the most,” showing that the variety of programming met a variety of interests and needs

“What I loved the most about this camp was that when we talked about successful women, it really inspired to me to do something with my life and to change the world and to be inspiration for some other women like us. It was really inspiring, and I really liked that topic.” - ACES Student, 2020
STAR Lab

STAR Lab is a collaboration between SARSEF and the University of Arizona Department of Molecular and Cellular Biology that provides mentorship, consultation, research supplies, and lab space for high school students to complete their own authentic research projects.

This school year, STAR Lab went completely virtual. Students completed research projects via weekly meetings with their mentors.

- 36 students – 19 male students (52.77%) and 17 female students (47.22%)
- 35 projects
- 13 high schools
- 26 mentors
- 14 University of Arizona Undergraduate Facilitators
- 100% of STAR Lab participants entered a project into the SARSEF Regional Science and Engineering Fair
- Student Ethnicity
  - Asian: 9 students (25%)
  - Black/African-American: 2 students (5.56%)
  - Hispanic/Latino: 13 students (36.11%)
  - White: 10 students (27.78%)
  - Prefer not to answer: 2 students (5.56%)

Racing the Sun

Previously hosted by Tech Parks Arizona, SARSEF has been named as the new host of Racing the Sun. Racing the Sun is an exciting engineering program that challenges high school students to design, build, and race solar-powered go-karts. It is open to all Arizona high schools.

Working with teachers and mentors, students spend nine months preparing for Race Day. Along the way, they apply physics, engineering, and energy. They solve real-world problems, using mathematical, analytical, and critical thinking skills. Students work in teams and collaborate on ideas. They are challenged to translate their ideas into a working prototype, and along the way, they build leadership skills.

The information below is a continuation of the 2019-2020 school year.

- 9 teams, 6 schools
- 58 students
- 19 volunteers
- 10 judges/evaluators
Arizona STEM Adventure

STEM Adventure took a new shape this year due to the pandemic, and became our first large-scale virtual event. The “Choose Your Own” Arizona STEM Adventure week for 4th through 8th grade students and their teachers took place November 16th-21st, 2020.

Videos were created and shared with classrooms ahead of time through a STEM Adventure YouTube Playlist, and supply kits were assembled so each student would have a kit in order to complete the hands-on activities described in the videos.

For many of them, it was the first time they had done hands-on science in the virtual school year. Twelve Pima Community College students created short “My STEM Story” videos to be included in our video library explaining their area of study and why they chose to pursue that field.

On the last day of STEM Adventure, tours of local STEM organizations were live-streamed into classrooms.

The teacher professional development workshop focused on incorporating engineering into science activities and curriculum. Our teacher “loot” bags had over $200 in supplies, the largest loot bag we’ve ever been able to offer teachers.

With the help of this professional development session, teachers are able to take students’ enthusiasm from Arizona STEM Adventure and leverage it to try new STEM projects in the classroom.

- SARSEF distributed 1,670 supply kits to students
- The Arizona STEM Adventure YouTube Playlist had 4,355 views
- The live broadcast had 764 views
- 49 teachers attended professional development
SARSEF Fair

Every year, PreK-12th grade students from across Arizona participate in a SARSEF-affiliated fair, conducting research projects to be considered as a representative of their school at the SARSEF Regional Fair, a week-long competition and celebration of their achievements.

Around 2,000 projects compete at the SARSEF Regional Fair, and over $100,000 in prizes, trips, and scholarships are awarded, thanks to community support. Top high school students move on to international levels of competition.

- 1099 projects were entered
  - 460 Elementary Schools projects
  - 437 Middle School projects
  - 202 High School projects
- 71% of projects were from Public Schools
- 70% of students who participated came from a Title I school
- 72% of Grand Award winners were from Title I schools
- 71% of all award winners came from Title I schools
- 55% of participants were female
- Live Awards stream has 3,105 views
- 80 non-judge volunteers
- 304 grand award judges
- 458 sponsored awards

- Student Ethnicity:
  - White: 45%
  - Hispanic or Latino: 26%
  - Asian: 6%
  - Black or African-American: 4%
  - Native American or Alaska Native: 2%
  - Native Hawaiian or Pacific Islander: 1%
  - Other: 2%
  - Prefer not to answer: 15%
Arizona Junior Science and Humanities Symposium

Previously hosted by Arizona Board of Regents on behalf of Arizona State University for decades, SARSEF has been named as the new host of the Arizona Regional Junior Science and Humanities Symposium (JSHS).

In spring of 2021, the JSHS competition was held completely virtual.

The JSHS Program is a national competition promoting original research and experimentation in science, technology, engineering, and math (STEM) at the high school level and publicly recognizes students for outstanding achievement.

Each year, 4,500 students participate in 48 regional symposia to qualify for the national symposium. JSHS awards $408,000 in undergraduate tuition scholarships annually to regional and national student finalists.

JSHS is one of the nation’s longest-running STEM competitions. It is a collaborative effort between the research arm of the Department of Defense (DoD) and nationwide academic research institutions and is administered by the National Science Teaching Association (NSTA).

- 55 Oral Presenters
- 12 Poster Presenters
- 6 students and 1 alternate made it to the National JSHS Competition
- 25 judges
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