The Arizona STEM Acceleration Project (ASAP)

Year 1 Summary

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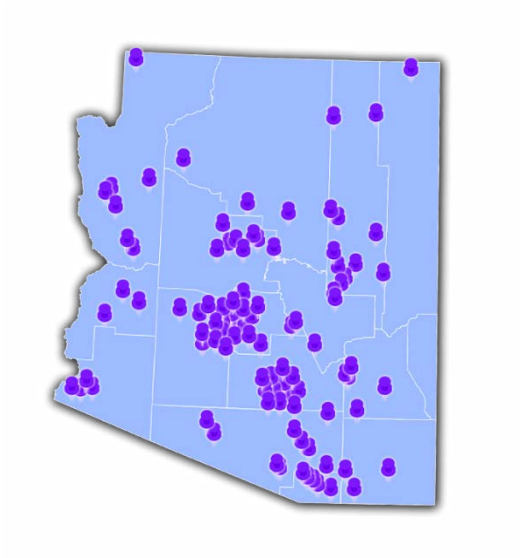
Project Overview

The Arizona STEM Acceleration Project (ASAP) is a grassroots effort to enhance and accelerate student access to science, technology, engineering, and math (STEM) activities in schools across Arizona. This project, supported by the Center for Science and the Imagination and the Mary Lou Fulton Teachers College at Arizona State University, responds to the pressing need to improve STEM education throughout the state, to combat the widespread learning loss following the COVID-19 pandemic. ASAP provides vital funding and guidance to STEM teacher fellows and professional development organizations, increasing their ability to foster engagement, update curricula, and acquire the materials needed to improve STEM education for Arizona's youth.

ASAP by the Numbers

- 452 STEM teacher fellows
- 317 schools
- 114 school districts
- 89,500 students reached
- $850,000 in classroom supplies
- $2,000,000+ in stipend payments to Arizona STEM teachers
- 370 classroom activities
- 155 after-school activities
- 54 contests or science fairs
- 115 school-wide projects
- 57 other projects
- 15,000+ hours of professional development
- 1,300 lesson plans approved and available on the ASAP website



The Problem

Arizona ranks nearly last among U.S. states in several major education categories:

- The U.S. Census Bureau ranks Arizona 48th among states in terms of its per-pupil spending for fiscal year 2020.[1] During the 2021-22 academic year, Arizona spent $10,183 per student, far less than the national average of about $15,700.[2]
- Arizona ranks 45th for education overall in national standings, with PreK-12 education ranked 48th,[3] according to US News and World Report.
- Arizona has the highest teacher-pupil ratio in the nation: 23.6 pupils per teacher, compared to a national ratio of 15.9[4]
- Only 47% of the Arizona's population has some education beyond a high school certificate.[5]

1 United States Census Bureau (2023). *U.S. school system current spending per pupil by region: Fiscal Year 2020.* Retrieved October 3, 2023, from https://www.census.gov/library/visualizations/2022/comm/spending-per-pupil.html

2 NEA Research (2023). *Teacher pay and per student spending.* Retrieved October 4, 2023, from https://www.nea.org/resource-library/educator-pay-and-student-spending-how-does-your-state-rank/teacher#:~:text=The%20national%20average%20per%2Dstudent,Vermont%20(%2425%2C%20053).

3 US News and World Report (2023). *Arizona rankings.* Retrieved October 3, 2023, from https://www.usnews.com/news/best-states/arizona

4 National Center for Education Statistics (2018). *Public elementary and secondary teachers, enrollment and pupil/teacher ratios.* Retrieved October 3, 2023, from https://nces.ed.gov/programs/digest/d20/tables/dt20_208.40.asp

5 Arizona Post-High School Enrollment. Retrieved November 28, 2023, from https://educationforwardarizona.org/progress/indicators/post-high-school-enrollment/?indicators=State::Arizona::All

- Science scores in Arizona have been significantly lower than the national average for more than a decade. Only a quarter of students are testing proficient or higher in science.[6]

According to the National Academies of Sciences, Engineering, and Medicine (NASEM), grades 6–8 are the most pivotal years in a student's STEM education. In the academies' 2021 *Call to Action for Science Education*,[7] these grades were identified as a priority focus for anyone working to improve STEM engagement and scores for their region or state.

ASAP is working from those recommendations, with an emphasis on the following key concept from the *Call to Action*: **Leaders of local and regional K-12 systems and postsecondary institutions should work together to form Alliances for STEM Opportunity that involve key stakeholders in science, technology, engineering, and mathematics (STEM).** Our overarching strategy was to build an ecosystem to support Arizona teachers in incorporating STEM into their classrooms. To do this, we used the six critical components enumerated in NASEM's Call to Action. These components, and ASAP's approach, are summarized below and also provide the framework for the remainder of this report.

- Providing access to high-quality science learning experiences across K-12 education
  We asked ourselves how we could do this work in the context of Arizona, and determined that we needed to build an ecosystem for STEM teaching with teachers at its center.
- Addressing existing disparities in access to high-quality STEM education
  In order to achieve the breadth and reach desired, we prioritized the selection of STEM teacher Fellows who represented underserved schools and communities.
- Providing high-quality instructional materials and other resources to support these experiences.
  At the heart of our program was the training of teachers. ASAP paid stipends to STEM teacher fellows to complete 30 hours of professional development (PD), to create four original lesson plans using ASAP templates, and to lead a student-facing community STEM project.
- Building a high-quality, diverse workforce for teaching science
  To create a stronger workforce, we wanted teachers to feel that teaching STEM is part of their identity. We knew that fostering a community of teachers would be necessary, so we included webinars and other modes of connection among our fellows.
- Creating pathways for learners in science across grades and disciplines
  ASAP provided web-based discussion forums for teachers, encouraging collaboration. By welcoming teachers from across grades and disciplines, we hoped to deepen STEM learning opportunities for students across disciplines, enabling them to see STEM content beyond science classes, and opening opportunities they may not have considered before.
- Supporting learners who want to pursue STEM careers and creating pathways for them for STEM across grades and disciplines
  We aimed to create opportunities for students to see STEM in every subject, and to have greater access to integrated STEM learning. All of our work was intended to build a statewide ecosystem for teachers. If teachers are excited to teach STEM, they will pass that excitement on to students. In turn, the teachers will continue to enrich and expand the inclusion of STEM in their classes, to the benefit of current and future students.

To provide high-quality professional development opportunities across the entire state, accessible to teachers in diverse rural, urban, and suburban settings, ASAP worked with 18 partner training organizations with expertise creating and delivering these opportunities for educators. These organizations serve as important hubs within Arizona's STEM ecosystem.

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6 Nation's Report Card (2015). ***Arizona overview.*** Retrieved October 3, 2023, from https://www.nationsreportcard.gov/profiles/stateprofile/overview/AZ?cti=PgTab_OT&chort=2&sub=MAT&sj=AZ&fs=Grade&st=MN&year=2022R3&sg=Gender%3A%20Male%20vs.%20Female&sgv=Difference&ts=Single%20Year&tss=2022R3&sfj=NP

7 National Academies of Sciences, Engineering, and Medicine (2021). Call to action for science education. Retrieved October 3, 2023, from https://www.nationalacademies.org/our-work/call-to-action-for-science-education

The Ecosystem

Providing access to high-quality science learning experiences across K-12 education

To begin to address Arizona's STEM education issues, we needed to address the gaps in the system. We envisioned an ecosystem in which teacher fellows (hereafter, Fellows) would be granted paid time to engage in professional learning. They would also have paid time to create lesson plans that they would implement and contribute to a permanent, shared online database. Fellows would have access to training and resources to procure the supplies and equipment needed for their classrooms and projects. The ecosystem would facilitate intentional exposure to Fellows from other schools and opportunities, to encourage professional socialization and resource sharing. Online meetups and forums would help to keep the Fellows connected and aware of the shared resources. Fellows would commit to extending learning opportunities beyond the classroom via school-community projects, science fairs, and other educational activities.

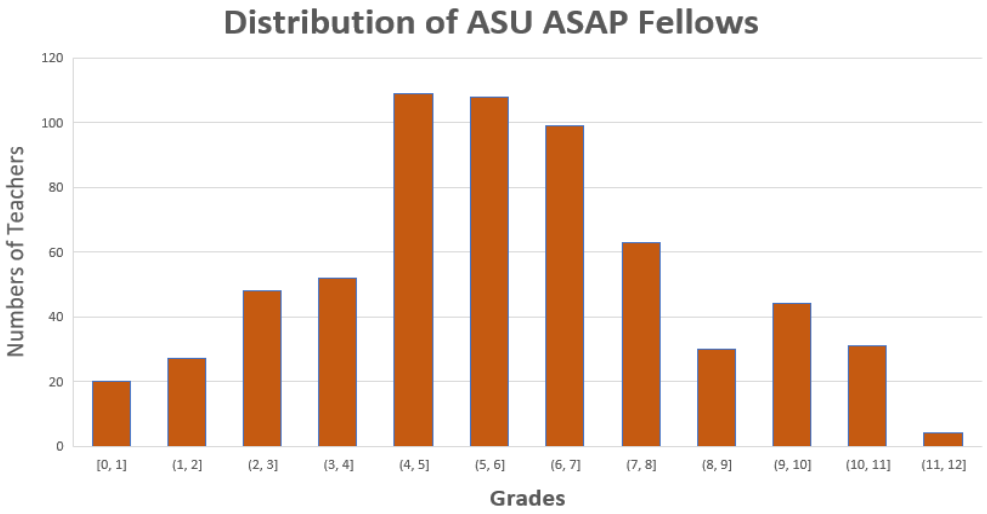
Through ASAP, all four of Arizona's major postsecondary institutions (Arizona State University, the University of Arizona, Northern Arizona University, and Grand Canyon University) united in efforts to address deficiencies in K-12 STEM education through ASAP. In addition to universities, ASAP has built increased capacity among our 18 partnering education organizations offering trainings across the state. In Year 2, we are building collaborations with state organizations, including the Arizona Department of Air Quality, the Maricopa County STEM Office, and the Arizona Parks Service. These collaborations connect teachers to state agencies, allowing them to boost their STEM education footprints by reaching more teachers and affecting a greater number of students.

ASAP professional development partners.

Addressing existing disparities in access to high-quality STEM education

To ensure that the project would have the desired breadth and reach, in our Fellows selection process, we worked to ensure the project was reaching students from a diverse range of communities. Teachers were carefully selected as Fellows to meet the needs of Arizona's entire student population. Over the course of Years 1 and 2 of the project, we worked diligently to balance the number of teachers serving students from urban (400 Fellows), rural (265) and

suburban (214) communities. Grade level was also a factor in choosing Fellows. In elementary grades, many teachers do not have the materials or experience to integrate transdisciplinary STEM lessons into their classes. Middle school teachers are often missing equipment and expertise to prepare their students for the rigors of high school STEM classes, and students in this age range often lack the confidence or interest to pursue STEM subjects in high school because of a paucity of access in earlier grades. Our selection process responded to these limitations and opportunities, with 46.1% of Fellows teaching grades 4–6 and 53.9% teaching in other grades.



Distribution of ASAP Fellows by grade level.

During the first project year, 2022–2023, 452 teachers completed all fellowship milestones. Participating Fellows represented a variety of backgrounds, from the grade levels and subjects they taught to their race/ethnicity, age, and previous education. Many Fellows taught in rural and/or under-resourced K-12 schools. This first cohort of ASAP fellows represented experience teaching STEM in variety of settings, including general education, specialist/elective education, gifted education, and/or extracurricular programming. The majority taught general coursework pertaining to STEM concepts. Using data gathered from the Fellows, we estimate these educators engage approximately 89,500 students across the state each year.

Providing high-quality instructional materials and other resources to support these experiences

ASAP formed strategic partnerships with organizations with an established record of enhancing teacher practice for greater student impact. ASAP coordinates public/private partnerships and connects teachers to universities, government agencies, and non-profit organizations in order to create a STEM education ecosystem designed to share high-quality resources with teachers.

As a result of their experiences in ASAP, Fellows are changing their practice to incorporate the types of hands-on activities that are proven to translate to greater student outcomes. Students of the Fellows were excited about learning STEM and looked forward to more STEM classes. As ASAP moves into Year 2, we anticipate reporting more student access and greater student success. ASAP is instrumental in continuing to increase student access to STEM across Arizona, especially in traditionally under-resourced learning environments.

ASAP provided **$2,000 to each Fellow** to purchase printed materials, equipment, and tools needed to implement STEM activities in their classrooms and schools. At the beginning of Year 1, Fellows provided details on a specific student-facing project that they would complete during their fellowship; the materials they purchased enabled them to design and implement that project. The fellowship provided access to funding and materials to which the teachers (and their students) would not otherwise have had access. These materials supported the development of novel, enriching learning experiences.

Collectively, the Fellows expended **$843,900 to acquire necessary classroom materials** during Year 1. Based upon self-reported data and purchase receipts, approximately half of these expenditures were for educational technologies and lab equipment ($495,891), including robotic components, telescopes, computers, tablets, airplane kits, and sensors. A smaller proportion of funds were expended toward consumables (e.g., paper supplies, tape, staples) and printed materials ($107,552). Close to $250,000 was utilized to purchase tools and other miscellaneous items.

The program also provided time and materials for Fellows to update their STEM lessons, projects and activities. For the ecosystem to support Fellows and other teachers with high-quality, vetted STEM lessons and activities, an **online lesson plan archive** was designed as a free, open-access resource for Fellows and other teachers across Arizona and beyond. While science and math content are certainly important for ASAP, the purpose of developing and sharing these new lesson plans was to focus on integrating these two disciplines with engineering and technology to demonstrate the transdisciplinary nature of STEM in lives and careers. The lesson plan archive includes resources for teachers PreK-12; all lessons include student-facing activities, assessment ideas, and differentiation for the widest possible relevance and engagement. The lessons are standards-aligned and designed with a focus on student engagement. Author notes and materials are included to ensure ease of implementation and use. Slides, student-friendly objectives, and hands-on activities are included to facilitate teachers' efforts to provide important content, develop meaningful skills, and draw connections among science, technology, engineering, and math. Many lessons also integrate with other disciplines, including English language arts, social studies, computer science, art, and music. Many Fellows created more than the required four lesson plans using the lesson plan template developed by the ASAP team, and the archive continues to grow as lesson plans are submitted and reviewed.

In Year 1, **18 partner training organizations** supported with funding from ASAP provided more than 100 professional development (PD) workshops and events, ranging from 1-hour sessions to multiday events. Both Fellows and non-ASAP educators attended events funded by ASAP in order to boost available PD opportunities across the state, particularly in rural areas. These events were held statewide and imparted in-depth STEM content knowledge, examples of age-appropriate STEM classroom activities, and training on new STEM technology and teaching methods for various disciplines. When surveyed, Fellows praised the quality of these events and affirmed their ability to adapt what they learned for their own classrooms and schools. Because these PD events occurred outside of school hours, ASAP extended a stipend of up to $4,500 to each fellow to compensate teachers for personal time and expenses related to traveling and participating in these events.

Building a high-quality, diverse workforce for teaching science

An important goal for ASAP was to increase teachers' STEM identities—their sense that teaching STEM was a core element of their professional identity—and to bolster their efficacy in teaching STEM; both of these are important factors in teacher retention and motivation. In terms of Fellows' STEM identities, we saw a **strong, positive change** of 0.63 on the overall mean score on a 7-point scale measuring efficacy.

Another benefit of participation was the opportunity to collaborate with other STEM professionals, both in Fellows' own schools and at different schools across the state, which affected Fellows' STEM identity in positive ways. Surveys and interviews conducted before and after the first fellowship year showed an increase in the percentage of Fellows who collaborated with teachers outside of their school on STEM-related teaching from 61% before the fellowship to 75.3% at the end of the experience. These findings indicate the importance of inter-school support networks and communities of practice for nurturing a robust STEM education ecosystem.

Creating pathways for learners in science across grades and disciplines

One of the key components of the pathways for learners was to engage teachers who traditionally did not teach science. The goal was to integrate science into multiple classes within a school so that students could begin to see STEM across the curriculum. Professional development training sessions also provided Fellows with better tools for

supporting learners who want to pursue STEM careers, and opening up opportunities for students to see potential career paths in or adjacent to STEM.

Although there was a focus on middle school students, our team also saw the importance of incorporating STEM for learners of both younger and older ages. This was an intentional decision to strengthen the pathway by bringing science into elementary classrooms where there was little or no science content taught, and for older students to have STEM reinforced as having transdisciplinary resonance.

Supporting learners who want to pursue STEM careers & creating pathways and supporting learners

All of ASAP's work was intended to build a statewide ecosystem for teachers. If teachers are excited to teach STEM, they will pass that excitement on to students. Findings from our evaluation support this assumption. We also believe that teachers provided with additional resources and the support of the ecosystem will continue to enrich and expand the inclusion of STEM in their classes.

Key evidence on outcomes from ASAP

Teachers applied what they learned from the workshops

Almost all Fellows (96.7%) noted that they used the teaching methods they learned in the trainings, with the same proportion using the classroom activities they experienced in these trainings. An overwhelming majority of Fellows (94%) reported that participation in ASAP increased their confidence to effectively teach or incorporate STEM concepts into a lesson plan, as well as their understanding of the necessary elements of a successful STEM lesson plan.

Similarly, 93% of the teachers felt they had increased their ability to overcome common challenges in teaching STEM concepts to their students. 48.7% reported an increase in their ability to teach STEM and half of these teachers reported that their ability increased a great deal.

Positively affected Fellows' STEM teaching efficacy and confidence

As mentioned above, we saw an increase of 0.63 on the overall mean score on a 7-point scale measuring efficacy. On that scale, we also saw a shift from a clear agreement score of 5.78 in the survey given to Fellows before the fellowship, to a very strong 6.41 mean post-fellowship. All items had positive gain scores ranging from .32 to .81 (see Table 1 below).

Table 1: Teachers' STEM Identity Pre/Post

Item	Pre	Post	Gain/(loss)
Scale Mean	**5.78**	**6.41**	**.63**
Use of STEM in daily life	5.77	6.45	.68
Awareness of STEM in daily life	5.89	6.50	.61
Friends/family think they do well in teaching STEM	5.54	6.23	.69
Other teachers think they do well in teaching STEM	5.40	6.21	.81
See self including more STEM in their classroom	6.32	6.64	.32

Impact of Professional Development on Fellows

As part of the program, ASAP Fellows are required to complete 30 hours of STEM professional development each year. In Year 1, the PD workshops and events affected Fellows in many positive ways, including increases in agreement that they:

- Have the knowledge of the STEM content in these workshops (gain of 26.9%),
- Have the ability to teach activities used in the workshops (gain of 27.5%), and
- Are prepared to teach new STEM activities and methods learned in these workshops (35.6%).

Most Fellows also reported that the PD workshops and events provided them with tools and content that they could use in their classrooms, schools, and communities. Moreover, the content of these sessions was well-aligned with teachers' usual classroom content and their independent ASAP project ideas.

As a result of their participation in these PD workshops and events, teachers used new methods of teaching (92.7% agreed) and activities in their lesson plans, classes, and projects (96.1% agreed) to mobilize new knowledge and to engage more fully with their students.

The reach

ASAP Fellows reported that **89,500 students were reached** by projects undertaken during Year 1. Fellows reported high variability in the number of students affected per project; on average, Fellows reported reaching about **200 students each** (mean=196), with the largest reach for an individual project reported at 2,500.

ASAP's effect on students

ASAP Fellows reported that **89,500 students were reached** by projects undertaken during Year 1. As a group, Fellows reported high variability in the number of students affected per project; on average, Fellows reported reaching about **200 students each** (mean=196), with the highest project impact reported at 2,500 (likely due to school- or district-wide implementation).

Summary and Recommendations

Results from the first year of ASAP activities demonstrate that the program is positively affecting teachers' STEM knowledge, STEM identities, and ability to incorporate new STEM content in their classrooms. Interviews conducted with Fellows further support these findings and detail the many ways that ASAP participation has improved STEM resources and outcomes for students across Arizona—for example, through increased access to technology in the classroom. Nearly all of the Fellows report benefiting from attending high-quality STEM workshops across Arizona that developed and expanded their knowledge of new and age-appropriate STEM content. Participation in these workshops afforded Fellows the opportunity to bring new technology, projects, and teaching methods back to their classrooms, schools, and communities. Additionally, these professional development sessions resulted in nearly all Fellows feeling connected to and supported by a community of professionals across the state. Many Fellows noted that these sessions filled gaps in professional resources available through their own schools or districts.

Data collection will continue for Year 2. The following are recommendations made by ASAP's independent evaluator[8] following project activities in Year 1:

- Continue supporting ASAP Fellows by providing stipends for the purchase of materials needed for high-quality STEM instruction.
- Continue providing professional development opportunities to Fellows, allowing them to hone their skills in teaching STEM, maintain familiarity with current technology, and connect and collaborate with other teachers and STEM professionals.

8 Independent evaluation for ASAP is provided by the University Office for Evaluation and Educational Effectiveness (UOEEE) at ASU.

- Explore how the existing Arizona STEM ecosystem can be permanently supported via a statewide STEM Action Center.
- Continue supporting partnering organizations to develop and carry out high-quality STEM-related professional development for Arizona teachers, especially in areas where schools have less ready access to technology.
- Continue compensating ASAP Fellows for the time outside of work they spend at professional development events/workshops.
- Continue to provide support for teachers outside of the traditional STEM disciplines (e.g., the arts) to incorporate STEM content within their classrooms.
- Encourage partnering organizations to expand workshop offerings outside of city centers (particularly in rural and suburban areas). Also consider encouraging partnering organizations to provide more virtual and weekend sessions during the school year.
- With the collaboration of current Fellows and partnering districts or schools, explore opportunities to evaluate student outcomes (academic and/or non-academic) related to ASAP.
- Through ongoing data analysis, continue to explore the characteristics of teachers and teaching in Arizona post-COVID, including (for example) challenges currently facing educators in urban, suburban, and rural areas.

Appendices

Appendix 1: Sample Success Stories

Natural Disaster Model Build Unit

During this 6-week STEM unit, students in grades 6–8 worked in both their Science and Global Perspectives classes with 3 different teachers to research, study, and learn about natural disasters around the world. They simultaneously researched, studied, and learned about developing countries, including the struggles encountered when a developing country or community experiences a natural disaster. They learned the scientific causes of these natural disasters as well as the impacts through research using scholarly articles, government databases, and documentary films.

At the end of this unit, students were given a predetermined budget (all groups varied in their budget amount), a supply list with costs, and a task to build a model of a house within the parameters of size and cost constraints that could withstand at least 2 of 4 types of natural disasters. A select group was also tasked with designing simulations of the natural disasters, another to test the simulations, and another to revise them. After several weeks of designing, testing, and revising their houses, the students then tested their models in the student-designed simulations. Through this activity, they were able to understand why developing countries are often unable to prepare for the disasters that demolish their communities because of their poor infrastructure and economic constraints. Finally, through an accompanying seminar, students made suggestions about how they could improve their designs, the simulation tests, and the lesson as a whole.

Future City STEM Program

At Lauffer Middle School, Jackie Nichols' Future City STEM Program provided students with the opportunity to solve relevant, real-world community issues while developing their authentic voices for advocacy and change. The students were tasked with working in three member teams to imagine, research, design, and create sustainable cities of the future while utilizing the Engineering Design Process. These cities were set 100 years into the future, and students designed sustainable systems and infrastructure to adapt to climate change and mitigate its impacts. During their participation in the program, students developed skills in collaboration, engineering design, and delivering presentations, as they developed their authentic voices for change and action on issues of sustainability in their community and the world.

Nichols' STEM classes grew so quickly that her work this year became featured both in a column in Sunnyside District's Community Share, and through a video interview of Nichols focused on the program featured at a local STEM Unconference. The program even became so notable that 87 students enrolled in Nichols' STEM classes, and 12 high school STEM mentors also partook in the Future City STEM Program, along with additional students enrolling from the middle school. To top it all off, Lauffer Middle School hosted a festival at the end of the year in which students could showcase their work, and the high school mentors were invited to be opening speakers at Arizona STEM Unconference this year.

Nichols' program helped bring the community at Lauffer Middle School together, and helped to forge a local STEM ecosystem that will continue for years to come.

Taking Flight with STEM Activities

During Arlene Nicolas's Taking Flight project, students were tasked with building, designing, and launching an RC plane utilizing foam boards, with guidance from Nicholas on constructing the plane and installing electrical components. Students had to communicate effectively with their peers through the engineering design process, and discuss the scientific reasoning for the design choices they made.

Throughout the course of this STEM project, topics of physics and engineering relating to the plane designs were taught and discussed, from the four fundamental forces of flight to a discussion of how Newton's laws are used in technology to create products to serve human ends. Rocket science was also incorporated into the unit, with students also designing a variety of rockets to observe the laws of motion.

Following the completion of the project on launch day, students were amazed that by using just a foam board and other common, affordable materials, they were able to put together a real RC plane, and utilize their installed electronic components to fly it. Throughout the year, Nicholas's students took ownership of their learning, and her physics class said that they loved doing hands-on units that they can pursue further as a hobby outside of the classroom.

This project was such a success that Mohave Daily News featured Arlene's work in their newspaper, social media, and website. Arlene and her colleagues were interviewed about their role as ASAP Fellows and the profound impact they have had on their students' learning.

Appendix 2: Testimonials from Year 1 Fellows

"I would like to send a heartfelt thank you. I was able to attend many professional development opportunities that I wished were available earlier. I was able to take those ideas, techniques and come back feeling inspired and refreshed. My classroom, my students, and my school are so much better for all of it. 65 students benefited directly from my project, but in reality, so many more have and will continue to benefit in the years that come."

"I grew so much, and I am grateful for the learning we got from attending professional development. In the ASAP Project I was able to put together and build a good root foundation at my school that STEM inclusion should be given emphasis to promote senseful, logical, and critical next-generation citizens."

"I would like to thank everyone that made this fellowship possible. For once in my life, I feel valued and respected as a science teacher. I was allowed to spend money to make lessons memorable for my students."

"This is a great program that encourages me to learn new and fascinating skills and concepts. I could then take that learning and transfer it to my students whether they were in my after-school drone club or not! I have been amazed by the projects that the other teachers have turned out, and by all of my PDs. This opportunity to train, learn, and share has made me a better teacher and I am fired up to get going with the full program in 2023-2024!"

"I have never participated in anything like this and there are no words to express my gratitude for the opportunity. My professional knowledge as a science teacher has greatly expanded and my students are getting so much better lab opportunities because of this grant that I hope it makes all of the stress worth it for your team. Thank you does not even cover the impact your work has had on science instruction in this state!"

"I am so happy to be a part of this Fellowship and hope to be able to continue my growth in this program as it has helped me and my students grow tremendously in the area of STEM."

"Thank you all at ASAP for the fantastic work and dedication to improving teacher and student education in STEM/STEAM."

"I know how to teach STEM better now as far as I've learned a lot of phenomenon-based teaching... I think one of the big things that I got through a lot of the PDs offered through this program was encouraging student discussion. One of the key things that it taught me [was] to change my style of teaching to where letting the students do more of the learning and me being more of a facilitator as opposed to, 'Well, I don't know. Let me ask the teacher.' Now, it's, 'I don't know, but I know enough to try and figure it out.' So, I think that was key, and the importance of hands-on. I think hands-on is critical when teaching STEM, whether it's through a simulation, whether it's through an actual, 'Here are the parts. Let's put it together'...Hands-on, I think is probably the best way to get kids involved in STEM learning and STEM education."