S.T.E.M. Center
Financial Plan of Action
February 7, 2018

Background

The Science, Engineering, Technology & Math (STEM) Center, started through a Title V grant, is a comfortable and welcoming environment that encourages the growth of interpersonal and academic connections between students, faculty, staff and the community. The resources provided by the STEM Center support students in achieving their academic and professional goals. (ASU 2020 Goal 2, Initiative 2.1 & 2.4) The STEM Center also provides community outreach by hosting STEM Saturday events, Planetarium shows and coordinating Ryan Museum tours, as part of ASU's ongoing efforts to influence and inspire student success in STEM programs. (ASU 2020 Goal 5, Initiative 5.1)

Mission Criticality & Essentiality

The STEM Center's mission is to support students enrolled in STEM courses and majors, as well as influencing and inspiring the greater community's interest in ASU and ASU STEM programs. The STEM Center supports student success by providing peer tutoring, Supplemental Instruction (SI), technology resources like laptops and calculators, and a student study and meeting place. (ASU 2020 Goal 2, Initiative 2.1)

The STEM Center peer tutoring and SI program supports student success, engagement, and professional development. The STEM Center has provided services to 677 students from spring of 2013 to the fall of 2017 and employed 92 students (Table 3 & 2). The STEM Center peer tutoring program has received excellent feedback from the student body. Overall, students are satisfied with tutoring in the STEM Center (Table 9). (ASU 2020 Goal 2, Initiative 2.1 & 2.4)

The STEM Center provides a central gathering and study location in Porter Hall encouraging the growth of academic and personal connections between students, staff and faculty outside of the classroom environment. The STEM Center is often the meeting place for student clubs and organizations such as the Society for the Advancement of Chicanos and Native Americans in Science and the Adams Atoms Chemistry Club. (ASU 2020 Goal 5, Initiative 5.1)

The STEM Center is also active in building relationships with the community. The STEM Center engages the community through STEM Saturday events, Planetarium visits, and tours of the Ryan museum. STEM Saturdays are hands-on events offered on Saturday mornings by ASU faculty with a wide range in topics. Some examples of past topics are "Learning to Run the World with Electronics" and "Spiders, Scorpions, and Bugs!". The events are designed to engage specific grade-levels and inspire interest in STEM.

The San Luis Valley has no public children's science museums, zoos, botanical gardens, or natural history museums that would provide possible inspiration for K-12 students. Without the STEM Saturday programs, Planetarium and Ryan museum visits students would have even less opportunities to be engaged in the wonder and inspiration of science. (ASU 2020 Goal 5, Initiative 5.1)

Cost & Benefit

The STEM Center started through Title V grant funding and was institutionalized in the fall of 2016. The current budget is divided into Tutoring/SI, STEM Saturday events, and the STEM Coordinator position.

The STEM Coordinator duties and responsibilities changed when the position was institutionalized and the grant no longer required management. The position went from a full-time, 12 month position, to a ¾ time, 9 month position. The STEM Summer Academy, National speaker series, and the coordination of outreach with STEM Faculty to provide presentations to schools in the San Luis Valley were discontinued.

The data in this report shows that even with a reduction in cost the STEM Center is coordinating a significant number tutoring sessions and community outreach through STEM Saturdays, Planetarium shows and Ryan museum tours (Table 1, 4, ,6, 7 & 8).

Table: 1 STEM Center Budgets from 2013-2018 *The SI/PLTL budget was combined with the tutoring budget starting in AY 2016-17; **Estimated cost because the grant ended in the fall of 2016

	2013-14	2014-15	2015-16	2016-17**	2017-18
STEM Saturday/Academy	$36,134	$36,134	$36,134	$4,500	$4,500
STEM Center Tutoring	$19,200	$19,200	$19,200	$14,000	$14,000
SI/PLTL*	$14,400	$14,400	$14,400		
STEM Coordinator	$74,997	$74,997	$74,997	$35,000	$35,000
Total	$144,731	$144,731	$144,731	$53,500	$53,500

The STEM Saturday budget from AY 2013-14 through October 2016 was part of the grant funding and was combined with the outreach efforts of the STEM Academy. The budget for SI/PLTL was combined into the tutoring budget in 2016-2017 when the STEM Center was institutionalized.

Based on the AY 2017-18 budget and an estimated ¾ of the STEM Coordinator's time focused on tutoring, the cost was $230 per student served in AY 2016-17 (Table 1 & 3). The cost based on the number of tutoring sessions was $31 per session (Table 1 & 4). Estimating the STEM Coordinators time focused for community outreach at ¼, the cost per attendee for STEM Saturdays, Planetarium shows and the Ryan museum was $5 (Table 1, 6, 7 & 8).

Table: 2 Number of STEM Center Tutors Employed 2013-Fall 2017

2013-14	2014-15	2015-16	2016-17	Fall 2017
16	19	20	17	20

Table 2 indicates the number of tutors employed by the STEM Center according to Tutor Trac. The STEM Center peer tutoring program provides students with training and opportunities to grow professionally

and academically. It is important to keep in mind that with minimum wage increasing annually until 2020, the available hours for tutors will be impacted in the future. In 2020, the current budget will support only 1166 hours of peer tutoring per academic year, compared to the AY 2016-17 number of tutoring hours which was 1290 (Table 4). (ASU 2020 Goal 2, Initiative 2.1 & 2.4)

Table: 3 Students Served by the STEM Center by Demographics

	2013-14	2014-15	2015-16	2016-17	Fall 2017
Students	88	132	172	175	110
Female	61%	57%	58%	55%	53%
Male	39%	43%	42%	45%	47%
Hispanic or Latino	41%	41%	47%	44%	39%
Not Hispanic or Latino - Undeclared	59%	59%	53%	56%	61%

Table 3 data shows the demographics of the students being served by the STEM Center according to Tutor Trac in the last five years. The data shows that over 39% of the students served at the STEM Center are Hispanic or Latino. This is excellent considering the ASU's website says that in 2015 35% of the student body was Hispanic. The STEM Center also serves more female students than male.

Table: 4 STEM Center Attended Tutoring Sessions AY 2013-14 through Fall 2017

2013-14	2014-15	2015-16	2016-17	Fall 2017
633	972	1395	1290	702

Table 4 indicates the number of tutoring sessions attended from AY 2013-14 through fall 2017. This data indicates a yearly increase in attended tutoring session through AY 2015-16, with a decline in the 2016-2017 academic year. This decrease may in part be due to the implementation of Net Tutor in the spring of 2017. Decline in ASU's enrollment would also impact the number of attended tutoring sessions. The number of tutoring sessions attended data demonstrates that students are utilizing the tutoring services provided by the STEM Center. (ASU 2020 Goal 2, Initiative 2.1)

Table: 5 STEM Center Percentage of Tutoring Hours Attended by STEM Major

	2013-14	2014-15	2015-16	2016-17	Fall 2017
Biology	17%	21%	20%	30%	25%
Chemistry	9%	7%	6%	2%	4%
Earth Sci: Phys Geography	6%	0%	1%	2%	4%
Geology	11%	3%	5%	8%	11%
Math Sciences: Comp Science/IT	7%	3%	2%	0%	4%
Math Sciences: Physics	0%	5%	0%	0%	2%
Mathematical Sciences	1%	1%	0%	0%	0%
Total	51%	40%	34%	42%	50%

Table 5 shows the data for the percentage of tutoring hours attended by major. This data indicates that on average 43% of the tutoring sessions provided by the STEM Center are for STEM majors. This reveals that on average 57% of the tutoring sessions attended are for general education courses and required courses for majors outside of STEM. For example, HPPE and Pre-Nursing majors, who are required to take biology and chemistry courses for their major, account for 20% of the tutoring sessions attended over the five-year period.

Table: 6 STEM Saturday Event Number of Attendees by year
*data was not available

2013-14	**2014-15***	**2015-16**	**2016-17**	**Fall 2017**
128		95	83	24

Table 6 indicates the number of students attending ASU's STEM Saturday programs. The STEM Saturday data is incomplete because this information was not always included in the annual reports for the grant. The number of attendees at STEM Saturday events also varies because the number of events offered in a semester ranges from 5 to 8 and the enrollment capacity of each session also varied greatly from 6 to 20 students depending on the topic, resources and target age group.

STEM Saturday events are an excellent way to get impressionable students on campus and expose them to activities that are only available in the SLV through ASU STEM Saturday programming. These programs are enriching to students and can inspire them to have a long term interest in ASU and STEM majors. (ASU 2020 Goal 5, Initiative 5.1)

Table: 7 Planetarium Shows Attended by Demographics 2013-Fall 2017

	Total	**K-12**	**Hispanic**	**Female**
2013-2014	2237	1730	1157	1186
2014-2015	2172	1609	1062	1431
2015-2016	2832	2293	1220	1413
2016-2017	2588	2001	1113	1200
Fall 2017	176	141	93	87
Total	10005	7774	4645	5317

Table 7 shows the data for number of attendees at the Planetarium. ASU has hosted over 10,000 individuals during the past five years, with 4,645 of those being Hispanic K-12 students. The STEM Center hosts planetarium shows at the request of the K-12 community during school hours. In addition, the planetarium hosts shows on Thursdays and Saturdays for the broader San Luis Valley community. (ASU 2020 Goal 5, Initiative 5.1)

Table: 8 Ryan Museum Visitors AY 2012-17

	Walk-ins	Groups	Total
2012-2013	312	238	550
2013-2014	160	97	257
2014-2015	185	133	318
2015-2016	178	80	258
2016-2017	170	189	359
Total	1005	737	1742

Table 8 shows the number of visitors to the Ryan museum. The STEM Center coordinates museum visits by scheduling visits for groups during business hours. The Ryan museum has brought 1,742 people to the ASU campus from AY 2012-17. (ASU 2020 Goal 5, Initiative 5.1)

Quality of Outcomes

The STEM Center receives feedback from the students and community in many ways. In 2015 the STEM Center started to survey all students after their tutoring sessions. When students sign out of a peer-led tutoring session they are prompted to voluntarily complete an eight question survey regarding their session. Two of the questions were chosen from the survey that demonstrate the quality of service being provided and student satisfaction with the STEM Center peer tutoring program.

Table: 9 Tutoring Survey Data from Tutor Trac

Question: Did your tutor help you work through your problem areas?			
	2015-2016	**2016-2017**	**Fall 2017**
Strongly Agree or Agree	99%	99%	99%
Question: How satisfied were you with your session?			
	2015-2016	**2016-2017**	**Fall 2017**
Very Satisfied or Satisfied	99%	99%	99%

The table 9 data is compiled from 2,994 surveys completed from AY 2015-16 through fall 2017. The data demonstrates that students who answered the survey strongly agree or agree that their tutor helped them work through challenging areas of their coursework. The data also reveals that students that answered the survey are very satisfied or satisfied with their tutoring session. This indicates that the STEM Center tutors are providing an outstanding service to their peers. (ASU 2020 Goal 2, Initiative 2.1)

The STEM Center receives feedback through recurring interest from teachers, groups and students to participate in STEM Saturdays, Planetarium shows and Ryan museum visits. The STEM Center also

receives cards and thank you notes from organizations like the Boys & Girls Club, and classes that have visited the Planetarium & Ryan museum. (ASU 2020 Goal 5, Initiative 5.1)

Conclusion

The STEM Center engages the ASU student body, faculty, staff and community by providing resources that would not be available in our region without the efforts of the STEM Center and ASU. The data shows the impact that the STEM Center is having on the quality of student outcomes and the achievement of dreams. (ASU 2020 Goal 2, Initiative 2.1 & 2.4)

The services the STEM Center and ASU provides to the greater community is invaluable. ASU is serving a rural and predominantly agricultural area that has virtually no access to public children's science museums and other resources that are available in urban areas. The STEM Center outreach programs may be the only access some Hispanic and low income students and families will ever have to be inspired by scientific achievements and understanding outside of the classroom. (ASU 2020 Goal 5, Initiative 5.1)