Mobius Science Center Outreach

1. Purpose: The purpose of the Mobius Science Center Outreach Project is to expand mobile outreach of science, technology, engineering, and mathematics (STEM) education to underrepresented student populations in rural, tribal, and low-income communities. Additionally, the purpose is to build general awareness of STEM and NGSS science initiatives in the local schools and communities, and to build capacity for STEM science teaching and learning in the region.

2. Description of services provided:

   - Educational programs including classroom workshops and planetarium shows are provided for school groups. STEM-integrated workshops are designed to fit into existing, grade-appropriate learning goals at each school, with input from teacher lesson plans. Planetarium shows are also grade-level appropriate, and engage students visually in various science topics.
   - Community engagement at evening programs, are a collaborative effort with local organizations and typically identified as a STEM Night or Science Night. Mobius educators bring hands-on STEM activities or science models to engage students and their families. These events both inspire students to investigate new STEM concepts, and let the community know about the science center in downtown Spokane.
   - Field trip visits to Mobius Science Center were utilized to support the growth of STEM programs at Progress Elementary, and other partner schools. Every student at Progress experienced a STEM program through the mobile outreach team and many grade-levels were able to schedule an additional field trip to Mobius Science Center.
   - Coding with robots was one of the newest initiatives introduced to students this year. Franklin Elementary expressed significant interest in this topic and scheduled multiple outreach visits throughout the year. These progressive lessons at Franklin were developed for students in 1st, 3rd, and 5th grades to build on understanding and learn 21st century skills and coding language throughout the year. Students used colors, picture- and text-based block coding to communicate with different robots and solve problems using computer science.
   - Mobius continued to support teachers in their lesson planning throughout the school year, finding connections to NGSS learning goals and supporting curriculum that is currently in place in various schools. In addition to working with teachers in their classroom, we also provided training to teachers at an ESD 101 elementary meeting providing exposure to our science and engineering programs.

3. Criteria for receiving services and/or grants: Those receiving services from Mobius Science Center are from underrepresented populations in Northeast Washington school districts. The criteria used for school partnerships include Title I, rural and tribal schools.

Urban/suburban schools Free/Reduced-Priced Meal rates range from 46-86%; rural schools range from 56-98% (OSPI, 2018).

Beneficiaries in 2017-18 School Year:

# of School Districts:	9
# of Schools:	18
# of Students:	3116*
Other:	651 (additional family members at community events)

# of OSPI staff associated with this funding (FTEs):	0.3
# of contractors/other staff associated with this funding:	1.0

FY19 Funding:	State Appropriation:	$100,000
	Federal Appropriation:	$0
	Other fund sources:	$0
	TOTAL (FY19)	$100,000

4. Are federal or other funds contingent on state funding? No

5. State funding history**:**

Fiscal Year	Amount Funded	Actual Expenditures
FY19	$100,000	$100,000
FY18	$100,000	$100,000
FY17	$100,000	$100,000
FY16	$100,000	$89,600
FY15	$100,000	$99,997

6. Number of beneficiaries (e.g., schools, students, districts) history**:**

Fiscal Year	# of Districts	# of Schools	# of Students
FY19	9	18	3116
FY18	11	19	2412
FY17	5	7	982
FY16	5	7	1660
FY15	5	7	1951

7. Programmatic changes since inception (if any)**:** FY19 saw an expansion of programs at some schools to work with more grade levels and visit the same students multiple times. At some schools, Mobius was able to offer programs to every grade instead of just one visit or a few classrooms in previous years. Multiple visits to the same school allowed our staff to become more connected with teachers and students. At many schools, our staff was also able to attend school STEM nights and connect with families. Programs expanded to include more field trips to Mobius Science Center which included STEM workshops. Mobius reached out

to new partners, while retaining the majority of partners from FY18. The same catalog of NGSS-aligned workshops was provided to teachers this year along with a number of new lessons that included technology purchased through OSPI funding. The upgraded planetarium projection system offered Earth and space connections at multiple grade levels. We introduced technology and robotics lessons this year exposing students as young as 1st grade to coding. Using patterns and picture-based block coding students of all ages used technology, engineering and math to meet theses computer science challenges.

Figure 1 Students engaged in STEM activities

8. Evaluations of program/major findings**:** Within the ESD 101 network, Mobius sought the expertise of Tammie Schrader, Regional Science Coordinator, to identify NGSS alignment within our workshops. She was also enlisted to offer advice for deeper connections or missed opportunities that could be included in future STEM programming. In reviewing lesson plans, she found that all of our STEM workshops connect to at least one life science, physical science, or Earth and space science standards. A few of our workshops even incorporate a science and an engineering standard within an activity. The feedback will allow Mobius to develop future programs that can support multiple standards and engage students in engineering design challenges. Evaluator feedback also pointed to further connections with computer science applications, as well as activities that could be provided to teachers for extending their learning after Mobius programs.

Figure 2 Elementary students with Mobius Staff

Figure 3 Students engaged in coding activity

Figure 4 Mobius staff demonstrating science and engineering

9. Major challenges faced by the program:
    - With the addition of multiple types of technology, our staff needed additional training in the basics of computer science and troubleshooting various technology issues. The upgraded planetarium projection system required a significant amount of practice, as well as reviewing the video content provided to find the best science connections for various grade levels.
    - Roosevelt Elementary in Spokane Public Schools had a transition of administrators early in the school year that prevented us from offering the same programs as last year. Mobius maintained contact with the science coordinator at Roosevelt and will aim to resume all programs at the school in FY20.

10. Future opportunities: The upgraded planetarium system allows Mobius to seek out additional programming in life and Earth sciences, in addition to the new space content. Planetarium content includes topics about exploring the ocean, weather, wildlife, and other topics that are impactful in a full-dome immersive experience.

11. Statutory and/or Budget language**:**
Budget Proviso: ESSB 6032, Section 501(18) - $100,000 of the general fund--state appropriation for fiscal year 2018 and $100,000 of the general fund-state appropriation for fiscal year 2019 are provided solely for the Mobius science center to expand mobile outreach of science, technology, engineering, and mathematics (STEM) education to students in rural, tribal, and low-income communities.

12. Other relevant information**:** Progress Elementary started its first year as a STEM-focused school in FY19 offering STEM electives to all students and incorporating Project Lead the Way curriculum in every grade. Mobius Science Center employees were recognized at the

Central Valley School District community service awards for their significant contributions to this program throughout the school year. We are very proud of this unique partnership with Progress and look forward to building better programming for staff and students in FY20. Students at Franklin Elementary, Progress Elementary and Valley K-8 each participated in multiple STEM programs throughout the year. Over 3000 students were reached through our OSPI-funded programs, and approximately 650 of those students received more than one visit during the 2018-19 school year.

13. List of schools/districts receiving assistance**:** See OSPI website**.**

14. Program Contact Information**:**

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