



Washington Office of Superintendent of **PUBLIC INSTRUCTION**

Mobius Science Center

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 include: classroom workshops and planetarium shows for school groups; STEM-integrated workshops designed to fit into existing, grade appropriate learning goals at each school with input from teacher lesson plans; and planetarium shows which are grade-level appropriate and engage students visually in various science topics.
- Community engagement evening programs, a collaborative effort with local organizations (e.g. STEM Night, Science Night), are hosted at an elementary school in the region. Mobius educators bring hands-on STEM activities or science models to engage students and their families.
- Field trip visits to Mobius Science Center engage students with the same workshops that can be provided in the classroom, as well as extended hands-on learning time in our exhibits. Admission and transportation fees are covered for several partner schools, to enrich the science lessons already going on in the classroom. Mobius Science Center expanded the "Lab" classroom space in September 2019 which doubled the capacity for more grant-funded field trips.
- New planetarium shows purchased for the 2019-20 school year provide engaging life science content enhancing the existing space science shows. These shows are geared to students in 2nd to 6th grade classes and aligned with content learning standards.
- At the onset of the pandemic, and the subsequent closure of schools across Washington, Mobius followed the lead of other educators in our region with a dramatic shift in learning. The remainder of the school year was spent developing at-home learning "kits" to provide to students through meal- and curriculum distribution programs. These kits were designed for K-3rd and 4th-8th grade students to complete STEM challenges or science inquiry activities with a simple set of materials. The majority of the kits were delivered to schools where spring programs were cancelled due to the pandemic. This activity helped Mobius make new connections with schools in the region. By the end of the school year, 1,690 kits were

delivered. It is difficult to estimate the impact of the kits, as there may be multiple students within the same household.

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 47-89%; rural schools range from 43-91% (OSPI, 2019).

Beneficiaries in 2019-20 School Year:

Number of School Districts: 8
Number of Schools: 18
Number of Students: 2023* not double counted
Number of Educators: 42
Other: Family Members 600 FM at Community Events

Number of OSPI staff associated with this funding (FTEs): 0 FTE

Number of contractors/other staff associated with this funding: 0

FY20 Funding: State Appropriation: \$100,000
Federal Appropriation: \$0
Other fund sources: \$0
TOTAL (FY20) \$100,000

4. **Are federal or other funds contingent on state funding?**

No

Yes, please explain.

If state funds are not available, the state will not be eligible...

5. **State funding history:**

| Fiscal Year | Amount Funded | Actual Expenditures |
|--------------------|----------------------|----------------------------|
| FY20 | \$100,000 | \$99,931 |
| 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., school districts, schools, students, educators, other) history:**

| Fiscal Year | Number of School Districts | Number of Schools | Number of Students | Number of Educators | Number of Other |
|--------------------|-----------------------------------|--------------------------|---------------------------|----------------------------|------------------------|
| FY20 | 8 | 18 | 2823 | 42 | 600 Family Members |

7. **Programmatic changes since inception (if any):**

Before the spread of COVID-19, FY20 was on track to produce steady growth for Mobius' education programs. The majority of school partnerships saw an increased number of students served by Mobius programs. Additional STEM-content topics, including workshops and planetarium shows, improved the offerings for classes. Mobius programs supported more NGSS-aligned standards and connected to curriculum topics across grade-levels.

When in-person learning was cancelled in March, Mobius was forced to shut down operations and begin working remotely. Starting in April, Mobius staff developed 5 different STEM kits to distribute to school partners throughout the region. The topics included an owl pellet dissection, an engineering design challenge, Earth science activities, and space science activities adapted for K-3rd and 4th-8th grades. Activities were adapted from programs that are typically offered to guests in-person or in classroom workshops. Each kit included a printed activity guide accompanied by any special or uncommon materials needed. The kits were delivered to 11 different sites throughout the spring, where schools would hand them out with free meal programs, or through school district curriculum distribution. Deliveries averaged nearly 200 kits each week.

8. **Evaluations of program/major findings:**

Mobius established a contract with Eastern Washington University to evaluate educational programs, the self-efficacy of students doing STEM activities, and the impact on students' exposure to STEM careers. Unfortunately, the large number of pre-assessments were never matched with post-assessments to track student responses, due to cancelled programs. The contract was ended in May when both parties acknowledged that school programming would not continue for the 2019-20 academic year. With the framework laid for assessing future in-person programming, both parties intend to implement this evaluation in future years.

Mobius staff were able to receive some basic feedback from staff members at schools receiving at-home STEM kits in the spring. 60% of respondents offered encouraging and positive feedback. One response indicated: "If this continues in the future, families will look forward to them and will spread the word." The main feedback was that not all schools were effective in communicating the availability to families. In the future, Mobius will work to provide materials and programs with higher-quality information to share with school administrators and throughout the community.

9. **Major challenges faced by the program:**

As noted in the mid-year report, Mobius education programs have grown throughout the community, and the success has pushed available staff hours to capacity. Mobius is able to balance revenue-based education programs with grant-funded programs. The unique nature of these grant-funded partnerships allows Mobius staff to work alongside classroom teachers, and often requires a larger time-commitment than a typical program.

State-wide budget changes at the end of FY19 caused staff cuts at some partner schools, or over-arching changes to staff responsibilities. Progress Elementary had to eliminate a position that was the point of contact for Mobius programs and scheduling; fortunately, programming remained mostly at the same level. In Spokane Public Schools, all science specialists were limited to only 1 hour per week with each class for science. Scheduling became difficult and science specialists had less time to build on content before and after Mobius programs.

Without question, the greatest challenge was long-term school closure in March. Cancellations affected 19 grant-funded school visits, and several field trips to Mobius. Approximately 50 different classes of students had programs cancelled this spring, over 1000 potential students and family members that missed out on in-person STEM programs. The distribution of at-home STEM kits was intended to off-set the impact of these cancelled events, in those respective communities. The STEM kits may have had a wider impact, distributing 1690 kits to students learning at home. However, it is difficult to know the impact and engagement of these kits on their at-home learning.

10. **Future opportunities:**

As plans continue to form for virtual or in-person school this fall, Mobius is committed to developing the best programming that follows school regulations and guidance from OSPI. Programs will range from virtual presentations, to in-person and socially-distant activities. Mobius educators will continue to support teachers as circumstances change, finding ways to serve as technology allows. The goal remains providing engaging, hands-on STEM for students.

11. **Statutory and/or budget language:**

ESSB 6168, Sec. 520 (12)(g) \$100,000 of the general fund—state appropriation for fiscal year 2020 and \$100,000 of the general fund—state appropriation for fiscal year 2021 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:**

Mobius programs at Progress, Browne, Franklin and Roosevelt Elementary Schools continued to integrate with the STEM curricula adopted in Spokane-area schools. Progress Elementary School continued its successful STEM programming with Project Lead the Way and other STEM focused elective courses. Mobius staff provided guidance and some training on STEM electives that were facilitated by Progress staff members. Spokane Public Schools introduced Mystery Science as their elementary science curriculum, which had several natural connections to existing Mobius workshops.

Mobius also received an encouraging note from a school partner:

“The excitement of these [owl pellet] kits made them get picked up immediately. They were gone in about 15 minutes. I received emails from many parents saying how this opportunity was a bright spot for their student and how they spent hours carefully dissecting the pellet...The teachers passing out the [other] kits said they were gone rather quickly and that most kids had not been participating in any class meetings, or zoom meetings but they suddenly showed up at the meetings to share their science projects.”

Melissa Percy, Roosevelt Elementary (Spokane) – Science Specialist

13. **Schools/districts receiving assistance:**

See [OSPI's Grantee List](#)

14. **Program Contact Information:**

Name: Ellen Ebert, Ph.D.

Title: Director, Learning and Teaching Science and Environmental and Sustainability Education

Phone: 360-725-4962

Email: ellen.ebert@k12.wa.us