



LASER Program

1. **Purpose:**

Washington State LASER (Leadership and Assistance for Science Education Reform) is a state science education program led by Washington STEM in partnership with the Office of Superintendent of Public Instruction, Educational Service Districts, the Institute for Systems Biology, and school districts.

Washington State LASER is divided into nine regional Alliances, geographically aligned with Washington's Educational Service Districts. These Alliances offer leadership and technical assistance to school districts, schools, and educators, within and across the six components of the LASER framework: school/district operations, STEM pathways, community and administrator engagement, assessment, curriculum, and instructional materials support. This work also includes science/STEM strategic planning support for districts and schools. This framework is derived from the LASER model developed by the Smithsonian Science Education Center.

LASER plays a key role in ensuring that state science leaders maintain a learning community and develop skills and capacity for removing barriers and creating opportunities to improve science/STEM education at the school and district levels.

2. **Description of services provided:**

Given the wide range of systems- and district-level needs across Washington, Washington State LASER offers a range of services to participating schools, districts, and educators.

Regional Alliances

- Alliances provide leadership assistance to schools and districts to develop, implement, and assess science/STEM strategic plans aligned with the LASER framework.
- In several regions, the regional LASER Alliance serves as a co-operative hub for instructional materials across 15-30 districts—resulting in efficiencies in cost, labor, and professional learning across the districts. During the pandemic, Alliances have also served as resource hubs for online, asynchronous professional learning and virtual science/STEM instructional materials.

- All Alliances contribute to regional capacity-building by providing professional learning opportunities, resources, and connections for science/STEM education leaders (including teachers, district leaders, principals)

Professional Learning Support for Alliance Directors

- LASER provides an equity- and justice-focused collaborative learning space for Alliance Directors, who in many cases are also Regional Science Coordinators and/or hold multiple STEM education leadership roles.
- Regular communication via email, monthly Alliance Director virtual workshops, LASER website, and semi-annual Alliance convenings.
- Semi-annual convenings of Alliance Directors and partners

Statewide Professional Learning Opportunities

- Alliance Directors are strongly encouraged to bring Alliance teams to semi-annual statewide workshops.
- Science/STEM education workshops open to educators and the public, aligned with the LASER framework.
- LASER website has a Toolbox of open-source resources aligned to the LASER framework

3. Criteria for receiving services and/or grants:

Each Alliance sets goals and develops work plans that are responsive to local needs and aligned with LASER’s commitments to OSPI. All Washington districts and schools are eligible to participate in regional LASER activity.

Beneficiaries in 2021-22 School Year:

Number of School Districts:	191
Number of Schools:	173
Number of Students:	65,693
Number of Educators:	1,249
Other:	154 - Administrators

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

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

FY22 Funding:	State Appropriation:	\$500,000
	Federal Appropriation:	\$0
	Other Fund Sources:	\$0

TOTAL (FY22)

\$500,000

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

No

5. State funding history:

Fiscal Year	Amount Funded	Actual Expenditures
2022	\$500,000	\$500,000
2021	\$500,000	\$500,000
2020	\$356,000	\$354,167
2019	\$356,000	\$365,000
2018	\$356,000	\$355,965

6. Number of beneficiaries (e.g., school districts, schools, students, educators, other) history:

Fiscal Year	Number of Schools
2022	191 districts/173 schools/65,693 students
2021	100 districts/306 schools/127,449 students
2020	76 districts/410 schools/238,708 students
2019	161 districts/330 schools/ 77,500 students

7. Programmatic changes since inception (if any):

Since LASER's inception, the number of Regional Alliances grew from 4 to 10. In 2020-2021, the North Sound and South Sound LASER Alliances merged to form the Puget Sound LASER Alliance, in partnership with PSESD. There are currently 9 Alliances total.

In order to fully tap the capacity of the LASER network's expertise, the LASER Executive Director position was eliminated in 2018. This change resulted in distributed leadership, increased resources to the field, and clearer alignment with Washington STEM's foci and strategy. LASER is now coordinated by 2-3 Co-Directors from different Alliances, and these roles rotate every 2-3 years. The Co-Directors provide leadership and consultation across Alliances and liaise with the LASER Advisory group and Washington STEM. This strategy continues to evolve with Co-Directors taking on more of the strategy and implementation work of LASER with strategic guidance and technical support from Washington STEM.

As systems became institutionalized (e.g. instructional materials co-operatives, Regional Science Coordinator positions) and the number of STEM-related initiatives increased since 1999, LASER's unique contributions to the ecosystem became more difficult to assess. Beginning in 2018, LASER changed how districts, schools, educators, and students were counted as beneficiaries to get a clearer assessment of impact. LASER work continues to be tightly woven with related regional and statewide STEM education efforts, but with clearer criteria for differentiating the impact. The resulting data show an initial decline in the number of districts, schools, and educators engaged with LASER, however this conservative estimate is more accurate and backed up by stronger data. The program continues to refine the program evaluation strategy in partnership with Washington STEM and the regional Alliances.

LASER has evolved to meet contemporary science/STEM education reform needs. Previous activities included developing leadership capacity in teachers and administrators across the state through annual Strategic Planning Institutes and STEM Education Leadership Institutes; instructional materials showcases; and professional learning opportunities around *A Framework for K-12 Science Education and the Next Generation of Science Standards*.

8. Evaluations of program/major findings:

Goal 1: Cultural Proficiency/Diversity, Equity, Justice, and Inclusion.

- October 2021: Washington State LASER worked with Arthur Mitchell and Cheryl Dix (from the STEM Equity Alliance in Pennsylvania and Smithsonian Science Education Center partners) to deepen understanding of systems change in service of working toward equity. The work included assessing Alliance work plans for structural and transformative change, recognizing productive tension in LASER collective action, and digging into the six conditions for systems change. The participant feedback was generally positive with regard to the resources that were shared and the subsequent discussions. One tool that gained particular traction was the set of "[Habits of a Systems Thinker](#)" cards from the Waters Center for Systems Change. Twenty-two educators across the ten Alliances participated in the session.
- March 2022: Alliance Directors studied and discussed [Tema Okun's Characteristics of White Supremacy](#), applying it to their work as STEM education leaders. This marked a shift in LASER's work on diversity, equity, inclusion, and justice. For the past several years, the cultural proficiency work has been largely disconnected from leadership development specifically tied to STEM education. Alliance Directors also explored how the Targeted Universalism framework could guide work plan development for 2022-2023.

- In April 2022: Alliance Directors participated in a workshop centered on authentic community engagement, led by Henedina Tavares, Washington STEM's UW Community Partner Fellow. Alliance Directors learned about a framework for community engagement reflected on ways to increase and improve community engagement in their STEM education leadership work.

Goal 2: PK-12 Science/STEM Strategic Planning and Implementation. Goal: 40 Washington school districts improve equity-centered PK-12 Science/STEM strategic planning and/or implementation within or across the system areas (pillars) of school/district operations, student pathways, curriculum, instructional materials, assessment, administrator and community engagement.

- In the 2021-2022 school year, over 1400 educators from 191 Washington school districts engaged in LASER activities. The majority of the participants were classroom teachers, specifically elementary teachers (see Figure 1 below). Professional development in the form of in-person and virtual workshops, asynchronous online learning, and learning communities was the most common mode of engagement. While the work of specific Alliances often centered on a subset of the pillars in the LASER framework, across the state LASER partners are working on each part of the framework.

Goal 3: System Coherence. Goal: Increase coherence across leaders, regions, and programs/initiatives in relation to the six pillars of LASER.

- January 2021, elementary science: Alliance Directors worked with Kimberley Astle (OSPI) and Jeff Estes (Washington State Board of Education) to better understand how each agency is addressing inequitable access to elementary science and identify ways LASER can provide leadership and implementation support for elementary science.
- Ongoing, OpenSciEd: Several Alliances amplified the implementation of OpenSciEd by providing professional learning on how to use the corresponding instructional routines with existing curriculum and/or piloting and implementing OpenSciEd units.
- Ongoing, ClimeTime: In one region, the LASER Alliance provided the venue for district leaders to connect with local community partners working on ClimeTime. This helped eliminate some of the noise in the regional system, in which community partners were vying for districts' engagement. Another Alliance amplified the formative assessment tasks developed in ClimeTime through a formative assessment workshop that focused specifically on mitigating bias against girls in STEM.
- December 2021- May 2022, connections to postsecondary: Several Alliances used regional data to help educators see the connections between elementary science and secondary and postsecondary success. This longitudinal connection was particularly impactful for elementary teachers to

see that their decision/capacity to teach science in K-5 has significant downstream implications.

- March-June 2022, computer science: Many districts in Washington are scrambling to address SB 5088, which requires that all high schools offer a computer science course. In some cases students may use a computer science credit for a science or math credit. One Alliance received requests from school and district leaders to help ensure that secondary computer science course offerings were actually part of a pathway leading to postsecondary options. In addition to examining computer science pathways, the Alliance is building trust and capacity to examine other STEM pathways (e.g. health sciences, environmental science). The Alliance also supported content integration at elementary by purchasing instructional materials for computational thinking at elementary and middle school.
- Ongoing, early learning: At least one Alliance provided ongoing professional learning for ECEAP teachers in the region to identify and leverage STEM connections in their existing curriculum.
- May - June 2022, website: LASER has a new website, wastatelaser.org. The re-designed site allows users to easily navigate basic info about LASER along with the developing Toolbox. The site also contains a password-protected portal for Alliance Directors for collective work.

9. Major challenges faced by the program:

Current state of education systems. The lingering effects of the COVID-19 pandemic continued to present challenges within LASER's scope of work, while also galvanizing the LASER network around a short list of priorities. The most common problem across the state is that educators, including school and district leaders, had to address myriad needs (e.g. COVID outbreaks, student and educator mental health, logistics and culture shift of returning to in-person, and racial reckoning) with limited resources and capacity. Impacts of this problem include district leaders being pulled into classrooms due to sub shortages, high educator turnover from classroom to district office, and educator burnout. The systems-level work of LASER is challenged by these implementation-related issues, but the system breakdown has illuminated three areas that LASER is positioned to address with partners: elementary science (quality and quantity), content integration (particularly at elementary, but increasingly in secondary), and school/district leadership support (early data suggests district Superintendent turnover at around 25% across the state).

Leadership capacity. All of the Alliance Directors hold multiple roles (e.g. Regional Science Coordinator, STEM Director, Career Connected Learning Coordinator). These leaders are responsible for several programs, initiatives, and administrative tasks, and are skilled at braiding together funding toward common goals. While this is good practice for creating coherence in a region, it presents a challenge to articulate

LASER's unique contribution to the increasingly complex landscape of science/STEM education in Washington.

10. Future opportunities:

- In partnership with OSPI (ESSER-funded Elementary Content Education Leadership Cadre), and school and district partners, LASER is positioned to support elementary content integration in service of increased and improved science learning in grades K-5.
- High turnover of school and district leaders creates opportunities for new conversations about elementary science and STEM pathways as these leaders seek coherence across initiatives that can be anchored in STEM learning.
- Washington STEM launched a new three-year strategic plan in 2022 that elevates the work of Washington State LASER, creating opportunities for deeper impact, increased partnerships, and funding from private and philanthropic sources.

11. Statutory and/or budget language:

ESSB 5693, Sec. 522(11)(a) - \$500,000 of the general fund—state appropriation for fiscal year 2022 and \$500,000 of the general fund—state appropriation for fiscal year 2023 are provided solely for the Washington state leadership and assistance for science education reform (LASER) regional partnership activities, including instructional material purchases, teacher and principal professional development, and school and community engagement events. The office may require the recipient of these funds to report the impacts of the recipient's efforts in alignment with the measures of the Washington school improvement framework.

12. Other relevant information:

Alignment with Washington School Improvement Framework (WSIF):

- To meet the legislative guidance to report the impacts of LASER in alignment with WSIF measures, LASER has baseline data on 2018-2019 regular attendance, 9th grade on-track, and dual credit measures for all of Washington's public school districts from available OSPI data. ELA/Math proficiency and growth, graduation and English language progress data provided by OSPI for WSIF is organized by school and not district. Given the use of deciles to compare growth, combining schools into districts may not be appropriate for supporting evaluation of LASER impact at the school district level in relation to WSIF indicators. LASER will continue to develop a plan to better understand the impacts of LASER in relation to the WSIF indicators, with additional indicators (e.g. student voice, assessment of strategic plans, time spent on elementary science) that guide LASER work more proximally.

LASER welcomes additional guidance from OSPI on how proviso-funded programs should be aligning with WSIF indicators.

13. Schools/districts receiving assistance:

See [OSPI's grantee list](#).

14. Program Contact Information:

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