House Bill 3072 Report

Distribution of Funds for Science, Technology, Engineering and Math and Career and Technical Education

December 2022

OREGON DEPARTMENT OF EDUCATION

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Contents

Executive Summary

The Oregon State Legislature passed House Bill 3072 (HB 3072) in 2015, recognizing that a strong educational foundation in science, technology, engineering, and mathematics (STEM) and Career and Technical Education (CTE) that centers equity will address some of the challenges in helping Oregonians achieve success in high-wage, high-demand careers. HB 3072 advances the following goals: improving student outcomes in these fields, increasing participation in post-secondary STEM and CTE majors, and increasing the number of Oregon youth who enter high-wage, high-demand STEM and CTE professions.

The strategies identified in the bill to achieve these goals are 1) funding a network of Regional STEM Hubs, 2) establishing a grants program to revitalize CTE programs and pathways in K-12 schools, and 3) establishing a STEM grants program. Within HB 3072 the Oregon Department of Education, the STEM Investment Council, and the CTE Grants Advisory Committee were charged with developing a report to the legislature that fulfills the following requirements.

> *2(7) The Department of Education, in collaboration with the STEM Investment Council and the committee established under ORS 344.075, shall submit a biennial report to the Legislative Assembly related to distributions made under this section. The report must include metrics that identify how distributions made under this section are contributing to the development of a skilled workforce that is able to secure high wage and high demand jobs.*

During the first year of the 2021-2023 biennium, distributions made under HB 3072, Section 2(7), have:

- Funded the Regional STEM Hub Network at a level that enabled them to expand geographically to cover all counties in Oregon;
    - Funded the operations of the thirteen Regional STEM Hubs;
    - Funded the Regional STEM Hub Network infrastructure that has allowed them to secure or leverage funding from other sources;
- Funded 12 STEM Innovation Grant collaborations among Regional STEM Hub Network Hubs;
- Funded 54 new CTE Revitalization Grants for a total of $7.3 million;
- Funded eight state chapters of Career and Technical Student Organizations; and
- Funded 635 CTE Pathways through the Secondary Career Pathways grants.

This legislative report starts with the background and legislative directive from HB 3072. Next there is an explanation of how the funds have been allocated to support the operations and programming of the Regional STEM Hub Network and their work with Oregon's students and

educators, followed by a chart of the impact Regional STEM Hubs are having on students and educators, expenditures made in CTE for this biennium, and a description of the progress that has been made in helping Oregon's youth work toward high-wage, high-demand careers in STEM and CTE.

Background and Legislative Directive

Critical thinking and literacy skills in science, technology, engineering, and mathematics (STEM) are essential for navigating today's world. Together with Career and Technical Education (CTE), STEM can also be crucial for successfully entering high-wage, high-demand professions. Having a population that is highly skilled in STEM and CTE fields is also becoming increasingly important for economic sustainability of the State of Oregon. For the past decade or more, however, Oregon's education system has not met the academic needs of students, as can be seen in declining math and science assessment scores.

In 2015, the Oregon legislature passed House Bill 3072 (HB3072), which authorized funds and created a grant account for statewide STEM education and CTE programs and activities that can lead to high-wage, high-demand careers. Although the bill established a *Connecting Education to Careers* account, this account was never created, so grants come directly from the General Fund. After amendments, forty percent of the funds were allocated for STEM education and the remaining sixty percent were allocated for CTE programs and activities. Additionally, HB 3072 and Oregon Revised Statute (ORS) 344.075 directed the Oregon Department of Education (ODE) to establish a CTE Grants Advisory Committee to make recommendations about disbursement of the CTE funds.

House Bill 3072 advances the following goals:

1. Improving student outcomes in STEM and CTE;
2. Increasing participation in post-secondary STEM and CTE majors; and
3. Increasing the number of Oregon youth who enter high-wage, high-demand STEM and CTE professions.

The strategies identified in the bill to achieve these goals are:

1) Funding a network of Regional STEM Hubs;
2) Establishing a grants program to revitalize CTE programs and pathways in K-12 schools to expose students to CTE programs that lead to high-demand and high-wage careers; and
3) Establishing a STEM grants program that creates innovative and effective STEM experiences for teachers and students – these grants are now called STEM Innovation Grants.

HB 3072 requires submission of a biennial report from ODE, the STEM Investment Council, and the CTE Grants Advisory Committee established under ORS 344.075. This report includes distributions to the Regional STEM Hub Network and CTE grant programs established by the bill. Prior to the 2021-2023 biennium, the combined report for STEM investments for HB 3072 (2015) and HB 2636 (2013) was submitted by the STEM Investment Council Director and did not include impact and fund distributions for the CTE programs. This report will only cover activities under HB 3072.

As the report will detail, funds authorized by HB 3072 in the first year of the 2021-2023 biennium have been used for many purposes. They have allowed the Regional STEM Hub Network to expand geographically to cover all counties in Oregon, funded the operations of the thirteen Regional STEM Hubs, and provided the Regional STEM Hub Network infrastructure that has allowed them to secure or leverage funding from other sources. In addition, the funding has provided 12 STEM Innovation Grant collaborations among Regional STEM Hubs, 54 new CTE Revitalization Grants, eight state chapters of Career and Technical Student Organizations; and 635 CTE Pathways through the Secondary Career Pathways grants.

As directed by HB 3072, this report also includes metrics that identify how distributions made under this section are contributing to the development of a skilled workforce that is able to secure high-wage and high-demand jobs. These data are included below in Table 1, *Regional STEM Hub Impact Data,* and explained and summarized in the *Impacts of Funded Activities* section.

The Oregon 2021-2025 STEM Education Plan[1]

In 2021, the STEM Investment Council wrote the *Oregon 2021-2025 STEM Education Plan*, which identifies goals and indicators of success for STEM education in Oregon. Oregon's Regional STEM Hubs align their work to the goals outlined in the STEM Education Plan (see project descriptions funded by HB 3072 below).

The STEM Education Plan outlines alternative indicators of student success, such as a student and educator's STEM identity, increased enrollments in STEM/CTE accelerated learning, and elective courses. While there is not yet a body of evidence to demonstrate whether or not high scores on state standardized tests are correlated with students entering STEM and CTE fields, research literature has shown that when early connections are made for students with STEM/STEAM experiences and when those experiences are based on relevant models of exploration, students are more likely to develop STEM

identity, interests, attitudes**,** motivation and confidence, which ultimately increase the likelihood that they will enter a STEM career[2,3,4].

The STEM Education Plan established four major goals for Oregon's students, centered around equity and empowerment of all students. The STEM Investment Council identified priority strategies, linked these to research, and named the state entities that should lead the work. These four STEM Education Goals and the associated Priority Strategies provide the roadmap to improve STEM education in Oregon while engaging a variety of partners, to increase access and achievement for the students and State of Oregon. The Regional STEM Hubs have aligned their STEM Innovation Grant projects funded by HB 3072 to the four goals from the STEM Education Plan:

1. Inspire and empower our students to develop the knowledge, skills, and mindsets necessary to thrive in a rapidly changing, technologically rich, global society.
2. Ensure equitable opportunities and access for every student to become a part of an inclusive innovation economy.
3. Continuously improve the effectiveness, support, and number of formal and informal P-20 STEM educators.
4. Develop a sustainable funding and policy environment for STEM and CTE that provides reliable, seamless, and sufficient support across biennia.

Regional STEM Hub Backbone and Innovation Grants

In the 2021-2023 biennium, funding for STEM education from HB 3072 has supported and expanded the operations ("backbone") of the Regional STEM Hub Network and has sustained the STEM Innovation Grants program. This year, thirteen STEM Innovation Grants were awarded from HB 3072 to Regional STEM Hubs, and one was awarded to Oregon State University Extension for $414,736 to administer the STEM Beyond School project coordination and statewide implementation. This grant is tied to the work and funding of each individual STEM Hub's Stem Beyond School proposal and funding but was written as a separate Innovation Grant to Oregon State University Extension for the coordination of the Network.

According to ORS **581-017-0306**, the development of the Regional STEM Hub Network under HB 3072 has several purposes:

- To engage stakeholders around common outcomes related to increasing student proficiency, interest, and attainment in STEM and CTE education;
- To address opportunity gaps for underserved and underrepresented students;
- To engage local communities to elevate the importance of STEM in individual, community, local and state prosperity;

- To promote best practices in education, provide career connected learning opportunities for students, and expand STEM and CTE experiences both in and out of school;
- To share STEM education expertise and insights among and between communities;
- To foster greater coherence across institutions and pathways to ease student transitions and diminish academic isolation; and
- To increase interactions between STEM professionals, students, and educators.

Regional STEM Hub Backbone Funding

The first pillar of the programs established by HB 3072 provides for the Regional STEM Hub network. This grant funds the operations of each Regional STEM Hub and expansion of the network. The work of the Hubs is to support P-20 STEM education through the HB 3072-funded STEM Innovation Grants to the thirteen Regional STEM Hubs.

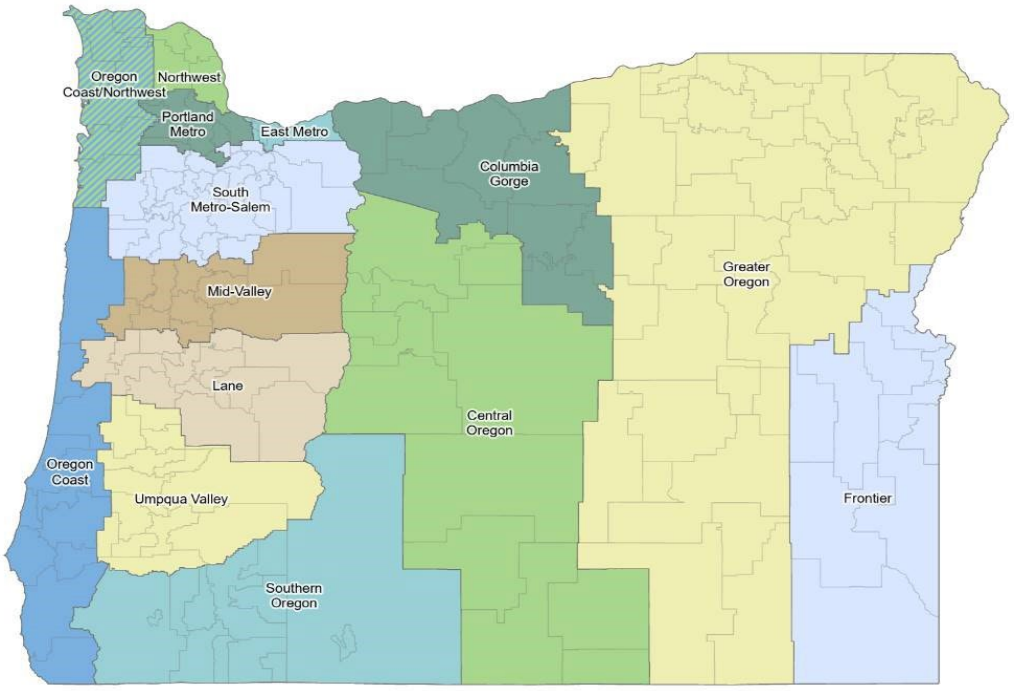


Figure 1. 2022 Map of the Oregon Regional STEM Hubs.

During the 2021-2023 biennium, the State of Oregon's investment in the Regional STEM Hubs totaled approximately $11.6 million for both backbone operations and innovative programming. This investment has enabled Regional STEM Hubs to build sustainability and expand programs through leveraged funds and resources from partners. For example, during

the first year of the current biennium Hubs were able to leverage approximately $13.5 million in in-kind and funding support, an amount greater than the state's investment of $11 million.

While this report pertains to the expenditures of HB 3072, it is important to note that the Regional STEM Hubs also administer and support a variety of other state and federal projects, including:

- the Well-Rounded Access Program (WRAP) Grants;
- the Governor's Computer Science Initiative Grants; and
- the Math Pathways (Mathways) Grant in secondary education.

STEM Innovation Grants

STEM Innovation Grants are designed to expand the implementation of effective programs related to STEM education. In the 2021-23 biennium, the Legislative Assembly passed a Policy Option Package that increased the STEM Innovation Grants from their previous service level of $4,601,636 to the current service levels of $5,291,547, an increase of fifteen percent. For the 2021-23 biennium, the STEM Investment Council recommended that projects must impact a significant number of students from historically underserved and underrepresented communities. The awards must involve collaboration across two or more Regional STEM Hubs to promote both regional and cross-regional partnership.

In the 2021-2023 biennium, Regional STEM Hub STEM Innovation Grant proposals exceeded available state funds, so Title II federal funds were used for approximately $1 million of STEM Educator Professional Development. This additional funding resulted in thirteen STEM Innovation projects, one of which is partially funded and one of which is wholly funded by Title II, Part A, Teacher and Principal Training & Recruiting Fund. The two federally funded projects are listed last in the accounting of projects below.

Project: Computer Science and Digital Literacy

Lead Hub(s): Lane STEM Hub and Northwest STEM Hub

Participating Hubs: Central Oregon STEM Hub, Columbia Gorge STEM Hub, Frontier STEM Hub, Mid-Valley STEM-CTE Hub, Oregon Coast STEM Hub, Portland Metro STEM Partnership, South Metro-Salem STEM Partnership, Umpqua Valley STEAM Hub

Funding: $772,683

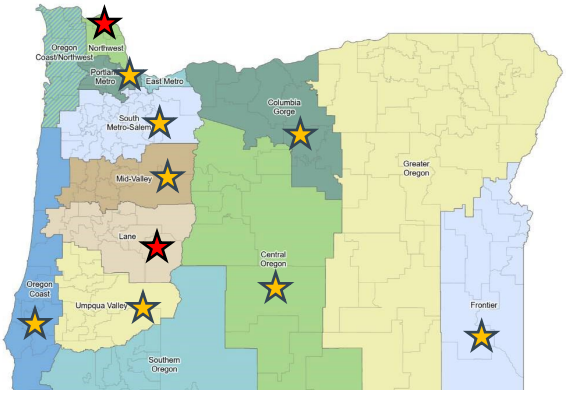


Figure 2. Map of Computer Science and Digital Literacy Project. Lead hubs are marked with a red star, participating hubs with a gold star.

Project Summary: This collaboration increases equity and access to computer science (CS) and digital literacy (DL) as a statewide network, through identification of Hub communities that have overlapping needs and goals. The project allows Hubs to deliver student experiences, expand professional development to teachers, and contribute to a stronger system and network around CS.

Expected Outcomes:

- Identification of Hub communities with overlapping needs and goals in CS and DL
- Increased access to CS and DL in school districts throughout the state
- Hands-on experiences in CS and DL for students
- Increased professional development for educators, leading to expanded course and content options for students
- Increased dual credit opportunities
- Integration of Math and CS, including information and data science
- Increased integration of CS by elementary and middle school teachers
- Increased post-secondary success, as student success in STEM and Computer fields improves with access
- District adoption and implementation of K12 CS standards, including identification of pathways, technology needs, leadership support, and community partnerships
- Centralized CS opportunities that are not district- or funding-dependent
- Establishment of a CS/DL community of practice in rural regions with limited previous investments
- Best practices resource document for scaling and replication in rural areas with limited CS programs

Project: Career Connected Learning

Lead Hub(s): Lane STEM Hub, Columbia Gorge STEM Hub

Participating Hubs: Central Oregon STEM Hub, Greater Oregon STEM Hub, Frontier STEM Hub, Southern Oregon STEAM Hub, Mid-Valley STEM-CTE Hub, Northwest STEM Hub, Oregon Coast STEM Hub, Portland Metro STEM Partnership, Umpqua Valley STEAM Hub

Funding: $459,446

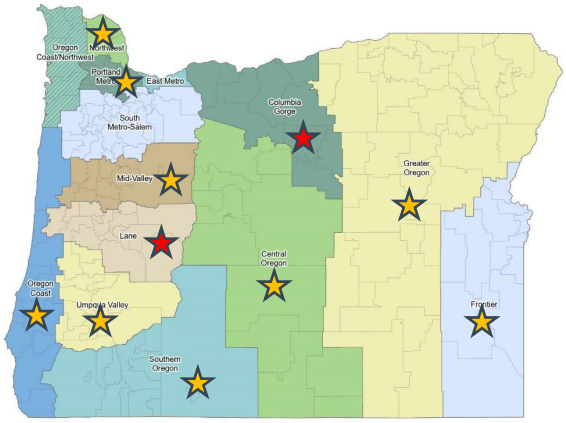


Figure 3. Map of Career Connected Learning Project. Lead hubs are marked with a red star, participating hubs with a gold star.

Project Summary: The Career Connected Learning project establishes teacher externships that allow exploration of a career aligned with subject area, demonstrating the application of industry standards to classroom content. Examples include having a chemistry teacher working for a metal paint or ice cream company, or a math teacher having a 5-day exploratory experience with a technology, finance, or manufacturing company.

Expected Outcomes:

- Teachers will deepen and expand understanding of the relevance of their content areas to careers
- Teachers will use the knowledge gained to make curriculum more relevant, skills-based, and aligned to industry standards
- Student engagement in Career Connected Learning will increase in their core and elective classes
- Student outcomes will improve in courses that expose students to a variety of careers, as research shows that student achievement improves when learning is seen as relevant[2]

Project: Rural STEAM Leadership Network

Lead Hub(s): Central Oregon STEM Hub

Participating Hubs: Frontier STEM Hub, Mid-Valley STEM-CTE Hub, Northwest STEM Hub, Oregon Coast STEM Hub, Southern Oregon STEAM Hub, Umpqua Valley STEAM Hub

Funding: $520,799

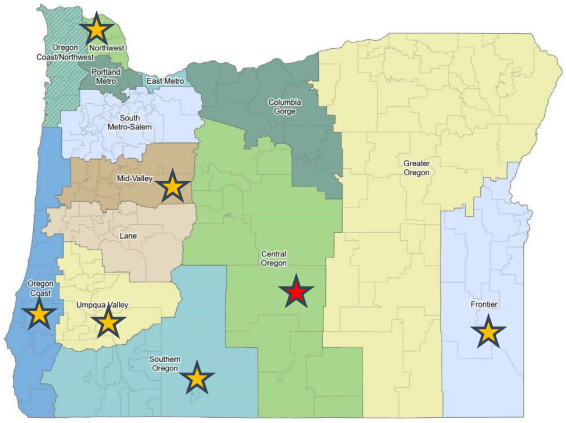


Figure 4. Map of Rural STEAM Leadership Network Project. Lead hubs are marked with a red star, participating hubs with a gold star.

Project Summary: The Rural STEAM Leadership Network connects educators in rural and remote communities across the state to each other, STEAM education resources, professional development, funding opportunities, and leadership opportunities. The network provides STEAM-focused learning and planning opportunities for administrators from different schools and districts who often serve in several roles, such as superintendent, principal, teacher, and coach. This multi-faceted job can limit the ability of rural administrators to connect with others for extended time on STEAM. The project also increases the offerings of STEAM-focused professional development for teachers, which is being delivered by rural educators for other educators in their regions and beyond. Learning opportunities for both educators and students include virtual field trips, synchronous and asynchronous learning, Place-Based Learning, and showcasing of rural STEAM-related innovations.

Expected Outcomes:

- Establishment of a Rural STEAM Leadership Network that connects educators and administrators in rural and remote communities across the state
- Improved ability of rural teachers and rural administrators to offer relevant, integrated STEAM content to students
- Increased number of rural students entering STEM careers and/or post-secondary STEM majors
- Network of home-grown, regional Learning Facilitators within rural regions of STEM Hubs
- Increased sustainability of STEAM programming through shared resources, professional development, funding opportunities, and leadership opportunities

Project: Early Learning STE(A)M - Support to Parents, Child Care Providers and Pre-School Educators

Lead Hub(s): Umpqua Valley STEAM Hub

Participating Hubs: Central Oregon STEM Hub, Columbia Gorge STEM Hub, East Metro STEAM Partnership, Frontier STEM Hub, Greater Oregon STEM Hub, Lane STEM Hub, Mid-Valley STEM-CTE Hub, Northwest STEM Hub, Oregon Coast STEM Hub, Portland Metro STEM Partnership, Southern Oregon STEAM Hub

Funding: $465,996

Project Summary: This project connects early learning partners, including Tribes, to Hubs to make family and educator STE(A)M kits available in underserved communities. Contents of kits reflect the needs, traditions and cultures of local communities. Resources are being produced in multiple languages reflecting the populations of the regions. Associated with these kits will be a variety of support tools including activity cards, videos and classes for both parents and early childhood educators.

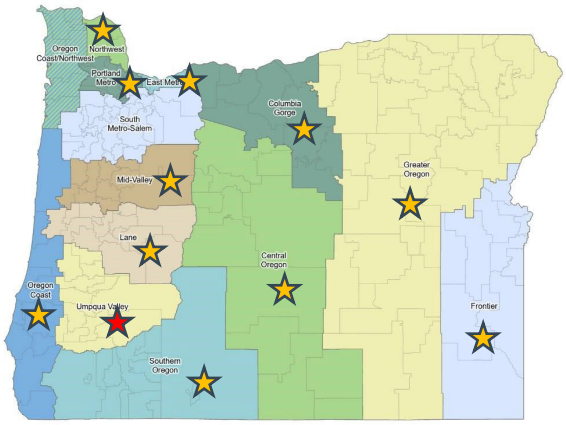


Figure 5. Map of Early Learning STE(A)M Project. Lead hubs are marked with a red star, participating hubs with a gold star.

Expected Outcomes:

- STEAM Kits focused on early childhood and local cultures available for check-out throughout participating regions
- Development of a network among the Hubs through which new participants in this work may learn from experienced Hubs
- Increased student interest in STEAM fields throughout K-12 and post-secondary for students who were involved in this work at a young age[5]

Project: Design Thinking for STEM Equity

Lead Hub(s): South Metro-Salem STEM Partnership

Participating Hubs: Central Oregon STEM Hub, East Metro STEAM Partnership, Oregon Coast STEM Hub, Portland Metro STEM Partnership

Funding: $195,741

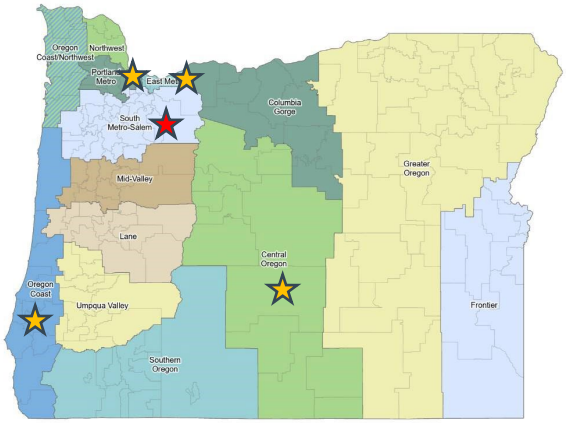


Figure 6. Map of Design Thinking for STEM Equity Project. Lead hubs are marked with a red star, participating hubs with a gold star.

Project Summary: This project uses Design Thinking to identify the root causes of low student engagement and achievement in STEM disciplines and begins to address these causes according to community needs. It is student-centered, and by design demands that those in power engage with users to explore the root causes of challenges to identify and execute locally actionable solutions. For example, if one is trying to problem-solve for why Latino males are under-represented in high school STEM electives, then high school-aged Latino males are necessarily at the center of the human-centered design process. Project partners engage with a nationally renowned human-centered design coach to lead the work, in partnership with local experts in STEM equity and Next Generation Science Standards implementation.

Expected Outcomes:

- Development of two cohorts of nine school-based teams of principals and teachers to use Design Thinking as a process to drive a shift in their school's culture of teaching and learning in STEM
- Broader adoption of the experiential Next Generation Science Standards (NGSS) framework for teaching and learning science in participating districts
- Implementation of best practices in teaching to address other challenges, such as anti-racist STEM instruction and equitable science teaching
- Access to ongoing coaching support for all participants to allow for development and testing of prototype strategies
- Increased student participation in STEM content, leading to increases in post-secondary STEM career and course achievement

Project: Industry-Connected Classroom Learning

Lead Hub(s): South Metro-Salem STEM Partnership

Participating Hubs: Greater Oregon STEM Hub, Oregon Coast STEM Hub, Southern Oregon STEAM Hub, Umpqua Valley STEAM Hub

Funding: $110,137

Project Summary: This project uses technological solutions to connect students and educators to career professionals in a variety of different fields. The project will be implemented in a variety of learning environments, in and out of school, to address regional and local needs. All participating regions will support the integration of industry-connected classroom learning opportunities to enhance the existing "STEM Bites" effort. "STEM Bites" is an elementary-focused project of the Regional STEM Hub Network that gives teachers access to simple, hands-on STEM experiments and projects.

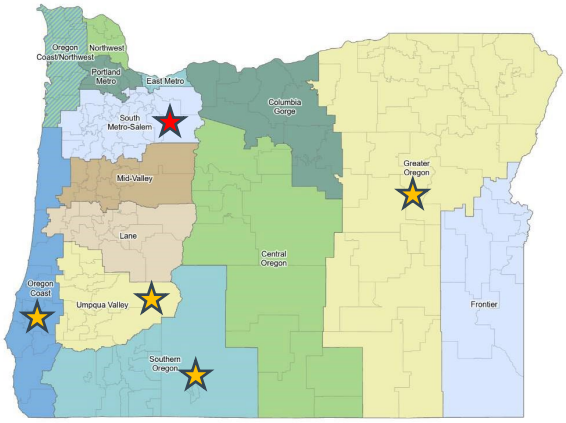


Figure 7. Map of Industry-Connected Classroom Learning Project. Lead hubs are marked with a red star, participating hubs with a gold star.

Expected Outcomes:

- Centralized staff person to aid in efficiency of the project and products
- Suite of recommendations for industry connections to enhance the experience for students and teachers
- Increased teacher expertise in building connections with industry partners
- Increased teacher expertise in delivering career-connected content to students
- Increased student awareness of the connection between STEM fields and careers
- Increased student engagement and participation in STEM fields in the future[6]

Project: Oregon Youth Voice in Action in STEM

Lead Hub(s): Frontier STEM Hub, Columbia Gorge STEM Hub, Umpqua Valley STEAM Hub

Participating Hubs: East Metro STEAM Partnership, Greater Oregon STEM Hub, Northwest STEM Hub, Southern Oregon STEAM Hub, Central Oregon STEM Hub

Funding: $528,696

Project Summary: Participating hubs are collaborating in the implementation of *Youth Voice and Action in STEM Leadership* programs, expanding the former Chief Science Officers (CSO) structure offered in years past. This leadership opportunity empowers middle and high school students to serve as STEM ambassadors in their schools and communities. Each Hub leads its own cabinet of all of the student STEM leaders in the region. Leaders participate in several annual events, such as a summer leadership training institute, two cabinet meetings, and a regional spring symposium.

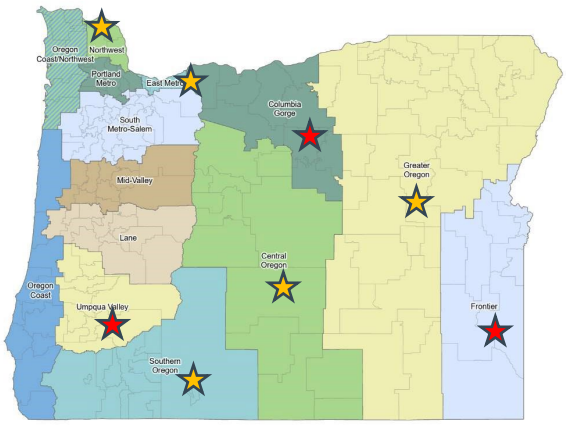


Figure 8. Map of Oregon Youth Voice in Action in STEM Project. Lead hubs are marked with a red star, participating hubs with a gold star.

Expected Outcomes:

- High quality leadership training for student STEM leaders
- Guidance and support by student STEM leaders for Oregon STEM Leader Clubs at participating schools, leading to greater direct student involvement in STEM education and careers
- Increased access to STEM professionals through monthly industry chats and dinners with local STEM professionals
- Increased student participation in and completion of post-secondary STEM degrees and STEM careers

Project: Regional Networks for STEM Equity

Lead Hub(s): East Metro STEAM Partnership

Participating Hubs: Portland Metro STEM Partnership

Funding: $75,600

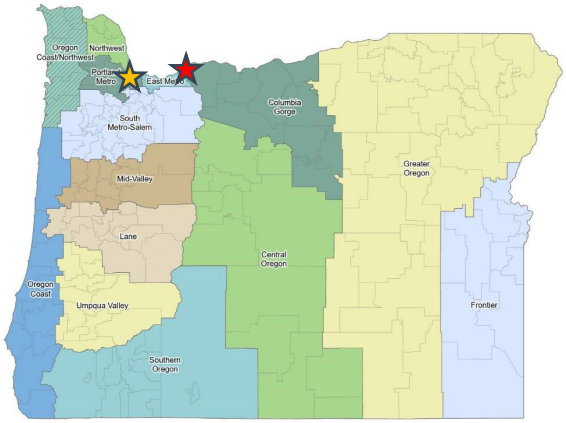


Figure 9. Map of Regional Networks for STEM Equity Project. Lead hubs are marked with a red star, participating hubs with a gold star.

Project Summary: This project uses an Action Learning Teams approach to solving problems through action and reflection. Within an Action Learning Team, individuals learn with and from each other by sharing their expertise and knowledge, while reflecting on their own experiences. Action Learning Teams are being used in this project to address STEM education problems of practice, such as maximizing the use of technology in STEM teaching and learning, bridging formal and informal STEM learning experiences, promoting transformative STEM leadership for school/district administrators and community-based program directors, addressing inequities and disparities in STEM education, and increasing time on elementary science through STEM integration.

Expected Outcomes:

- Increased time spent on science in elementary schools
- Increased educator comfort with delivering science and STEM content to diverse groups of students
- Increased access to technology for students and educators
- Increased achievement opportunities in STEM fields for students

Project: STEM Beyond School

Lead Hub(s): Portland Metro STEM Partnership

Participating Hubs: Central Oregon STEM Hub, Columbia Gorge STEM Hub, Lane STEM Hub, Mid-Valley STEM-CTE Hub, Umpqua Valley STEAM Hub

Funding: $545,057

Project Summary: Reduced educator capacity and staff losses during the COVID-19 pandemic has meant that more educators need support in responding to emerging youth STEAM needs. The STEM Beyond School approach for this biennium builds out-of-school time STEAM capacity at both the state and local levels. This serves a critical need for youth that were most impacted by the pandemic, allowing them to engage in project-based STEAM learning that is student-centered and culturally- and community-based.

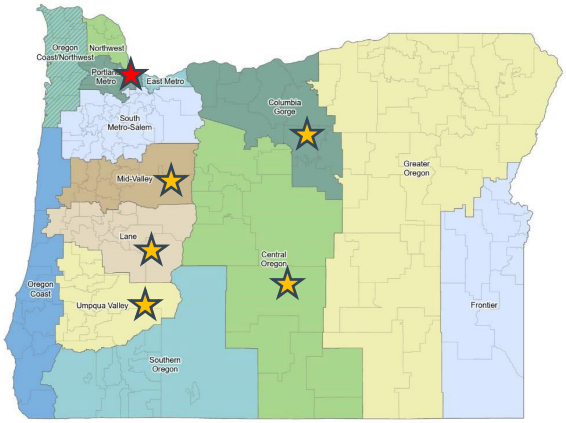


Figure 10. Map of STEM Beyond School Project. Lead hubs are marked with a red star, participating hubs with a gold star.

Expected Outcomes:

- Expansion of a Community of Practice Network throughout the participating districts and regions
- Development and delivery of teacher Professional Development on STEAM education and equity-centered teaching
- Increased capacity of educators to provide high-impact, inclusive and culturally responsive STEM explorations for youth
- Increased out-of-school time educator comfort in delivering high quality STEAM experiences to underserved students
- Increased student engagement with and achievement in STEM courses and careers

Project: STEM Beyond School Grant – Oregon State University Extension

Lead: Oregon State University Extension Service

Funding: $414,736

Project Summary: These funds are being used to train out-of-school educators in the integration of STEAM in out-of-school-time education opportunities.

Expected Outcomes:

- Cadre of out-of-school-time educators trained in and implementing STEAM in out-of-school programs

Project: Developing a STE(A)M School Designation Process for K-8 High-Need Schools

Lead Hub(s): Portland Metro STEM Partnership

Participating Hubs: Central Oregon STEM Hub, East Metro STEAM Partnership, Oregon Coast STEM Hub, South Metro-Salem Partnership, Umpqua Valley STEAM Hub

Funding: $964,476

Project Summary: This project establishes a STEM School Designation process that will provide the mechanism, resources, and necessary support to schools interested in focusing on STEM. Many of Oregon's administrators and classroom educators already understand the power of STEM education and have created pockets of STEM excellence in their classrooms and schools. To ensure that these efforts reach beyond one administrator or educator, cultivation of a school-wide STEM culture is necessary. The grant allows for, among other things, peer-learning, coaching support, technical assistance, and mini-grants to schools for STEM supplies and equipment.

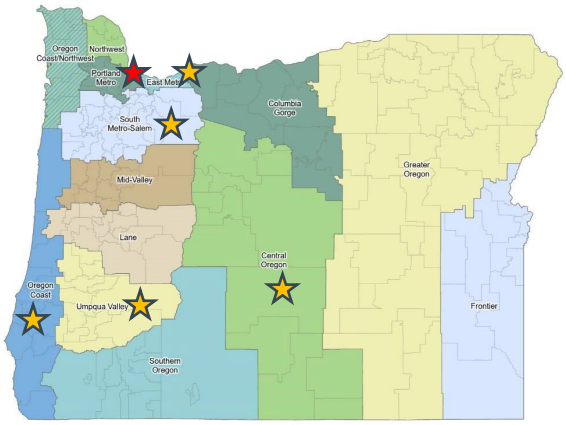


Figure 11. Map of Developing a STE(A)M School Designation Process for K-8 High-Need Schools Project. Lead hubs are marked with a red star, participating hubs with a gold star.

Expected Outcomes:

- Development of a collection of resources aligned to the planning process, including templates, tools, surveys, examples, and samples for existing STEAM schools
- Increased opportunities for all education professionals to participate in high-impact professional development
- Support for job-embedded, peer-learning during the school year
- Increased number of public Oregon schools that earn the STEM School designation
- Increased educator and student understanding of the value of STEM and connections of STEM to aspects of life

Project: High School Science for All

Lead Hub(s): Portland Metro STEM Partnership

Participating Hubs: South Metro-Salem Partnership, Lane STEM Hub

Funding: $394,317

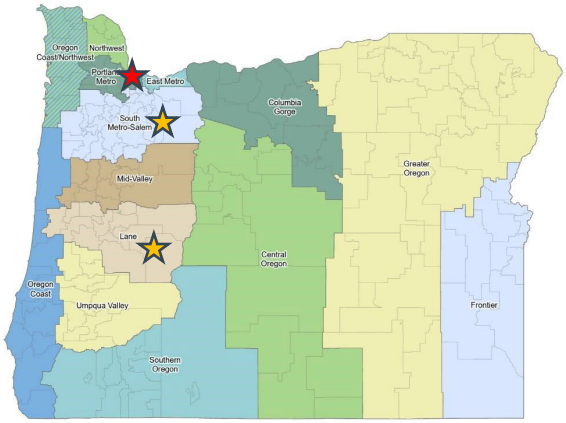


Figure 12. Map of High School Science for All Project. Lead hubs are marked with a red star, participating hubs with a gold star.

Project Summary: *High School Science for All* is a year-long, vertically articulated course curriculum that was developed and refined in the greater Portland Metro area for three high school science courses - Physics, Chemistry, and Biology. All courses include embedded engineering projects, applied math elements, technology for data collection/analysis and emerging Career Connected Learning components. *High School Science for All* extends the disproportionate financial and intellectual resources (e.g. Teacher on Special Assignment, instructional specialist positions, etc.) of the largest K-12 school districts in the Portland Metro area to districts around the state, as these resources do not exist in many of the smaller districts for financial reasons. From a separate grant (Oregon Mathways Initiative), the *High School Science for All* work is also being extended to the Core Two years of high school mathematics.

Expected Outcomes:

- Increased access to the *High School Science for All* science articulation model and curricula for rural and small school districts statewide.
- Increased student engagement, as *High School Science for All* is a key equity driver for high school science outcomes
- Increased student achievement in high school science

***Project:* STEAM Leaders in Elementary Schools**

Lead Hub(s): Greater Oregon STEM Hub

Participating Hubs: Columbia Gorge STEM Hub, Frontier STEM Hub, Portland Metro STEM Partnership, Umpqua Valley STEAM Hub

Funding: $618,871.05 ($255,956.40 from Oregon State funds, $362,914.65 from Title IIA federal funds)

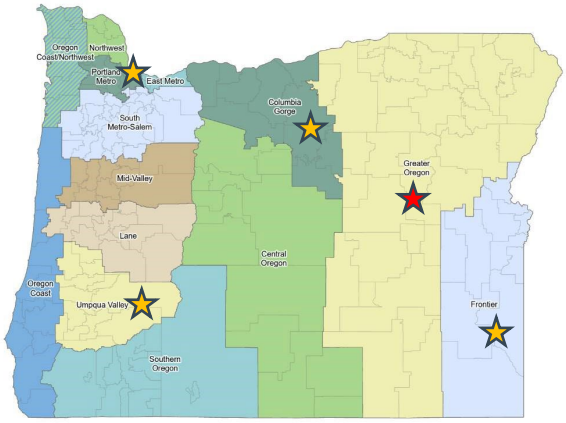


Figure 13. Map of STEAM Leaders in Elementary Schools Project. Lead hubs are marked with a red star, participating hubs with a gold star.

Project Summary: This project focuses on best practices to engage directly with elementary educators to provide high-quality instructional practice, innovative STEAM teaching techniques, and increased confidence in a teacher's ability to provide STEAM learning experiences in their classrooms. Collaborative workshops with administrators and classroom educators lead to an increased understanding of the value of STEAM and co-creation of STEAM goals and school- and district-wide STEAM initiatives.

Expected Outcomes:

- Creation of a sustainable network of STEAM teacher leaders across Oregon
- Integration of STEAM learning experiences into content areas to authentically engage students in problem solving, inquiry, and project-based learning skills
- Increased alignment of Next Generation Science Standards, Common Core State Standards, and STEAM learning units
- Improved educator understanding of STEAM teaching/learning principles to increase educator confidence and comfort level when implementing STEAM in classroom and school-wide practices
- Increased access to STEAM equipment and resources through Regional STEM Hub Lending Libraries
- STEAM content units published on the open-source Oregon Open Learning Hub
- System change and school transformation through recognition of STEAM Champions

Project: Developing Equity-Based Math Leadership for K-8 Educators

Lead Hub(s): Portland Metro STEM Partnership

Participating Hubs: East Metro STEAM Partnership, Oregon Coast STEM Hub, South Metro-Salem STEM Partnership, Umpqua Valley STEAM Hub

Funding: $618,924 (Federal Title II Funds)

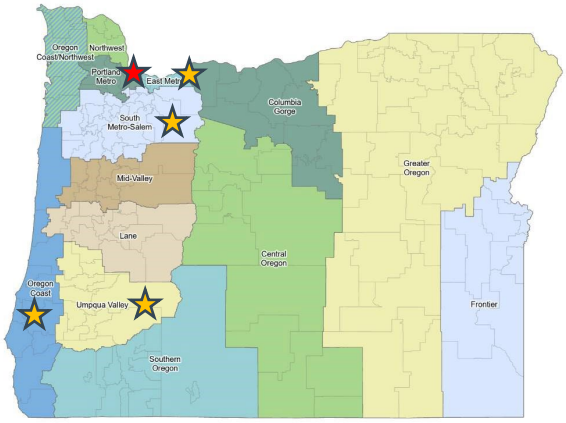


Figure 14. Map of Developing Equity-Based Math Leadership for K-8 Educators Project. Lead hubs are marked with a red star, participating hubs with a gold star.

Project Summary: This project connects K-8 master educators with deep classroom experience and a commitment to equity as a professional development team. It also convenes an Equity Advisory Group made up Black, Indigenous, and Other People of Color (BIPOC) and Lesbian, Gay, Bisexual, Transgender (LGBTQ+) community members who work with the professional development team to set the vision and provide feedback throughout the professional development process. The professional development team is supported with current research on equitable practices as they engage in critical conversations around their own teaching practices. From this perspective and with an understanding of the needs of colleagues and students, the professional development team designs the experiences, which include reviewing and updating Design Principles, establishing learning goals, and identifying success criteria, as well as developing the course content.

Expected Outcomes:

- Sustainable, equity-focused professional development, as members of the development team often become the lead facilitators
- Increased number of teacher leaders in delivering equity-centered math leadership
- Increased engagement by historically underserved students in mathematics
- Increased student achievement in mathematics for Oregon students

Impacts of Funded Activities

The project descriptions above lay out the distribution of funds and regions served for each project in the 2021-2023 biennium. HB 3072 also directs ODE to *identify how distributions made under this section are contributing to the development of a skilled workforce that is able to secure high wage and high demand jobs.*

Table 1 shows the widespread reach of Oregon's STEM Hub Network on students and teachers throughout the state. School and industry closures due to the COVID-19 pandemic are likely to have negatively impacted the number and hours of engagement during the past biennium; however, Oregon's STEM Hubs were able to significantly increase both the *number of educators* participating in STEM Hub professional development and the *number of students* participating in Hub-directed programs. While it is difficult to measure how professional development impacts students, research has shown that engagement in teacher professional development changes teacher classroom practice[7], which in turn impacts student learning[8].

The data in Table 1 show an increase in educator professional development coupled with a decline in teacher professional development hours and average hours per educator. This apparent anomaly may be the result of COVID-19 effects on both the type of professional development offered, and the severe shortage of substitute teachers. A lack of available substitute teachers makes it challenging for teachers to engage in sustained, out-of-classroom professional development. Shorter-term professional development experiences, or experiences scheduled outside of school time could result in more teachers, yet fewer hours of professional development.

Table 1. Regional STEM Hub Impact Data

The table reflects the number of educators who participated in STEM professional development with Regional STEM Hubs and the number of students who participated in Regional STEM Hub programs. Data from the previous biennium is included for comparison and in each of the columns, data represent just the first year of each biennium.

Regional STEM Hub Impact Data Category, 2021-2022	**2021-2022 Value[9]**	**2019-2020 Value[10]**
Number of *educators* who participated in Hub professional development or programs	6,375	5,056
Number of *educator hours* spent in STEM Hub professional development and programs	36,681	44,448

Average number of *professional development hours per educator*	6	9
Number of *industry volunteers* who participated in STEM Hub activities	1,673	2,240
Number of industry *volunteer hours*	17,475	14,526
Number of *students* who participated in STEM Hub-directed programs	69,035	43,040
Number of *student hours* in STEM Hub-directed programs	291,264	190,683
Number of *teachers* who use equipment loaning programs	941	927

Career and Technical Education (CTE) Investments

House Bill 3072 established funding for several key CTE investments: the CTE Revitalization Grants, Student Leadership Grants, and funds for developing Secondary Career Pathways. Each program and the recipients of these investments is outlined in this report.

CTE Revitalization Grants Program

The Oregon Legislature established a competitive grant program entitled the CTE Revitalization Grant which strengthens the alignment of Career and Technical Education, workforce development and economic development through HB 3072 and HB 5016 (2015). The CTE Revitalization Grant program is a purposive concept designed to support student engagement and success, completion leading to career and college preparation, and a potential boost to local and regional economic development.

The CTE Revitalization Grant funds from the State of Oregon serve diverse communities around the state, with programs focused on advanced manufacturing, engineering, agricultural science, smartphone application development, robotics, tourism, forestry, home renovation and health care. In 2021, 54 CTE Programs received funding through CTE Revitalization Grant funds in the total of $7,321,352.00 for the 2021-2023 biennium. The 2021-2023 CTE Revitalization Grant Project Abstracts provide more detailed information about the projects.

Secondary Career Pathways

The Secondary Career Pathway Funding was established by the Oregon Legislature through HB 3072. This is a first attempt at a sustained funding source for CTE. It is intended that the funds allocated through this program will incentivize intensive CTE Programs of Study that lead to high-wage and high-demand occupations. CTE Programs across the state are eligible if they are an approved CTE Program offering at least 3 credits. The funds are distributed by a formula based on the following criteria: 1) number of students who complete three credits in the CTE program, 2) number of students who earn an approved Industry Recognized Credential, and 3) number of historically underrepresented students earning credits in the program. The grant provides a funding floor of $2,000 and caps awards at $45,000.

In 2021, 635 CTE Programs received funding through Secondary Career Pathways in the total amount of $4,044,846.50. The remaining funds of the $8,089,693.00 for the 2021-2023 biennium will be distributed to programs during the 2022-2023 academic year.

Student Leadership

Student leadership opportunities are one of the 12 components of a high-quality CTE Program of Study. All CTE Programs of Study must provide student leadership opportunities for students, although for some career areas there is not yet a formal Career and Technical Student Organization with which to affiliate. In Oregon, there are currently eight State Board recognized Career and Technical Student Organizations.

Table 2. The Eight Chartered Career and Technical Student Organizations in Oregon

Name	***Cluster***	***Career Areas***
Distributive Education Clubs of America **(DECA)**	Marketing	Business Management & Administration, Finance,
		Hospitality & Tourism, Marketing
Future Business Leaders of America **(FBLA)**	Business and Management	Business Management & Administration, Finance,

Family, Career and Community Leaders of America **(FCCLA)**	Human Services	Education & Training, Hospitality & Tourism, Human Services
Future Farmers of America **(FFA)**	Agriculture	Agriculture, Food, & Natural Resources
Future Natural Resource Leaders **(FNRL)**	Natural Resources	Natural Resources/Forestry
Health Occupations Students of America/Future Health Professionals **(HOSA)**	Health Sciences	Health Science
SkillsUSA	Manufacturing, Construction, Culinary	All 16 Career Clusters
Technology Student Association **(TSA)**	Information & Communication Technology	Science, Technology, Engineering, & Mathematics (STEM)

Oregon received a total of $757,817 for student leadership from the legislature for the 2021-2023 biennium. ODE passes those funds through to the Oregon Career and Technical Education Student Leadership Foundation, a non-profit organization set up to manage student leadership funds, as all funds go to the Career and Technical Student Organizations. In 2021, the Career and Technical Student Organizations used $371,900 of those funds, leaving $385,917 for the second year of the biennium. Career and Technical Student Organization distributes $60,000 each year to each of the chartered Career and Technical Student Organizations for statewide administration, $110,000 for joint activities shared by the organizations, and then distributes the remainder of the funds ($185,426 in 2021) to individual chapters of the Career and Technical Student Organizations through a 'Chapter Grant' process.

Conclusion

HB 3072 directs the ODE, the STEM Investment Council, and the CTE Grants Advisory Committee to submit a biennial report with *metrics that identify how distributions made under this section are contributing to the development of a skilled workforce that is able to secure high wage and high demand jobs*."[11] These entities have been deeply committed to the implementation of HB 3072 since its enrollment in 2015 and believe in the values of the policy

and its impact on Oregon's P-20 students. To attain the goals of HB 3072, ODE has implemented funding structures for Regional STEM Hub operations, STEM Innovation Grants to Regional STEM Hubs, CTE Revitalization Grants, the Secondary Career Pathways Program, and student leadership opportunities within STEM and CTE, including the national Career and Technical Student Organizations.

As directed by HB 3072 Section 2(3), grant funds support and sustain Oregon's Regional STEM Hub Network. In turn, the Regional STEM Hubs fund projects that align with STEM/STEAM education needs in each district and region. As seen in the Projects section, STEM Innovation Grant funds have expanded in-school and out-of-school STEM/STEAM programs to engage P-20 students in experiential STEM/STEAM learning. These grants are also tied to Career Connected Learning and bring relevance to the STEM/STEAM activities supported by the grants. All STEM Innovation Grants are also closely aligned with the goals of the *2021-2023 Oregon STEM Education Plan*, which centers equity and aims to empower Oregon's youth in today's world, in part through strong teacher professional development and collaboration between CTE and STEM educators and industry partners.

Oregon's investments in STEM programming have resulted in increased programming offered by the Regional STEM Hubs. Impact data demonstrate that in the current biennium, both teacher and student engagement in Hub-directed activities have increased. In addition, all Oregon school districts are now included in at least one STEM Hub region for the first time since the establishment of Regional STEM Hubs in Oregon.

Likewise, CTE funding authorized by HB 3072 Section 2(4) has resulted in a robust set of grant programs. Career Connected Learning has become a high priority in classrooms and is filtering down to the elementary level. CTE pathways in schools have been created, expanded, and supported by state funds that allow students opportunities to experience integrated and relevant learning activities, as well as choose and experience career pathways in CTE fields.

The integrated nature of STEM and CTE helps students develop essential skills, such as creativity, critical thinking, innovation, problem-solving, and a host of literacies. These are precisely the skills Oregonians need to thrive in today's uncertain economy. HB 3072 firmly established Oregon's Regional STEM Hub Network, the CTE Revitalization Grants and other critical grant programs, all of which have helped expand access and equity to Oregon's youth. Despite learning opportunity setbacks from the COVID-19 pandemic, the funds authorized by HB 3072 continue to build equity and access to STEM and CTE careers for Oregon's students.

This report highlights that during the first half of the 2021-23 biennium, key state investments in the Regional STEM Hubs and CTE Grant Programs resulted in expanded STEM and CTE opportunities for both students and educators. In this biennium the funding and the combined efforts of the legislature, ODE, the STEM Investment Council, and the Regional STEM Hub Network have increased opportunities for educators and students to access STEM and CTE programs.

References Cited

[1]Oregon STEM Investment Council (2021). *2021-2025 STEM Education Plan*. Oregon Higher Education Coordinating Commission. https://www.oregon.gov/highered/institutions-programs/workforce/Documents/STEM/2021-2025%20Oregon%20STEM%20Education%20Plan.pdf

[2]Singer, A., Montgomery, G. & Schmoll, S. (2020) How to foster the formation of STEM identity: studying diversity in an authentic learning environment. *International Journal of STEM Education* 7:57. https://doi.org/10.1186/s40594-020-00254-z

[3]LaForce M, Noble E, Blackwell C. Problem-Based Learning (PBL) and Student Interest in STEM Careers: The Roles of Motivation and Ability Beliefs. Education Sciences. 2017; 7(4):92. https://doi.org/10.3390/educsci70400925

[4]Oyserman, D., & Destin, M. (2010). Identity-based motivation: Implications for intervention. The Counseling Psychologist, 38(7):1001-1043. https://journals.sagepub.com/doi/10.1177/0011000010374775

[5]Dou, R., Hazari, Z., Dabney, K., Sonnert, G., & Sadler, P. (2019). Early informal STEM experiences and STEM identity: The importance of talking science. Science Education, 103(3):623-637. **https://doi.org/10.1002/sce.21499**

[6]Nurmi, J. E. (1991). How do adolescents see their future? A review of the development of future orientation and planning. Developmental review, 11(1):1-59. https://doi.org/10.1016/0273-2297(91)90002-6

[7]Buczynski, Sandy & Hansen, C. Bobbi. (2010). Impact of professional development on teacher practice: Uncovering connections. Teaching and Teacher Education, 26(3):599-607. http://dx.doi.org/10.1016/j.tate.2009.09.006.

[8]Wenglinsky, H. (2002). The Link Between Teacher Classroom Practices and Student Academic Performance. Education Policy Analysis Archives, 10:12. https://doi.org/10.14507/epaa.v10n12.2002.

[9]Impact data collected from the individual Regional STEM Hubs and represent impact between July 1, 2021 - September 1, 2022.

[10]STEM Investment Council (2020). STEM Investment Council Annual Report to the Legislative Assembly. Higher Education Coordinating Commission. https://www.oregon.gov/highered/about/Documents/Commission/COMMISSION/2021/Dec%209%202021/10.2a%20AI%20STEM%20Investment%20Council%20Legislative%20Report.pdf

[11]House Bill 3072 (2015) Section 2(7). https://olis.oregonlegislature.gov/liz/2015R1/Downloads/MeasureDocument/HB3072/Enrolled

Appendix A – Oregon Regional STEM Hub One-Pagers

OREGON REGIONAL STEM HUB NETWORK

CENTRAL OREGON STEM HUB

BY THE NUMBERS

Schools Districts: **14**
Students: **32,859**
Educators participated Professional Development (PD): **995**
Students participated in STEM Hub Programs: **4,925**
Student hours in STEM Hub supported programs: **18,597**

INITATIVES

BEYOND THE NUMBERS

- Career Connected Learning
- Computer Science
- Design Thinking for STEM Equity
- Early Learning
- Mathways
- Rural STEAM Leadership Network
- STEM Beyond Schools
- STEM School Transformation
- Youth Voice

The pandemic response and recovery allowed us to adapt to how we provide equitable opportunities for our youth and educators. During 2022's 'Week of the Young Child' we co-created in partnership with Central Oregon Community College's Early Learning Program, the Early Learning Hub, and Neighbor Impact 2000, bilingual family engagement STEM kits. These kits include details on why youth should engage in STEM activities outside the traditional classroom. We distributed them through the Library District networks allowing us to reach the most rural "corners" of our region. Our own Central Oregon STEM Hub Library also supports vast distribution of STEM learning materials as it provides free delivery and pick-up of shared materials, This effort continues to break down the barriers to educator participation in STEM by providing the necessary resources for hand-on learning.

Backbone Organization: **High Desert ESD**
Counties in Region: **Deschutes, Jefferson, Crook and Lake**
Sq. Miles in Region: **16,191**
Hub Director: **Tracy Willson-Scott**
Email: **Tracy.willson-scott@hdesd.org**
Website: **centraloregonstem.org**

INDUSTRY >

CAREER CONNECTED LEARNING

Industry volunteers: **40**
industry volunteer hrs: **263**

We strive to provide career connected learning opportunities and target students who may not typically have access to this learning. Our *Science Explorations* program engages middle school students in science experiments at the three Central Oregon Community College campuses; our industry *Learn it Make* tours visit industry facilities; and our *Skilled Trades Fair* brings in 200+ industries and community partners to share career awareness experiences with students. In all of these experiences, the youth AND adults engage in discussions about personal career journeys and pathways to careers. By removing barriers to participation, all students are able to apply this real-world career preparation.

DETAIL >

Just a few of our middle school CS students exploring the world of computers and technology.

MEET THE CENTRAL OREGON STEM HUB

The Central Oregon STEM Hub is committed to elevating STEM pathways in our region and with the recent addition of Lake County, the Hub has helped achieve statewide STEM Hub coverage. Central Oregon is a growing region. Data released by the Oregon Employment Department shows the tri-county area, between 2020 and 2030, will experience the largest employment growth at 18.5% (state: 16.5%). Lake County is also expected to have employment growth at 10.9%, the average for rural counties. According to US Census estimates from 2021, our region is also young -- persons under 18 comprise 20.3% of the population. Between a growing economy and a young population our region is poised to help our state prosper. Our high-wage, high-demand, high-skill STEM careers are bountiful and are in healthcare, construction, technology, and manufacturing, all sectors we are proud to support through internships, externships and other hands-on learning experiences.

OREGON REGIONAL STEM HUB NETWORK

COLUMBIA GORGE STEM HUB

BY THE NUMBERS

Schools Districts: **10**
Students: **10,426**
Educators participated Professional Development (PD): **451**
Students participated in STEM Hub programs: **4,711**
Student hours in STEM Hub supported programs: **14,701**

INITATIVES

BEYOND THE NUMBERS

- Career Connected Learning
- Computer Science
- Early Learning
- Elementary STEAM Leaders
- Youth Voice
- Annual Gorge STEM Fair
- Gorge Robotics

The Columbia Gorge STEM Hub aims to develop strong working relationships with its partners. Workgroups have formed through Hub leadership and include *Empowered Educators*, *Career Connected Learning* and *Informed Community*. The goals for each of these workgroups are to make sure: Every learner has access to at least three career exploration experiences by 11th grade; make sure parents, youth and counselors are aware of high-wage, high-demand career pathways; and make sure all are aware of the related courses for those regional pathways. These workgroups aim to have at least 50 youth, ages 16-20, access summer career preparation employment every year,

Backbone Organization: **Columbia Gorge ESD**
Counties in Region: **Gilliam, Hood River, Sherman, Wasco & Wheeler**
Sq. Miles in Region: **6,698**
STEM Hub Director: **Julie Cucuel**
Email: **jcucuel@gesd.k12.or.us**
Website: **GorgeSTEM.org**

Columbia Gorge STEM HUB
Science, Technology, Engineering, & Mathematics

INDUSTRY >

CAREER EXPOS AND STEM FAIRS

Industry volunteers: **55**
Industry volunteer hrs: **312**

The Columbia Gorge STEM Hub builds strong industry partnerships through key events like the College and Career Expo. In 2022, 140 students from 11 schools attended the annual event to hear from 12 local businesses. The annual Gorge STEM Fair is another opportunity to partner with local business and industry. In 2022, 1000+ families explored STEM partner-hosted booths and had the opportunity to discuss their work and potential career opportunities. The STEM Hub also works to build strong partnerships with the area's High School Career and Technical Education programs. This work recently provided seven students the opportunity to participate in 280 internship hours at seven local worksites.

DETAIL >

At our annual Gorge STEM Fair, a free community event, industry partners provide youth and their families with hands-on STEM experiences and career exposure.

MEET THE COLUMBIA GORGE STEM HUB

The Columbia Gorge STEM Hub provides support for public schools ranging in size from 4,061 (Hood River) to 62 students (Spray). Key industries of the region are unmanned technology systems, healthcare, manufacturing, natural resources, agriculture, and renewable energies. This STEM Hub has a unique regional footprint as it has both densely populated centers and a frontier population. The 4,000-foot-deep canyon of the Columbia River, the boundary between Oregon and Washington States, serves as the backdrop to learning for students in this beautiful natural setting.

OREGON REGIONAL STEM HUB NETWORK

EAST METRO STEAM PARTNERSHIP

BY THE NUMBERS

Schools Districts: **6**
Students: **38,710**
Educators Participated Professional Development (PD): **410**
Students participated in STEM Hub Programs: **930**
Student hours in STEM Hub supported programs: **19,236**

INITATIVES

BEYOND THE NUMBERS

- Design Thinking for STEM Equity
- Early Learning
- K-8 Math Leadership
- Regional Networks for STEM Equity
- STEM School Transformation
- Youth Voice

Joy and Justice Math is a professional development opportunity for elementary educators that centers equity and student voice in mathematics. Too many of our students, especially our Learners of Color, do not see themselves as math-capable. Two virtual institutes, one for K-2 educators and one for 3-5 educators, seek to address this problem by providing 24 hours of supported learning. These institutes provide educators with an opportunity to examine research-based inclusive, culturally responsive practices in math teaching. Educators gain the skills, knowledge, and dispositions necessary to modify or create integrated STEM lessons centering equity, student experience, and student voice.

Backbone Organization: **Multnomah ESD**
Counties in Region: **Eastern Region of Multnomah**
Sq. Miles in Region: **>465**
Hub Director: **Jarvez Hall**
Email: **jhall@mesd.k12.or.us**
Website: **eastmetrosteam.org**
Podcast: **eastmetrosteam.podbean.com**

EMSP
East Metro STEAM Partnership

INDUSTRY >

INCREASED ACCESS TO COMPUTER SCIENCE

Industry volunteers: **48**
industry volunteer hrs: **1,874**

EMSP, in partnership with Intel and others, is initiating *Computer Science (CS) East Metro*. *CS East Metro* is a program designed to increase student access to and interest in computer science, as well as increase engagement between professionals of color and students, and connect higher education CS programs to students. At the center of the program is *P.C. Build*, where students from underrepresented populations have the opportunity to build a gaming PC and learn about CS careers, including game development, artificial intelligence, data science, and more. We are also establishing E-sports Teams to foster equitable opportunities and continued engagement of students in computer science. Industry partners and affinity professional organizations will serve as industry mentors for each team and students will use the P.C.s built during the *P.C. Build* to participate in the E-sport season.

Just a few of the many participants in our programming efforts.

DETAIL >

MEET THE EAST METRO STEAM PARTNERSHIP

East Metro STEAM Partnership wants to see an East Multnomah County community where children, youth, and adults have equitable access to and are engaged in STEAM learning, resulting in a skilled workforce and increased economic opportunity. East Metro's region is one of the most diverse and economically challenged areas in the state. According to the 2016 US Census *American Community Survey*, incomes are 68% higher in West Portland than East Portland and in West Portland more than three times as many people hold college degrees. EMSP is governed by a Leadership Team consisting of community leaders in education, the trades, industry, and community organizations. At the direction of the Leadership Team, the Director convenes 50+ partners every other month, conducts an annual needs assessment, and serves as the point of contact for the region's STEAM efforts. In a distributed leadership model, five action teams comprised of committed partners work together to move the region toward EMSP's vision.

OREGON REGIONAL STEM HUB NETWORK

FRONTIER STEM HUB

BY THE NUMBERS

Schools Districts: **11**
Students: **5,095**
Educators participated Professional Development (PD): **565**
Students participated in STEM Hub programs: **3,595**
Student hours in STEM Hub supported programs: **10,595**

INITATIVES

BEYOND THE NUMBERS

- Career Connected Learning
- Computer Science
- Early Learning
- Rural STEAM Leadership Network
- Youth Voice
- Mobile Maker Spaces
- Student Internships

In October of 2022, the Frontier STEM Hub and OSU Extension - Malheur County received the National Award for Excellence in Teamwork from the National Association of Extension 4-H for their mobile makerspaces. These mobile spaces were designed to remove barriers to youth participation. Frontier STEM's team uses a large utility trailer to transport equipment and supplies, setting up maker spaces in classrooms, labs, libraries, and community spaces across the county. The maker spaces use computer-aided design and digital fabrication. One educator stated: *"This program has enabled me to get a fabrication lab and so many other activities going here at our school. Over 200 students are now engaging regularly with Computer Science and a lot of that has to do with the support and help received from the Frontier STEM Hub. Thank you so much!"*

Backbone Organization: **Malheur ESD**
Counties in Region: **Malheur**
Sq. Miles in Region **9,930**
Hub Director: **Nickie Shira**
Email: **nickie.shira@malesd.org**
Website: **www.frontierstem.com**

INDUSTRY >

INTERNSHIP OPPORTUNITIES

Industry volunteers: **49**
industry volunteer hrs: **391**

Frontier STEM Hub partnered with Eastern Oregon Career Technical Education, Oregon State University Extension - Malheur County, and the Eastern Oregon Workforce Board to develop and implement the *Malheur Works - Internship Program*. *Malheur Works* is connecting the learning needs of youth with the talent needs of industry through a nine-week, full-time, paid, summer internship program. Through the summer of 2022, 13 industry and community partner organizations hosted 20 youth. Over the course of the summer, each intern gained over 360 hours of workplace experience in addition to weekly mentorship and more than 20 hours of professional development workshops.

Just a few of our Region's students and teachers engaging in some of our computer science programming.

DETAIL >

MEET THE FRONTIER STEM HUB

The Frontier STEM Hub provides support for public schools ranging in size from 2,263 (Ontario) to 4 students (Juntura). As the second largest county by land area in Oregon, Malheur covers nearly 10,000 square miles in the southeastern corner of the state. In this sparsely populated area, many students live in remote rural regions with few service providers. The students and families of Malheur County face many challenges including long distances to services and opportunities and, according to *Oregon by the Numbers*, the highest child poverty rate in the state, at 30% (state average: 15%). Key industries of the region are agriculture, food manufacturing, and educational services. Malheur County is also very diverse as Hispanic individuals make up over 34% of the population, the second highest Hispanic population in the state (Oregon average: 13%). This high desert region of Eastern Oregon enjoys the rugged beauty of the Owyhees and the majestic grace of the Snake River where it establishes the border between Oregon and Idaho.

OREGON REGIONAL STEM HUB NETWORK

GREATER OREGON STEM HUB

BY THE NUMBERS

Schools Districts: **42**
Students: **29,134**
Educators participated Professional Development (PD): **304**
Students participated in STEM Hub Programs: **3,067**
Student hours in STEM Hub supported programs: **24,750**

INITATIVES

BEYOND THE NUMBERS

- Career Connected Learning
- Early Learning
- Elementary STEAM Leaders
- Industry-connected Classroom Learning
- K-8 Math Leadership
- Mathways
- Youth Voice

Our new *Think Big Mobile Maker Lab (MML)* is one of our newest projects. It is a portable classroom space with hands-on STEM learning activities, career connected learning curriculum, and open-concept of tinkering with STEM-related tools and materials. *MML* helps remove distance as a barrier to engagements, and directly reaches those communities most in need. GO STEM staff is currently working to develop pre- and post-curriculum aligned with the in-person curriculum brought to schools by *MML*. Additionally, Go STEM plans to use the *MML* to engage the broader communities by focusing on partnerships, at community events, summer camps, and afterschool/out-of-school programming and events.

Backbone Organization: **Eastern Oregon University**
Counties in Region: **Baker, Grant, Harney, Morrow, Umatilla, Union & Wallowa**
Sq. Miles in Region: **28,312**
Hub Director: **David Melville**
Email: **dmelville@eou.edu**
Website: **go-stem.org**

INDUSTRY >

INDUSTRY PARTNERSHIPS

Industry volunteers: **40**
industry volunteer hrs: **263**

Funded by the Oregon Community Foundation, Eastern Oregon Works partnered with GO STEM to develop internship opportunities in Harney, Wallowa, and Union Counties. GO STEM's strong business and industry partnerships allowed us to build meaningful paid and for-credit internships to high school students. These opportunities removed many of the typical barriers to youth participation and ultimately students were connected to employers directly for hands-on, experiential job training. With the 2022 pilot completed, there is interest to continue the program in the initial counties as well as all unserved counties in the GO STEM region,

One of our many Teacher Externships, where educators are connected to real-life STEM professionals.

DETAIL >

MEET THE GREATER OREGON STEM HUB

The Greater Oregon STEM (GO STEM) Hub provides STEM resources, materials, and support for K-12 educators and students, as well as for community members and partners. Our STEM Hub spans the largest geographic region within Oregon's STEM Hub network, serving a vast and rural seven-county region. Spanning 42 school districts and a huge square mile area, we deliver high quality in- and out-of-school programming and support for P-20 STEM education, efforts that typically fall outside of the traditional role of the K-12 system. A key aspect of our Hub's work is career preparation and workforce development. We provide services that connect students to real-life STEM professionals in the classroom, as well as promote career readiness. Our collaborations with high school career internships and teacher externships help students learn more about local career opportunities and prepare them for a prosperous future.

OREGON REGIONAL STEM HUB NETWORK

LANE STEM HUB

BY THE NUMBERS

Schools Districts: **15**
Students: **41,922**
Educators Participated Professional Development (PD): **38**
Students impacted by Educator PD (approx.): **1,140**
Students participated in STEM Hub Programs: **1,757**
Student hours in STEM Hub supported programs: **31,022**

INITATIVES

BEYOND THE NUMBERS

- Career Connected Learning
- Computer Science
- Early Learning
- High School Science for All
- Mathways
- STEM Beyond Schools

In May 2022, Lane STEM coordinated and hosted the first Lane County STEAM Expo at *Connected Lane County*'s Youth Innovation Center, (Spark on 7th). Partnering with other Out-of-School STEM community-based organizations (see list below), the STEAM Expo gave 4th-5th grade students from rural elementary schools the chance to interact with a wide range of hands-on learning and career opportunities. In addition, the STEAM Expo provided Professional Development for designing learner-centered activities for attending educators.

Eugene Science Center, Museum of Natural Cultural History, Willamette Resources Education Network, BRING, Lane Arts Council, Partners for Sustainable Schools, Whole Earth, Mt. Pisgah Arboretum, and Nearby Nature

Backbone Organization: **Lane ESD**
Counties in Region**: Lane**
Sq. Miles in Region: **4,722**
Hub Director: **Gabriel Gellon**
Email: **ggellon@lesd.k12.or.us**
Website: **lanestem.org**

INDUSTRY >

CAREER CONNECTED LEARNING

Industry volunteers: **86**
industry volunteer hrs: **553**

Lane STEM continues to help build the capacity of *Elevate Lane County*, a county-wide, career connected learning program. Each year, over 3,000 youth participate in hands-on learning through career fairs, job shadows, tours, internships, and showcases in various industries. Lane STEM Hub works to complement as well as expand these efforts by making stronger career connections within pre-school to high school science and math curriculum. Lane STEM also works with out-of-school community providers, helping them see the benefits of connecting industry and potential careers within their STEM Education efforts - helping youth see the potential of their future.

Some of our Region's teachers participating with an externship with a local industry.

DETAIL >

MEET THE LANE STEM HUB

The Lane STEM Hub works hard to provide STEM opportunity and access to the many potential career paths for ALL youth in Lane County. The county is home to one of the largest research universities in the state, a diverse population and important agricultural production. In addition to agriculture the region offers youth potential careers in advanced manufacturing, construction, culinary services, healthcare, computer science and technology among many others. However, many of the public school districts are rural with small populations and access to STEM learning can be limited. The STEM Hub works hard to provide opportunity to students so they can see themselves in the diverse and prosperous careers within the county, as the region is a beautiful area in which to live and work.

OREGON REGIONAL STEM HUB NETWORK

MID-VALLEY STEM-CTE HUB

BY THE NUMBERS

Schools Districts in Region: **11**
Students in Region: **30,892**
Educators participated Professional Development (PD): **446**
Students participated in STEM Hub programs: **6,459**
Student Hours in STEM Hub supported programs: **12,900**

INITATIVES

BEYOND THE NUMBERS

- Career Connected Learning
- Computer Science
- Early Learning
- Rural STEM Leadership
- STEM Beyond Schools
- Lending Library
- Mobile Makerspace
- Maker & Innovator Learning Lab (MILL)
- Scholarships for CTE study
- Culturally-specific Student Mentorships

Women and gender minorities make up just over 25% of the workforce in STEM and only 9% in the skilled trades. As part of our effort to bolster diverse representation of those working in STE(A)M and the skilled trades, we produce a bi-monthly podcast, *Closing the Gap*. Our conversations with local professionals in these fields seeks to shift the narrative and provide young people with relevant role models from their schools and neighborhoods.

Latinx professionals are also underrepresented in STEM with just 8% of Hispanic adults working in these fields. To better reach and be more accessible to our Latinx and Spanish-speaking constituents, we've launched a fully translated website, monthly newsletter, social media content, and retain bilingual staff for outreach and engagement.

Backbone Organization: **Linn Benton Community College**
Counties in Region: **Linn and Benton**
Sq. Miles in Region: **2,971**
STEM Hub Director: **Sarah Whiteside**
Webiste: **midvalleystem.org**
Podcast: **midvalleystemctehub.podbean.com**

Mid-Valley STEM-CTE HUB

INDUSTRY >

EQUITABLE INTERNSHIPS

Industry volunteers: **66**
Industry volunteer hrs: **136**

With construction, health care, and manufacturing as the top high wage, high demand STEM/CTE sectors in the region, MVSCH has launched its career connected learning portfolio to focus on each of those three industry sectors. The Hub is running student internships in health occupations in Lebanon and educator externships in manufacturing and construction. To ensure equitable access to these opportunities, participants are compensated for their time and participation and provided with meals and transportation.

Check out the Mid-Vally Podcast : midvalleystemctehub.podbean.com.

DETAIL >

MEET THE MID-VALLEY STEM-CTE HUB

The newest Hub to the network, the Mid-Valley STEM-CTE Hub serves a total population of 225,856 residents. In addition to our eleven public school districts, we have two online charter schools. Of our eleven geographically defined school districts, nine are considered rural, with the smallest being Central Linn School District - serving 540 students - and the largest being Greater Albany School District - serving 8,896 students. Our two-county region is home to two higher education institutions: Linn-Benton Community College - at which our Hub is housed - and Oregon State University, the state's land, sea, sun, and space grant and largest public research university. LBCC offers several two-year degrees, certificates, apprenticeship programs, and non-degree options. There is a robust degree partnership program between the two institutions.

OREGON REGIONAL STEM HUB NETWORK

NORTHWEST STEM HUB

BY THE NUMBERS

Schools Districts: **13**
Students: **15,073**
Educators participated Professional Development (PD): **137**
Students participated in STEM Hub programs: **3,276**
Student hours in STEM Hub supported programs: **28,286**

INITATIVES

BEYOND THE NUMBERS

- Career Connected Learning
- Computer Science
- Early Learning
- Rural STEAM Leadership Network
- Youth Voice

In recent years, the Northwest STEM Hub has explored a stronger internal partnership within the Northwest Regional ESD. Partnering with the Diverse Educator Pathway (DEP) program gave the STEM Hub an opportunity to develop and support culturally specific programming for BIPOC youth pursuing careers in education. DEP offers experiences that are relevant to youth, interweaving culturally responsive programming within their learning experiences through programs like Cultura Mexicana Camp and STEM Inventors of Mexico. In partnership with the DEP program and local business and industry, we connect the DEP participants with paid internship opportunities in the education sector. Together, the DEP and STEM Hub developed a safe spaces protocol to share with business host sites to ensure a safe and supportive environment for the DEP interns.

Backbone Organization: **Northwest ESD**
Counties in Region: **Clatsop, Columbia & Tillamook**
Sq. Miles in Region: **2,906**
STEM Hub Director: **Myronda Schiding**
Email: **mschiding@nwresd.k12.or.us**
Website: **nwresd.org/departments/instructional-services/STEM-Hub**

INDUSTRY >

INDUSTRY PARTNERSHIPS

Industry volunteers: **124**
Industry volunteer hrs: **3,957**

In our inaugural year, we conducted strategic planning sessions with a diverse array of cross-sector partners. The message was clear, industry wanted to engage with K-12 and K-12 wanted to engage with industry. One of the partners in this conversation was Hampton Lumber. In 2017, through our partnership with Hampton, the Clatsop Economic Development Resource Center, the five school districts in Clatsop County, and Clatsop Community College, we launched *Clatsop Works*, a paid internship program for youth in Clatsop County. In 2022, the program had 31 interns hosted by 27 business and industry partners. The program continues to grow and is now being replicated in the neighboring counties. Providing paid work experiences to youth not only builds resumes, but also supports community and economic development. Hampton Lumber continues to be a strong supporter of our STEM Hub by hosting interns and developing and supporting educator professional development.

A Robotics student testing her creation.

DETAIL >

MEET THE NORTHWEST STEM HUB

The Northwest STEM Hub serves a rural three-county region and is home to just over 17,200 K-14 students, approximately 24% of whom identify as students of color. All three counties have high rates of students experiencing poverty, ranging from 40.4% in Columbia County to 54.2% in Tillamook County. Due to the rural nature of the communities, many students lack access to career exploration opportunities. With the Oregon Manufacturing and Innovation Center (OMIC) in Columbia County the STEM Hub is able to help students explore high-wage, high-demand career areas in the advanced manufacturing sector. OMIC has two components -- a research and development center, housing world-class machines, and the PCC OMIC Training Center, which provides education and training opportunities. The Northwest STEM Hub partners with OMIC to provide paid internships for high school students, educator professional development, and to support the development of regional manufacturing CTE programs.

OREGON REGIONAL STEM HUB NETWORK

OREGON COAST STEM HUB

BY THE NUMBERS

Schools Districts: **20**
Students: **26,322**
Educators participated Professional Development (PD): **172**
Students participated in STEM Hub Programs: **2,076**
Student hours in Hub supported programs: **7,122**

INITATIVES

BEYOND THE NUMBERS

- Career Connected Learning
- Computer Science
- Design Thinking
- Early Learning
- Industry-connected Classroom Learning
- K-8 Math Leadership
- Mathways
- Rural STEAM Leadership Network
- STEM School Transformation
- STEM Beyond School

At the Oregon Coast STEM Hub, Computer Science (CS) is meant for all grade levels and students. We seek out barriers to participation in CS by offering the **S**trategic **C**SforAll **R**esource & **I**mplementation **P**lanning **T**ool or **SCRIPT** training for teachers, administrators and counselors. We help districts offer a broad, equity focused, introductory CS class at each high school. Lincoln County School District has been at the forefront of this work, with a team of educators and administrators committed to assuring every student has the opportunity to learn and explore CS as a tool that can be used in any career field they choose.

Backbone Organization: **Oregon State University**
Counties in Region: **Clatsop, Coos, Curry, Lincoln and Tillamook, and coastal communities in Douglas and Lane.**
Sq. Miles in Region: **7,207**
Hub Director: **Cynthia Reséndiz**
Email: **cynthia.resendiz@oregonstate.edu**
Website: **oregoncoaststem.oregonstate.edu**

INDUSTRY >

REPRESENTATION MATTERS

Industry volunteers: **43**
Industry volunteer Hrs: **51,087**

Coastal communities are rural, and industry partners and opportunities for our students are limited, with tourism and hospitality as the most visible career opportunity. This limited view is often the only place our underserved students see themselves represented. Together with our Workforce Investment Boards, we are working to highlight sometimes-hidden local career opportunities. One example is our mental health and healthcare program for bilingual and trilingual students from Latino/a/x and Indigenous Mesoamerican backgrounds. We are excited to see this program launch in 2023, as it will provide underserved and underrepresented students the opportunity to see themselves in these fields.

Mayan indigenous families attending a STEM summer program.

DETAIL >

MEET THE OREGON COAST STEM HUB

The Oregon Coast STEM Hub is based at the Hatfield Marine Science Center, Oregon State University. We have access to state-of-the-art oceanographic research. Our bicultural and bilingual staff and volunteers work directly with local Community-Based Organizations to build their confidence and capacity in STEM Education. Living on the coast, our economy depends on ocean resources. This 'Blue Economy' encompasses all economic sectors that utilize and affect water-related resources. It includes not only the maritime sector, but also science and technology, climate change, coastal engineering, ocean energy, maritime fuels, tourism, and more. The Oregon Coast STEM Hub aims to increase learning opportunities and career connections for students to this 'Blue Economy' so students have the opportunity to explore careers close to home and those that connect to the importance of sustained development and care of coastal regions and marine life.

PORTLAND METRO STEM PARTNERSHIP

BY THE NUMBERS

Schools Districts: **5**
Students: **111,804**
Educators participated Professional Development (PD): **761**
Students participated in STEM Hub Programs: **1,500**
Student hours in STEM Hub supported programs: **3,000**

INITATIVES

BEYOND THE NUMBERS

- Career Connected Learning
- Computer Science
- Elementary STEAM Leaders
- High School Science for All
- K-8 Math Leadership
- Mathways
- STEM Beyond Schools
- STEM School Transformation

Prior to High School Science for All, most Oregon students earned their high school science credit in courses not aligned to Oregon Standards and not connected to STEM fields. This kept many students from engaging in postsecondary learning necessary to enter high-wage and high-demand sectors. Year-long, vertically-articulated, open-source curriculum for three high school science courses - 9th grade Physics, 10th grade Chemistry, and 11th grade Biology has been developed and refined. Each course builds on the previous one and includes embedded engineering projects, applied math elements, technology for data collection/analysis and emerging Career Connected Learning components.

Backbone Organization**: Portland State University**
Counties in Region: **Multnomah & Washington**
Sq. Miles in Region: **1,192**
STEM Hub Directors: **Kristen Harrison and Jerian Abel**
Email: **jerian.abel@pdxstem.org and kristen.harrison@pdxstem.org**
Website: **pdxstem.org**

INDUSTRY >

INTEL PARTNERSHIP

Industry volunteers: **195**
Industry volunteer hrs: **515**

Five years ago, PMSP began a partnership with Intel to increase student access to National Engineers Week. This week-long experience provided engineering challenges to students who might not normally have access to high-wage, high-demand career opportunities. PMSP facilitated training for teachers and volunteers, coordinated volunteer assignments and developed activity guides. Intel drove volunteer recruitment, provided challenge supplies, managed media outreach, and in conjunction with PMSP, coordinated volunteer placement. Dual immersion and Title I schools were prioritized, and students are able to connect with bilingual and multicultural Intel volunteers. The project, a partnership between PMSP, Intel, and Hillsboro School District, is now annual and aims to reach every 4th grade classroom.

DETAIL >

Some of the many educators that take advantage of all the STEM professional development we offer.

MEET PORTLAND METRO STEM PARTNERSHIP

Portland Metro STEM Partnership serves a diverse and densely populated region. Our region's boundaries are those of our school district partners, which includes approximately 20% of the students in Oregon. Nearly 50% of youth in the region qualify for free or reduced-price lunch and 51.47% are non-white. Engaged partners include five school districts, five higher education institutions, 65 community-based organizations, and 42 industry partners. Our scale and commitment to equity drive our work. Portland Metro STEM is proud to support a local BIPOC STEAM Ecosystem. The group includes eight culturally specific and/or culturally focused organizations/programs: This community-led collaboration increases access to STEAM learning opportunities for historically marginalized youth by expanding existing programs and co-creating new opportunities. The Ecosystem develops long-lasting partnerships among the organizations that build awareness and understanding of the importance of STEM Education in communities.

OREGON REGIONAL STEM HUB NETWORK

SOUTHERN OREGON STEAM HUB

BY THE NUMBERS

Schools Districts: **13**
Students: **48,126**
Educators participated Professional Development (PD): **534**
Students participated in STEM Hub Programs: **4,272**
Student hours in STEM Hub supported programs: **8,000**

INITATIVES

BEYOND THE NUMBERS

- Career Connected Learning
- Early Learning
- Industry-Connected Classroom Learning
- Mathways
- Rural STEAM Leadership Network
- Youth Voice
- After School and Summer
- Bus Project
- Lending Library
- Pre-apprenticeship Expansion
- NASA in the classroom

Oregon is at the forefront of a nation-wide movement to increase accessibility of mathematics and math-connected career pathways for students. Southern Oregon STEAM works with over 30 high school math teachers statewide in support of this “Mathways” project, facilitating the development of learning units that connect rigorous algebra, geometry, and data reasoning concepts with careers. Southern Oregon math leaders meet with Career and Technical Education (CTE) teachers and industry partners to bring real math applications to our participants. Together, we aim to help EVERY student learn math that is engaging and relevant to their lives.

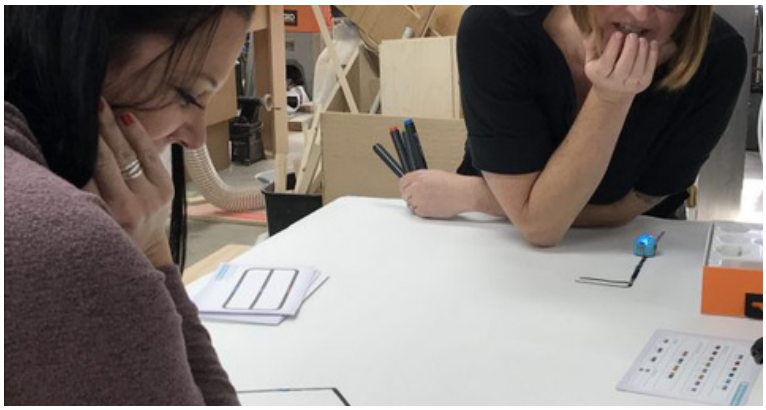
Backbone Organization: **Southern Oregon ESD**
Counties in Region: **Klamath, Josephine, & Jackson**
Sq. Miles in Region: **10,580**
Hub Director: **Karla Clark**
Email: **Karla_Clark@soesd.k12.or.us**
Website: **TBD**

INDUSTRY >

CAREER CONNECTED LEARNING

Industry volunteers: **200**
industry volunteer Hrs: **275**

Through our state-funded, Career Connected Learning grant we fund educator externships each summer and are looking to expand our focus of construction to include other industries. An analysis funded by the Oregon Community Foundation demonstrated the need in our region to expand opportunities for high school students in both construction and health care. Industry partnerships in our tri-county region have expanded the Pre-Apprenticeship program in Klamath County and helped us start a “Bus-to-Home Build" project in both Jackson and Josephine counties. With the statewide effort on Career Connected Learning and Employability Skills, we are digging a little deeper to further understand how teachers are embedding employability skills into the classroom.



Our Mathways educators hard at work.

DETAIL >

MEET THE SOUTHERN OREGON STEAM HUB

The Southern Oregon STEM Hub region is vast and contains diverse school districts. From Medford, with just under 14,000 students, to Pinehurst with 12, the Southern Oregon STEM Hub aims to serve all. One of the best ways we have found to serve all is being an innovative leader in our statewide network. Southern was one of the first STEM Hub regions to pilot YOUSCIENCE, an aptitude and interest assessment modeled after the same assessment used by the military. The student-friendly version provides not just results of a student's aptitude, but is an expansive tool for students as they explore education pathways and careers. This tool has led to youth-demand in our region for CTE courses. We have seen an amazing 200% increase in CTE course enrollment during Fall of 2022 and we believe much of this is connected to our efforts with YOUSCIENCE. We were proud to be the pilot region for this tool and excited that many of our middle and high schools have seen the value of this program.

OREGON REGIONAL STEM HUB NETWORK

SOUTH METRO SALEM STEM PARTNERSHIP

BY THE NUMBERS

Schools Districts: **32**
Students: **145,428**
Educators Participated Professional Development (PD): **1,100**
Students participated in STEM Hub programs: **29,929**
Student hours in STEM Hub supported programs: **105,415**

INITATIVES

BEYOND THE NUMBERS

- Career Connected Learning
- Computer Science
- Design Thinking for STEM Equity
- High School Science for All
- Industry-Connected Classroom Learning
- K-8 Math Leadership
- STEM School Transformation
- Northwest Earth & Space Sciences Pathways

Through community-building and leadership efforts by teachers in our region, the SMSP's STEM Leadership Team (SLT) championed the launch of hands-on exploratory workshops geared toward meaningful STEAM learning in the PK-2 classroom. These workshops, *Exploring Elementary Science* and *Making & Tinkering*, along with ongoing initiatives launched by the SLT, aim to leverage feedback from our regional teachers and provide data-driven, community-focused opportunities to strengthen our approach to STEAM for all learners.

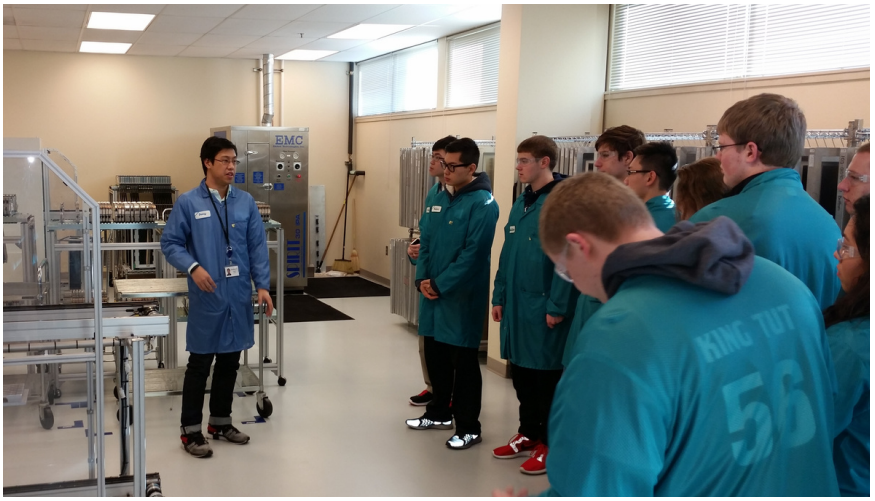
Backbone Organization: **Oregon Institute of Technology**
Counties in Region: **Clackamas, Marion, Polk, Yamhill, parts of Washington**
Sq. Miles in Region: **4,535**
Hub Director: **Julia Betts**
Email: **julia.betts@oit.edu**
Website: **oit.edu/strategic-partnerships/stem-partnership**

INDUSTRY >

HEALTHCARE INTERNSHIPS

Industry volunteers: **287**
industry volunteer hrs **750**

Funded by the Oregon Community Foundation and in partnership with Willamette Workforce Partners, Clackamas Community College, and several of our 32 regional school districts, the SMSP team has developed internship opportunities with an emphasis on high need healthcare professions. These internship and job shadow opportunities for local high school students provide meaningful connections to industry, applications of their learning, and forge a pathway toward careers. A second round of healthcare internships are underway through a collaboration between our regional Career and Technical Education Coordinators and Clackamas Workforce.



Engaging youth in real-world experiences.

DETAIL >

MEET THE SOUTH METRO SALEM PARTNERSHIP

South Metro Salem STEM Partnership (SMSP), recently under new leadership, is comprised of a diverse team of educators, industry professionals, STEAM advocates, and students committed to equitably broadening access to STEAM opportunities for our region. Serving a diverse mix of both rural and urban districts, SMSP aims to elevate the tremendous expertise and wealth of knowledge within our region to strengthen ties across education, industry, and the communities we serve. Key aspects of our Hub's work include teacher leadership development, access to industry leaders through platforms such as Oregon Connections, and partnerships with NASA centers and resource hubs.

OREGON REGIONAL STEM HUB NETWORK

UMPQUA VALLEY STEAM HUB

BY THE NUMBERS

Schools Districts: **13**
Students: **12,760**
Educators participated Professional Development (PD): **462**
Students participated in STEM Hub programs: **2,538**
Student Hours in STEM Hub supported programs: **7,640**

INITATIVES

BEYOND THE NUMBERS

- Career Connected Learning
- Computer Science
- Early Learning
- Elementary STEAM Leaders
- Industry-connected Classroom Learning
- K-8 Math Leadership
- Rural STEAM Leadership Network
- STEM Beyond Schools
- STEM School Transformation
- Youth Voice

One barrier to STEAM Education in rural schools is access to adequate materials. This is no different in Douglas County. With great need came a helpful response: the constant curation and lending of STEAM learning materials. Currently, the STEAM Hub's library contains over 550 different STEAM assets, each of which provides opportunities for open-ended learning, which helps develop problem-solving, critical thinking, collaborative, and creative innovation skills. Each item is supported by starter lesson plans and access to a STEAM consultant to provide any necessary PD. In summer of 2022, 15 summer camp sites reaching an estimated 750 youth and utilizing 340 library assets were supported by the Umpqua Valley STEAM Hub's Lending Library.

Backbone Organization: **Umpqua Valley Community College**
Counties in Region: **Douglas**
Sq. Miles in Region: **5,134**
STEM Hub Director: **TBD**
Email: **TBD**
WEBSITE: **TBD**

INDUSTRY >

EXPANDING HORIZONS

Industry volunteers: **49**
Industry volunteer hrs: 1**20**

Youth in rural Oregon often do not have access to career experiences. UVSH partners with industry, the local tribe, schools, agencies, and organizations to provide career connected learning (CCL) experiences throughout the CCL continuum - career awareness, exploration, preparation and training. In 2019 many of the region's 140 industries partnered with the STEAM Hub to bring *Expanding Horizons* camps to 163 youth. These free week-long career exploration experiences focused on student-centered projects and included local industry visits. Currently in development is an *Expanding Horizons* trailer. This trailer will bring hands-on, minds-on career learning to the most rural areas of the county. Another valuable resource for the community is a vibrant, career connected learning website (brightfuturesumpqua.org). This website is available in both Spanish and English, and provides resources for students, parents and mentors to consider when planning for careers and education.

A Douglas County family exploring STEAM at the County Fair.

DETAIL >

MEET THE UMPQUA VALLEY STEAM HUB

The Umpqua Valley STEAM Hub provides support to public schools ranging in student size from 5,539 (Roseburg) to 213 (Days Creek). The region's industry includes wood product manufacturing, service, and education. Based on the Ford Family Foundation, the median income of residents is $47,267 and 46% live below the Alice Threshold, a measure of financial ability to meet basic life needs. The 5-year graduation rate is 71.8% and 17.3% have a 4-year degree. These numbers only tell part of the story. The area abounds in natural beauty and the region is rich in natural resources. The Hub boundaries include the beautiful Umpqua watershed, moving water from the Cascades to the Pacific within the lush canopy of Douglas Fir trees.