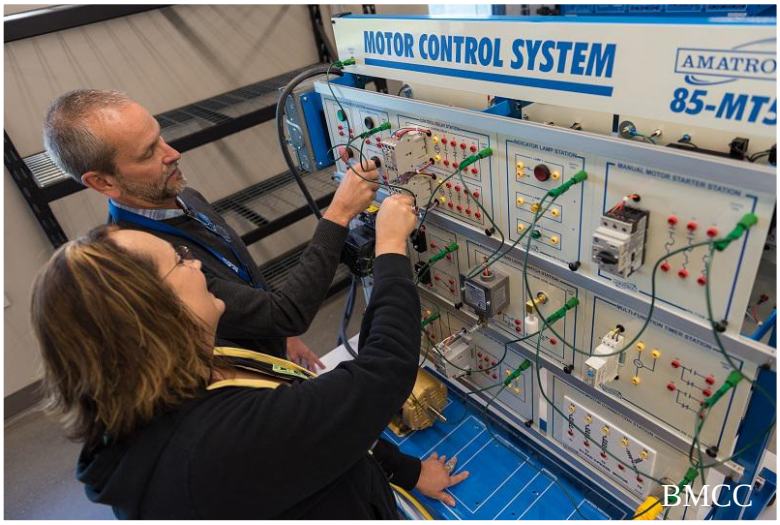
HIGHER EDUCATION COORDINATING COMMISSION

STEM Investment Council Annual Report to the Legislative Assembly

December 2020



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INTRODUCTION

This report fulfills the STEM Investment Council's obligation under ORS 326.500 to submit an annual report to the State Board of Education, Higher Education Coordinating Commission and the Legislative Assembly on progress made toward achieving Oregon's STEM education goals and on state investments in STEM education.

In 2020, the STEM Investment Council focused its efforts on a) expanding its membership to include advisory members from K-12 and postsecondary education, community-based organizations, industry associations, and other partners, b) monitoring and providing guidance for the 2019-2021 Innovation Grant projects, and c) creating and releasing the 2021-2025 STEM Education Plan.

STEM EDUCATION GOALS

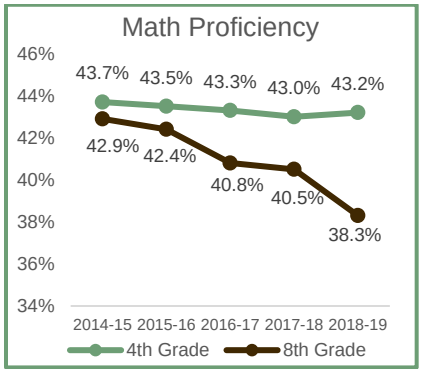
LEGISLATIVELY MANDATED GOALS

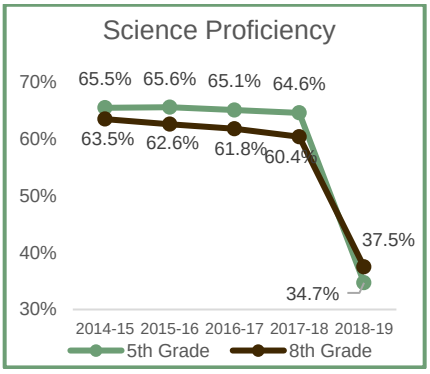
ORS 326.500 sets forth the following STEM education goals for Oregon:

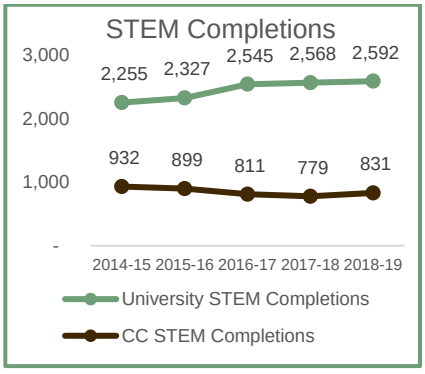
1) Double the percentage of Oregon's students in 4th and 8th grades who are proficient or advanced in mathematics and science by 2025.
2) Double the number of Oregon's students who earn a postsecondary STEM degree or credential by 2025.

These goals are highly ambitious. For context, in 2019, Minnesota had the highest percentage of students scoring proficient or above on the mathematics National Assessment of Educational Progress at 53 percent.[1] Doubling Oregon's percentage of students in the 2018-19 school year scoring proficient or above on its statewide mathematics assessment would mean 76.6 percent of students scoring proficient or better. Further, assessment scores are blunt instruments for gauging progress. Oregon's 2020-2025 STEM Education Plan includes a number of additional goals and indicators, such as STEM identity in students and educators and enrollments in STEM CTE, accelerated learning, and elective courses.

The following tables show the percentage of Oregon students performing proficient or above on statewide 4th and 8th grade mathematics and 5th and 8th grade science assessments[2] and the number of postsecondary STEM degrees and credentials earned at Oregon public community colleges and universities.[3] The science assessment data provided is for 5th grade because Oregon administers statewide science assessments in 5th grade, not 4th grade. As an additional note, Oregon administered for the first time a new statewide science assessment. This accounts for the significant decline in science assessment scores in the 2018-19 school year. The new assessment is aligned to the Next Generation Science Standards and is more rigorous.







[1] The Nation's Report Card, https://www.nationsreportcard.gov/mathematics/states/achievement/?grade=4
[2] Oregon Department of Education
[3] Higher Education Coordinating Commission, Office of Research & Data

STEM INVESTMENT COUNCIL

HISTORY, VISION, AND COMPOSITION

History and Purpose

In 2013, the Legislative Assembly passed and Governor Kitzhaber signed into law House Bill 2636, which, among other things, established the STEM Investment Council. The council's statutory functions are to:

1) Assist the State Board of Education (State Board) and HECC in developing and overseeing a long-term strategy to advance Oregon's target outcomes around STEM education.
2) Advise the Superintendent of Public Instruction and Executive Director of the HECC on the administration of the state's investments in STEM education, including grants for the Regional STEM Hub Network and STEM Innovation grants.
3) Submit an annual report to the State Board, HECC, and Legislative Assembly on progress on Oregon's STEM education goals and the state's investments in STEM education.

The Council also provides guidance to the Regional STEM Hub Network, encourages collaboration between education and business & industry, and raises awareness and understanding of STEM education in the education sector, business & industry, and the broader public.

An Equitable Vision for STEM Education in Oregon

The STEM Investment Council established the following vision for STEM education in Oregon:

"Reimagine and transform how we educate learners in order to enhance their life prospects, empower their communities, and build an inclusive, sustainable, innovation-based economy. Oregonians of all races, economic status, and regions will develop the fundamental STEM-enabled skills and mindsets necessary to:

- Improve the prosperity of all individuals and communities across the state
- Become creative life-long learners who can adapt to changing social and economic conditions
- Fully contribute to an increasingly complex and technologically rich global society
- Address high-demand, competitive workforce and industry needs"

The Council is committed to seeing its vision – and the state's statutory STEM education goals – realized for all student populations – most especially, for students from underserved and underrepresented communities, including black, indigenous, and people of color (BIPOC) students, rural students, economically disadvantaged students, and girls.

Membership

The STEM Investment Council is business-driven, comprising nine voting members from the private sector, jointly appointed by the Superintendent of Public Instruction and Executive Director of the HECC. In January 2020, the council welcomed 17 new members. In selecting new members, the council strove for broad representation across race/ethnicity, gender, geographic location, rural/urban, and sector.

Voting Members

Stephan Bird (Chair)
Pacific Power

Marcelino Alvarez
Fresh Consulting

Beth Alcouloumre
Trillium Engineering

Herb Fricke
Akana

Rita Hansen
Onboard Dynamics

Marv Nelson
A-dec

Lisa Powell
Providence St. Joseph Health

Nikki Salenger
Intel

Paul Stewart
Sky Lakes Medical Center

Advisory Members

Yolanda Coleman
Quatama Elementary

Melissa Dubois
South Metro-Salem STEM Partnership

Andy Grzeskowiak
Siuslaw School District

Jessica Howard
Chemeketa Community College

Katrina Hull
McKay High School

Andrew Lattanner
Oregon Manufacturing Innovation Center

Nagi Naganathan
Oregon Institute of Technology

Kyle Ritchey-Noll
Oregon Business Council

Susan Shugerman
Oregon Health Sciences University

Cara Snow
Technology Association of Oregon

Lela Thieme
Pilot Rock Middle School

Tong Zhang
Oregon MESA

2021-2025 STEM EDUCATION PLAN

The 2021-2025 STEM Education Plan maintains and builds off of the grand vision for STEM education set forth in the 2016 plan. The updated plan attempts to operationalize the existing goals and assign clear indicators, performance targets, and roles. The 2021-2025 plan is highly ambitious, outlining roughly 40 different strategies to implement in order to achieve the plan's four overarching goals. While all outcomes and strategies identified in the plan are essential, the plan identifies 10 priority strategies to guide the state's STEM work over the next biennium:

GOAL 1: Inspire and empower our students to develop the knowledge, skills, and mindsets necessary to thrive in a rapidly changing, technologically rich, global society.

Priority Strategies:

- Incorporate applied learning, project-based learning, and other engaging practices across K-12 curricula.
- Increase time on science in elementary school.

GOAL 2: Ensure equitable opportunities and access for every student to become a part of an inclusive innovation economy.

Priority Strategies:

- Adopt culturally relevant, place-based contexts as the basis for STEM lesson plans, units, and courses.

- Provide financial aid for postsecondary students from underserved/underrepresented communities pursuing STEM postsecondary education and training pathways.
- Reform math and science course content, sequencing, and/or tracking.
- Increase access to out-of-school STEM experiences.

GOAL 3: Continuously improve the effectiveness, support, and number of formal and informal P-20 STEM educators.

Priority Strategies:

- Provide STEM-based professional development sessions and communities of practice.
- Provide high-quality STEM professional development to school and district administrators.

GOAL 4: Develop a sustainable funding and policy environment for STEM and CTE that provides reliable, seamless, and sufficient support across biennia.

Priority Strategies:

- Conduct fundraising outreach to business and philanthropy.
- Collaborate with CTE, workforce, early learning, and educator network leaders, and others to propose, fund, and implement local and regional initiatives.

OREGON DEPARTMENT OF EDUCATION

The Oregon Department of Education (ODE) supports the Regional STEM Hub Network and serves as the administrative agency for STEM Hub Network Grants and STEM Innovation Grants. Nearly one year ago, ODE moved its STEM positions from the Secondary and Postsecondary Transitions team to the Standards and Instructional Support team. This move was intended to create better alignment with related efforts at ODE, such as those being led by ODE's math and science content experts. So far, the move is proving beneficial. ODE created a cross-office STEAM team that meets regularly in an effort to continue to promote alignment across the agency and elevate the work of the STEM Hubs.

Communication and collaboration between ODE and the Regional STEM Hub Network has also grown stronger. As an example, ODE and the STEM Hubs worked together to ensure that high-quality math and science curricula, such as Portland Metro STEM Partnership's High School Patterns Science curriculum, were available through ODE's repository of open educational resources – Oregon Open Learning.

All of these efforts cumulated to ODE securing a competitive $9.8 million grant from the federal Department of Education.

EXPANDING ACCESS TO WELL-ROUNDED COURSES DEMONSTRATION GRANT

The Oregon Department of Education (ODE) received a $9.8 million federal grant for five years, beginning October 2020, to focus its approach to developing, expanding, and implementing, a course- access program on expanding access to STEAM-related courses. Specifically, ODE proposes to expand Oregon's existing STEM program in continued partnership with the STEM Investment Council, regional STEM Hubs, and higher education partners, and build capacity to develop and maintain an arts program to support districts across the state in providing students with access to high quality courses in the arts and more fully realize STEAM education in Oregon.

ODE's proposal relies on the following strategies:

- Strategy One: Utilizing Oregon's statewide system of regional STEM Hubs and higher education partners to both expand development of STEAM-related course content and provide professional learning opportunities for educators at the local and regional levels to support high- quality instructional practices in delivering STEAM-related courses;
- Strategy Two: Increasing ODE's internal staffing capacity to coordinate engagement of Oregon art educators in developing and identifying existing high-quality creative commons licensed arts- related course content;
- Strategy Three: Utilizing existing state programs to provide educators with access to STEAM- related course content; and
- Strategy Four: Engaging in a competitive procurement process to identify additional partners to help ODE meet the needs of Oregon students in accessing well-rounded courses.

ODE will meet the needs of students living in rural communities, disadvantaged students, and students with disabilities through a combination of strategies. First, ODE will center its process for developing and curating course content and providing associated professional learning opportunities for educators around the principles of universal design for learning with a focus on culturally sustaining practices. ODE's plan will also emphasize delivery models that will specifically meet the needs of both students living in rural communities as well as in low-income communities that may not currently have access to well-rounded course offerings. ODE will implement a robust stakeholder engagement process, not just to inform the final grant project design, but throughout the duration of the grant period to ensure that the work happening under the grant is meeting the needs of students and their communities.

OREGON MATHWAYS

Starting in 2014, the ODE math team began sharing a model for reimagining math education in high schools. The model, referred to as Mathways, recognizes a need for significant change in mathematics education that includes eliminating traditional math tracking, engaging students in real mathematics, focusing instruction on what matters, and providing more opportunities for students to learn mathematics aligned to their needs and aspirations. The model includes a multiple-pathways approach for offering high school mathematics courses referred to as 2 plus 1. The 2 plus 1 course sequence provides two years of algebra, geometry, and data science necessary for all students. The third year of mathematics education at high school provides rigorous options for students that align with their plans for future education and careers.

This 2 plus 1 pathway model was relatively unique to Oregon at the beginning. Since 2014, a multiple pathways model for high school mathematics education has been promoted by multiple national leaders and organizations in mathematics education. Oregon's model has been highlighted at the national level as an example. The work to actualize this model has accelerated over the last year in the following ways.

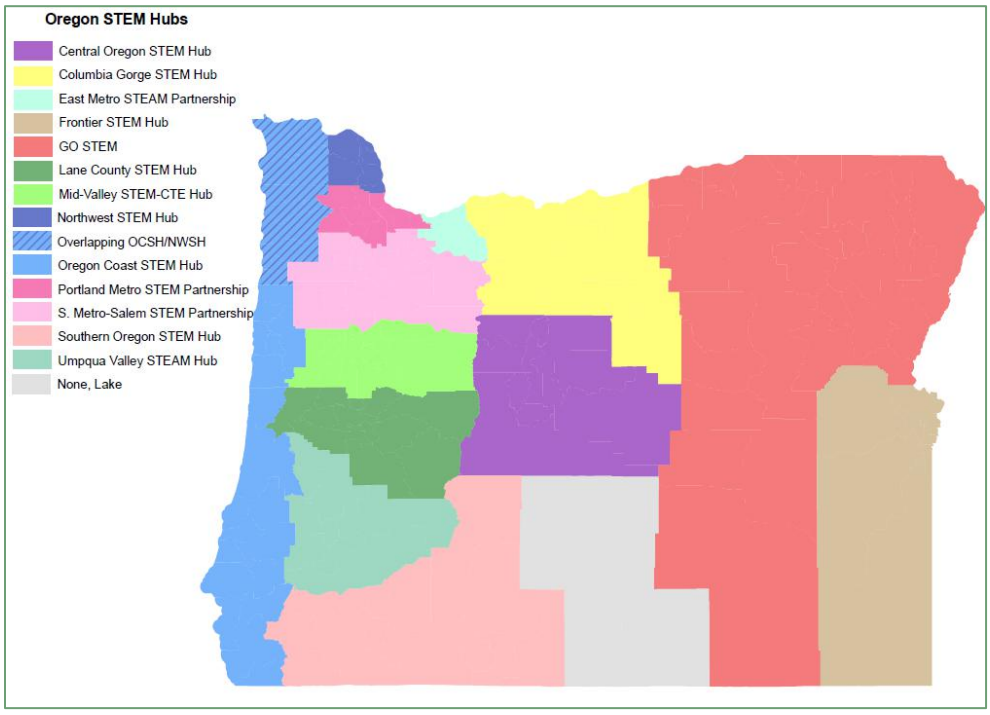
1. New high school mathematics standards are being developed for approval by the State Board of Education in 2021. The standards reflect the desire to improve depth in learning while incorporating math for the 21st century such as statistics and data science.
2. Through STEM Investment grants, multiple schools have been piloting specialized math courses in quantitative literacy and data science. These courses may serve as models for the third year of mathematics that provides some student choice.
3. Oregon is participating in a national project with 24 states to explore how best to link a multiple-pathway model for high school mathematics with similar reforms happening in post-secondary.
4. Courses and lessons aligned with this approach to high school mathematics education are being included in Oregon Open Learning, a recently developed hub for instructional materials available for free.

REGIONAL STEM HUB NETWORK

Oregon's Regional STEM Hub Network comprises 13 STEM Hubs throughout the state. STEM Hubs are multi-sector partnerships linking P-20 educators, schools, school districts, and education service districts to business & industry, CTE regional coordinators, workforce development, economic development and community-based organizations.

Hubs devise local solutions to meet local needs by coordinating regional communication and partnerships, improving student outcomes, building capacity and sustainability for change, and encouraging and supporting local and statewide engagement. Through coordination and alignment, Hubs increase system efficiency.

The Regional STEM Hub Network received roughly $4.8 million for the 2019-21 biennium. A snapshot of each hub can be found at the end of this report.



2019-2020 STEM HUB IMPACT DATA[4]

STEM Hub Impact Data	Value	Units
Number of educators who participated in Hub professional development or programs	5,056	Educators
Number of educator hours spent in Hub professional development and programs	44,448	Educator Hours
Average number of professional development hours per educator	9	Hours
Projected number of students impacted by educator professional development participation	238,735	Students

[4] Collected by the Regional STEM Hub Network. Data is from July 1, 2019 – September 1, 2020

Percent of students in Oregon impacted by STEM Hub professional development to their teachers	40.97%	% of students in Oregon
Number of industry volunteers who participated in Hub activities	2,240	Industry Volunteers
Number of industry volunteer hours	14,526	Industry Volunteer Hours
Number of students who participated in Hub directed programs	43,040	Students
Number of student hours in Hub directed programs	190,683	Student Hours
Estimate of students who benefit from equipment loaning programs	38840	Students
Estimate of teachers who benefit from equipment loaning programs	927	Educators

STEM Hub Leveraged Funding	**$**
Grants and sponsorships (current biennium)	$3,646,105.00
Partner investments in Hub initiatives	$1,179,576.35
In-kind time and resources	$1,062,500.30
Funding and in-kind secured for future biennia	$11,183,036.00
Total	$17,071,217.65

RESPONSE TO COVID-19

As communities across Oregon continue to grapple with the effects of the COVID-19 pandemic, the crisis only highlighted the critical need for community-based, collaborative partnerships, like Oregon's STEM Hubs, and the type of engaging, hands-on, project-based learning that is at the core of STEM education. As districts, schools, educators, parents, and students adapted to virtual learning, STEM Hubs stepped up. Over the past nine months, STEM Hubs have:

- Built and distributed thousands of take-home STEM kits, full of hands-on STEM activities and accompanying materials for students and families to do at home. These provide much-needed relief from increased screen time as a result of virtual learning. Hubs prioritized the highest-risk students, making kits available in English and Spanish and at school lunch and summer food sites.
- In partnership with local industry and health care facilities, provided 3-D Printers to teachers and students to aid in the designing and printing of face shields and other personal protective equipment.
- Secured funding to provide immediate internet access to hundreds of students and families in need.
- Connected students to STEM professionals through virtual "industry chats," field trips, etc.
- Supported hundreds of educators through virtual professional development, including professional development related to teaching in a virtual environment.

PROMOTING DIVERSITY, EQUITY, AND INCLUSION IN STEM

All of the work of the STEM Hubs is deeply rooted in the promotion of diversity, equity, and inclusion (DEI) in STEM. While each of the Hubs employs its own approach, all are committed to reducing opportunity gaps across communities and demographics. Some of the ways that the hubs are promoting DEI in STEM include:

- Explicitly setting forth an emphasis on equity in strategic plans and partnership plans.
- Adopting equity-based lenses, filters, rubrics, etc. to be used in decision-making processes around communications, programming, and funding.
- Offering professional develop for educators and administrators specifically around DEI in STEM teaching and learning, and infusing DEI into every other professional development session.
- Intentionally recruiting students for programs and educators for professional development from historically underrepresented and underserved communities.
- Standing up and supporting programs that specifically serve underrepresented and underserved communities, such as migrant children, tribal students, rural areas with little to no broadband service, and many more.
- Partnering with and providing funding to culturally-specific organizations to provide STEM learning experiences to the communities they serve.
- Providing STEM learning resources and materials in multiple languages.

OREGON STEM

Oregon STEM is a developing 501(c)(3) to support and work in collaboration with the 13 regional STEM Hubs in Oregon. The organization will operate with an infrastructure separate from any one hub, with a commitment to advance each hub's regional STEM needs and the larger mission of serving all Oregon communities. The organization will have five primary purposes:

1) Secure resources that advance each of Oregon's regional STEM Hubs.
2) Provide Strategic leadership to Oregon's regional STEM Hubs, along with policy makers, educational leaders, families, and industry partners. Initial priority initiatives include: educator professional development; career connected learning; and Digital Literacy and Computer Science.
3) Provide an equity-focused lens to all STEM work and STEM opportunities and ensure underrepresented students (rural students, students of color, female students, and low-income students) are at the forefront of the State's STEM opportunities.
4) Provide shared learning to and between Oregon's regional STEM Hubs and promote best practices to STEM Hubs and to other educational leaders throughout Oregon.
5) Represent Oregon on National STEM-related issues and work to bring national STEM education investment to Oregon.

The creation of Oregon STEM has been led by four of the hub directors, in collaboration with the entire statewide hub network. Development of Oregon STEM began in earnest in early 2020 after many discussions with hub leaders and partners about sustainability needs of the Oregon STEM Hub statewide network. Bylaws have been finalized, and both state and federal 501(c)(3) applications have been submitted. The Oregon application has been approved; the federal application is pending.

A founding board of directors was selected in November 2020. In accordance with the bylaws, there is one member representing each of the 13 STEM Hubs, plus three Hub directors. Industry, education, government, community partners, and students are all represented on the founding board.

Next steps include:

- Holding the first board meeting to confirm priorities and timeline for 2021 action items.
- Fundraising for the nonprofit's launch, with a goal of $1 million.

- Drafting and submitting an application to the Oregon Community Foundations for matching funds to launch and staff Oregon STEM.
- Hiring an executive director to provide strategic, operational, and fundraising leadership.

STEM INNOVATION GRANTS

STEM Innovation Grants are designed to expand the implementation of effective programs related to STEM education, and to test out innovative approaches or programs that transform the way our students learn and improve student outcomes. Funded projects must specify how the program or project will serve a significant number of underserved and underrepresented students and, if proven successful, how the approach will be brought to scale across the state and sustained beyond the term of the grant.

2019-21 GRANTS

In the 2019-21 biennium, the Legislative Assembly continued funding for STEM Innovation Grants at current service level, or, $4,601,636. For the 2019-21 biennium, the STEM Investment Council recommended that the majority of STEM Innovation Grant funding be allocated to three new grant categories: School-wide STEM Transformation, STEM Leaders, and Innovative Programming. Projects in these categories must impact a significant number of students from underserved and underrepresented communities. They also must involve collaboration across two or more STEM Hubs in order to promote both regional and cross-regional partnership.

The Council recommended that the remaining funds be used to sustain the progress and success resulting from Math in Real Life, Digital Literacy & Computer Science, and STEM Beyond School.

The STEM Investment Council approved the following 2019-2021 STEM Innovation Grant projects:

SCHOOL-WIDE STEM TRANSFORMATION GRANTS
School-wide STEM Transformation grants use STEM education as the basis for lasting school-wide transformation at the elementary and middle school level. 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 – beyond a single classroom or one employee's tenure at the school – cultivating a school-wide STEM culture is necessary.

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Project:	**STE(A)M School Transformation Planning Process**
Lead Hub:	**Portland Metro STEM Partnership**
Participating Hubs:	**Central Oregon STEM Hub, East Metro STEAM Hub, NW STEM, South Metro-Salem STEM Partnership, Umpqua Valley STEAM Hub**
Funding:	**$827,280**

Portland Metro STEM Partnership (PMSP) designed a STEM School Transformation Planning Process approximately seven years ago. The STEM Hub Network asked PMSP to lead this grant, building off of this existing process. Funding supports the following outcomes:

- Redesign, test and iterate an improved STE(A)M School Transformation Planning.
- Completion of School Transformation Plans for each participating school that include the following core elements: full NGSS alignment, integration of highly relevant and place based learning opportunities for students, development of regional partnerships, and the use of academic and STEM Identity data to guide planning and implementation.

- Build the capacity of five other STE(A)M Hubs to support future planning processes in their regions, including the development of two professional development summer institutes, a 5-day and a 3-day (or equivalent)
- Develop a framework and a set of recommendations for a STE(A)M School Designation Process

The project launched in January, 2020, engaging school-based STEAM Leadership Teams in two in-person work sessions. When the COVID-19 pandemic hit, the work pivoted. Monthly Leadership Team work sessions were paused, but Hubs remained in email communications and hosted three Leadership Team "reconnect" sessions in May & June to allow teams to learn from each other about their responses to COVID-19 and for Hubs to learn how they might be helpful. The planned summer 2020 intensive professional development institute was redesigned as a 30-hour hybrid learning experience utilizing Zoom video conferencing for synchronous engagement that "bookended" an asynchronous online course in Canvas. Now, Hubs are offering monthly virtual sessions for the Leadership Teams to stay connected to each other, to support COVID-19 response challenges, and to support "smaller steps" in the planning process.

Outcomes to-date include:

- Six STEM Hubs and 10 schools engaged: Central Oregon STEM Hub (Buckingham Elementary, Sisters Elementary, Sisters Middle), East Metro STEAM (Davis K-5), NW STEM (Hudson Park Elementary, Junior High, and Senior High), Portland Metro STEM Partnership (Creston K-8), South Metro-Salem STEM Partnership (Scotts Mills Elementary and Gervais Elementary), and Umpqua Valley STEAM (Hucrest Elementary)
- 54 educators plus one parent participate on school-based STE(A)M Leadership Teams
- 117 educators from eight schools spanning the six STEM Hub regions participated in a combined total of 2,658 hours of professional development
- PD evaluation: 43% of respondents (55) agreed that they acquired new knowledge and resources and 40% felt increased confidence to teach STE(A)M. One participant noted, "The content was great! So much great information that really helped me envision what our school could be like with the implementation of STEAM across the grades and curriculum."
- Hosted a 2-hour visit to Quatama Elementary School, a full immersion STEAM school in Hillsboro, followed by a 2-hour debrief and discussion opportunity.

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STEM LEADER GRANTS

STEM Leader grants develop school and district administrator and teacher leaders who have a deep understanding of STEM pedagogy and STEM education's power to transform student outcomes. STEM administrator and teacher leaders will create the conditions for STEM integration in our elementary and middle schools, and make the goal of STEM integration become a reality.

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Project:	**Building Math Leadership Capacity K-8**
Lead Hub:	**Portland Metro STEM Partnership**
Participating Hubs:	**East Metro STEAM Partnership**
Funding:	**$239,355**

The primary goal of this project is to increase the capacity of the Oregon STEM Hub Network to deliver high quality STEM leadership development opportunities focused on math by creating a comprehensive and cohesive set of professional development opportunities that can be leveraged statewide and utilized annually. The development process includes training a cadre of educator facilitators and leveraging expertise within universities, CBOs, and others in the development, testing, and refinement of the professional development.

The institutes will utilize learning math through the lens of Social Justice, prioritize explicit anti-racist mathematics (content and practices), cultivate teachers' own identity in K-8 mathematics learning & teaching through equity-based practices, and explore how rehumanizing mathematics also mitigates inequalities education. Participants will discuss research that promotes honoring student experiences, backgrounds, and cultures as they relate to ways of knowing and learning. Further, participants will consider the role of creativity in mathematics learning, and the ways in which creative problem solving can support culturally appreciative pedagogies.

This project was paused and redesigned to launch in November/December 2020 to allow educators to focus on Comprehensive Distance Learning. Originally, one institute was to be developed for launch in the summer of 2020 and the second institute was to be developed during the 2020-21 school year for launch in June 2021. Now both institutes will be developed concurrently as hybrid (synchronous & asynchronous) courses utilizing technology (e.g., Zoom, Canvas, other apps). The timing of when each course launches will be determined during the development process but no later than June 2021.

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Project:	**Design Thinking in Support of NGSS Implementation**
Lead Hub:	**South Metro-Salem STEM Partnership**
Participating Hubs:	**Portland Metro STEM partnership, Central Oregon STEM Partnership**
Funding:	**$148,849**

Originally, this project sought to develop the capacity of two cohorts of principals and teachers to use Design Thinking as a process to drive a shift in their school's culture of teaching and learning. Design Thinking was to be presented as both an instructional strategy and a strategy for making change would ultimately serve to help schools meaningfully adopt the new NGSS framework for teaching and learning science.

Designed as a summer 2020/Academic Year 2020-21 project, the design and execution of this project was deeply impacted by COVID-19-related closures. Project staff and district partners quickly determined that the appetite for professional development addressing NGSS or traditional "Planning Workshops" was low due to school closures, distance/hybrid learning, etc. Project staff surveyed regional teachers, school STEM specialists, and principals and determined that there was considerable appetite for a course to specifically address the development of mental tools and habits of mind to weather the uncertainty of Fall school re-opening. The course was re-imagined as "Tooling Up for Uncertainty: A Professional Development and Guided Facilitation to approaching the challenges and uncertainty of Fall School Re-Entry (K-8)". Teams were asked to use human-centered design to address a challenge that they anticipated with school-reopening in Fall 2020, and implement that project in Fall 2020.

Progress/Outputs include:

- Enrolled 73 teachers across SMSP, PMSP, and Coast STEM Hubs, structures in 21 elementary and middle-school based teams; 7 teams attended with their principal.
- Course was oversubscribed. Coast teachers (not in original budget) were supported by supplemental funds. SMSP and PMSP utilized an equity lens to select school teams prioritizing school ethnic and racial diversity profiles as well as income and geographic constraints.
- 24 hours Summer synchronous/asynchronous Summer learning; Fall Implementation plus 4 hours school year follow-up. Coast teachers were funded by the Coast STEM Hub.
- A second, abbreviated series will be offered in Winter 2021.

Outcomes include:

- Examples of design projects executed in September/October 2020
    - Digital Learning survival kit for families; (Digital) student engagement and community-building activities; Buddy Check-In system for peer support throughout distance learning; Process for students to share mathematical thinking with peers; Designing Home Workspace; Parent/Family support with distance learning tools

- 92.3% of respondents felt More or Much More comfortable with creative problem-solving
- 87.2% of respondents felt More or Much More comfortable engaging with stakeholders
- 100% of respondents felt More or Much more comfortable trying ideas early before implementing at scale.
- 74.4% of respondents felt More or Much More comfortable navigating ambiguity

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Project:	**Professional Learning Communities for NGSS Capacity**
Lead Hub:	**East Metro STEAM Partnership**
Participating Hubs:	**Portland Metro STEM Partnership, South Metro-Salem STEM Partnership**
Funding:	**$107,638**

The overarching goal of this initiative is to increase the capacity of the Oregon STEM Hub Network to deliver high quality STEM leadership development opportunities by creating a comprehensive and cohesive set of professional development opportunities that can be leveraged statewide and utilized annually while developing administrators and teacher-leaders as facilitators and coaches. Three main components include:

1) Action Learning Teams – Throughout the year, the hubs will organize groups of 5-8 educators/ administrators/community leaders (recommended as specialists and/or working towards change in a specific area, paid opportunities for educators and community leaders) to meet for 15-20 hours over a 4-6-week time period. These cross-regional teams will be organized around a specific problem of practice and will work collaboratively to further define the issue, identifying root causes, and developing interventions, in the form of position statements, recommendations, curriculum, resources, etc. at the school, network, and legislative levels.
2) Problem of Practice – A practice or policy that is or is not in place that is producing inequitable outcomes. These problems/challenges should be directly observable, actionable, and connected to a broader strategy of improvement.
3) Networked Learning – Each action team will both learn and produce knowledge that will be helpful to other team members and the organizations they represent. We will Integrate the work of school-based and external organizations into Networked Improvement Communities so that districts and schools are in closer and more effective communication with partners across our STE(A)M network.

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Project:	**Rural STE(A)M Leadership Network**
Lead Hub:	**Central Oregon STEM Hub**
Participating Hubs:	**NW STEM, Oregon Coast STEM Hub, Frontier STEM, Southern Oregon STEM Hub**
Funding:	**$386,716**

The Rural STE(A)M Leadership Network is an emerging multi-STE(A)M Hub collaboration establishing centers of rural K-8 STE(A)M education leadership within five of the predominantly rural STE(A)M hubs in Oregon. This new network is built to specifically address the inequity of K-8 STEAM professional development resources and opportunities in Oregon's rural communities by creating a variety of new collaboration and networking spaces - explicitly defined as made *for* and *by* rural educators and administrators.

Initially designed as a Zoom-based hybrid model, the Rural STE(A)M Leadership Network has transitioned its two different programs smoothly online: Rural Learning Collaboratives and Oregon Science Project Institutes. The new '20-'21 programming menu for both has been developed with input from participants in response to the changing needs of rural educators during COVID-19 restrictions. The network recognizes and responds to the need for increased time on science in elementary, which then integrates and embeds transferable STE(A)M skills and knowledge across the curriculum, ensuring long-term student success in STE(A)M. It also

acknowledges the distinct assets of rural educators and the opportunities for innovation within smaller more nimble systems.

Rural Learning Collaboratives:

- Audience – Rural educators, administrators, nonformal partners, and educational service districts
- Number of Registered Participants – 147 representing 21 counties
- Programs offered Spring-Fall 2020 – Regional Learning Collaborative Launch Sessions, Developing STEM Identities in Rural Regions, Land-Based Student and Family Engagement, Math Engagement, STEAM Integration, Virtual Field Trips, and new YouTube Live Interviews on Topics of Interest.

Oregon Science Project (OSP) Learning Facilitation Institutes:

- The OSP model prepares K-8 teachers to teach *other* K-8 teachers about NGSS and STEAM education. A combination of classroom experience, participation in STEAM professional development, and training in adult facilitation techniques prepares OSP Learning Facilitators to lead *from* and *in* their regions for educators nearby, statewide, and beyond. These OSP Learning Facilitators are then hired by ESD's, STEAM Hubs, and others to provide professional development that was not available before in their region, or from their region's rural perspective.
- Number of K-8 Educators Who Completed the Summer 2020 Institute – 20 representing 9 counties *(Spring 2021 Institute Target is additional 30 Teachers)*
- Professional Development Series Offered by Learning Facilitators Fall 2020 – NGSS & Phenomena, Integrating Math into NGSS, Science in Elementary (Nyssa), Distance Learning with Kinders.

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Project:	**STEAM Leaders in Elementary Schools**
Lead Hub:	**GO STEM**
Participating Hubs:	**Oregon Coast STEM Hub, Umpqua Valley STEAM Hub, Columbia Gorge STEM Hub, Southern Oregon STEM Hub**
Funding:	**$217,824**

This grant's intended impact is to develop elementary school STEAM Leaders and increase the time spent on quality STEAM learning in classrooms. Specifically, the grant will:

- Develop a cadre of elementary STEAM leaders including teachers and administrators
- Strengthen science and STEAM instruction tied to existing curriculum
- Empower teachers to spend more time on science by building their confidence and comfort with NGSS and a repertoire of quality lessons

To date, teachers from the three STEM Hubs have participated in a Spring on-boarding session, a three-day summer session and a fall 2-hour workshop. Additional workshops are planned for January and April, 2021, along with a two-day 2021 summer institute.

GO STEM has 16 teachers from 4 counties, 4 school districts and 7 elementary schools participating in the project. Teachers of grades 2 – 5 are involved and are working together in grade level groups to design lessons. Teachers are expanding the work by reaching out and assisting others in their schools, who are not involved in the project, to engage them in also teaching the STEAM lessons. The first formal sharing by a GO STEM STEAM Leader is being planned with a 2nd grade teacher leading a STEM PD for six other school district 2nd grade teachers. The school district will support the teachers in attending the workshop session. This teacher led PD will be used as a model for the other 56 teachers in the STEAM Leaders project.

The Umpqua Valley STEAM Hub has 21 teachers representing 9 elementary schools and 7 districts in the Elementary STEAM Leaders project. These 21 teachers have also influenced STEAM education in their

buildings by sharing lessons with other staff members. Two buildings have expanded the work to the whole school by developing kits to go with lessons to be sent home to students for virtual STEAM learning. At least 1200 students have been directly impacted by the work to date.

Columbia Gorge STEM Hub has 21 teachers involved, including the 2 project leads. Nearly all work has been in alignment with the other Hubs in this project. Teachers are working collaboratively on STEAM lesson planning and will meet in PLCs at least 2 more times this school year. Teachers will be invited to share their learning and the lesson plans they've developed at a larger event in the summer, the format TBD.

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INNOVATIVE PROGRAMMING GRANTS

Innovative programming grants will expand regional implementation of innovative ideas related to the STEM Education Plan's goals. Projects under this grant category will focus on:

- Efforts that increase cross-Hubs collaboration
- Efforts that increase time on science in elementary school
- Efforts that increase youth voice
- Efforts that increase use of Oregon Connections
- Efforts that increase communication of STEM education efforts.

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Project:	**High School Science for All**
Lead Hub:	**Portland Metro STEM Partnership**
Participating Hubs:	**East Metro STEAM Partnership, Frontier STEM Hub, Lane STEM, Oregon Coast STEM Hub, Southern Oregon STEM Hub, South Metro-Salem STEM Partnership, Umpqua Valley STEAM Hub**
Funding:	**$351,183**

All students accessing rigorous science courses and learning is, at its foundation, an equity issue. The High School Science for All project brings three years of high quality NGSS-aligned and vertically-articulated science curriculum to teachers and students. Too many students in Oregon achieve their required science credit requirements through introductory science electives rather than a pathway that supports rigorous development of science literacy. This non-coherent model results in too many students, disproportionately youth of color and youth qualifying for free or reduced lunch, not accessing rigorous classes that would prepare them for college and career.

The HS Science for All curriculum is already open-source and available to all educators. This professional development/capacity building project brings support to teachers and administrators implementing this innovative curriculum and approach through the following strategies:

1. Develop a system of support for schools and districts implementing the High School Science for All curriculum.
2. Identify and build capacity for instructors and coaches across the state.

Due to the COVID-19 pandemic, an urgent need for comprehensive distance learning (CDL) resources emerged. High School Science for All was well positioned to effectively respond to this need. Portland Metro STEM Partnership added a CDL curriculum development strategy to our project. To date, complete CDL units were developed for Physics, Chemistry, and Biology course content in Spring and Fall 2020. Additional units are in development. In summary, full-year CDL curriculum will be developed and delivered to teachers in time for use during the pandemic and beyond. Virtual teacher workshops have also been developed and delivered to support teachers to use these CDL resources.

Outcomes to-date include:

- 24 hours of professional development developed and delivered to educators with a total of 238 educator PD hours achieved
- Comprehensive Distance Learning (CDL) curriculum units developed for Physics (4 Units), Chemistry (6 Units) and Biology (5 Units).
- Project is reaching educators in 12 of 13 STEM Hubs
- 336 unique educators from 64 Oregon public high schools in 32 districts have participated in professional development and/or utilize the CDL curricular resources developed through this grant
- An estimated 30,009 students in grade 9, 10, and 11 are impacted by this grant

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Project:	**Supporting STEAM Education in the Early Years**
Lead Hub:	**Umpqua Valley STEAM Hub**
Participating Hubs:	**Central Oregon STEM Hub, Columbia Gorge STEM Hub, East Metro STEAM Partnership, Frontier STEM Hub, GO STEM, NW STEM, Oregon Coast STEM Hub, Portland Metro STEM Partnership, Southern Oregon STEM Hub**
Funding:	**$282,196**

Ten of the thirteen STEM Hubs are participating in the early learning project and are divided into three regions – Southwest/Coast, Northwest and Central/Eastern Oregon – to facilitate coordination and sharing of work.

Progress to-date by region:

Southwest/Coast

Hubs in this region have been introducing Wee Engineering through professional development and the purchase of materials for implementation in child care centers and pre-schools. Partnerships with local CCR&Rs, Early Learning Hubs and Community College Early Childhood Education Programs have led to virtual conferences for 54 providers. Sixteen providers will continue on a leadership team to assist in developing kits and lessons to be available for checkout. A partnership with the Southwest Oregon Parenting Hub, Take Root, is leading to the development of fall, winter and spring STEAM activity kits to deliver to families. Kits are also available in Spanish. Virtual sessions, live and recorded, will be available to parents to promote quality STEAM thinking. Kits will also be distributed through local libraries and parenting hubs.

Central/Eastern Oregon

Frontier STEM and Greater Oregon STEM Hub, have partnered with 8 Early Learning Hubs across 7 counties to provide STEM Curriculum, kits, and professional development for the early learning providers in our region. The project will provide EL providers with five different STEM kit options that will be available for check out. Available STEM kits include: Wee Engineering, FIRST LEGO Discover, Natural Resources, Healthcare Connections, and Intro to Robotics. Central Oregon has partnered with COCC Early Learning department to offer a 1 credit course entitled "Creating STEM paces for Early Learning". The grant covered tuition for 30 educators as well as materials for family engagement.

Northwest

The primary focus of PMSP s to bring hands-on minds-on STEM learning to youth of color and youth in poverty. Partners include: Early Learning Multnomah, Early Learning Washington County, United Way of the Columbia-Willamette, NAYA, Latino Network, Kairos PDX, and Immigrant and Refugee Community Organization (IRCO). We will develop and distribute 3,500 STEM Kits to families with supporting classes for parents and caregivers to help utilize the kit resources and ideas. The Columbia Gorge STEM Hub has developed an Early Learning Educator Guide and play-based materials kits. All details were created in

collaboration with local early childhood providers. Aspects of the program have been piloted at 3 distinct sites with positive feedback used to improve program. We have delayed formal launch of the accompanying training in the hopes that it can be done in person. NW STEM is partnering with their Early Learning Hub and CCR&R to provide professional development, including Latinx families.

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Project:	**Oregon Connections: Industry Connections for Rural and Remote Communities**
Lead Hub:	**South Metro-Salem STEM Partnership**
Participating Hubs:	**Frontier STEM Hub, Southern Oregon STEM Hub, Umpqua Valley STEAM Hub**
Funding:	**$47,966**

This project focuses on increasing usage and impact of Oregon Connections (OrC), especially in rural and high-needs communities, to expose and inspire students to pursue STEM careers as well as help teachers provide clear career- and real world-related context for classroom learning. Key activities include the purchase of virtual licenses and staffing/infrastructure to meaningfully support teacher usage per learnings from previous efforts (training, follow up communication, site visits, convenings, as locally appropriate), as well as development of locally relevant "World of Work" weeks in each participating region to promote industry engagement.

Highlights from the project include:

- Umpqua Valley STEAM's "Bright Futures Umpqua" website offers resources to help students explore careers in six career clusters. Our local industry chats and field trips are highlighted through embedded links from OrC as well as OrC playlists for each cluster.
- STEM Hub regions across the state have partnered to establish a school year calendar of events featuring different industry sectors each month.
- Southern Oregon has committed to recruiting at least one industry partner from Jackson, Josephine and Klamath counties for each sector featured, and one post-secondary partner from Rogue CC, Klamath CC, Oregon Tech, & SOU.
- Southern Oregon is partnering with Science Works in Ashland to offer some elementary STEM lessons to accompany our industry partners.
- South Metro-Salem STEM was able to include additional nearby districts that overlap with the hub through the ESD, CTE region and Youth Corrections. They are partnering with Willamette ESD's career-connected learning effort to develop a student dashboard of work-related learning exposures and experiences, engaging with more than 100 regional industry partners.
- Southern Oregon STEM's efforts were highlighted in a national publication, STEM Magazine (p.14): https://www.stemmagazine.com/gJULY20ywmwqp/viewer/desktop/

Outcomes to-date include:

- 1,784 educators licensed
- 341 educators trained and supported
- 5,424 students impacted
- 165 new industry professionals
- 77 Virtual Sessions impacting 2,250 students
- 271 "Industry Chats" impacting 3,174 students
- 1,790 archived videos viewed

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Project:	**Chief Sciences Officers**
Lead Hub:	**GO STEM**
Participating Hubs:	**Columbia Gorge STEM Hub, Frontier STEM Hub, NW STEM, Southern Oregon STEM Hub**
Funding:	**$230,058**

Through the Chief Science Officer (CSO) Program, students and STEM professionals become aware of and engaged in STEM education efforts. This leadership opportunity empowers middle and high school students to serve as CSOs in their schools and communities. The CSO Program is part of a growing international program, partnering with CSO Global, supported by the National Science Foundation, and several state and national governments (AZ, PA, MI, GA, NY, Mexico, Kuwait, and growing). This connection to a larger program provides Oregon with support by leveraging resources, providing quality curriculum and training, and building connections for CSOs that extend beyond Oregon's borders.

CSOs are 6th through 12th grade STEM leaders who are elected by their peers, receive leadership training, and develop a community-minded STEM project, or action plan. This grant serves 92 CSOs at 32 middle and high schools in six regions around the state. CSOs also advocate for and support STEM opportunities in their region. In schools, CSOs serve as a voice for STEM, identifying, designing and leading experiences that reflect student interests. In the community, CSOs serve as ambassadors and thought leaders, working with school boards, government, business, and industry to promote STEM awareness and engagement. CSOs attend STEM learning opportunities, provide STEM Hubs with insights, connect with other students & STEM professionals, and learn about the array of STEM careers in their region.

Prior to the new school year, all CSOs participate in a Leadership Training Institute (LTI). Under normal circumstances, the LTI takes place on regional college campuses. This year, due to COVID-19, CSOs and their advisors participated in a virtual, statewide LTI.

Whether school is taking place virtually, in-person, or through a hybrid learning model, CSOs aren't letting COVID-19 slow them down. CSO action plans for the 2020-2021 school year include:

- Virtual science clubs
- A CSO-supported math and science tutoring platform
- Robotics club websites and fundraisers
- Math competitions
- Virtual STEM lessons for migrant preschool students
- Linking STEM professionals to Agriculture education programs
- STEM lessons and kits for elementary students
- Morning STEM announcements
- Virtual panel of STEM professionals
- 2-D printing of personal protective equipment

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Project:	**ThinkUp!**
Lead Hub:	**Central Oregon STEM Hub**
Participating Hubs:	**N/A**
Funding:	**$11,550**

ThinkUp! Challenge is an innovative process that centers around the belief that the best ideas come from those closest to the problems we need to solve. Students are the ultimate users of the programs and STEM systems built and, therefore, providing a way to elevate their voice, choice, and ideas to the community and Agency matters. Students are a critical part in designing programs and systems that meet their needs and they find engaging.

Think - Using a crowd-souring software created by Innovate K-12, students will first generate their ideas they think are most likely to increase their engagement and excitement in STEM learning at their school. They will anonymously share their initial ideas through the platform. During the ideation process ideas will bubble up, ideas will formulate, and new ideas will be generated. Eventually, the youth will select an idea/ideas to advance.

Design - A student human-centered design team will work with local entrepreneurs and a design thinking consultant to bring the idea to action. They will create one or more prototypes.

Test - The prototypes will be implemented with feedback gathered and reiterations made. Finally a final version will be implemented by the youth at the school.

Sustain - The process at both schools will be evaluated by ALL participants. Their input will guide future Think Up! Projects. All of the student-centered design tools, facilitation materials, Facilitator's Guide created will reside at the Central Oregon STEM Hub for future endeavors.

Progress to-date:
Two schools have been recruited to participate in our pilot starting in January 2021. The middle school's cohort is a group of students in a design lab program, while the elementary school's cohort will be classrooms of 4th and 5th graders. In the absence of sending teachers from the participating schools to a summer conference to learn crowdsourcing and design-thinking skills, a consultant is currently creating the facilitation materials and guides for these educators. They will work together with these pilot groups to implement and to document the process for future youth voice Think Up! challenges.

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Project:	**CS Drive**
Lead Hub:	**Oregon Coast STEM Hub**
Participating Hubs:	**Frontier STEM Hub, Lane STEM, NW STEM, Umpqua Valley STEAM Hub**
Funding:	**$673,392**

CS Drive positions STEM Hubs in Oregon to be regional leaders, facilitating a solution that ensures K-12 Oregon public school students receive aligned, meaningful, high-quality Computer Science learning experiences at the elementary, middle, and high school levels. CS Drive supports the development of comprehensive, equitable computer science plans in school districts across Oregon, with an emphasis on rural school districts. The project provides participating school districts with SCRIPT professional development which is centered around equity-focused computer science strategic planning, and facilitates the implementation of evidence-based CS programs and curriculum.

CS Drive provides:

- K-12 computer science education strategic planning aligned to state and national goals in collaboration with school district teams and the NSF-funded CSforALL project;
- Recruitment of and training for CS educators in collaboration with high-quality professional development providers committed to equity; and,
- Facilitation of C4C: Counselors for Computing professional development provided by the National Center for Women and Information Technology (NCWIT).

In partnership with participating STEM Hubs, 15 school districts were engaged and invited to participate in SCRIPT training and the development of CS equity-focused district plans. In June of 2020, 11 facilitators from six STEM Hubs participated in a SCRIPT facilitator workshop. In addition, teams of teachers and administrators from two school districts (Warrenton-Hammond and Lincoln County) joined the STEM Hub facilitators for a school district workshop, where the school district teams collaborated on self-assessment and goal-setting, and

evaluated the needs, strengths, and challenges facing their districts. These school district teams have continued to meet with additional team members and flesh out their plans. A second SCRIPT workshop is currently being planned for January 2021 to train additional facilitators and school district teams and a NCWIT training for counselors is planned for February 2021.

CS Drive facilitators have also joined national CS efforts and opportunities focused on equity-first, including participating in a *Scaling Inclusive Pedagogy* training. Two facilitators completed this NSF-funded training which they will now share with other CS Drive facilitators and participating school districts.

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SUSTAINABILITY GRANTS

Sustainability grants support the continued operation, expansion, and evolution of successful projects and programs, while building capacity to sustain the work following the end of the grant term. The projects funded for the 2019-21 biennium include:

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Project:	**STEM Beyond School (SBS)**
Grant Recipient:	**Oregon State University – Extension Service**
Funding:	**$445,000**

This statewide project focuses on increasing access to STEM professional development (PD) opportunities for out-of- school educators statewide who work primarily with students experiencing poverty, students of color, English Language Learners, and students with disabilities in grades 3-8. For most students, out of school programs provide their only access to STEM learning opportunities and it also greatly expands their access to science learning.

The after- and out-of-school field and staff have been highly impacted by school and facility closures associated with the COVID-19 pandemic. Since SBS is primarily a virtual network, the focus has not changed, although there have been adjustments to formerly hands-on workshops/events to be provided virtually and respond to changing conditions and cohort needs. SBS directly provided 33.5 hours of Professional Development through July 2020 to after- and out-of-school elementary and middle school educators statewide. From March-June, 28 educators collectively completed 466 hours of SBS professional development. Adding in aligned partner opportunities, our educators logged over 550 PD hours, with additional summer opportunities. An expanded cohort kicks-off in November.

SBS STEAM educators have explored and implemented (where possible) new ways to support student learning within conditions imposed by COVID-19 including adjusting to deliver virtual programming or provide emergency child care. Project staff are trying to establish the best way to help facilitate connections between informal educators and teachers/school districts as partners in virtual hands-on learning. With facility closures and districts shifting to comprehensive distance learning, methods of supporting student engagement and support through out-of-school programs have to be reimagined.

SBS educators report working with students from 35 districts statewide. Informal educators have different delivery models and often serve more than one school or district. School district data includes geography where students were served before and during the pandemic.

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Project:	**Statewide License for Oregon Connections**
Grant Recipient:	**South Metro-Salem STEM Partnership**
Funding:	**$52,272**

This grant continues funding for the statewide license for Oregon Connections for the 2019-21 biennium. Career-connected learning is a key characteristic of STEM education. Increasing students' exposure to STEM businesses and professionals in their communities by bringing them into the classroom increasing engagement and motivation. Oregon Connections is an important tool that links education and industry statewide.

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Project:	**Math in Real Life**
Grant Recipients:	**Central Oregon STEM Hub, GO STEM, Lane STEM, Portland Metro STEM Partnership, Oregon State University, Southern Oregon STEM Hub**
Funding:	**$266,016.62**

Math in Real Life (MiRL) supports the expansion of regional networks to create an environment of innovation in math teaching and learning. The focus on applied mathematics supports the natural interconnectedness of math to other disciplines while infusing relevance for students. MiRL supports a limited number of networked math learning communities that focus on developing and testing applied problems in mathematics. The networks help math teachers refine innovative teaching strategies with the guidance of regional partners and the Oregon Department of Education.

Specifically, grantees:

- Assist ODE in the creation of publishable professional development resources based on knowledge gained through past practice in MiRL
- Develop and pilot examples of MiRL lessons, units, and courses that will align with the 2 + 1 model for secondary mathematics education and can be published as Open Education Resources.
- Work with school districts to use existing district funds such as High School Success to implement a multiple pathways model for secondary mathematics.
- Continue to build regional math leadership capacity.

RECOMMENDATIONS

In order to continue the Oregon's progress toward transforming our education system into a STEM ecosystem, the STEM Investment Council recommends the following:

1. **ODE Policy Option Package (POP) 109 – STEM Programs for Diverse Learnings**
   The Council recommends that the Legislative Assembly include ODE POP 109 in its Legislatively Adopted Budget. POP 109 invests an additional $5.4 million above current service level to support Oregon Math Pathways, the Regional STEM Hub Network, and STEM Innovation Grants. POP 109 was included in the Governor's Request Budget.

2. **Support for the STEM Investment Council**
   The Council recommends that the Legislative Assembly provides funding for a full-time STEM Investment Council Director and for activities of the council, including meetings and convenings, developing and disseminating communications, and assistance with data collection and analysis.

3. **Investments in STEM-related efforts**
   The Council recommends that the Legislative Assembly continue investments in a number of STEM-related efforts in its 2021-2023 Legislatively Adopted Budget. These efforts include career and technical education, High School Success, secondary and postsecondary career pathways, and the Engineering Technology & Industry Sustaining Pathways fund.

4. **2021-2025 STEM Education Plan adoption**
   The council recommends that the State Board of Education, Higher Education Coordinating Commission, and Workforce and Talent Development Board formally adopt the 2021-2025 STEM Education Plan as one of each agency's guiding strategies.

Sincerely,

Stefan Bird
Chair, STEM Investment Council

Mission

The Central Oregon STEM Hub is a partnership connecting regional pre K-12 education, higher education, industry, and community partners to catalyze opportunities and exploration in science, technology, engineering, and math (STEM).

Vision

Through collaboration, Central Oregon STEM Hub partners prepare students to be critical thinkers, career-ready and college-bound students, and informed global citizens through integrated STEM opportunities in and out of the classroom.

Equity

Objective: Every Central Oregon student has access to and is engaged in high-quality STEM opportunities in and out of school.

Indicator: Number of STEM learning opportunities available across counties (formal and/or informal).

Indicator: Number of [historically underserved and underrepresented] students participating in out-of-school STEM experiences and programs.

School Systems

Objective: STEM learning is integrated and prioritized across grade-levels and addresses student barriers, fosters STEM fluency, and student achievement.

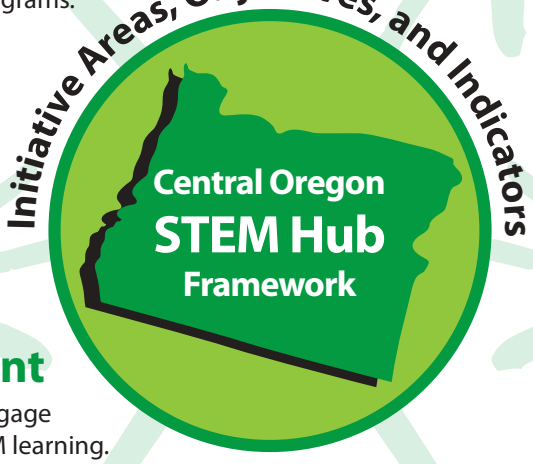
Indicator: Growth in time dedicated to STEM learning (measuring time spent in STEM).

Educator Development

Objective: Central Oregon educators engage students in high-quality integrated STEM learning.

Indicator: Educator confidence in teaching STEM.

Indicator: Educator STEM pedagogical and content knowledge.



Well-Lit, Aligned Pathways

Objective: Young people are aware and ready to enter STEM post-secondary opportunities and careers.

Indicator: Number of times kids have been exposed to STEM experiences.

Indicator: Number of STEM certificates and degrees earned [especially by underrepresented and nontraditional students].

STEM Identity & Engagement

Objective: Students are interested in and possess STEM knowledge and skills to succeed in a complex future.

Indicator: Number of students enrolled and completing MS/HS/Post-Secondary STEM Courses.

Indicator: Retention in STEM certificate and degree programs.

Indicator: Participation in out-of-school STEM experiences.

Sustained, Reciprocal Investments

Objective: A vibrant STEM ecosystem is part of Central Oregon's reputation and attracts industries and families to live, work, and learn here.

Indicator: Partners use regional assets and environments to spark interest in STEM.

Indicator: Number of business and industry partners engaged in the STEM Hub network.

2019-2020 HIGHLIGHTS BY INITIATIVE AREA

EQUITY	The Central Oregon STEM Hub has a commitment to equity and creating programs that specifically serve marginalized and non-traditional populations. Diversity, equity and inclusion have been intentionally embedded into all STEM Hub materials & activities. We have introduced a workshop series on Integrating Culturally Relevant STEM Practices into Distance Learning, and continue to integrate opportunities to reach our youth. Our Advisory Board has identified this as our priority for the 2020-2021 school year.
SCHOOL SYSTEMS	We cannot build a pipeline for industry or engaged students if we do not invest in our PreK-16 school systems to teach STEM principles. The Central Oregon STEM Hub is creating a mindset shift around STEM education, creating an environment that is less about the acronym and more about how we teach and learn. We remove the periods in the STEM acronym and focus on STEM as a way of teaching and learning through relevant hands-on problem solving.
EDUCATOR DEVELOPMENT	We continued to build our PreK-16 relationships, with educators participating in HUB professional development or programs. We provided focused, content-specific trainings with the majority of the programming through some form of professional learning community – both in-person & virtually. We add new educators to our ecosystem as our relationships continue to develop with public, private, out-of-school, and home school educators. Because of these opportunities, educators are more confident to embrace inquiry, wonder, and real world learning at the heart of their practice.
WELL-LIT, ALIGNED PATHWAYS	Our relationships with Career Technical Education and our local workforce investment board align our priorities to local high growth, high demand STEM careers in the computer science, healthcare, advanced manufacturing, and construction fields. By providing career-connected learning opportunities, including career exploration events and virtual internships, we exposed them to STEM career options and related pathways. Over 3,200 youth participated in STEM Hub programming this year.
STEM IDENTITY & ENGAGEMENT	We strive to build both STEM identity and confidence. Young people are encouraged to be makers, creators, doers, and thinkers in charge of their own learning. Youth voice and choice related to STEM experiences continue to expand as their STEM knowledge and skills increase. Regionally we are focused on gaps in STEM learning specifically related to increasing computer science, early learning STEM practices, and rural elementary & middle school science.
SUSTAINED, RECIPROCAL INVESTMENTS	The exponential growth in our region is fueling new educators, new students, and new industry partners. We continue to grow the awareness of STEM education in our community and the investment of local STEM business and organizational partners in their time, money and insight in our youth. Despite the challenges of 2020, our STEM advocates logged over 2,500 volunteer hours in STEM in-person & virtual activities this year.

Columbia Gorge
STEM HUB
SCIENCE, TECHNOLOGY, ENGINEERING, & MATHEMATICS

Empowering, informing, and engaging STEM leaders for an evolving world.





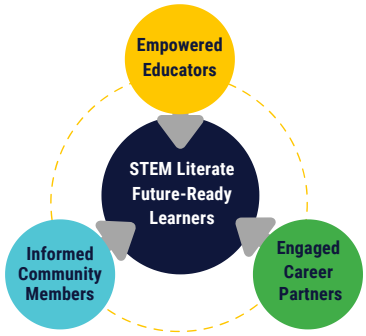

Who We Are

The Columbia Gorge STEM Hub is a regional collaborative devoted to bringing together partners around a shared mission of empowering, informing, and engaging STEM leaders for an evolving world. Our goal is for all youth in the Gorge to grow up to be both STEM-literate and future-ready.

Our Mission

STEM Literacy + **Future Readiness** = **SUCCESS: Adaptable learners prepared for an ever-evolving world**

Theory of Change

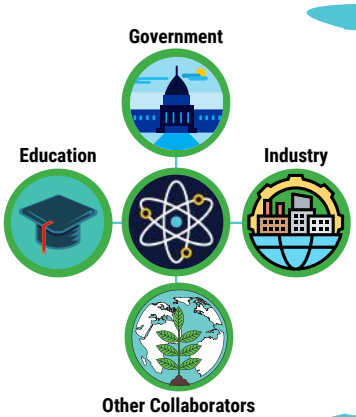


What is STEM?

STEM stands for science, technology, engineering, and math, but it's more than the individual subjects that make up the name. STEM education is about taking an integrated approach to learning, just like how discovery and development happen in the real world.

Why STEM?

STEM is about instilling curiosity, problem-solving skills, connections to career, and a life-long love for learning. Learners who are comfortable with STEM concepts will be well equipped to enter the workforce in our ever evolving world.



How We Work

We seek out opportunities to have the greatest impact across the region through strategic and targeted engagement, focusing on enabling other networks of learners and leaders, working with numerous partners to infuse STEM into their work. Through **collective impact**, we cultivate cross-sector STEM champions with a shared goal of increasing access to STEM.

Our Service Area
Gilliam, Hood River, Sherman, Wasco, & Wheeler counties
(also collaborate with partners in Klickitat & Skamania counties in WA)

541-296-2046 | gorgestem@cgesd.k12.or.us | www.gorgestem.org

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

Significant Projects in 2019-2020 & 2020-2021

Empowering Educators

We envision collaboration between educators, designated STEM leaders at schools and districts, all schools with STEM enrichment, and utilization of STEM Hub resources.

- Monthly opportunities **e-newsletter** and quarterly paper newsletter
- **Microgrants** for educators to increase access to STEM in their schools and community
- Annual **STEM Symposium** training for educators
- STEM **Lending Library** and online lesson plan directory
- **Maker Clubs**, after school clubs lead by local STEM champions, especially for Title I schools
- **Elementary STEAM Leaders Cohort**, collaborating to increase time on science and STEM
- **PreK STEM Kits**, providing supplies and training for early learning providers
- **Regional curriculum planning & professional development** for STEM/CTE courses

Informing Community

We strive to create and disseminate family-friendly, bilingual information about what STEM is, why it's important, and how students and families can get involved.

- Public communications, including **STEM newspaper insert** and regular **press releases**
- **Elementary STEM Nights** (support schools in hosting)
- **STEM Champions contacts** - list of key point people working with populations underrepresented in STEM, to partner in sharing information
- **Chief Science Officers** - student leaders at middle and high school who are focused on elevating the importance of science and STEM

Engaging Career Partners

We work to facilitate connections between educators and industry leaders, make it easy for businesses to engage, and facilitate alignment efforts and sharing of best practices about what works across the region. We are also working on a plan to cultivate Career Connection Leaders at all middle schools, high schools, and colleges in the region.

- Regional, coordinated approach to **career connected learning**
- **Lunch with a STEM Professional**, hosted at a regional location
- Plan to host **Middle School Career Day** & **High School Career Expo** in 2021, virtually if needed

Distance Learning Response

Since the initial school closures in March, the we have worked collaboratively to find innovative solutions to the disruptions caused by COVID-19. Partnering with ESDs throughout the state we curated a **comprehensive learning at home resources list** and were able to provide a **virtual PD conference** to replace our traditional in-person STEM Symposium.

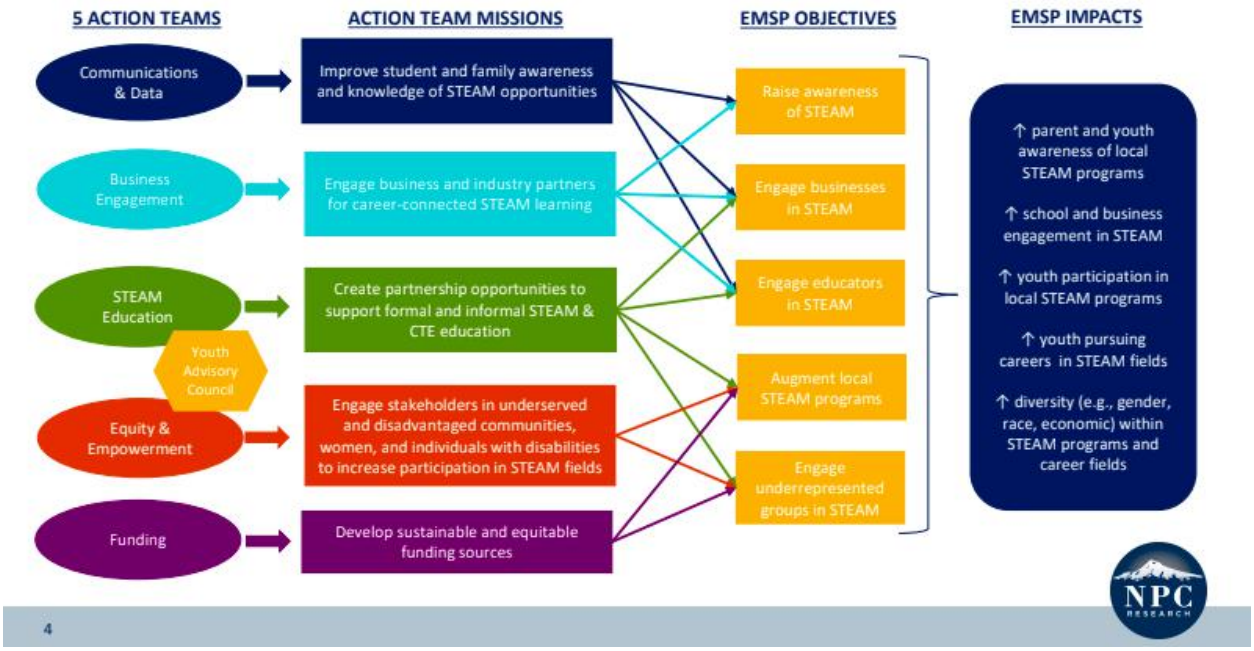
We were also awarded a grant from Oregon Community Foundation to continue adapting our programs and providing additional resources for educators in our region. We plan to create **videos to supplement our Maker Club curriculum** and provide additional **COVID-response Microgrants to educators** to increase and enhance STEM learning during the pandemic and beyond.

East Metro STEAM Partnership: 2019-2021

Summary

The vision of the East Metro STEAM Partnership is an East Multnomah County community where children, youth, and adults have equitable access to and are engaged in Science, Technology, Engineering, Art, and Math (STEAM) learning that results in a skilled workforce and increased economic opportunity. EMSP focuses on the Eastern part of Multnomah County, a region representing 7 school districts (Parkrose, David Douglas, Centennial, Reynolds, Gresham/Barlow, Corbett, Multnomah ESD), 43,000 students, 2,000 teachers, and the most diverse and economically challenged residents in the state of Oregon. Incomes are 68% higher in West Portland than East Portland and more than three times as many people hold college degrees in the west compared to the eastern part of the metropolitan area, according to the 2016 US Census, American Community Survey.

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 (see image below), work together to move the region toward EMSP's vision.



Impact Data

- 179 educators received a total of 1,789 professional development hours, reaching an estimate of 31,575 students as a result.
- 825 students participated in EMSP-supported or EMSP-funded programs, resulting in 28,526 hours of STEAM.
- Over $1.5 million brought to the East Metro region to support STEAM initiatives since its formation in 2015.

Selected Initiatives

STEM Leadership Academy for Administrators

- 10-month learning opportunity for elementary building principals and their supervisors to deepen their understanding of STEM teaching & learning, effective leadership models that support high academic achievement, and tools & resources to support their role.
- 22 administrators across six districts, served by three STEM Hubs: PMSP as lead, with support from EMSP and SMSP.
- More info: http://bit.ly/STEM-leadership-academy

Pockets of Innovation

- Funded 15 projects in 2017 and an additional 5 projects in 2018 with the purpose of raising awareness around current STEAM projects in the region.
- In 2017, an evaluation was completed by NPC Research, and MetroEast Community Media created three videos highlighting the projects, closed captioned in three languages.
- More info: https://eastmetrosteam.org/pockets-of-innovation/

Industry for a Day

- In 2018, in collaboration with All Hands Raised, Worksystems, and Impact NW over 200 educators visited 38 industry sites and experienced firsthand what jobs are available in the east metro area as well as what employers are looking for.
- Information from companies was compiled into a Company Overview Booklet. Attendees also indicated which actions they would follow up on over the course of the school year.

STEM Beyond School

- Each site serves 30 or more youth in grades 3-8 for at least 50 student hours. At least 70% of students are underserved. Staff at each site participates in 70 professional development hours.
- Metropolitan Family Services hosts a site through its SUN School at West Powellhurst Elementary (David Douglas School District).
- Saturday Academy hosts a site through a winter and spring class at three locations: Hall Elementary School (Gresham-Barlow School District), Woodland Elementary School (Reynolds School District), and Walt Morey Middle School (Reynolds School District) as well as a spring break camp at Mt. Hood Community College.

Youth in STEAM Communications

- Collaboration in which Center for Advanced Learning digital media and design students set the strategy and creation of EMSP communications materials through paid internships at Lewis Creative and MetroEast Community Media
- In 2018, six student interns produced a promo video, STEAM banners, social media messages based on major audience profiles and a content strategy.
- In 2019, additional students will develop a photojournalism project, a brochure, motion graphics based on the films, and a passport for STEAM activities in the region.

Youth Advisory Council

- Youth Advisory Councils have taken place twice per year since spring 2017, engaging up to 15 youth age 13-20 from throughout the East Metro region, paying them to influence their peers by spreading information and activities about STEAM in their schools and community.
- More info: https://eastmetrosteam.org/youth-advisory-council/

Our Mission

To support, develop, and promote quality Science, Technology, Engineering, and Math (STEM) education for all students of Malheur County to advance Oregon's 40-40-20 goal for students to achieve college and career readiness resulting in long-term economic growth and increased competitive and creative capacity for the region.

Our Vision

STEM education that inspires and empowers all learners to develop knowledge, skills, and mindsets necessary to adapt and contribute to and succeed in an increasingly complex and technologically rich society, building our shared prosperity and economic vitality.

FRONTIER STEM HUB

SCIENCE TECHNOLOGY ENGINEERING MATH

The Frontier STEM Hub serves Malheur County, a large geographic and rural region in Eastern Oregon. The students and districts Frontier STEM serves often face challenges resulting from geographic isolation and limited availability of services, opportunities, and resources. The young people of Malheur County also face challenges associated with the highest child poverty rate in the state at 35% compared to Oregon's average of 18%. Poverty can limit a child's social, educational, and personal development due to reduced access to opportunities.

The Frontier STEM Hub leverages the work of diverse partners and collective impact to create innovative solutions to overcome these challenges and reduce barriers.

To achieve their vision, Frontier STEM Partnership has identified the following four goals:

1. Support, develop, and promote formal and informal STEM-learning opportunities, increasing exposure and interest of P20 students to increase proficiency, interest, and attainment of post-secondary credentials and degrees in STEM and CTE
2. Continuously improve the effectiveness of STEM education through quality professional development and support
3. Strengthen industry, higher education, and Career Technical Education (CTE) partnerships that will increase graduation rates with students who are prepared and on track to pursue college and career pathways
4. Create, develop, and sustain an equity committee to ensure that the initiatives of the Frontier STEM Hub incorporate and adopt the principles of Oregon's Equity Lens, ensuring quality, culturally-responsive educational opportunities for all students of Malheur County

Initiatives & Impacts

Chief Science Officers (CSOs)

This international student leadership program is supported by the National Science Foundation. In its third year in Malheur County, the program consists of 22 youth from eight area middle and high schools.

The goals of the CSO program are to:

- Create a global network of diverse STEM leaders
- Foster communication and collaboration among CSOs
- Enrich STEM culture and career awareness
- Amplify student voice in STEM conversations in the community

CSOs at Leadership Training Institute in LaGrande.

Frontier STEM Hub's response to COVID-19

- Sought and secured financial support to provide immediate internet access for students in need
- Provided timely professional development to support educators transitioning to virtual platforms such as Zoom and Google Classroom
- Collaborated with Eastern Oregon Regional Educators Network (REN) to design and support 4-Week Summer Course for educators to prepare for distance learning in the Fall
- With support from South Metro-Salem STEM Partnership, established an Oregon Connections regional license agreement to provide access to career connections and real-world applications for all schools, educators, and students of Malheur County
- Provided equipment, supplies, and support for student STEM leaders to produce personal protective equipment for local frontline workers during the initial crisis and resulting shortages of PPE
- With funding from Oregon Community Foundation and collaboration with Malheur ESD, Frontier STEM established an Education Technology Specialist position to support small, rural school districts, students, and families transitioning to Comprehensive Distance Learning

"It's so neat to see Malheur County STEM students finding real-world applications to their work. This donation enhances our efforts to remain ready and safe for all patients who come our way."
~A. LaRosa, RN, Manager of Emergency Services at Saint Alphonsus

FRONTIER STEM HUB IMPACTS 2019-2020

Number of educators who participated in Hub PD or programs	Number of educator hours spent in Hub PD and programs	Projected number of students impacted by educator PD participation	Number of students who participated in Hub supported programs	Number of student hours in Hub supported programs	Number of teachers who participated in equipment loaning programs	Projected number of students benefiting from equipment lending programs
485	3,228	8,730	4,163	11,333	114	2,895

Nickie Shira, STEM & Innovation Coordinator | nickie.shira@malesd.org | 541-473-4865

GO·STEM

Greater Oregon Science Technology Engineering & Math

Background

Vision

Greater Oregon (GO) STEM is a regional partnership that values **STEM learning**, prepares youth for **successful STEM careers**, and **builds pathways and pipelines** to meet workforce needs.

Region

GO STEM serves almost 30% of Oregon's geographical area. Its 7 eastern Oregon counties are Baker, Harney, Grant, Morrow, Umatilla, Union, and Wallowa. Despite its large area, the region's population is relatively low and very dispersed—out of the region's 36 school districts, 30 (88%) are in areas classified as "rural," "remote," or "frontier."

Each county in eastern Oregon is unique and has its own distinctive needs. However, commonalities around the region include rural living, an abundance of public lands, and a history of natural resource-based economies (primarily logging, agriculture and ranching). There are pockets of industry primarily focused on food processing and packaging that form significant numbers of jobs in some counties. GO STEM's mission is to employ these commonalities and align shared values, which will lead to a thriving workforce, career-ready rural youth, and regional prosperity.

Priorities

1. ***STEM Awareness, Pipelines & Pathways:*** Develop a STEM workforce that includes a variety of opportunities for different educational levels.
2. ***STEM Systems for Education:*** Ensure quality STEM educational offerings across Eastern Oregon. This will increase the number of regional high school graduates with full-time employment plans or post-secondary educational plans related to STEM fields.
3. ***Communicating Rural STEM Perspectives, Needs, Solutions and Opportunities:*** Communicate rural values and needs between employers, educators, students, and government.

Achievements to Address Priorities

Pre-K and Parent Engagement (STEM Awareness, STEM Education & Rural STEM Perspectives)
GO STEM is designing classroom kits and professional development focused on STEM learning. The kits will be distributed to our three Early Learning hubs who will replicate and distribute the kit numbers across our region. The kits included are: Natural Resources, Engineering, Robotics & Coding, Healthcare.

STEAM Leaders in Elementary Schools (STEM Awareness & STEM Education)
GO STEM is working to develop STEAM Leaders in elementary classrooms and to increase the time spent on quality STEAM learning in the classroom. GO STEM is the lead hub on this project, partnering with the Columbia Gorge STEM Hub and the Umpqua Valley STEAM Hub. In 2020, GO STEM had:

- 16 participating teachers in 2nd to 5th grades, from 4 counties, 4 districts, and 7 elementary schools.

Youth Voice – Chief Science Officers (STEM Awareness & Rural STEM Perspectives)
GO-STEM participates in the nationwide Chief Science Officer (CSO) Program. CSOs are high school students who choose to serve as local STEM leaders. Regional teams complete Action Plans to create STEM Awareness in their community. In 2020:

- GO STEM has 16 CSOs and 8 advisors across 5 counties
- CSOs from GO STEM, Frontier and Columbia Gorge attended:
    - Virtual Leadership Training Institute
    - Spring Summit to showcase Action Plans
    - Regional trainings and networking events

COVID Response STEM Kits STEM Kits (STEM Awareness, STEM Education & Rural STEM Perspectives)

- 2,000 STEM kits delivered to all 4th grade students in the 7-county region of GO STEM.
- Kits were provided to address the needs of the rural communities of eastern Oregon.

STEM Professionals Engagements (STEM Awareness, STEM Education & Rural STEM Perspectives)

- Dinner with a STEM Professional: Connects students and industry professionals to explore career pathways.
- STEM Professional Business Lunch (20 participants): Engage and connect industry and agencies to education systems through STEM careers.

Explore Science Club (STEM Awareness, STEM Education & Rural STEM Perspectives)

- Designed to provide students an opportunity to learn about STEM careers from STEM professionals in an educational environment.
- Baker Summer Academy piloted the Explore Science Club, which has now reached over 1,000 students.

STEM Stays Here (STEM Awareness & Rural STEM Perspectives)

- Videos are created that highlight jobs and professions within the advanced manufacturing sector.
- Address the "talent drain" in eastern Oregon and serve those farthest from the opportunities. This includes both students and teachers.

Home Explorations (STEM Awareness & STEM Education)

- STEM lessons developed for at-home use in response to the COVID-19 pandemic.
- 125 At home magnet kits were distributed to rural students as part of the project.

STEM Outreach (STEM Awareness, STEM Education, & Rural STEM Perspectives)

- Social media outreach including STEM stories, news, and events across eastern Oregon and beyond.
- Outreach platforms include: Facebook, Twitter, Instagram, YouTube, Newsletter, Regional newspaper, and webpage.

By the Numbers

Within the 2019-2020 biennium:

2,026 teacher professional development hours

6,570 student participation hours to 1,150 students

320 hours donated from 67 industry professionals

David Melville, Executive Director | Go-stem@eou.edu | www.go-stem.org

Connected Lane County

LaneSTEM

2019–2020 Legislative Report

Elevate by Connected Lane County

STUDENTS

2,980 students participated

EDUCATORS

2,608 hours spent in industry

Elevate by Connected Lane County has been at the forefront of adapting to the new reality of distance learning as a result of COVID-19, and has done ground-breaking work providing an array of opportunities for students. From virtual tours of local companies to career skills webinars hosted by local industry experts, to job shadows and career expos, to the matching of students with mentors in the workforce, this effort is keeping students connected at a time when that challenge has never been greater.

Lane Community College

Computer Science & Digital Literacy

Launched Intro to Cybersecurity

codeORcreate hackathon

16 programs of study

Two districts working on K12 standards

Through this unique virtual program between Museum of Cultural and Natural History and Lane STEM, families were able to connect with the Museum of Natural and Cultural History to explore artifacts designed by Oregon's first engineers, visit with an archaeologist, and try out their own engineering skills! Funding STEM programs like this is vital to keeping families in Lane County (and statewide) connected and curious.

Museum of Natural and Cultural History

Across Lane County, STEM and CTE have continued to work hand in hand. At least 6 (with plans for more) of our CTE classrooms have been enriched by the opportunity to introduce a new Intro to Data Science course to their Program of Study. STEM funding in the next biennium is critical to keeping these partnerships and important initiatives alive.

Lane CTE

Partnerships

6 Regional Advisory Boards in collaboration with Lane CTE (38 new teachers)

6 New Sources of Funding

154 New Industry Partnerships

840 Unplugged STEM Kits distributed during STEM Week

Mathways & Patterns

- Introduction to Data Science in **nine** high schools
- Patterns used in **13** districts

I wish to fully support STEM funding, as this allows strong U.S. leadership in advancing future technologies and developing a skilled, modern workforce. The future pilots, engineers, software developers, and even astronauts are being built right here, with the help of STEM programs and funding!

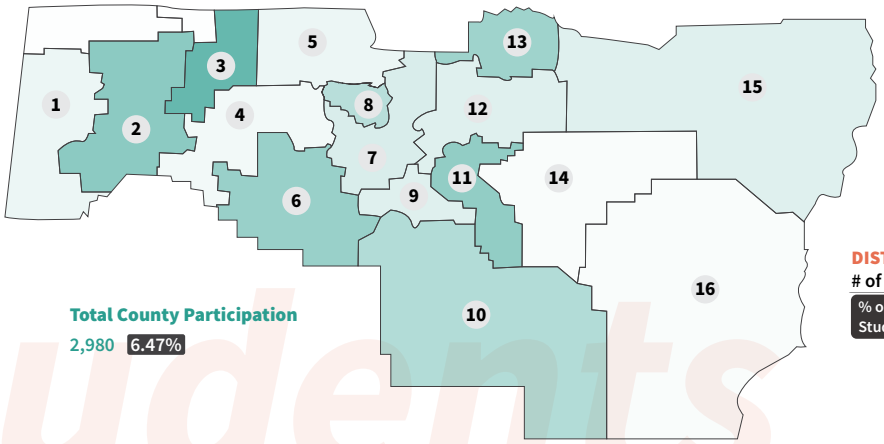
Lane Community College

As a nonprofit that supports all ages of people with intellectual and developmental disabilities, we find that our partner organization Connected Lane County provides added value to our educational and employment programs. We share their vision for all students' success from pre-K through high school graduation, and beyond.

Pearl Buck Center

Elevate *Participation by Region*

1 **SIUSLAW 97J** 37 2.73%	5 **JUNCTION CITY 69** 1,717 2.45%	9 **CRESWELL 40** 61 4.74%	13 **MARCOLA 79J** 11 4.87%
2 **MAPLETON 32** 158 17.72%	6 **CROW-APPLEGATE-LORANE 66** 40 15.44%	10 **SOUTH LANE 45J** 309 11.02%	14 **LOWELL 71** 2 0.23%
3 **BLACHLY 90** 53 23.25%	7 **EUGENE 4J** 1,016 5.87%	11 **PLEASANT HILL 1** 173 16.76%	15 **MCKENZIE 68** 11 4.87%
4 **FERN RIDGE 28J** 20 1.32%	8 **BETHEL 52** 596 10.74%	12 **SPRINGFIELD 19** 495 4.68%	16 **OAKRIDGE 76** 11 4.87%



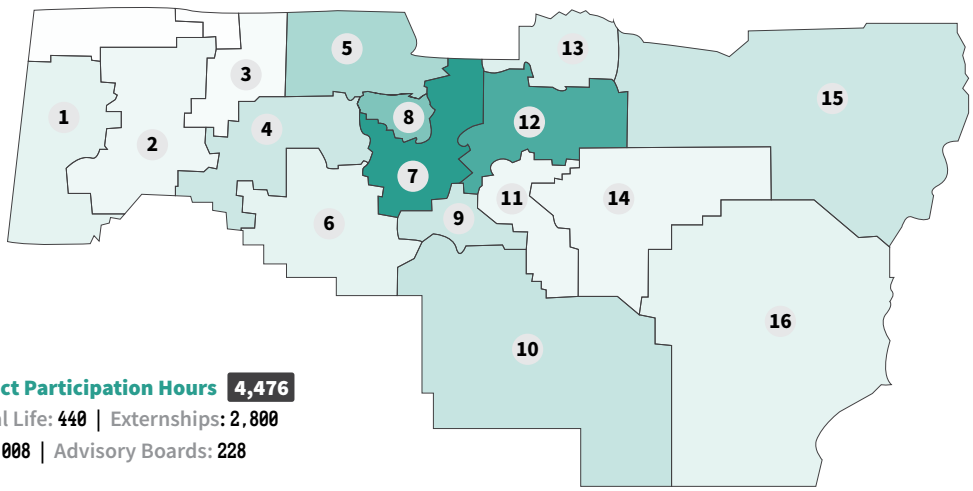
Total County Participation
2,980 6.47%

DISTRICT
# of Elevate Participants
% of Participants to Student Population

Students

Educators

1 **Siuslaw 97J** 3 Educators	5 **Junction City 69** 10 Educators	9 **Creswell 40** 6 Educators	13 **Marcola 79J** 4 Educators
2 **Mapleton 32** 2 Educators	6 **Crow-Applegate-Lorane 66** 3 Educators	10 **South Lane 45J** 9 Educators	14 **Lowell 71** 2 Educators
3 **Blachly 90** 1 Educators	7 **Eugene 4J** 26 Educators	11 **Pleasant Hill 1** 2 Educators	15 **McKenzie 68** 6 Educators
4 **Fern Ridge 28J** 6 Educators	8 **Bethel 52** 15 Educators	12 **Springfield 19** 21 Educators	16 **Oakridge 76** 3 Educators



Total District Participation Hours **4,476**
Math in Real Life: 440 | Externships: 2,800
Patterns: 1,008 | Advisory Boards: 228

Mid-Valley
STEM-CTE HUB

Growing, innovating, learning, and prospering... TOGETHER

MID-VALLEY STEM-CTE HUB - HISTORY

The Mid-Valley STEM-CTE Hub has gone through a couple of iterations since Oregon Department of Education approval in 2017. Here is a brief timeline/overview of our history:

~2014 - Mid-Valley Mid-Coast Partnership (MVMCP) considers STEM Hub
The MVMCP was created to engage Linn and Benton county educational institutions, share resources, and collaborate on strategies for improving the performance of the region's students and teachers. It was this group that considered the possibility of creating a STEM Hub for Linn and Benton counties, convened a small committee to work on concept and purpose, identified partners, and established Linn-Benton Community College as fiscal agent for the potential Hub.

Meanwhile, in 2014 - Pipeline created
Pipeline was a business-driven program out of the Albany Area Chamber of Commerce created through partnership with education and industry to expand the capacity and enrollment in K-12 and LBCC programs that lead to family wage careers in the region's expanding manufacturing and health care fields.

Late 2017 - The Mid-Valley STEM-CTE Hub (MVSCH) approved by the ODE

December 2018 - MVSCH hires its first full-time director

June 2019 - MVSCH's first director departs after experiencing differences with the Hub Board

June 2019 - Spring 2020 - MVSCH put "on hold"
After losing its first director, the Hub board regrouped to form a "new" STEM-CTE Hub/Pipeline Collaborative by merging Pipeline and the STEM-CTE Hub under a single Board of Directors, combining program capacity and resources, and bringing program partners together with a more unified vision, two fiscal agents (one for industry under the Albany Chamber and one for education and programming under LBCC), and a combined board that includes a representative from each of the fiscal agents plus five businesses and three education entities.

This newly formed collaborative between the STEM-CTE Hub and Pipeline expands the Pipeline, which through collaboration with LBCC, provides a bridge from K-12 to post-secondary education and careers in CTE-STEM, to rural and underserved populations in Linn and Benton counties. The partnership will allow the career connected learning activities that have thus far focused mostly on Albany schools and industries truly to expand to include all industries and school districts in the two-county region. This new collaboration will create a truly regional, sustainable career-connected-learning effort to address inequities and enhance the economic vitality of the region.

August 2020 - Mid-Valley STEM-CTE Hub rebranded and relaunched
The newly merged MVSCH/Pipeline hired its new director and the Mid-Valley STEM-CTE Hub has since hit the ground running. Highlights from our first 90 days, continued on next page.

What we've been working on since our reboot:

- Developing our mission, vision, values, goals, and corresponding strategic plan
- Meeting partners across other hubs, within the ODE, on the Board, and across sectors in both Linn and Benton Counties
- Setting up our systems and infrastructure for our virtual and physical spaces
- Identifying liaisons and cultivating relationships for collective action

CAREER-CONNECTED LEARNING

- Acquired an Oregon Connections/Nepris site license and brought 30+ local educators onto the platform to help make every day career day in their classrooms
- Organized Manufacturing Month for LBCC, with virtual industry chats and q & a's for students, parents, and educators across the region
- Connected with teachers to provide career-connected learning via virtual presentations & activities.
- Engaged in planning & development of a comprehensive resource library & system for connecting students to careers in high-demand, high-wage positions in our community.

COVID-19 RESPONSE

- Launched microgrants for classroom teachers and community-based organizations to help support and sustain work with youth on STEM-CTE programming
- Hosted a booth at the local Parks & Recreation Halloween Drive-Through to introduce ourselves to 1,500 of the area's families and students
- Partnered with the Linn County Library Consortium to provide 'take and make' STEM-CTE kits available to local libraries across the region via shared system catalogue and courier services
- Engaged with Oregon MESA to bring a chapter of their virtual Invention Camp to our region

COMMUNITY ENGAGEMENT

- Launched a website and six social media platforms
- Invested in PR & marketing to (re)introduce ourselves to our community, build an audience, and develop connections
- Joined the local Chambers of Commerce in our region and hosted meet & greet events for local business and industry professionals to learn about our Hub and connect
- Reached our network of >430 educators, parents, students, businesses, and community with twice-monthly STEM-CTE newsletters that have an open rate of 43% (industry average is 13.4%)

APPLIED & PROJECT-BASED LEARNING

- Created a weekly STEM-CTE Fridays series for at-home everyday STEM activities for educators & families
- Planned with the Boys and Girls Clubs of Greater Santiam to build a makerspace at their two clubs for STEM and CTE learning for rural youth; this will serve as our pilot for cultivating other community-based learning spaces across both counties
- Collaborated with Linn County Juvenile Probation to expand our Pathways camp to serve students in need of extra support throughout the entirety of the academic year with an in-person STEM-CTE enrichment camp

RESOURCE DEVELOPMENT

- Recruited an Advisory Board of nine community members across our region to advise and guide our work with equity as its core focus
- Supported our Hub network team with participation in shared programming, leadership, and cross-promotions to strengthen our collective voice
- Hired four college interns to help develop robust, relevant, and culturally responsive online content
- Awarded 40k in new grant money for programming. Received 67k of in-kind contributions for programming. Given 15k in matching grant funding for our teacher microgrants

Overview

The Northwest STEM Hub works to create and elevate science, technology, engineering, and math (STEM) opportunities across Tillamook, Columbia, and Clatsop counties. In partnership with PK-12 educators, higher education, community-based organizations, families and industry, we promote authentic in and out-of-school STEM experiences that ignite students' passions and interests.

Priorities

- Ensure formal and informal educational experiences are provided to members of the Region's communities, so they will be ready to engage in an economy and culture that is increasingly technological.
- Invigorate educational opportunity and economic prosperity to benefit both individuals and local communities.
- Ensure the historically predictable opportunity gap is closed for individuals of color, those who experience economic challenges, and those of rural origins.
- Develop student identities as people who are curious about science and makers that are creative and solve problems to create excitement, curiosity, and confidence.

Impact data

NW STEM Impact data from July 2019-July 2020:
Educators participating in Hub PD: 100
PD hours for participating educators: 1231
Students impacted by PD: 3180
Students participated in Hub activities: 2516
Student hours spent in activities: 12,917
Industry partners/volunteers supporting hub activities: 233
Hours industry partners committed to hub activities: 4367

STEM Hub Leveraged Funds:

Grants and sponsorships (current biennium)	$85,000
Partner investments in Hub initiatives	$224,853
In-kind time and resources	$107,821.23
Total	$417,674

Key Initiatives:

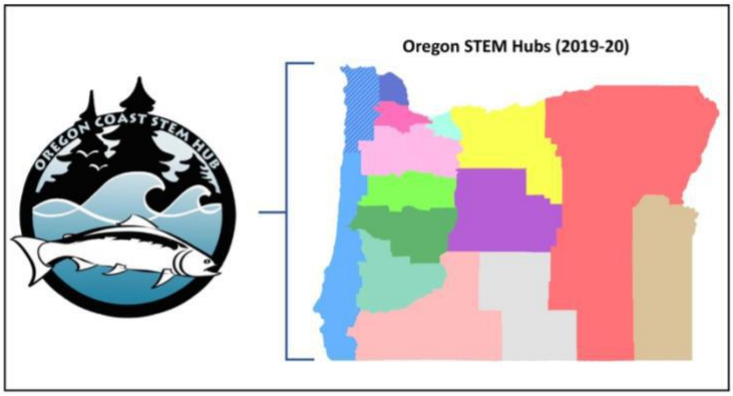
1. **Career Connected Learning through regional Works programs**
   The Northwest STEM Hub has been actively engaged in promoting a Career Connected Learning initiative throughout our region, which includes Clatsop, Columbia, and Tillamook counties. This work includes continuing to expand Clatsop Works, a paid, summer internship program for youth in Clatsop County. Clatsop Works recruits students from the county's five school districts, along with engaging Clatsop Community College students and programs. The NW STEM Hub has also has also engaged cross-sector partners to replicate Clatsop's best practices to establish Columbia Works and Tillamook Works, leveraging the unique assets and community partners within each county. While COVID was an obstacle for some industry partners to host interns, the Works programs were able to host 29 interns regionally during the summer of 2020. Throughout the next year, we are working with our partners to offer additional programming during the school year, more opportunities to develop career readiness skills and connect with local industry.

2. **Professional Development**
   Northwest STEM Hub's goal is to provide pockets of professional development opportunities for P-20 educators. Some examples of these opportunities are:
   - Early Learning- In collaboration with the NW Early Learning Hub and CCR&R, we provide STEM professional development for early learning service providers and families.
   - Elementary and Middle School- Through our STEM Innovation projects with the Rural Learning Collaboratives, the Oregon Science Project, and the STEM Transformation Schools, we were able to provide targeted NGSS professional development to elementary and middle school formal and non-formal educators.
   - High School and Post-Secondary- Through our unique partnership with the Oregon Manufacturing Innovation Center (OMIC), we are providing CTE teachers and guidance counselors opportunities to learn more about OMIC technical skill development and program alignment.

3. **Equity-focused Educator and Families Engagement Supports**
   A long-term goal of the Northwest STEM Hub has been to support equitable student/youth engagement and program accessibility through developing funding resources and grants for curriculum, materials, and supplies for educators and families. Examples of this work are:
   - Community Innovation Mini-grants offered to regional partners in P-20 education
   - Support of non-formal education partners including the Columbia River Maritime Museum, Consejo Hispano, and the regional public library systems
   - Distribution of STEM kits and materials throughout the region as comprehensive distance learning engagement tools

Oregon Coast STEM Hub

Who We Are



Headquartered at the Hatfield Marine Science Center in Newport, the **Oregon Coast STEM Hub** (OCSH) serves coastal educators, youth, and rural communities along the entire Oregon coastline, from Brookings to Astoria. Our Hub's geographic region provides unique opportunities for place-based learning focused on coastal ecosystems, marine science and technologies, and career-connected learning for the maritime sector and other coastal industries. The OCSH supports a wide array of STEM teacher professional development and student experiences in a variety of STEM fields, collaborating with more than 60 partners throughout the region. Our partners include 20 school districts and five post-secondary education institutions, as well as a broad coalition of industry, community organizations, and government agencies committed to our vision to foster a culture of STEM innovation.

Student STEM Experiences * Teacher PD * Community Partnerships

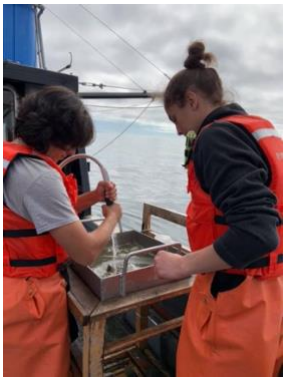
VISION: *Fostering a culture of STEM innovation by engaging people of all ages to create a vibrant and prosperous region.*

MISSION: *The Oregon Coast STEM Hub engages learners with STEM by leveraging local and regional resources and collaborating with diverse partners.*

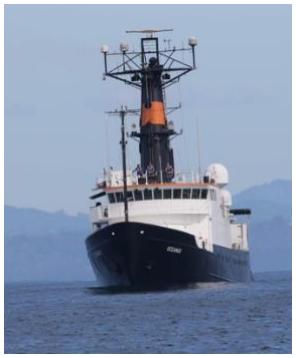
Oregon Coast STEM Hub

OUR IMPACTS in the 2019-20 Academic year

- **2,005** students engaged in direct career-connected student STEM learning experiences
- **437** educators engaged in **4,388** hours of STEM professional development, reaching **25,806** students
- **103** STEM business and industry volunteers contributed **1,345** hours to support student STEM experiences
- **$369,251** grants and sponsorships secured for the Oregon Coast



Shipboard Experiences for Students and Teachers
HS teachers and students from Siletz and Bandon worked with researchers to collect data on the *R/V Pacific Storm*



Oregon coast students and teachers studied marine mammals and seabirds during a 4-day research cruise on the *R/V Oceanus.*

2,700 students benefitted from STEM equipment borrowed from the Oregon Coast STEM Hub trailers

Partnering school districts that used STEM materials provided by OCSH saw a 25% increase in student attendance on days with normally high absenteeism.

"Thank you so much for supporting our students!" -Teacher on the R/V *Pacific Storm*

"I can't imagine a better way to teach students about ocean science and what it takes to be a researcher." -Student on the R/V *Oceanus*

ORSEA Professional Development – The Oregon Marine Scientist and Educator Alliance (ORSEA) connected math and science educators with scientists to create curricula focused on marine phenomena. Lessons included opportunities for data exploration and career-connected learning, while building STEM skills.

STEAM Activity Kits in Libraries
1,000 STEAM kits and bilingual activity books were created for six public libraries and distributed to young families through Summer Reading Programs.

Portland Metro STEM Partnership
650 NW 118th Avenue
Portland, OR 97229
info@pdxstem.org

OVERVIEW

Portland Metro STEM Partnership (PMSP) is a regional collaboration of public and private organizations with a shared goal of transforming science, technology, engineering, and mathematics (STEM) education for K-20 students. Launched in 2011 as a Collective Impact initiative, PMSP was the precursor for the Oregon STEM Hubs. We believe that high quality STEM education is critical for preparing our youth for a STEM-based economy and for developing a STEM literate society able to fully participate in our democracy. PMSP supports the creation of world-class STEM learning environments that are captivating and relevant for ALL students, regardless of background or zip code. PMSP's primary geographic area is defined by the boundaries of our five school district partners: Banks, Beaverton, Forest Grove, Hillsboro and Portland Public. Our actual region extends beyond these boundaries as we engage community-based organizations, business/industry and other partners outside these school district boundaries.

CORE INITIATIVES

PMSP supports the creation of world-class STEM learning environments that are captivating and relevant for ALL students, regardless of background by:

- Providing access to effective professional development for all types of educators
- Facilitating whole school transformation to become STEM- or STEAM-focused
- Developing in-school/out-of-school partnerships to expand STEM learning opportunities for youth
- Cultivating career-connected learning so that students and educators understand how STEM courses and careers are intertwined
- Supporting educators' use of evidence to create strong learning environments for all youth

PMSP addresses these endeavors collectively, resulting in greater impact, by:

- Connecting and convening educators, businesses, professionals, and community programs to work together toward shared STEM education goals with larger effect
- Identifying resources and relationships across the region to leverage the strengths and assets of partners to improve outcomes while reducing duplication of efforts and maximizing effectiveness
- Designing and implementing STEM programming for historically under-served or marginalized youth in multi-partner projects
- Providing tools, sharing proven methods, and offering consultations to strengthen our partners and bridge the gap between research and practice to improve STEM learning for all youth

SPOTLIGHT INITIATIVE: High School Science for All

Ninety-eight high schools in fifty-one districts across Oregon are piloting or implementing a common High School Science approach and curriculum designed to provide all students access to a rigorous,

engaging, highly relevant, three-year learning pathway that better prepares them for post-secondary success. Development of this curriculum began in 2011, when PMSP and Portland State University (PSU) co-funded STEM Teachers on Special Assignment in our partner districts to support STEM education and identify barriers to success. Beaverton School District (BSD) reviewed course taking patterns and other data and discovered that students had hundreds of choices in how to earn their three years of science credit for graduation. Many students achieved their credit requirements through introductory science electives rather than a pathway that supported rigorous development of science literacy. As an example, only 11% of students were taking physics, a gateway into many STEM professions. Under this model, too many students, especially youth of color and youth qualifying for free or reduced lunch, were not accessing rigorous classes that would prepare them for college and career. Forest Grove School District (FGSD) saw similar patterns in their data. Seeking to change this dynamic, PMSP, BSD, FGSD, and PSU developed this 3-year science sequence aligned to the Next Generation Science Standards (NGSS): freshman physics, sophomore chemistry, and junior biology courses. In 2016, Portland Public Schools & Hillsboro School District joined this collaborative effort that includes summer professional development for high school science teachers implementing the curriculum. These four districts serve approximately 20% of the students in Oregon. PMSP hosts annual summer educator institutes and leverages a team of master teachers from across our partner districts to continually refine the open source curriculum. What started in two partner districts, has now expanded across the state to reach one in three Oregon high school students.

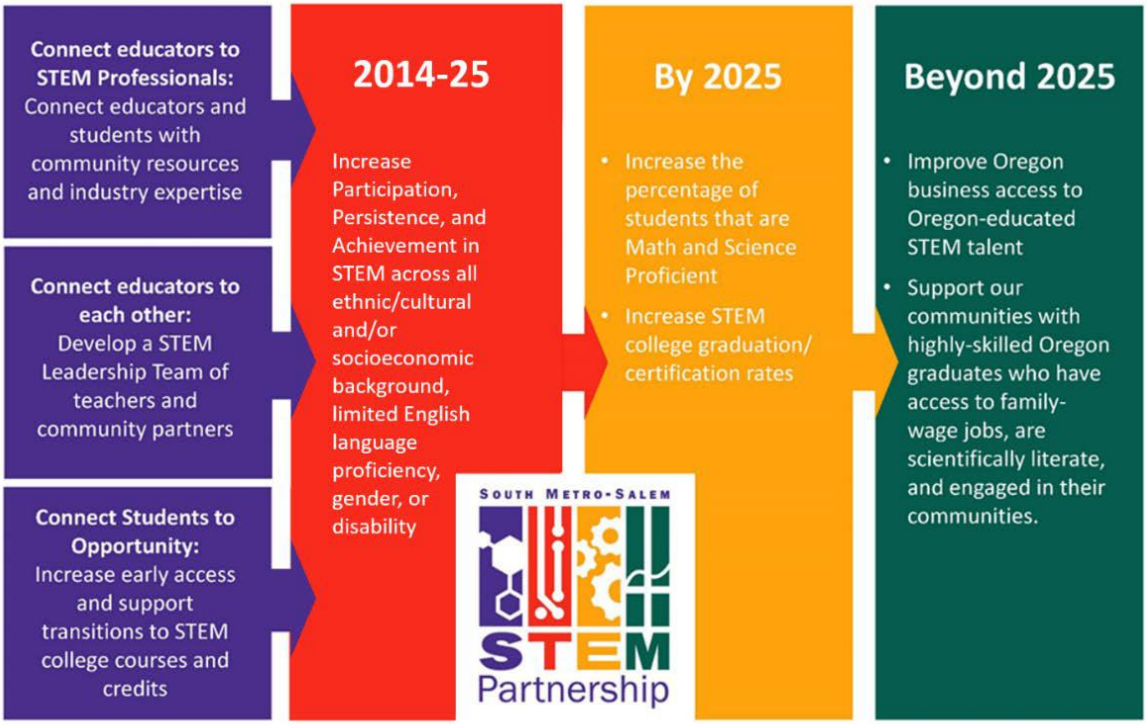
IMPACTS THIS BIENNIUM*

Impact Area	Value
Number of educators who participated in Hub PD or programs	948 educators
Number of educator hours spent in Hub PD and programs	9,109 educator hours
Project number of students impacted by educator PD participation	76,275 students impacted
Number of industry volunteers who participated in Hub activities	430 industry volunteers
Number of industry volunteer hours	986 volunteer hours
Number of students who participated in Hub support programs	7,322 students
Number of student hours in Hub support programs	20,735 student hours

PMSP Leveraged Funds (non-state funds):	Value
Grants and sponsorships (2019-2021)	$731,300
Partner investments in Hub initiatives (2019-2021)	$668,559
In-kind time and resources (2019-2021)	$285,591
Funding secured during this biennium for the future (2021-2023)	$453,721
Total	**$2,139,171**

* 7/1/2019-11/3/2020

The South Metro-Salem STEM STEM Partnership (SMSP) is a collaborative of community leaders, representing 17 K-12 school districts, 5 higher education institutions, and more than two dozen industry, civic, non-profit, and community organizations, with the vision to catalyze Oregon students to achieve STEM degrees and certificates, and reach Oregon's education goals by increasing the access, excitement and engagement of students in STEM courses and experiential learning. Since 2012, we have leveraged more than $3.7M of external funding ($265K in new dollars, FY2020), in addition to state funds, for projects to advance our STEM goals among and in support of our partnering organizations. We seek to achieve these goals by focusing our efforts on activities and objectives that support three core strategy areas that represent the assets, needs, and opportunities in our region, with particular emphasis on strategies that have potential for scalability and/or transferability within the STEM Oregon regional hub network.



The SMSP region is comprised of the suburban and rural areas south and southeast of Portland, continuing through rural regions surrounding the I-5 corridor extending into the urban community of Salem. The 17 partnering school districts serve over 125,000 students, or about 25% of the state's K-12 students. While our partners acknowledge that our region is rich in STEM resources, there has not historically been cross-district or cross-sector collaboration to tap these resources in a coordinated, systemic, equitable manner. Localized economic and geographic disparities have largely determined which students could access high quality STEM educational resources. Local employers are unable to fill open, well-paying STEM jobs with students from their community, all of which are increasingly ethnically and racially diverse. Systemic coordination of efforts, collection of data, encouragement of new partnerships, and initiation of new opportunities to acquire resources are needed. *The hub backbone enables such cross-sector collaboration across our three core strategies to ensure that best practices and valuable resources are shared among educators, across sectors, and between partner institutions for the good of all students in our region, our workforce, and our communities.*

Since 2012, the SMSP partners have engaged in a number of activities and initiatives related to the main core strategies that have resulted in demonstrable change to the regional STEM education landscape (Key initiatives bolded).

1. Connect educators and students with community resources and industry

   Key Achievements in FY20:

   - **Establishment of regional site licensing model for Oregon Connections, powered by Nepris, an online platform facilitating real-time virtual skills-based connections between educators and STEM industry volunteers.** This was critically important during school closures and distance learning. 8 of 13 STEM Hubs currently hold licenses for educators in their regions. Statewide, 1784 educators and 165 industry users have been added since July 2019. SMSP has trained over 140 new education users and supported incorporation of the tool into classroom and distance learning.
   - Led negotiations with Nepris to make Oregon Connections free to all educator and *parent* users in Spring 2019, during school closures.
   - Hosted 5th Annual STEM Industry Networking event for educators. Hosted virtually on Oregon Connections, 80 educators engaged with 30 industry professionals from 11 sectors.
   - Statewide*, 5424 students have engaged with 77 live teacher-requested virtual sessions and 271 live industry chats. Nearly 1800 archived sessions have been accessed from the video library by educators and students. **Usage is currently difficult to disaggregate by region.*
   - Collaborating with Willamette ESDs Control Tower effort to engage students in career exploration and work-based learning by linking Oregon Connections efforts to the dashboard for student exploration.
   - Maintain STEMOregon.org as a central shared asset for STEM education in Oregon.

2. Connect educators to each other.

   Key Achievements in FY20:

   - **Established STEM Leadership Families, an opportunity for teachers to self-select into topical peer-groups across the entire region to learn from one another. This effort morphed into virtual STEM Happier Hour Chats following school closures.** STEM Happier Hour Chats are available to educators statewide and happen twice a month on topics such as Student Engagement at a Distance, Distance Learning Beyond the Screen, and Online STEM Labs.
   - Engaged >70 teachers from 21 K-8 schools in human centered design process for addressing hurdles related to Fall 2020 School Re-Entry.
   - Renewed $90K funding to support development and delivery of standards-based NASA-related STEM professional development to 30 rural middle school teachers
   - Served as Oregon's nucleus for the Northwest Earth Space Science Pipeline collaborative with University of Washington; hosted ROADs on Mars Challenge for >100 middle and high school students (drone and robotics challenge). Adapted to online format to challenge in Summer 2020. Currently launching virtual ROADs on Asteroids Challenge for 2021.
   - Collaborated with Willamette ESD to engage >145 teachers in summer externships.
   - Engaged two rural elementary schools (Silver Falls, Gervais) in STEM Transformation Planning through STEM Innovation Funds.

Other Key Achievements:

New partners the Healthcare sector. The broad reach of this project to support community co-investment in healthcare-focused opportunity for underserved students that meet the needs of our regional healthcare providers, combined with the opportunity to match funds through the Oregon Community Foundation Ignite initiative, has enabled us to work differently with our CTE and workforce partners, and provided opportunity to engage meaningfully with healthcare employers (Kaiser Permanente, Salem Health, Legacy Health, Providence). SMSP has not previously interacted extensively with our regional healthcare entities.

Southern Oregon STEAM Hub 2018-19

Background

The Southern Oregon STEAM Hub uses the collective impact approach serving formal and informal educational organizations in Josephine, Jackson and Klamath counties, including 13 school districts with 8 percent of Oregon's school aged population.

Our mission infuses STEAM (Science, Technology, Engineering, Arts, and Mathematics) into every classroom and beyond. STEAM references both courses/academic disciplines and a "way of thinking/being" in the classroom from P-K to career. Scientific inquiry, creativity, innovation, computational thinking, project-based learning, and collaborative problem solving are the hallmarks of the 21st century workplace and SOESD schools. These skills along with core relationship competencies and mindsets drive the outcomes necessary to thrive bringing economic prosperity to all!

Core strategies and Initiatives

Overarching all the strategies and Initiatives below, and core strategy in and of itself is to increase the diversity of participants in STEAM activities. Specifically, our focus is to increase the number of underserved/non-traditional educators and students who have access to and persist in STEAM opportunities.

1. Educator Professional Development

Our focus for professional development this biennium is creating **teacher leaders**. After positive feedback from our 24 educators who received world-class training from Best Practices in Math by Teachers Development Group during the 2018-19 biennium, we submitted a **Math In Real Life** Grant through ODE to send **12 teachers to the Teacher Leadership Conference** in March of 2020. Teachers Development Group led PLC time with our teachers through spring of 2020 and again is holding grade level specific PLC time this fall for teachers. Math teacher leader, Debbie Knapp from Prospect Charter school presented to educators statewide during our 2020 Ed Tech Summit in August. This year's Ed Tech Summit hosted over 700 attendees; we partnered with **Oregon Connections Nepris** as a platform. Debbie Knapp also presented during our Teacher Symposium in October which was open to educators around the state. She shared her lesson plan to be available on the **Oregon Open Learning** site.

Teacher Leaders are emerging through our work with the **Oregon Science Project** with Heather Armstrong from Talent Middle School, Ben DeCarlow from Butte Falls Charter.

2. Youth Voice Initiative

Our 20-21 school year has 7 schools hosting **24 Chief Science Officers (CSO's)** with Butte Falls Charter joining us brand new this year. CSO's attended a virtual summer leadership seminar to learn what it means to be a CSO, create their STEAM awareness strategic plans that will ultimately benefit their school and community beyond and also to meet CSO's from around the state. Our CSO's are ambassadors helping adult decision makers in education and industry to better understand the needs of diversity for students in the region. The Youth Voice initiative leverages student voices to promote STEAM activities, events, and opportunities for their peers. An Industry panel is being planned virtually through the use of **Oregon Connections Nepris**.

3. Partnerships

Partnerships and collaboration are a vital component of sustainable programming and efforts to maximize impact and outcomes. Southern Oregon Steam Hub and **Gordon Elwood Foundation partnered with Camp Invention** creating **4 summer camp locations serving 121 students** from Jackson, Josephine and Klamath counties. Maintaining our partnerships is a priority and the SOESD currently lists over 40 active industry, business, community, and government agencies with whom we robustly collaborate on STEAM events, activities, and opportunities for educators, students, and their families. Partnerships with **Talent Maker City** include the makings of STEM lessons ready for teacher use at the elementary, middle and high schools. Our **Josephine and Jackson County Libraries** are helping us distribute 250 STEM kits for early learners. **Science Works** is preparing to launch virtual elementary age STEAM lessons available for live student interaction over the Oregon Connections Platform; these lessons will align to the state wide featured career focuses each month.

4. Data-driven Decision Making

We are currently conducting a **regional needs assessment**; the findings are anticipated to clearly direct our projects moving forward. The guidance team driving this work is made up of educators, industry partners and community partners from Jackson, Josephine and Klamath County. Dialogues in Action is facilitating the work of this assessment to help us understand the barriers of accessibility that some of our students face. Upon completion, a report will be shared out publicly for immediate use to increase opportunities for young people in preparation for pathway selection and promoting local high wage, high demand careers in STEM. For more information regarding our final assessment, please contact Karla Clark at: karla_clark@soesd.k12.or.us .

High-lights with a shift since COVID and Community Supports

1. Southern Oregon STEAM Hub Lending Library

We have 3 mobile maker space kits available for check out; we deployed 1 kit each both to Jackson and Josephine County with preparation to send a kit to Klamath just before COVID hit. Professional development was scheduled routinely for our educators to become familiar with and comfortable in their classroom using these lending library items during the 2019-20 school year. When COVID hit, we were able to lend our 3 -D Printers to Talent Maker City and to CTE teachers and students to aid in the designing and printing of face shields and other PPE for our community. This effort was orchestrated largely by our local industry and community partners who call themselves COVID Skunkworks.

2. Oregon Connections and STEM Kits

We have a greater need to connect virtually, giving opportunity for some to connect with more. Simultaneously we have families who lack internet access or have other challenges. Our hub is working hard to braid resources; utilize our funding to strengthen vertical alignment in pathways and provide awareness and exploration opportunities at every level whether they are digital or hands on materials that help a student step away from a screen. While we have landed a site license through Oregon Connection NEPRIS that is made available to every educator in our region, we also recognize and are working to support the educators and students who do not have internet access or technology. Also since COVID, a parent/student use agreement has been developed so that lending library items can be checked out and sent home with families. We look forward to our classrooms coming together again so that the equipment can serve more students at once.

The fires in Southern Oregon have compounded the effects of COVID for some families. One of our projects partners with Southern Oregon Fire Ecology and together we gathered donated, brand new art and school supplies for 500 students and then partnered with the Phoenix Talent School district and other helping hands to distribute the kits to families who had lost their homes.

INTRODUCTION

The mission of the Umpqua Valley STEAM Hub is to support and provide inspiring, engaging, authentic STEAM learning experiences for youth in Douglas County preparing them for future careers and a meaningful future.

The Umpqua Valley STEAM Hub serves the geographic area of Douglas County which includes 13 school districts meeting the educational needs of 14,000 students. 7 of the 13 districts serve less than four hundred students and 10 of 13 have 60% or more qualifying for Free/Reduced lunch. Our communities are considered rural with considerable distance between schools spread throughout the 5134 square miles of Douglas County. We also serve early learning providers, private and home school youth, youth-serving organizations, libraries, business/industry and our community at large.

STRATEGIC GOALS

1. Improve the quality of STEAM learning experiences PreK – 16+ both in and out of school by supporting educators through professional development and a resource lending library.
2. Expand opportunities for family and community engagement in STEAM Learning experiences to build community ownership for quality STEAM education.
3. Increase the number of students engaged in STEAM career connected learning experiences through awareness, exploration and preparation with support for future planning including post-secondary education

PROFESSIONAL DEVELOPMENT SUPPORT

Professional Development support has necessarily taken on a new look in the virtual environment, expanding opportunities and flexibility for STEAM educators in the Umpqua Valley. We have: Partnered with the Southern Oregon STEAM Hub to offer an Educational Technology Conference, Next Generation Science Standards Professional Development, Patterns Science and BIE Project-Based Learning PD. A total of 75 Umpqua Valley teachers were impacted at our summer conference.

Our Elementary STEAM Leaders project has engaged 21 teachers in 28 hours of PD (with more to come) to develop quality STEAM learning experiences in their classrooms and schools. Partners are Greater Oregon STEM and the Gorge STEM Hub. Hucrest Elementary School has begun their STEAM Transformation work led by Portland Metro STEM Partnership, becoming leaders of STEAM Education in our county.

A fall early learning conference introduced 54 early learning providers in southern Oregon to Wee Engineering. A leadership cadre of 16 providers is being forned to provide more PD.

RESOURCE LENDING LIBRARY

The Umpqua Valley Resource Lending Library had over 90 different items to support quality STEAM education in classrooms and beyond school environments. We serve learners and educators PreK to community college. We currently have over 180 registered users and distributed materials to over 160 user events through March 2020 when COVID arrived. We recently moved to a new online check out system that responded to teacher input and needs. It can be found at: www.umpquasteamhub.org

COMMUNITY ENGAGEMENT

STEAM EXTRAVAGANZA

The annual STEAM Extravaganza had the opportunity to go virtual this year. The May event coincides with Oregon STEM Week and this year we involved Hubs across the whole state to promote STEAM activities at home. Instead of one day, we promoted Soaring Sunday, Make-It Monday, Take Apart Tuesday, Wondering Wednesday, Think About It Thursday, Field Trip Friday and Shadowing Saturday. Facebook, local media and our website was alive with several activities for our families. New activities were added throughout the spring.

COMMUNICATION and STORY SHARING

Through the support of communication specialists, the stories of STEAM education in the Umpqua Valley are shared regularly through websites (www.dcpss.org www.brightfuturesumpqua.com), social media, The Partner's Post, television, radio and local newspapers.

BRIGHT FUTURES UMPQUA

The Bright Futures Umpqua initiative emphasizes the connection between quality STEAM education and future careers leading to personal and community vitality.

BRIGHTWORKS CLUBS

Using the Chief Science Officer model develop through Arizona SciTech, we are launching virtual Brightworks Clubs to elevate the youth voice and engagement in STEAM education linked to future careers. Two AmeriCorps members have joined our team to facilitate the clubs across all high schools in the Umpqua Valley as well as home-schooled youth. Brightworks Clubs are established in healthcare, Manufacturing/Design, The Trades and general career exploration.

OREGON CONNECTIONS

Oregon Connections provides career connected learning through virtual field trips, "chats" with industry professionals both local and national, and access to digitized presentations where professionals share their skills and expertise to bring authentic learning opportunities to students. 133 total educators have been trained, 700 students reached, 4 virtual field trips completed and 30 local sessions scheduled. We are currently developing a series connecting loca industry to educational pathways at Umpqua Community College.

BUSINESS/INDUSTRY PARTNERSHIPS

We have expanded our engagement with business/industry through a partnership with the Southwest Oregon Workforce Investment Board, working with them to provide industry tours and internships for students. Last year our AmeriCorps members work with their talent advisors to place 39 students in STEM related internships.

COMMITMENT TO EQUITY

Our commitment to equity is reflected in our partnerships with community organizations that work with traditionally underserved populations. 2000 STEAM Kits were distributed across the county this summer through DHS, summer lunch programs and libraries. We work regularly with high school TRIO programs, youth transition programs, our homeless and ELL liaisons and our local Tribe.


HIGHER
EDUCATION
COORDINATING
COMMISSION
OREGON
1859