Oregon Department of Education

GEER Computer Science Grant
End of Year One Summary

October 2022 – September 2023

OREGON DEPARTMENT OF EDUCATION

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Overview:

The following report highlights the accomplishments of the thirteen STEM Hubs that received GEER funding to support regional computer science projects.
All Oregon GEER investments are dedicated to education programs that remove systemic barriers to equitable education and prioritize supporting historically excluded communities disproportionately impacted by the pandemic. The funds are specifically centered to equitably serve Oregon's Black, Latine, Indigenous, Asian, Pacific Islander and Tribal students; students with disabilities; students who identify as LGBTQ2SIA+; multilingual learners; students navigating foster care, houselessness and poverty; and students with limited access to resources due to their geographic location.

Background: What is the Computer Science initiative?

In May of 2022, the Oregon Department of Education (ODE) was directed by former Governor Brown to lead two initiatives pertaining to computer science education:

1. Distribute $6 Million in GEER Funds through grants to increase computer science opportunities for students during the 2022-2024 school years, particularly for female identifying students and students of color. ODE distributed these funds to Oregon's 13 Regional STEM Hubs through the STEM Hub Computer Science Grants to amplify and support regional projects between October 2022 and September 2024. This summary report describes the accomplishments during the first year of these grants (October 2022 – September 2023). A final report for the 2023-24 federal fiscal year is forthcoming.
2. Develop a statewide Computer Science Education Implementation Plan, in collaboration with the Higher Education Coordinating Commission, to provide computer science accessibility to all of Oregon's public-school students by the 2027-28 school year. The Computer Science Education Implementation Plan was officially released in December 2023.

The goals of the initiative:

Increase Access: Increase the number of computer science education opportunities and the capacity for existing opportunities.

Diversify Participation through Equity and Inclusion: Increase the diversity of students participating in computer science opportunities with a focus on students historically and systemically underrepresented in computer science.

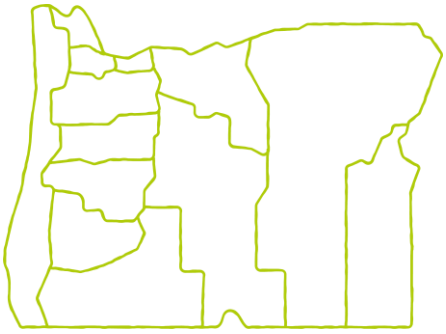
Support Equity-Based Systemic Change: Align projects with other current and future computer science opportunities grounded in equity at the building or district level, including work with Career and Technical Education (CTE) Regional Coordinators and CTE programs to support strong, inclusive CTE programs in computer science.

Strengthen Engagement and Sense of Belonging in Computer Science: Retain historically and systemically underrepresented students in computer science opportunities using equity-based strategies and integration of career-connected learning.

Engage Community-Based Organizations: Connect communities to the planning and implementation of computer science education to build culturally relevant instruction and sustainable programs.

Accomplishments of the 13 Oregon STEM Hubs

In November 2022, the Computer Science GEER Grants were established and allowed for work to begin as early as October 2022. In 2023, the Oregon Department of Education secured a one-year no-cost extension of the Computer Science grants, through September 30, 2024.



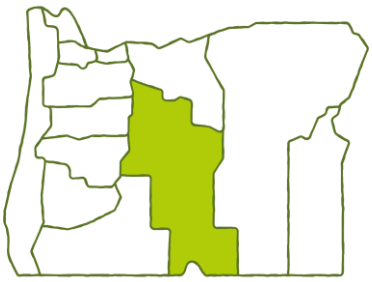
Over 54,000 of Oregon's PreK-12 students have been engaged in and impacted through various projects, both during and outside of the school day. Approximately 120 of Oregon's 197 school districts (61%) have participated in Computer Science professional development resulting from grant funds. All activities target at least one of the grant goals given above, such as increased access and broadening participation.

By the end of the first year of the grant, with approximately 58% of the funds spent, there have been many accomplishments, outlined further in this report.

Central Oregon STEM Hub (High Desert ESD)

- STEM Hub Director: Tracy Willson-Scott
- Number of School Districts: 14
- Counties Served: Deschutes, Jefferson, Crook and Lake
- Number of Students in Districts: 32,859

Accomplishments:



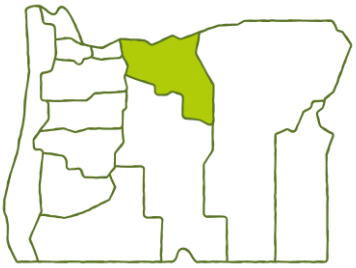
Central Oregon STEM Hub focused the first year on implementing school-day programming for PreK-12th grade students, expanding after-school and community engagement activities and enhancing enrichment programming for migrant students and facilitating activities for Warm Springs Summer School. These activities included 122 different events, serving 5,831 students during the year. A standout initiative of the year was the Coder in Residence program, which introduced teachers and students to fostering immersive, hands-on learning experiences about computer science. Through these efforts, Central Oregon forged numerous partnerships with community-based organizations, district leaders, and school administrators.

Additionally, Central Oregon STEM Hub provided a diverse array of professional development programs for Pre-K through 12th-grade educators, as well as out-of-school educators. They organized 17 training opportunities, with 215 teachers benefiting from these sessions. The professional development efforts aimed to equip teachers with the tools to ignite early interest for computer science in youth, leading them towards potential computer science pathways in middle school, high school, and beyond.

Columbia Gorge STEM Hub (Columbia Gorge ESD)

- STEM Hub Director: Julie Cucuel
- Number of School Districts: 10
- Counties Served: Gilliam, Hood River, Sherman, Wasco and Wheeler
- Number of Students in Districts: 10,426

Accomplishments:



Over the past year, Columbia Gorge STEM Hub focused on bringing computer science education to rural counties in their region, emphasizing unplugged activities for hands-on exploration and addressing the needs of students with limited computer and internet access.

One highlight this first year was providing 179 educators professional development in Computer Science education. The professional development opportunities ranged from online, virtual, in-person and participation in state and national conferences. The trainings focused on technology to ensure classroom implementation and sustainability.

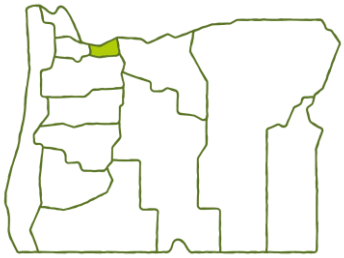
Continuing to enhance computer science capacity, the hub engaged in outreach and marketing strategies to connect with regional districts and teachers. They showcased computer science equipment at their annual Gorge STEM Fair, a free, two-hour event, exposing families to Bee Bots and Spheros among other education technology tools.

Moreover, they partnered with A05 Robotics Team from Hood River County School District to offer afterschool mentoring programs for elementary students, procuring toolkits to support over 180 students. They anticipate significant growth in this mentoring program going forward.

East Metro STEM Hub (Multnomah ESD)

- STEM Hub Director: Jarvez Hall
- Number of School Districts: 6
- Counties Served: Eastern Region of Multnomah
- Number of Students in Districts: 38,710

Accomplishments:



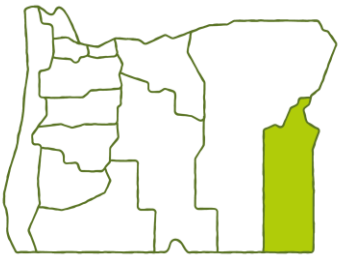
East Metro STEM Partnership implemented an Esports Program focused on using gaming to increase student experiences and interest in computer science (and related fields) while addressing barriers to participation in East Multnomah County. The program consisted of providing schools with computing technology to allow participation in Esports and provide other computer science curricula to students. The program also provided professional development to school personnel on Esports coaching, leading to level 1 Esports Coaching certification for participating coaches. The program hosted an online Esports season, which culminated with an in-person event, the East Metro Esports Championship and Expo, held at Mt. Hood Community College in June 2023. One hundred middle and high school students competed for gameplay championships and explored a mini-college fair, Intel Gaming Lounge, Industry Professional Panel and PC Build station. The industry panel made a significant impact on the students, introducing them to the importance of computer science education. Due to the event's success, an expo will be scheduled for 2024 and will include more colleges as part of the college fair, a virtual reality station and a Blazer gaming station hosted by the Portland Trail Blazers.

MetroEast Community Media, a local community media partner, recently won a Hometown Media Award for "Live Sporting Event Coverage" for covering this event, featuring interviews with staff, teachers, partners and students.

Frontier STEM Hub (Malheur ESD)

- STEM Hub Director: Nickie Shira
- Number of School Districts: 11
- Counties Served: Malheur
- Number of Students in Districts: 5,095

Accomplishments:



Frontier STEM Hub spearheaded six distinct events during the first year, offering a multifaceted approach to enhancing computer science education. These events encompassed professional development sessions for educators, in-school and after-school activities and collaborative opportunities for community partners to engage in computer science initiatives. Educators took part in professional development sessions to implement computer science efforts such as robotics, CAD and digital fabrication tools into their classrooms, with the aim of inspiring and engaging students. Additionally, the initiative deployed a traveling computer science (CS) teacher-on-special-assignment (TOSA) to rural schools, directly bringing CS education to remote communities.

Middle school students participated in after-school programs focused on 3D design and fabrication. Robotics scrimmages offered further opportunities for skill development beyond regular school hours. The grant funded new computer science classes in high schools such as Adrian and Nyssa. Students at Four Rivers and Ontario High School gained access to E-Textiles curriculum and supplies through teacher professional development supported by the grant.

Greater Oregon STEM Hub (Eastern Oregon University)

- STEM Hub Director: David Melville
- Number of School Districts: 42
- Counties Served: Baker, Grant, Harney, Morrow, Umatilla, Union and Wallowa
- Number of Students in Districts: 29, 134

Accomplishments:

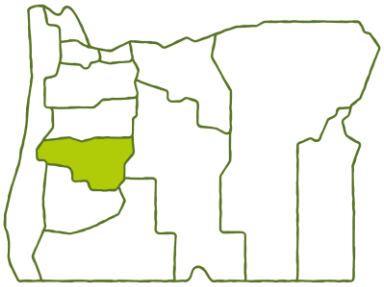
Greater Oregon (GO) STEM Hub distributed computer science materials to teachers and students using grant funds. Teachers had the option to purchase or borrow supplies from the GO STEM lending library, which supported tiered student exploration and skill growth. Alongside the lending library, GO STEM developed a professional development guide to aid schools in implementing these products and new computer science programs.

GO STEM staff piloted a STEAM Literacy class at a local arts center, featuring kits and picture books with coding and robotics activities, which are now available for community-based organizations to borrow from the lending library. Additionally, they held weekly after-school office hours in the spring for educators seeking computer science assistance. This year, three educators are teaching Computer Science for All for the first time and plan to share their experiences with GO STEM, receiving stipends for their efforts. GO STEM also funded eight robotics programs across the region and the Mobile Maker Lab initiative utilized grant funds to offer in-school professional development and student experiences.

Lane STEM Hub (Lane ESD)

- STEM Hub Director: Gabriel Gellon
- Number of School Districts: 15
- Counties Served: Lane
- Number of Students in Districts: 41,922

Accomplishments:



Lane STEM Hub's Invention Club and Invention Lab collaborated to support middle and high school students in exploring computer science and STEM. Invention Lab students acquired skills in coding Python and C++. The Invention Club's annual theme changes to provide students with new opportunities to develop coding skills. Both programs prioritized career and college readiness, ensuring participants were informed about available computer science courses in public schools.

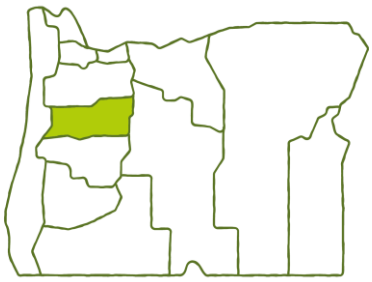
Lane STEM Hub significantly increased participation rates for the Invention Lab, experiencing a 150% rise in student enrollment. This expansion included the addition of a cohort at the Spark facility in Springfield and this strategic move extended the reach of Invention Lab to the rural community of Cottage Grove, effectively eliminating transportation barriers.

Due to these expansions and changes, the impact across all three cohorts of Invention Lab consistently demonstrated positive outcomes, underscoring the model's efficacy across diverse communities and locations.

Mid-Valley STEM-CTE Hub (Linn Benton Community College)

- STEM Hub Director: Sarah Whiteside
- Number of School Districts: 11
- Counties Served: Linn and Benton
- Number of Students in Districts: 30,892

Accomplishments:



In and out of the classroom, the Mid-Valley STEM-CTE Hub invested in innovative computer science initiatives focused on addressing unmet needs along the career-connected continuum including outreach to underserved constituents in the Mid-Valley region. This included intentional programming for underserved students including those from rural schools, students furthest from opportunity, gender diverse students and those with disabilities.

Classroom activities, led by Program Coordinator Chris Singer, included the use of Bee Bots in PreK-2nd grades and Microsoft MakeCode Arcade with elementary and middle school students. The Bee Bot program included professional development training for educators and statewide STEM Hub leaders on how to implement the program in engaging ways. Both activities engaged students in active learning to foster critical skills like problem-solving and creativity while making computer science concepts accessible and exciting.

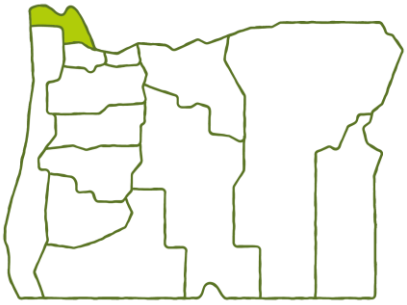
Mid-Valley STEM-CTE Hub provided professional development for educators by investing $50,000 in Code Fellows courses covering software development, cybersecurity and computational thinking. This initiative has already seen participation from educators in 8 out of 11 districts in Linn and Benton counties. Additionally, the hub is actively supporting and expanding computer science programs in the region. Oregon Charter Academy, Harrisburg School District and Greater Albany Public Schools have already utilized this support to enhance their computer science offerings in robotics.

Mid-Valley STEM-CTE Hub extended its impact beyond the classroom with out-of-school activities. They engaged in hands-on learning experiences for K-12 students in 3D printing, offering field trips and after-school programs to explore both physical and digital processes. In addition, the Mid-Valley's Maker and Innovation Learning Lab, located at Linn-Benton Community College's Albany Campus, engaged students in coding and robotics. Through field trips, events and after-school programs, students are encouraged to engage in design thinking and problem-solving, fostering their skills in innovation and technology.

Northwest STEM Hub (Northwest ESD)

- STEM Hub Director: Chris Hesselbein
- Number of School Districts: 13
- Counties Served: Columbia and Tillamook
- Number of Students in Districts: 16,645

Accomplishments:



Throughout the year, Northwest STEM Hub dedicated its efforts to assembling a team to spearhead the development of STEM and computer science initiatives within their region.

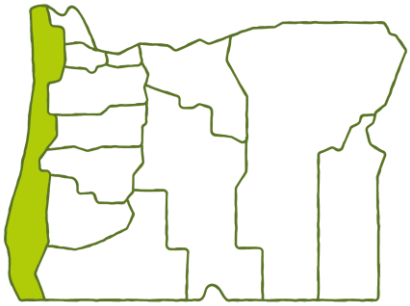
Northwest STEM Hub created a partnership with the Northwest Regional Education Service District Migrant Education Program to deliver STEM education to rural migrant students during the Migrant Education Program Summer School. Their objective was to cultivate an enjoyable and accessible STEM learning environment through hands-on activities. Activities were tailored to various age groups. Each classroom featured a unique activity centered around engineering concepts and fostering students' familiarity with STEM principles.

Lastly, Northwest STEM Hub addressed the educators who expressed feeling unfamiliar with STEM concepts and activities by offering guidance and advice on integrating STEM and computer science into their curriculum.

Oregon Coast STEM Hub (Oregon State University)

- STEM Hub Director: Kama Almasi
- Number of School Districts: 20
- Counties Served: Clatsop, Coos, Curry, Lincoln, Tillamook, Douglas and Lane
- Number of Students in Districts: 26,322

Accomplishments:



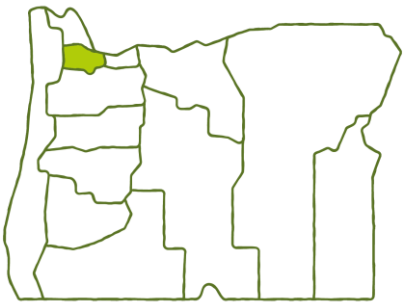
During the 2022-2023 school year, Oregon Coast STEM Hub partnered with Rainbow Dance Theatre and iLumiDance productions to provide engaging and unique computer science programs for local youth. ILumiDance combines performance art, dance, fiber optic fabric technology, electroluminescent wire, black light and dance choreography to create visual performances. Students from different communities along the coastline learned how to build and code their own luminescent costumes. Darryl Thomas from Western Oregon University worked with each school and community to decide what local story, tradition and/or subject they wanted to focus on and tell via their costumes and dance.

In addition, Oregon Coast STEM Hub focused on building partnerships with community-based organizations and partnered with OSU Extension Program *Juntos Afuera: Latinos Connecting with Nature.* This program is an exclusively Latine support group focusing on pathways to careers and secondary education pathways into science. Each workshop concluded with students doing a performance for parents and community members in their local area.

Portland Metro STEM Hub (Portland State University)

- STEM Hub Director: Kristen Harrison
- Number of School Districts: 5
- Counties Served: Multnomah and Washington
- Number of Students in Districts: 111,804

Accomplishments:



The Portland Metro STEM Partnership (PMSP) focused on expanding computer science (CS) education through two main efforts: an in-school program and an out-of-school program. The in-school program emphasized professional development for teachers to enhance CS education during school hours for elementary, middle and high school students. The out-of-school program provided funding and support to either improve existing CS training or develop culturally responsive CS programs for students.

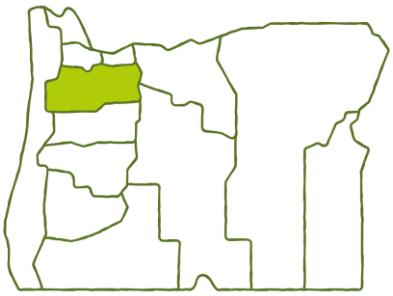
During the first year, a comprehensive support system was provided for K-8 teachers, including paid training, coaching and planning time outside of contract hours, as well as materials. This training helped integrate digital and physical coding into classrooms. At the elementary level, the PMSP program aided classroom and STEM Specials teachers with incorporating computer science and robotics. At the middle school level, it focused on technology and STEM elective teachers to embed computer science in their courses. Additionally, PMSP collaborated with Massachusetts Institute of Technology and New York University, to host a CS Professional Learning Community for 5th grade teachers, merging coding computational models with science curricula.

Lastly, PMSP was able to support numerous out-of-school programs including multiple culturally focused programs to bring relevant and empowering computer science learning to the afterschool and summer space.

South Metro-Salem STEM Hub (Oregon Institute of Technology)

- STEM Hub Director: Julia Betts
- Number of School Districts: 32
- Counties Served: Marion, Polk, Yamhill, Clackamas and Washington
- Number of Students in Districts: 135,661

Accomplishments:



In February 2023, South Metro-Salem STEM Partnership (SMSP) initiated its inaugural regional event, dedicated to expanding access and awareness of computer science throughout the area. Aligned with the State of Oregon's Computer Science Implementation Plan and in collaboration with Computer Science is Elementary, the SMSP joined forces with over 20 schools, school districts and public libraries to host a live-streamed, interactive coding experience. Families convened to enjoy a meal, engage in coding activities and foster a sense of community around STEM. Event materials were translated into the eleven most requested languages, with the live-stream content simultaneously translated into additional languages. An estimated 3,500 individuals, including children, family members, educators and administrators from more than 15 school districts, took part in the event. Additionally, valuable feedback was gathered from participants about their interest and awareness of computer science and the obstacles hindering their engagement in STEM opportunities.

An initiative with SMSP and Western Oregon University led to a regional computer science training event called the "Web Design Institute". This program focused on coaching educators on incorporating HTML and CSS-based web design into their curriculum. Teachers participating in the institute came from diverse backgrounds and had minimal experience with computer science but were actively engaged in developing ways to make computer science more relatable and engaging for themselves and their students. Six school districts and schools were represented in the institute, including Forest Grove, Portland Public, Salem-Keizer, Sheridan, Woodburn, and Chemawa Indian School.

In addition, SMSP provided professional development workshops for teachers. One of the workshops was facilitated by Bootstrap. The training provided educators with the necessary tools to strengthen skills in integrating data science into their courses.

Southern Oregon STEM Hub (Southern Oregon ESD)

- STEM Hub Director: Karla Clark
- Number of School Districts: 13
- Counties Served: Klamath, Josephine and Jackson
- Number of Students in Districts: 48,126

Accomplishments:

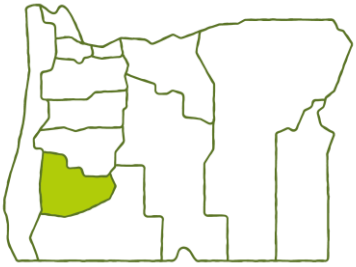
Southern Oregon STEM Hub collaborated with Klamath County High School Robotics/Engineering (Chief Science Officers) to spearhead a session aimed at equipping elementary educators with VEX Robotics preparation. Following the session, each participant integrated VEX Robotics into their classrooms, empowering them to teach coding and programming skills to their students.

This successful initiative has paved the way for a second event. Student leaders will mentor their peers from other high schools in preparation to introduce computer science education to neighboring elementary schools. Student leaders from Henley High School were offered paid internships in the summer with a local 3D printing manufacturer for their involvement. With this momentum, every elementary school in Klamath County is set to implement computer science education in their classrooms by September 2024. Dr. Kristi Lebkowsky showcased these achievements to CTE Regional Coordinators, STEM Hub Directors and the Oregon Department of Education during the Career Connected Learning Conference in October 2023.

Umpqua Valley STEAM Hub (Umpqua Valley Community College)

- STEM Hub Director: Teresa Middleton
- Number of School Districts: 13
- Counties Served: Douglas
- Number of Students in Districts: 12,760

Accomplishments:



Umpqua Valley STEAM Hub (UVSH) expanded their robust lending library that provides much needed equipment and lesson plans to educators in Douglas County. This year they were able to build up their computer science inventory adding equipment that focuses on coding, programming, VRand robotics. UVSH also provided a variety of computer science professional development to county educators in the format of 'play and learn' events. Their annual STEM Institute and workshops provided over 110 hours of professional development with a computer science focus.

In addition, a partnership was created with UVSH Educational Service District's Early Learning/Take Root Parenting Program. Through this partnership, three different STEAM computer science events were held. The first event was focused on children PreK-8 years old, with subsequent events focusing on grades 1-3 and youth 1-15 years old. In total there were over 20 adults and over 45 youth who participated. During each event, parents were included to be a part of the STEAM learning experience. Feedback received from the events was overwhelmingly positive. UVSH plans on continuing this partnership and will provide one event every quarter.

Lastly, UVSH held a STEAM Day at a rural library. They brought computer science equipment such as VR learning goggles, Ozobots, Indies and Bee-Bots for students to explore and try out. During the event, 25 students and 17 adults were actively learning and playing with the equipment.

Conclusion

The first year of the GEER Computer Science grants has notably advanced computer science education across Oregon. Through the collaborative efforts of the 13 STEM Hubs, diverse and inclusive educational opportunities were created, emphasizing equity and access for historically underrepresented students in computer science. This initiative increased participation in computer science but also strengthened community ties and professional development for educators. As the grant program continues into the next year, these programs and activities will pave the way for sustained growth and further integration of computer science in Oregon's educational landscape, ensuring that all students are equipped with the skills necessary for the future.

For more information about the GEER Computer Science grants, contact ode.csinitiative@ode.oregon.gov.