



# Computer Science Education Statewide Implementation Plan Phase II Engagement Report

September 2023

The Computer Science Education Statewide Implementation Plan Phase II Engagement Report summarizes the community engagement efforts of the Oregon Department of Education (ODE) and the Higher Education Coordinating Commission (HECC) in the development of a statewide, long-term computer science education implementation plan. This report summarizes the participants' voices from the engagement sessions gathered between March 2023 and August 2023. All information included in this report is a reflection of the data gathered during the engagement sessions and is not intended as an endorsement by ODE or HECC.

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- Office of Senator Janeen Sollman
- Oregon Advisory Council on Special Education
- Oregon Computer Science Teachers Association
- Oregon Department of Education's Office of Indian Education
- Oregon Migrant Education Service Center
- Oregon Expanding Computer Education Pathways (ECEP) Team
- Oregon's Computer Science Consult Group

Additionally, ODE and HECC deeply appreciate the educators, students, families, community members, and industry partners who attended the engagement sessions. Please send any questions or comments regarding the computer science initiative in Oregon to [ode.csinitiative@ode.oregon.gov](mailto:ode.csinitiative@ode.oregon.gov).

## Background

In May 2022, former Governor Kate Brown directed the Oregon Department of Education (ODE) and the Higher Education Coordinating Commission (HECC) to develop a statewide, long-term implementation plan “to provide access to comprehensive computer science education opportunities to every public school student in this state by the 2027-2028 school year.” In her letter to ODE and HECC, she writes:

*Racial, ethnic, and gender disparities in STEM<sup>1</sup> education persist across the state, including gaps in access to computer science and related advanced placement courses...*

*The results of these racial and gender disparities in access to STEM and computer science courses in public schools are clear...In summary, Black, Indigenous, and people of color, tribal, and female students have the least access to high-wage, high-demand careers requiring a STEM credential or diploma.*

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<sup>1</sup> STEM: Science, Technology, Engineering, and Math

The directive to ODE and the HECC specifies that across Oregon, computer science education is to be made available on an equitable basis and be based on national frameworks to guide students from computer users to computer literate creators. Further, the directive states that the plan must:

- Identify immediate, practical, and systemic changes to increase students' access to computer science education
- Include an annual, ongoing evaluation process of the state of computer science education in Oregon
- Achieve these goals through a **robust community engagement process**

ODE and the HECC developed a strategy to ensure that robust community engagement was central to building the implementation plan. This strategy included two phases of engagement.

**Phase I Engagement:** This phase of engagement took place between December 2022 and April 2023. The goal of Phase I was to learn about Oregonians' experiences with computer science education and their hopes for the future of computer science education in our state. The [Computer Science Education Implementation Plan Phase I Engagement Report](#) shared the information gathered from participants through both engagement sessions and an online survey.

**Phase II Engagement:** This phase of engagement took place between May 2023 and August 2023. The goal of Phase II engagement was to create opportunities for educators, families, education partners, and community members to provide feedback on the draft outcomes and strategies to be included in the Computer Science Education Statewide Implementation Plan.

## How We Listened to Oregonians

ODE and the HECC hosted 16 engagement sessions for families, educators, industry leaders, and culturally specific organizations between May 2023 and August 2023. These sessions were predominantly virtual. The structure of the engagement sessions varied based on the needs of the particular group. Some sessions occurred fully asynchronously with participants sharing ideas on a shared notetaker; others occurred synchronously with both independent reflection and small group discussion.

Three general sessions were held with participants from across Oregon in a variety of roles including: industry professionals and those working in fields related to computer science; educators including teachers, para-educators, school, district, and ESD staff and administrators,

college instructors, and university professors; and students, families, caregivers, and community members.

Additionally, 11 focused engagement sessions were held with the following groups:

- African American Black Student Success Advisory Group
- American Indian Alaska Native Student Success Advisory Group
- Education Partners
- English Learner’s Advisory Group
- Latino/a/x & Indigenous Student Success Advisory Group
- LGBTQ2SIA+ Student Success Advisory Group
- Oregon Computer Science Teachers Association (OCSTA)
- Oregon Expanding Computer Education Pathways (ECEP) Team
- Oregon Migrant Education Service Center
- Oregon STEM Hubs
- State Advisory Council for Special Education

## What Oregonians Shared

After the engagement sessions, all of the data shared on the note takers as well as during the discussions were reviewed. This included categorizing each piece of feedback according to the potential revision needed to the outcomes and strategies, as well as grouping the feedback according to themes. The following themes arose from Phase II engagement:

- [Funding Computer Science](#)
- [Computer Science Access Across K-12 Education](#)
- [Teacher Recruitment and Retention](#)
- [Educator Professional Development](#)
- [Industry and Career & Technical Education \(CTE\)](#)
- [Supporting Small and Rural Schools and Districts](#)
- [Secondary and Postsecondary Alignment](#)
- [Computer Science Content/Instructional Materials](#)
- [Instructional Approaches](#)

### Funding Computer Science

Across engagement sessions, participants shared the importance of consistent funding, noting that unfunded mandates often fail, and as such, funding is necessary to build and grow programming. Participants also shared an appreciation for the focus on explicit funding for small and rural school districts given that this will be essential to create more equitable access

to computer science for students across the state. Finally, participants shared the need to be explicit in the plan with regards to how funding would be spent to ensure equitable participation.

*“Funding annual professional learning opportunities for current teachers - right now it seems easier to find ‘stuff’. Very difficult to carve out time where educators are paid to develop themselves and apply/integrate/try their new understandings.”*

*“The money follows the students - either what they’re required to learn or what they demand. Computer science is still an elective. There’s an awareness problem. Counselors and administrators are not aware of what we’re teaching - building better awareness and showing students the value of computer science is important.”*

## **Computer Science Access Across K-12 Education**

Across engagement sessions, participants shared the importance of providing access to computer science education and computational thinking starting in elementary school, noting that if female-identifying students and students of color are exposed to computer science early in their education, this will have positive impacts on how they see themselves in STEM. They also shared the importance of developing computer science modules to be integrated into core content rather than requiring a certain number of minutes of instructional time. Further, participants shared feedback regarding computer science as a graduation requirement including a concern with computer science being included as an elective, given that increasing access and the opportunity to participate in computer science is unlikely to address gender disparities. Additionally, participants shared an appreciation regarding the requirement for schools to offer both foundational and advanced computer science courses. A final common theme that arose across engagement sessions was the importance of partnerships in ensuring that the outcomes and strategies identified within the plan are able to be implemented equitably across the state. This included partnerships with existing entities and organizations such as ESDs (Education Service Districts) and STEM Hubs, as well as partnerships with businesses and industry.

*“Some of the problem is big society-level bias about who ‘should’ take computer science classes. Holding schools responsible for unequal participation is problematic. However, making computer science required may turn off as many people as it encourages.”*

*“Ensure all students should have access to computer science education opportunities (rather than all schools). This would help level access rates within schools. Going a step further and*

*mandating computer science education opportunities (for graduation, for example) would further eliminate opt-in related inequities.”*

*“It cannot be the responsibility of the classroom teacher (K-5) to hold this. With the lack of teacher librarians in most buildings, will this be an expectation to do this? Who is taking the ownership of this? How can we integrate this into content for the teachers? K-5 teachers are always asked to add one more thing - it really needs to be a staffed position. May also see inequities between classrooms based on teacher willingness.”*

*“I can’t think of a specific outcome that is not represented. What I would like to see is more support for schools to develop partnerships with community stakeholders to support schools and move this initiative forward.”*

## **Teacher Recruitment and Retention**

Across engagement sessions, participants shared the importance of both recruiting and retaining computer science teachers – both within K-12 and postsecondary institutions. Participants shared an appreciation for including strategies focused on supporting pre-service teachers prior to entering the classroom. Many of the participants shared concerns regarding teacher salary noting that it is not practical for industry professionals to seek teaching careers given the salary differential. Other concerns were raised including the fact that there is no computer science credential in Oregon, making it difficult to recruit computer science teachers that are both interested and prepared to teach computer science as well as a need to diversify the teacher workforce across K-12 and postsecondary.

*“... to counterbalance past systemic inequities and to promote diversity going forward. When people see someone who looks like them doing something, it seems more doable.”*

*“...diversifying faculty and hiring faculty is critical - connecting with the high school programs is also important so they have a good pipeline - making sure credits transfer and that systems are not hindering Black, Indigenous, and students of color.”*

*“Salaries are not sufficient to attract instructors and keep them. So many schools cannot fill CTE positions.”*

## Educator Professional Development

Across engagement sessions, participants continually uplifted the importance of educator professional development. This feedback included: pre-service teacher education to support an understanding of computer science education prior to entering the classroom; professional development for inservice teachers to learn computer science; and professional development for instructional assistants, teacher librarians, counselors, and administrators with regard to developing systems that ensure all students have equitable access to computer science education. Ensuring that there is funding to support professional development was a consistent theme across sessions, as was the importance of regional computer science coaches being fundamental to sustaining computer science programs. Further, discussion around the utilization of existing entities such as the ESDs (Education Service Districts), RENs (Regional Educator Networks), and the STEM Hubs were lifted as a strategy for providing regional professional learning to educators. Some participants shared a desire for ODE to explore and share virtual professional development opportunities with educators to ensure that there were a variety of pathways for learning for classroom teachers, educational and instructional assistants, and teacher librarians.

*“Additionally, the provision of a toolkit planning aid for administrators who may have limited knowledge about this field is highly valuable. Despite our expertise as computer science professionals, it's crucial to acknowledge that there are still many individuals who are not well-informed about the nature and content of this field and find it all a bit mystical.”*

*“Teachers are key, as teachers bring the instructional strategies and community connections to connecting students and computing. Growing our teaching cadre in Oregon will have the most profound effect in determining not only access, but the type of student engagement in the class.”*

## Industry and Career & Technical Education (CTE)

Across engagement sessions, participants shared the importance of creating strong partnerships between K-12 education and industry. Several strategies were shared including hiring industry professionals to teach computer science courses and providing educators with externships to learn from industry professionals. Additionally, participants shared a desire to better understand the impact of computer science courses on postsecondary educational and professional attainment and a need to include additional strategies that align with career readiness immediately following high school. Participants also shared the importance of ensuring that the skills that students are learning within their K-12 education need to be

responsive to the changing industry needs. A final theme that arose with regard to CTE is the desire to see collaboration between CTE programs, existing work, and the outcomes and strategies included in the Computer Science Implementation Plan to ensure that the programs and initiatives are aligned.

*“Something about the flexibility to respond to the changing industry needs in computer science. We want to be intentional in our design about not backing ourselves into a quickly outdated framework of study.”*

*“... to ensure that the learning targets are evolving and aligning not only with technological advancements, but there is some accountability for ensuring inclusive, equitable, and accessible workplace practices.”*

*“It’s very difficult to get work experience at the high school level because of the needs in the computer science industry. Developing the list of industry partners that have more entry-level types of connections would be helpful.”*

## **Supporting Small and Rural Schools and Districts**

Participants shared the importance of supporting rural districts in meeting the needs of their students with regards to access to computer science. A number of participants noted that rural districts do not have the resources to be able to offer the number of courses included in the draft outcomes and strategies. Potential strategies shared by participants included providing deployable classroom level kits, hybrid dual credit courses, and the possibility of remote learning with live instructors. Further, funding continued to be a central theme with regard to supporting small and rural districts, particularly with equitable implementation.

*“Establish[ing] stable, long term funding... is particularly important for our smaller, rural schools who don’t have the resource or applicant pool that can be found in larger, more urban areas.”*

## **Secondary and Postsecondary Alignment**

Across engagement sessions, participants shared the importance of aligning secondary and postsecondary requirements and course numbering systems. Needs shared by participants included: the need for universal course numbering at the college level; updating the college map with an equity lens; and ensuring alignment between high school graduation requirements and college admission requirements. Further, dual enrollment was addressed by several participants as an important part of secondary and postsecondary alignment within computer



science with a note that pointing to this specifically in the plan might encourage additional partnerships between high schools and postsecondary institutions.

*“Aligning High School and Post Secondary Requirements - this provides validation and relevancy for the initiative.”*

## **Computer Science Content/Instructional Materials**

Across engagement sessions, participants shared the importance of ensuring clarity regarding how computer science is being defined and what content and skills are embedded within that understanding. Several participants noted the importance of strong instructional materials while others shared concern regarding mandated curriculum. Several participants shared the importance of adopting K-12 computer science standards to support alignment with curriculum and teacher preparation as well as a need to ensure that there is constant revision to the standards, as computer science is a rapidly evolving field. Further, participants shared a need to anchor the computer science goals and implementation plan within the broader field of STEAM<sup>2</sup>.

*“It’s important that there is a clear understanding of the skills that students need to learn within computer science as well as a differentiation between general skills and skills for a student who wants to be a computer scientist.”*

*“Instructional Materials - if we have discrepancies in rigor or quality of instructional materials, or allow materials to be developed by folks with conflicts of interest, it will be a problem. Appreciate the connection to culturally sustaining materials, and the connection to teacher preparation.”*

*“Support for multi-subject cross-curricular models, but these need to be an addition, not the primary requirement for implementation until curriculum, modules, and resources have been fully developed and teachers have been trained.”*

## **Instructional Approaches**

Participants across engagement sessions shared a desire to ensure that the instructional approaches embedded within computer science are inclusive and provide students with hands-

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<sup>2</sup> STEAM: Science, Technology, Engineering, Arts, and Math

on, project-based learning experiences, where they can apply their skills and knowledge. Several participants also shared the alignment with mathematics and a desire to see alignment between the work happening within math (e.g. the Oregon Math Project) and the work of computer science.

*“Many students have been turned off by computer science because of the way it has traditionally been taught. This strategy helps educators learn how to make computer science relevant to all students.”*

## Conclusion

Through Phase II Engagement, ODE and the HECC had the opportunity to learn from Oregonians in many different roles about what they wanted to see included in the Computer Science Education Implementation Plan. The shared interest in ensuring that all Oregon students have access to computer science experiences and all educators have the needed professional development to provide robust and culturally responsive instruction was clear. Oregon voices continue to express hope, a sense of urgency, and optimism for the future of computer science education statewide. The Computer Science Education Statewide Implementation Plan is expected to be released in October 2023.