



Computer Science Education Implementation Plan Phase I Engagement Report

May 2023

This Computer Science Education Implementation Plan Phase I Engagement Report summarizes the community engagement efforts of the Oregon Department of Education (ODE) and the Higher Education Coordinating Commission (HECC) as directed by former Governor Kate Brown in the development of a statewide, long-term computer science education implementation plan. This report summarizes the participants’ voices from the engagement sessions and the online survey responses gathered between November 2022 and April 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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- Oregon Migrant Education Service Center
- Oregon Expanding Computer Education Pathways (ECEP) Team

Additionally, ODE and HECC deeply appreciate the educators, students, families, community members, and industry partners who attended the engagement sessions or participated in the online survey.

Please send questions or comments regarding the computer science initiative in Oregon to ode.csinitiative@ode.oregon.gov.

Executive Summary

In May of 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 for computer science education that included robust community engagement. Between November 2022 and April 2023, ODE and HECC hosted 18 listening sessions and conducted an online survey. Between these two forms of engagement, approximately 550 Oregonians participated and shared over 1,500 ideas and hopes for the future of computer science education.

Students reported positive experiences with computer science. Overwhelmingly, respondents indicated that they want to see more computer science opportunities in their schools. The most frequently expressed hopes for the future of computer science education include increasing the training opportunities for teachers and attracting more diverse students to pursue studies in computer science. The top concerns raised include the lack of trained computer science teachers and stable funding. In addition, respondents expressed:

- The importance of starting computer science education early
- The value of developing a working definition of computer science and K-12 learning standards
- The importance of sustaining computer science education efforts through both funding and state level positions
- The necessity of a culturally responsive and sustaining computer science curriculum
- The need to address pre-service teacher training and professional development for current teachers
- The importance of strong connections between high school courses, post-secondary institutions, and industry
- The urgent need to consider policy recommendations through an equity lens to ensure that the disparities seen in access and participation are addressed in the years ahead

Moving forward, ODE and HECC will work with a Consult Group of 40+ educators, students, industry professionals, college and university partners, and community members to draft the Statewide Computer Science Education Implementation Plan. Starting in May, another round of community engagement will commence to gather public comment on the draft of the plan prior to its publication in September of 2023.

Background

In May of 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 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, BIPOC, tribal, and female students have the least access to high-wage, high-demand careers requiring a STEM credential or diploma.

The directive to ODE and 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**

In response to the directive, ODE and HECC developed a strategy to ensure that robust community engagement is central to building the implementation plan. This strategy includes two phases of engagement. Phase I Engagement focused on listening to Oregonians’ experiences with computer science education, their hopes for the future of computer science education in our state, and the priorities to be considered in advance of writing the implementation plan. Phase II Engagement, which commences in May 2023, will gather public feedback on the initial draft of the implementation plan.



Phase I engagement, which took place primarily between December 2022 and March 2023, included a series of engagement sessions hosted by ODE and HECC and an online survey with the goal of ensuring that all interested Oregonians had space to share their voice. The engagement sessions provided information about the computer science directive and the current state of computer science education in Oregon. Session facilitators and presenters from both ODE and HECC were honored to hear the stories and ideas of those invested in creating equitable opportunities for computer science for all students across Oregon. During the synchronous engagement sessions, participants shared both written and spoken feedback transcribed by a note taker. These collected thoughts, experiences, and recommendations are summarized in this engagement report and will inform the writing of the Computer Science Education Implementation Plan scheduled to be released in September 2023.

How We Listened to Oregonians

ODE and HECC hosted 18 engagement sessions for families, educators, industry leaders, and culturally specific organizations between November 2022 and April 2023. These sessions were predominately virtual, with one session held in person. Each session included small group discussions with opportunities for Oregonians to respond to prompts through writing and speaking. In addition to these sessions, ODE and HECC reached out to community groups and were honored to be invited to present and listen at their meetings. Sessions included the following groups:

General Audience Sessions:

- Career Connected Partners - including industry professionals and those working in fields related to computer science.
- Education Partners - including teachers, para-educators, administrators, college instructors, and university professors.
- Students, Families, and Community Members - including parents, volunteers, and family members. (Sessions in English and Spanish)

Sessions with Specific Organizations:

- African American/Black Student Success Advisory Group
- Confederated Tribes of Umatilla
- Expanding Computer Science Pathways - ECEPs Alliance Team
- LGBTQ2SIA+ Student Success Advisory Group
- Oregon Advisory Council on Special Education
- Oregon Association for Comprehensive Education Conference (in Spanish)
- Oregon Computer Science Teachers Association

Overall, approximately 550 Oregonians participated in either an engagement session or the online survey. Of these, approximately 235 people joined a live session and shared more than 1,000 items of feedback regarding their experiences with computer science, barriers they have encountered, and hopes for the implementation plan. In the breakout sessions, facilitators from ODE and HECC shared discussion prompts to initiate the conversations. A complete list of the discussion prompts are included in Appendix A. Additionally, 315 individuals engaged through the online survey and submitted more than 550 responses to its optional, open-ended questions.

What Oregonians Shared

Through these forms of engagement, it is clear that Oregon families, educators, community members, and industry professionals care very deeply about the state of computer science education in Oregon's schools. Many of those who engaged expressed significant concern that Oregon as a state lags behind others in adopting computer science policies that proactively increase access, broaden participation, create the conditions for student engagement and success in computer science, and support teacher professional learning. The comments, feedback, and recommendations have been grouped into 4 broad themes with embedded sub-themes, which are described below with supporting quotes from engagement session participants.¹

¹ Every effort was made to preserve the fidelity of the intent of the original feedback. For ease of reading, acronyms have been rewritten in their long form and minor punctuation and grammar edits have been made in some cases. Any personally identifiable information has been removed from the comments.

Themes from Engagements

Computer Science Education Awareness and Access

- [Access to Computer Science Education](#)
- [Awareness and Perceptions of Computer Science](#)
- [Benefits of Computer Science Education](#)
- [Challenges and Barriers to Computer Science Education](#)
- [Resources and Funding](#)

Broadening Participation in Computer Science

- [Equity as the North Star](#)
- [Need for K-12 Computer Science Content Standards](#)
- [Promising Practices](#)

Computer Science Pathways

- [Importance of Early Computer Science Education](#)
- [Implications for Graduation](#)
- [College and Career Connections](#)

Educator Professional Learning

- [Teacher Training and Professional Development](#)

Computer Science Education Awareness and Access

Access to Computer Science Education

Oregonians value access to computer science education and want it to be available for students. During sessions, there was a general perception that computer science skills can lead to high paying careers and financial security. On the whole, participants shared a belief that technology skills are increasingly necessary for a broad range of careers, including many outside of traditional high-tech jobs. Throughout engagement sessions, people expressed an interest in making computer science a required class like math or English, but also expressed concern that other electives like art and music should not be removed to make this possible. Embedding computational thinking lessons in core subject areas was also a common theme.

What People Shared:

- *“Eventually computer science education needs to be seen as a core learning requirement for all K-12 students.” - Oregon Educator*
- *“Acquiring computer science skills and computer literacy should be required, like students are required to know sex education, personal finance, and digital citizenship.” - Oregon Parent*
- *“Porque es la ciencia del presente y no del futuro. Debe ser un derecho y no un privilegio.” - Padre de Oregon (**“Because science is from the present, not from the future. It should be a right and not a privilege.” - Oregon parent**)*
- *“Computer science education should be offered at all grade levels in all Oregon public schools.” - Oregon Community Member*
- *“I think increasing access and participation is critical and has to be paired with any other priority goals.” - Oregon Industry Professional*

Awareness and Perceptions of Computer Science

Many participants expressed the need to invest in expanding students’ and families’ perceptions of what computer science is while redressing the stereotypes often associated with the computer science classroom. Participants elevated the need to create spaces where all students feel welcome, safe, and seen. In addition, participants shared that computer science and by extension STEM classrooms must be accessible to all students, with no student facing

any barriers to access due to a disability. Finally, participants shared that it is vital that students need to see themselves reflected in the curriculum and learning materials.

What People Shared:

- *"As a student, computer science is often seen as a highly difficult major/career path that you need to fit a certain profile to be a part of." - Oregon Student*
- *"It is important to bring more awareness to students and parents about computer science education and what computer science is." - Oregon Parent*
- *"Students see computer science as exceptionally advanced and only for the elite or those with experience." - Oregon Educator*
- *"The biggest challenge I see is creating greater awareness of the opportunities for all students to participate in computer science education and its value to the students after high school." - Oregon Educator*
- *"Students have not even heard of these courses. Make students and parents aware of these courses." - Oregon Community Member*

Benefits of Computer Science Education

Many Oregonians perceive the benefits of computer science education. One family shared that computer science education provides "the ability to think critically about technology and the social media they [students] consume." The engagement conversations highlighted the perception that computer science and technology skills are the keys to financial security and that the study of computation teaches important employability skills like teamwork and problem solving. Community members shared that technology now spans nearly every field from agriculture to health care and that understanding how technology works is important across a multitude of career fields.

What People Shared:

- *"The benefits of learning computer science in school are both long term and short term. It is like math - it develops problem solving skills and it gets students prepared*

to do computer science in college and university when they get there." - Oregon Community Member

- *"Esto les abrirá la oportunidad de tener una mejor carrera y un buen futuro." - Padre de Oregón (**"This will open the door to having a good career and a good future."** - Oregon Parent)*
- *"Benefits include project-based learning, teamwork, and strategy building." - Oregon Parent*
- *"Es de suma importancia aprender sobre ciencias de la computación, porque en este momento todo utiliza tecnología." - Padre de Oregón (**"It is of the highest importance to learn about computer science, because in this day and age everything uses technology."** - Oregon Parent)*
- *"Benefits: problem solving, resiliency, and critical thinking." - Oregon Community Member*

Challenges and Barriers to Computer Science Education

Across engagement sessions, it was clear that Oregonians understand that there are many challenges that must be addressed to realize the goal of ensuring every student has access to computer science education by the 2027-2028 school year. Some challenges, such as funding and universal broadband access, were raised so frequently that they merited their own category (see [Resources and Funding](#)). However, many of the barriers shared by participants included experiences that students, parents, and professionals have encountered in their schools and places of work. These barriers can especially impact female students and students of color considering computer science education opportunities. Concerns regarding systemic barriers, like tracking in schools and making space in high school schedules were also raised.

What People Shared:

- *"Tengo dos hijas y al escuchar las cifras de que las mujeres son muy bajo por ciento, es de ponerse a pensar. Ya que en las escuelas no se toman ese tiempo de que hay que impulsar a todos por igual, no nada más a los hombres." - Padre de Oregón (**"I have two daughters. When hearing that the number of women [in technology] is***

very low, it makes you think. In schools, they need to take the time to motivate everyone equally, not only men.” - Oregon Parent)

- *“Being a female in technology is not easy - often ignored or overlooked, everyone is always smarter than you so your voice is often not heard. It is always a hill to climb for women in technology. Have to work twice as hard, twice as long, do twice as much to get the same recognition.” - Oregon Industry Professional*
- *“There is already a huge barrier for the ‘normal’ student to be part of high level STEM courses, and the barrier for underrepresented students is so large it seems almost impossible for many students.” - Oregon Student*
- *“Schools are still tracking youth and making it impossible to take computer science classes.” - Oregon Industry Professional*
- *“The danger is that this will become an add-on.” - Oregon Educator*

Resources and Funding

Within each session, conversations about expanding access and broadening participation to computer science education focused on the importance of resources and funding. In particular, engagement session participants raised the concern that rural districts may need additional support to make universal access a reality. Another concern that was often voiced was the importance of sustainability with regards to funding. Participants shared that modest, but consistent and reliable funding, may be more beneficial in the long run than intermittent, large infusions of grant-based funding.

What People Shared:

- *“Focus on additional support for rural districts.” - Oregon Industry Professional*
- *“Sustainability is a concern/challenge; the dollars aren’t always there in districts to upgrade technology. Grants may get things started, but funds don’t always exist for the long haul.” - Oregon Educator*
- *“Sustained commitment. Equitable is key - focus needs to be with key ages/groups/regions.” - Oregon Educator*

- *“We need to budget these changes so that schools that offer computer science education don’t have to eliminate existing programs such as music or art.” - Oregon Parent*
- *“While there are stipends for coaches of sports, arts, etc. there are minimal stipends for coaching computer science. This creates inequality with other opportunities. Computer science needs to have stipends equivalent to the head sports coaches.” - Oregon Parent*
- *“Budget is always an issue. Often great ideas come along, but districts need funding for materials, programming, training, and new staff. I find it important to keep that at the forefront of all decision making.” - Oregon Educator*

Broadening Participation in Computer Science

Equity as the North Star

Throughout each engagement session, it became evident that Oregonians care about equity and want systems and policies that ensure all students have access to computer science education. Participants shared that they felt privileged to live in a state where conversations about equity, diversity, and inclusion are perceived to be valuable milestones along the journey to a more just society. The [Oregon Department of Education’s equity stance](#) states:

Education equity is the equitable implementation of policy, practices, procedures, and legislation that translates into resource allocation, education rigor, and opportunities for historically and currently marginalized youth, students, and families including civil rights protected classes. This means the restructuring and dismantling of systems and institutions that create the dichotomy of beneficiaries and the oppressed and marginalized.

The Higher Education Coordinating Commission understands equity as follows:

Postsecondary education equity will be achieved once one’s community or characteristic—including but not limited to racial/ethnic identity, socio-economic background, dis/ability status, gender, parental status, veteran status, sexual orientation, and geographic origin or location—no longer predict inequitable

access to and success in postsecondary education and training. We will work towards this by addressing the root historical causes of systemic racism and inequities, not just their manifestation. This includes the intentional examination and elimination of policies, practices, attitudes and cultural messages that perpetuate the stark inequities in postsecondary education and workforce training we see today.

These sentiments are echoed by passionate educators, parents, industry leaders, and community organizers.

What People Shared:

- *“Estos últimos años hemos escuchado de la inclusividad y esto debe tenerse en cuenta para que los estudiantes afroamericanos, hispanos y estudiantes con discapacidades tengan la oportunidad.” - Padre de Oregon (**“The last few years we have listened about inclusivity. This should be taken into account for African-American students, Hispanic students, and students with disabilities to have computer science opportunities.” - Oregon Parent**)*
- *“At the end of the day, every student in Oregon who wants to learn about computer science should have the opportunity to do so. Teachers should have the opportunity and support that they need to get the skills and licensing to teach computer science.” - Oregon Educator*
- *“Increasing access and exposure to computer science specifically in rural regions and working with schools/administrators to support equity-based systemic change to ensure programs have longevity and can continue to grow/expand is very important.” - Oregon Industry Professional*
- *“It is important to elevate the diverse community of practicing and historical computer scientists and professionals.” - Oregon Industry Professional*
- *“The north star has to articulate equity at the center. It is not okay to have gaps in this knowledge based on gender, race, ethnicity.” - Oregon Educator*

Need for K-12 Computer Science Content Standards

The need to define what is meant by “computer science”, develop K-12 learning standards, and then universally adopt these standards was the focus of considerable feedback from engagement session participants. While work has been done in this area in the past, participants shared the need to revise and officially adopt K-12 computer science standards in Oregon that detail the outcomes for computer science education.

What People Shared:

- *“Computer science is a gargantuan field of study. Are the goals that students know the basics of programming? How computers work? Working with Microsoft Excel/working with data? It is an important goal to ensure alignment with our vision and mission. What does CS mean and what do we see students doing?” - Oregon Educator*
- *“No es solo saber encender una computadora sino saber navegar y tener conocimiento de la ciencia computacional.” - Padre de Oregon (**“It is not only about knowing how to turn on a computer, but also knowing how to navigate and having knowledge on computer science.” - Oregon Parent**)*
- *“Focusing on unplugged computational thinking strategies integrated into core curriculum is an important strategy.” - Oregon Educator*
- *“Need for engaging curriculum that appeals to historically underrepresented groups (i.e., not just robotics or video game design. Instead create websites and other forms of creative expression.)” - Oregon Educator*
- *“Standards adoption is important. Make them understandable by the core teachers, not just computer science teachers - for example, the elementary math teacher.” - Oregon Educator*

Promising Practices

Across engagement sessions, participants were eager to share examples of promising practices. Some promising practices shared by participants included the importance of before/after school programs, ensuring all schools have the hardware resources to deliver quality

instruction, and ensuring that there are state level positions charged with coordinating and promoting this work. Maker spaces have proven to be a popular and engaging strategy in many schools. Connecting the work in computer science classrooms with social issues that matter to students was suggested as a strategy to attract more students into the field.

What People Shared:

- *“It is important to have a maker space in every school. These machines help develop interest and understanding of computers.” - Oregon Parent*
- *“We need accountability - somebody needs to be responsible for this work - strong leadership and a strong leader that is accountable for getting these results achieved - this might be in the plan.” - Oregon Industry Professional*
- *“Any successful plan needs to be for the long-term and be adjusted as we learn from our previous experiences. So there needs to be regular review of what works well and what needs to be improved. Then the plan needs to be re-worked based on previous experiences.” - Oregon Industry Professional*
- *“It is important to clearly identify strategies to increase participation in computer science, collecting data for impact, and focusing on a few key initiatives.” - Oregon Educator*
- *“It is important to provide mentorship for all students to make them feel welcome.” - Oregon Educator*
- *“It is important to strengthen engagement and a sense of belonging in computer science.” - Oregon Community Member*
- *“Youth may respond to examples of technology as conduits for social change and improvement.” - Oregon Community Member*

Computer Science Pathways

Importance of Early Computer Science Education

Regardless of the conversation prompt, many discussions highlighted the need to start computer science education early in a student's academic journey. Computer science activities at the elementary level may look very different than in a secondary school classroom. Learning computational thinking skills outside of the use of a computer was suggested by participants.

What People Shared:

- *"From a national and international perspective, Oregon students are behind. They [students] are not introduced early to computer science." - Oregon Educator*
- *"More fun with computers at early ages - all I ever did was type papers and now I am uninterested in what they can do. Start WAY earlier than high school if you want this to feel doable for non-traditional computer students." - Oregon Student*
- *"Integrate teaching computer science into other subjects in non-digital modes (such as books) to reach younger students." - Oregon Educator*
- *"There's a lot to learn about computers, the earlier you get started the easier it is to grasp them as time goes on." - Oregon Parent*
- *"Help our elementary teachers and students have awareness, interest and ability to teach and engage early on. If there is no interest at the earlier ages, it will be harder to create the interest later. It is already known that families who have access earlier on have an advantage to engagement long term. With that, this is also an equity approach by creating access and allowing opportunities for interest to form earlier. Introduce Computational Thinking earlier on." - Oregon Industry Professional*

Implications for Graduation

When considering computer science education, many Oregonians who attended engagement sessions pondered the possibility of making computer science a graduation requirement. While

many recognized that this policy would directly address the disparities in enrollment based on race, ethnicity, and gender, participants also recognized that such a requirement would have significant impacts on schools and districts who already struggle to hire, train, and retain teachers while providing comprehensive elective experiences. The idea of incentivizing computer science by allowing it to count for different graduation requirements also was noted in conversations with educators.

What People Shared:

- *"Having required courses is a two-edged sword. High school level students may not be interested in the subject matter." - Oregon Parent*
- *"Just making a course available won't help without additional things happening beforehand. Other states have made computer science a grad requirement or count as a science or math credit." - Oregon Parent*
- *"No me imagino a una persona graduada de high school sin el conocimiento del uso de computadora a un nivel de high school. Creo que debería ser como cualquier otra materia. Para mí como adulto, es una traba poder seguir desarrollándome en mi trabajo o espacio laboral sin este conocimiento." - Padre de Oregon (**"I cannot imagine a high school graduate not having computer knowledge at the high school level. I believe it should be like any other subject. In my opinion as an adult, not having that knowledge is a barrier to being able to keep growing at the workplace."** - Oregon Parent)*
- *"Make computer science a subject area just like English and Math. Until we do that there will continue to be people who will be left out." - Oregon Industry Professional*
- *"Require computer science education. Just like we require students to learn math or reading." - Oregon Industry Professional*

College and Career Connections

Parents and career connected partners expressed the need that computer science education be relevant to current industry needs and align with introductory courses at Oregon colleges and universities. Students and families value opportunities to visit and interact with faculty at higher education institutions as well as job shadowing and mentorships. Industry professionals

expressed a sense of urgency that the computer science curriculum keep pace with the rapid changes in technology. Creating options for high school students to earn college credit is important to families, though some raised the concern that the implementation plan not focus primarily on expanding access to advanced courses (like AP and IB classes), but focus on ensuring that foundational computer science courses are available to all students.

What People Shared:

- *“CTE (Career and Technical Education) days at the colleges are important where high school students can engage in mini classes to explore pathways in computer science and meet faculty.” - Oregon Educator*
- *“Computer science is a basic skill and is becoming more so every year. Computer science gives students the basic skills required in today’s and tomorrow’s jobs, similar to basic skills in math, English, etc.” - Oregon Industry Professional*
- *“All high schools should offer computer science courses that qualify for college credit.” - Oregon Parent*
- *“The IT/CS field is ever changing. If you stand still, you will be left behind.” - Oregon Industry Professional*
- *“We’ll fall behind if we don’t prioritize computer science education.” - Oregon Industry Professional*

Educator Professional Learning

Teacher Training and Professional Development

It was clear that Oregonians value their teachers - not only because they are the heart of education, but because their deep knowledge of content and their pedagogical skills make classrooms come alive. Feedback in this area focused on teacher shortages with a particular concern around shortages at the secondary level. Participants shared that computer science can be a particularly difficult area to staff as many positions require difficult to obtain CTE licenses. Many educators expressed interest in exploring a computer science endorsement or possibly a specialization recognized by TSPC ([Oregon Teacher Practices and Standards](#))

[Commission](#)). In addition, conversations arose regarding a need for teacher education programs to more explicitly focus on the pedagogy of teaching computer science. Furthermore, there was much discussion about the need to attract, support, and retain a teacher workforce that reflects the diversity of Oregon's communities.

What People Shared:

- *“El profesor Jaime Escalante es un buen ejemplo, para ayudar a los estudiantes a que tengan ganas de triunfar. Necesitamos maestros entrenados que aman su profesión y motivan a los estudiantes.” - Padre de Oregón (***“The professor Jaime Escalante² is a good example for helping students that have goals of going far in life. We need trained teachers that love their profession and motivate students.” - Oregon Parent***)*
- *“Explore accreditation options for teachers entering from other content areas.” - Oregon Educator*
- *“It is important to work with teacher education programs to develop computer science related courses for pre and in-service teachers.” - Oregon Educator*
- *“Seems to me that we need increasing numbers of culturally and linguistically diverse educators delivering computer science content in K-12 schools. Focusing on middle school coding in a culturally relevant and engaging way is a must to build early and relevant interest in students, otherwise only privileged and well-primed students will see it as a realistic pathway.” - Oregon Educator*
- *“Teacher and volunteer training is mission critical as all programs require adults to supervise the kids.” - Oregon Educator*

² “Jaime Alfonso Escalante Gutiérrez (December 31, 1930 – March 30, 2010) was a Bolivian-American educator known for teaching students calculus from 1974 to 1991 at Garfield High School in East Los Angeles. Escalante was the subject of the 1988 film *Stand and Deliver*, in which he is portrayed by Edward James Olmos.” Source - [Wikipedia](#)

Online Survey

In addition to the engagement sessions, ODE and HECC sponsored an online computer science education survey in 6 languages: Chinese, English, Russian, Spanish, Somali, and Vietnamese. Throughout the survey window, 315 responses were received. The feedback submitted helped to provide a more complete picture of Oregonians’ perceptions of and hopes for computer science education moving forward. The following section summarizes the insights gained from the online survey.

Who Responded

ODE and HECC received responses from participants living in 27 of the 36 Oregon counties (shown in Table 1). About 60% of the respondents live in Marion, Multnomah, or Washington County.

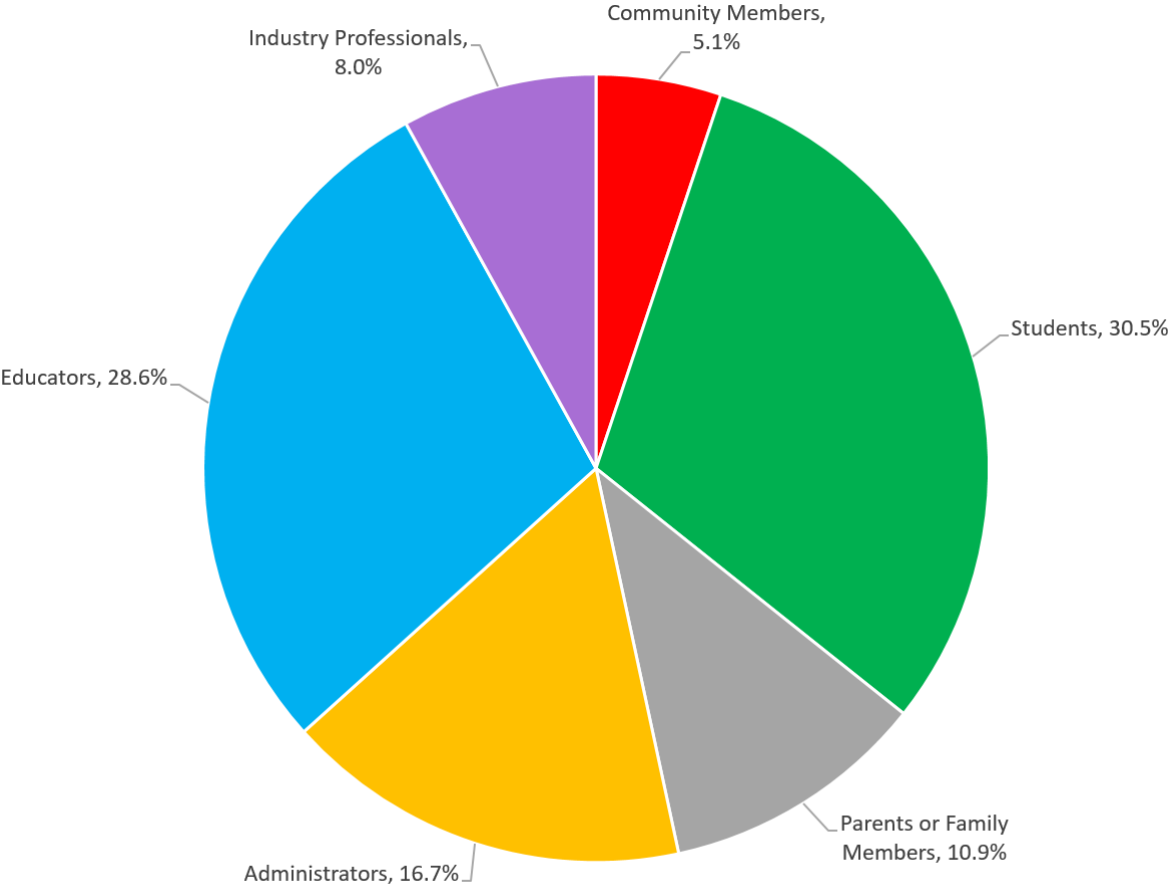
Table 1. Percentage of Total Survey Respondents by County

Baker	1.3%	Deschutes	2.6%	Lincoln	1.0%	Umatilla	2.6%
Benton	2.6%	Douglas	1.3%	Linn	3.0%	Union	1.3%
Clackamas	5.0%	Grant	0.7%	Malheur	0.3%	Wasco	0.3%
Clatsop	1.0%	Hood River	1.0%	Marion	15.8%	Washington	34.7%
Columbia	0.3%	Jackson	3.3%	Multnomah	10.6%	Wheeler	0.3%
Coos	1.7%	Josephine	0.3%	Polk	1.0%	Yamhill	1.0%
Curry	0.7%	Lane	3.6%	Tillamook	1.0%	Out of State	1.7%

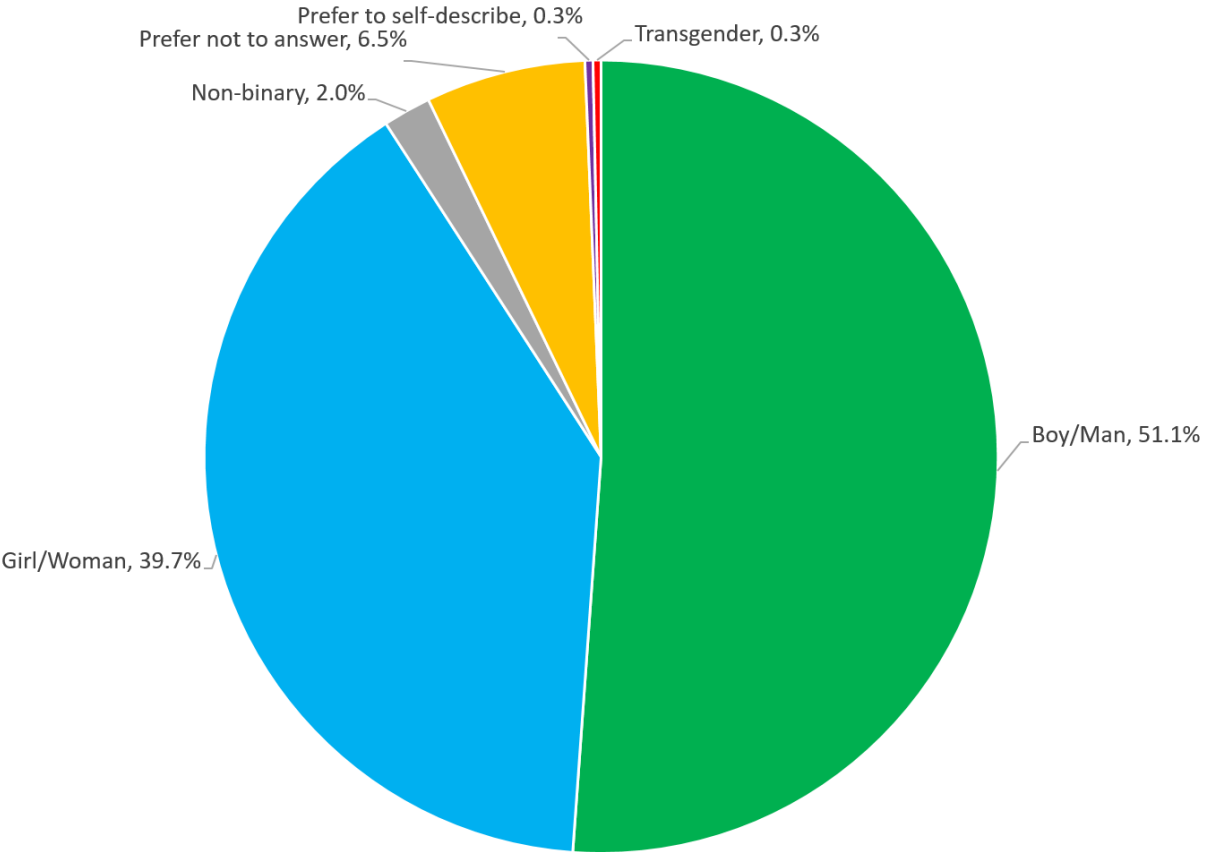
Table 1. This table shows the percentage of respondents per county. Counties with no respondents are not shown.

Of the 315 respondents, nearly a third were students. The next largest roles represented were educators and administrators. Graph 1 (below) shows the percentage of respondents in each role. Graph 2 shows the balance of respondents by gender. Approximately 50% of the respondents were male and 40% were female. Graph 3 shows the percentage of respondents by race. The majority of respondents described themselves as white.

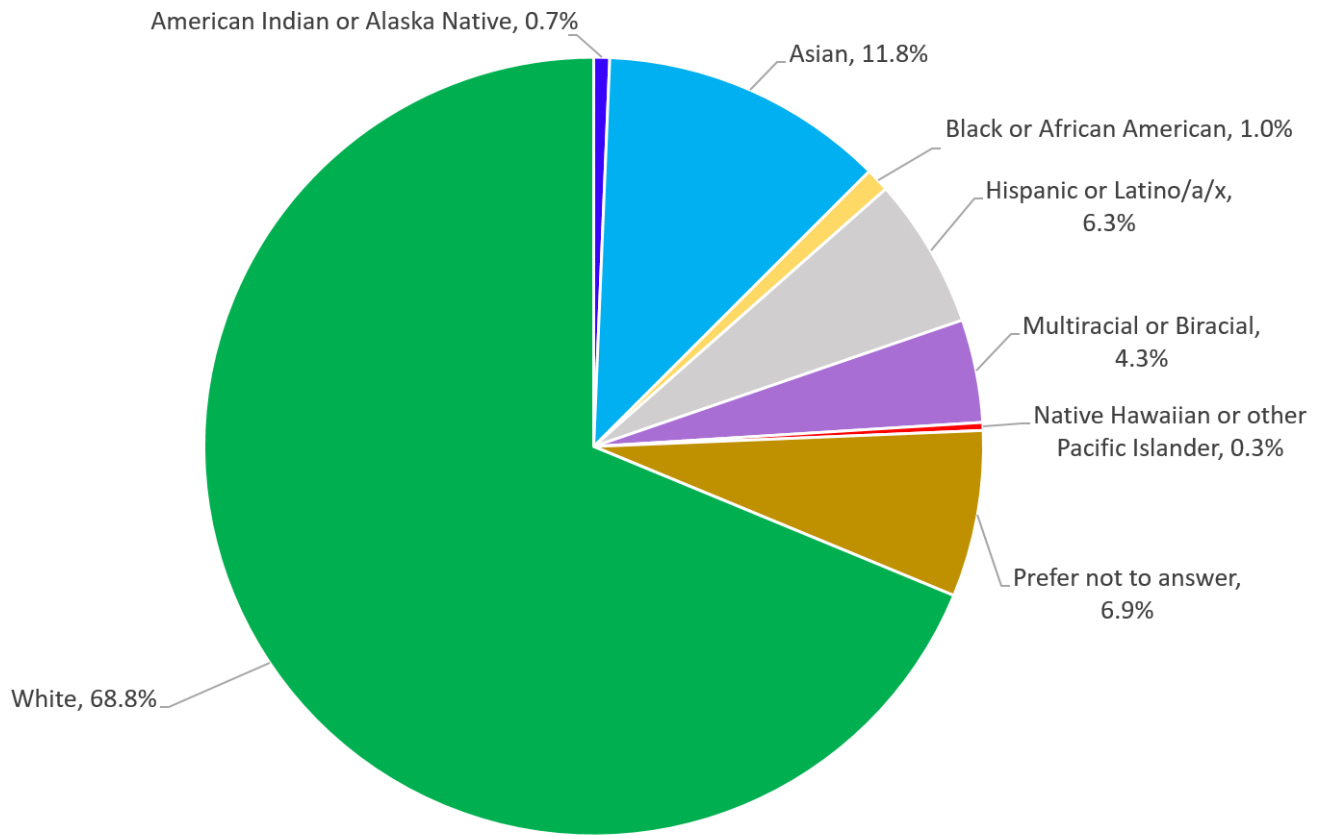
Graph 1. Percentage of Respondents by Role



Graph 2. Percentage of Respondents by Gender



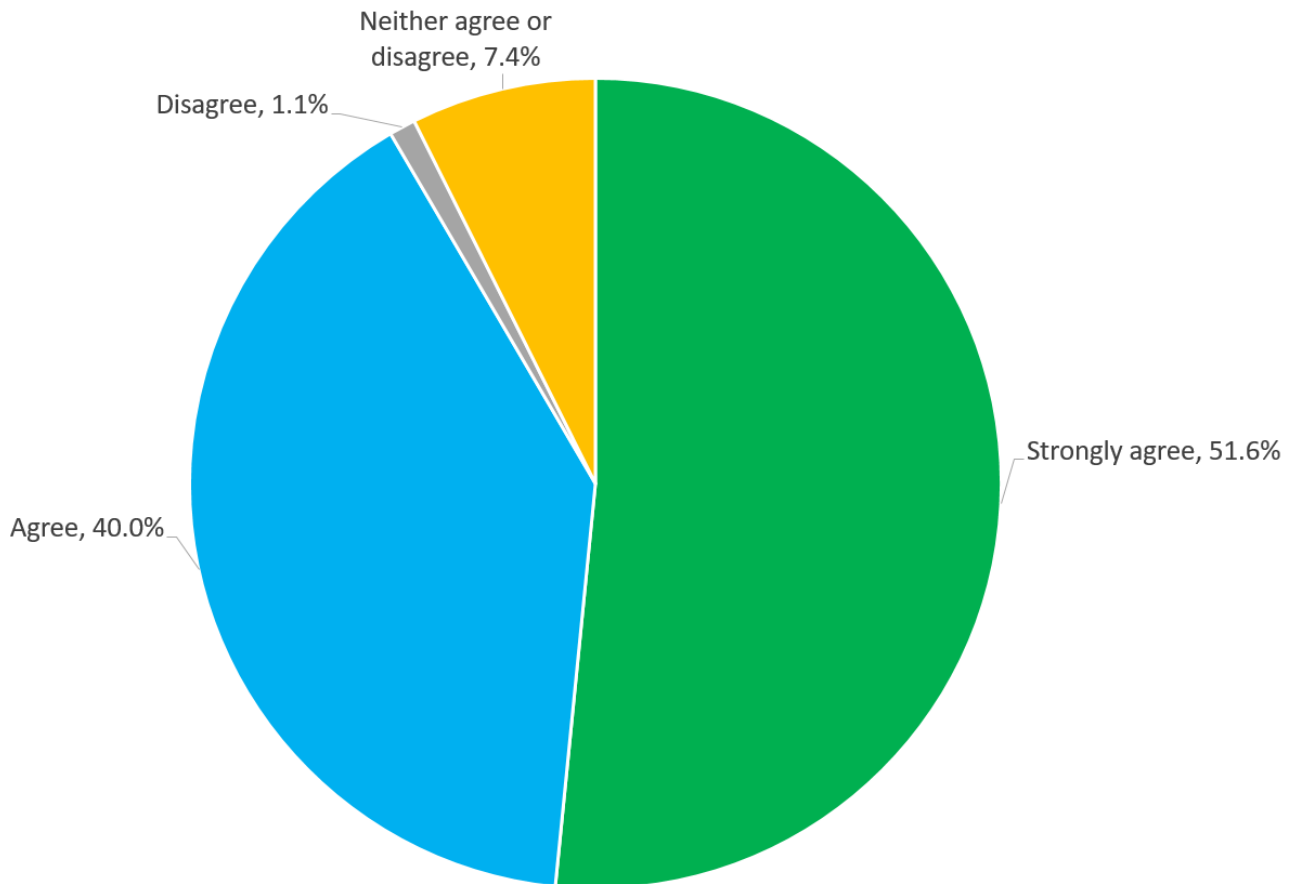
Graph 3. Percentage of Respondents by Race



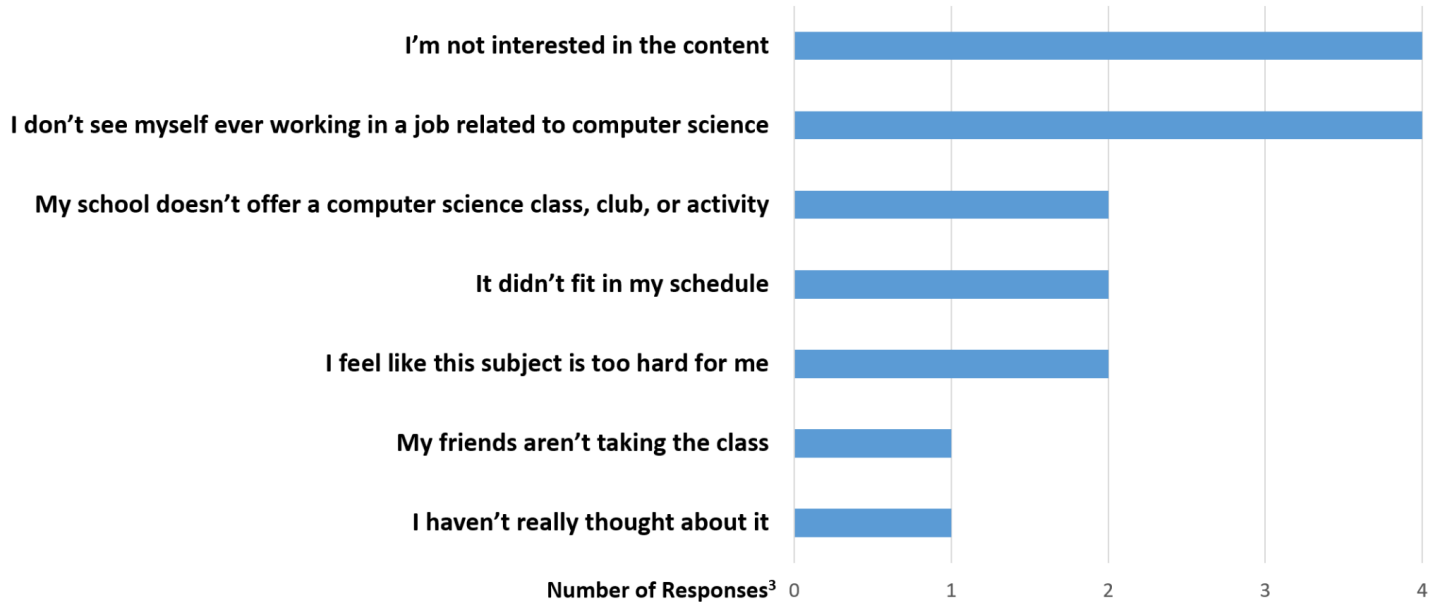
Student Perspectives

The survey offered students a different set of questions than the adult respondents. The following graphs are all from the students' perspectives. Overwhelmingly, students reported positive experiences with computer science in their schools. Very few student respondents were not already taking a computer science course. Those who were not currently enrolled in a computer science class reported lack of interest or not seeing themselves in the profession as the primary reasons why they avoided a computer science course.

Graph 4. Percentage of Students Reporting Positive Experiences with Computer Science in their Schools



Graph 5. Ranking of Reasons Why Students Do NOT Take Computer Science Classes



³ The Number of Responses in this graph is low because only students who indicated that they were not currently taking computer science classes were asked this question. Eight students responded to this question.

Student Responses

Of the 315 participants in the online survey, approximately 94 were students. Examples of student responses to the open-ended survey questions are provided below.

What have been the most positive experiences you have had in computer science classes or activities?

- *“Positive experiences are everywhere. The ability to critically problem solve, and get things done that have the ability to translate to real life is a valuable asset to learn for children everywhere. When you write a program that works, the feeling of having created something is a wonderful experience.”*
- *“I’ve always felt very supported in my computer science classes in my high school. I like that everything is project-based and individual - but the teachers there know exactly how to support us through that.”*

Overall, what are the most important things that you have learned in school about computer science?

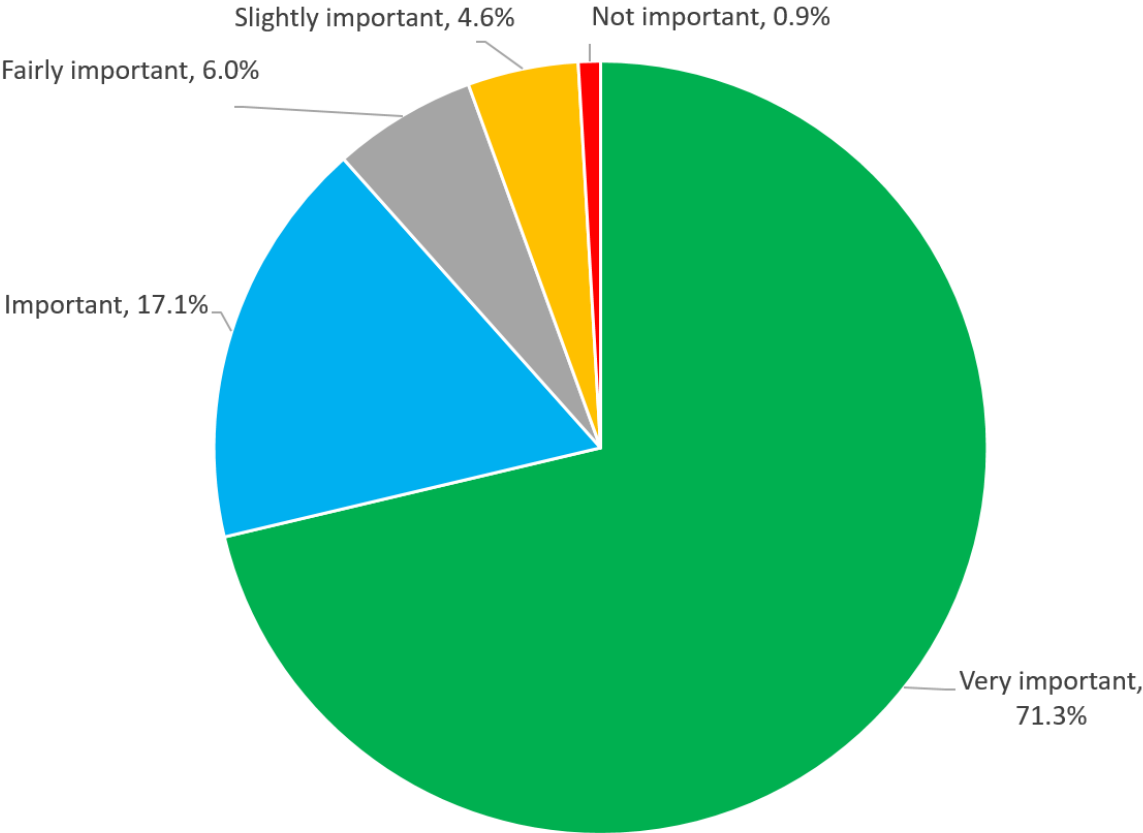
- *“How important it is going to be for the future. It’s very likely that a majority of jobs in the future will incorporate computer science in some way, so learning about the ways that could happen has been very valuable.”*
- *“One of the important things I have learned from computer science is to never give up, there is always a solution to the code so don’t just give up trying, which is also an applicable lesson to most situations.”*

Adult Perspectives

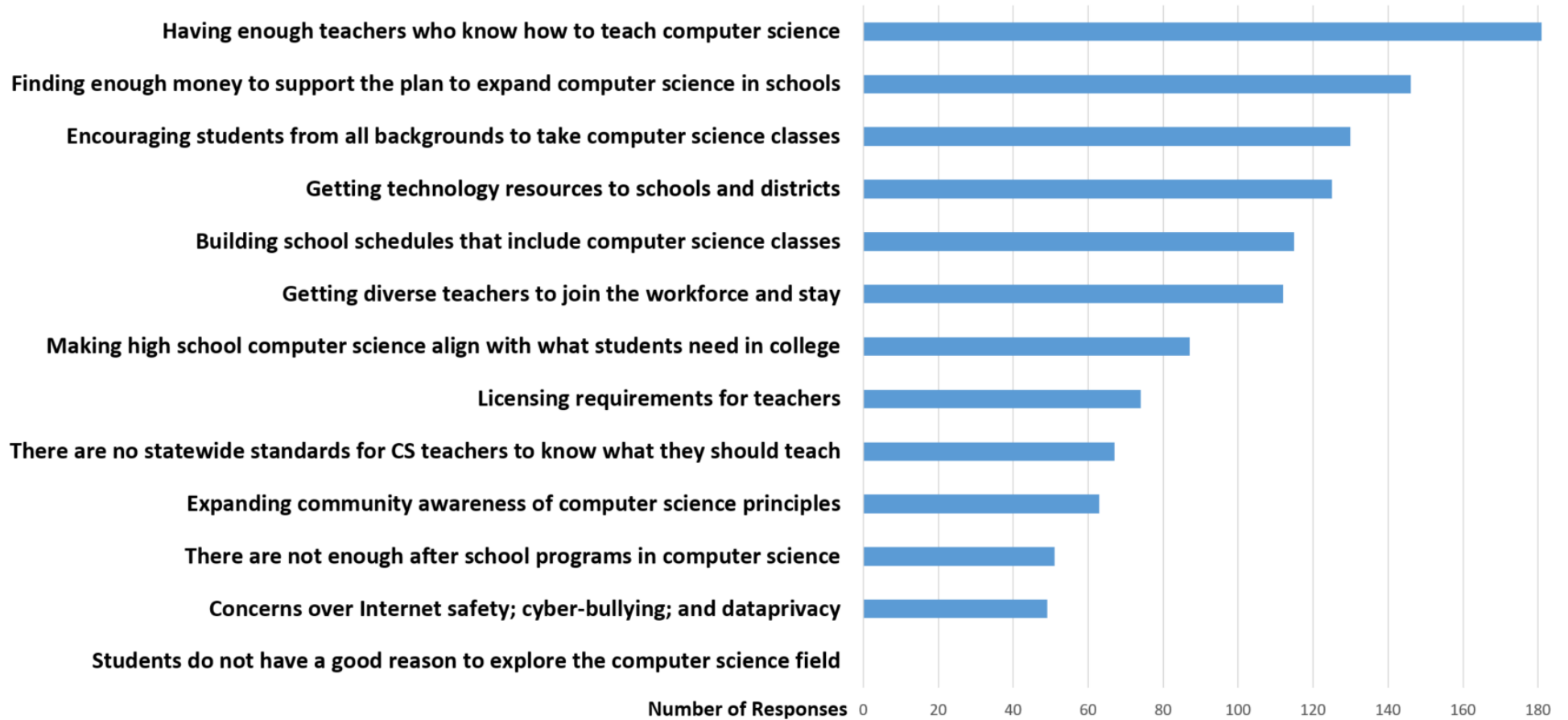
The following graphs reflect the perspectives of the parents, family members, educators, administrators, community members, and industry professionals who participated in the survey. Overwhelmingly, respondents indicated that they want to see more computer science opportunities in their schools. Among possible challenges to broadening participation in computer science, the lack of trained computer science teachers and stable funding top the respondents’ concerns. Along similar lines, the most frequently expressed hopes for the future

of computer science education include increasing the training opportunities for teachers and attracting more diverse students to pursue studies in computer science. Respondents reported creating stable funding sources and establishing teacher training programs at colleges and universities as the top strategies for making computer science foundational.

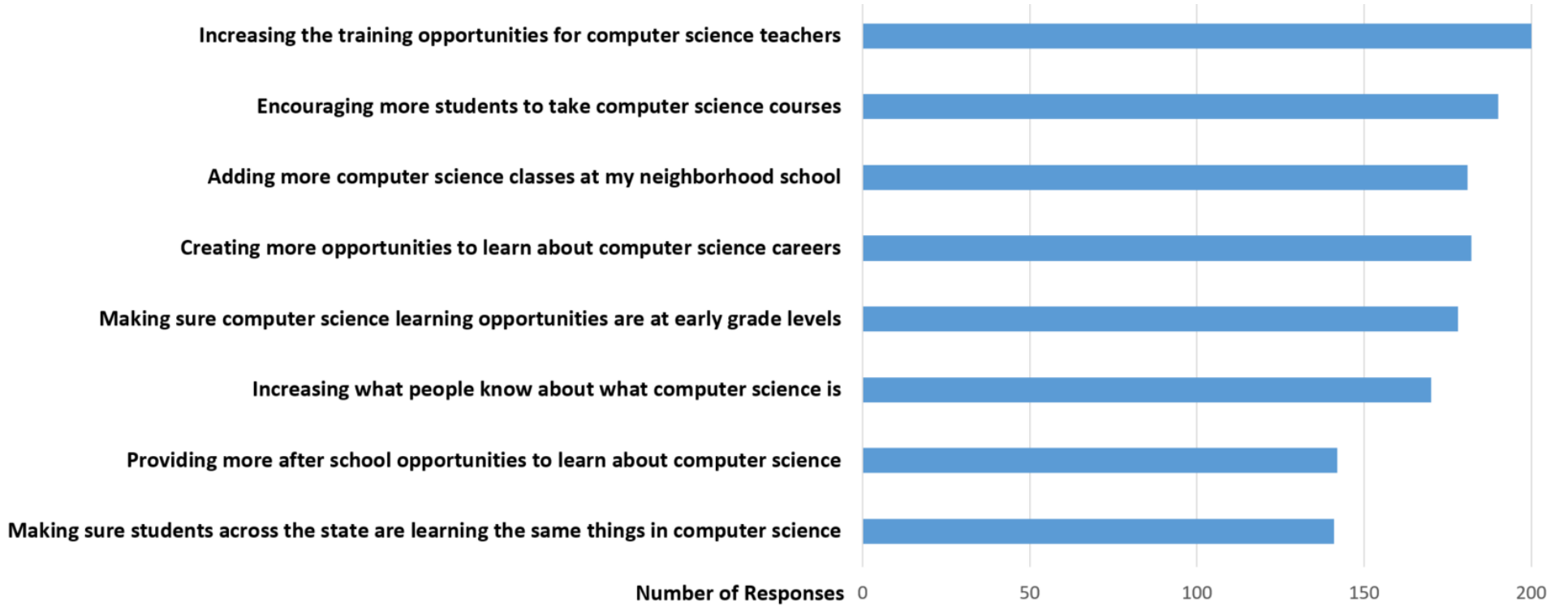
Graph 6. Importance of Increasing Computer Science Opportunities in Local School



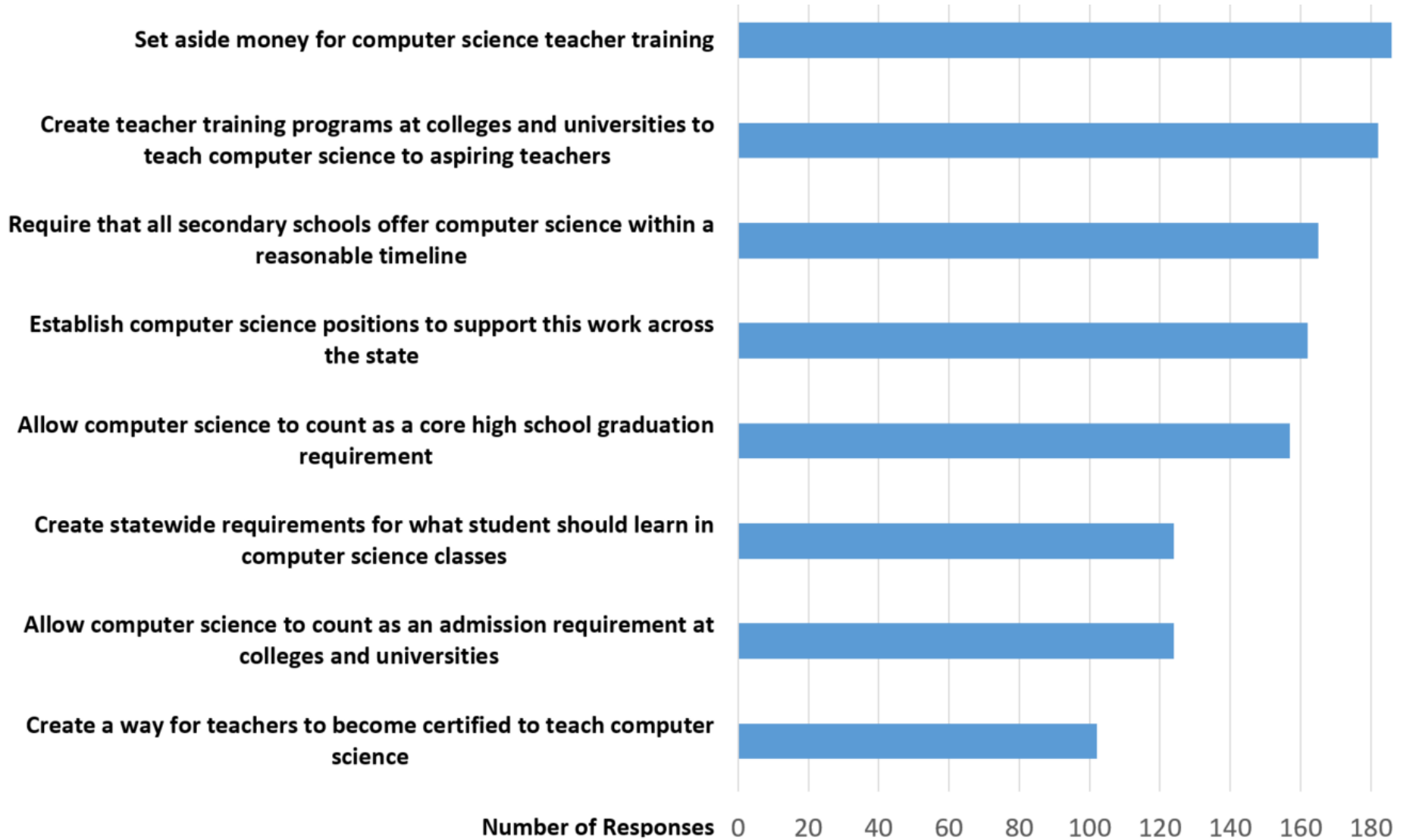
Graph 7. Relative Ranking of Perceived Most Central Challenges to Broadening Participation in Computer Science Education



Graph 8. Relative Ranking of Hopes and Priorities for the Implementation Plan



**Graph 9. Ranking of Relative Importance of Ideas
to Make Computer Science Educational Foundational**



Adult Responses

Of the 315 participants in the online survey, 221 respondents identified in a non-student role. Examples of these responses to the open-ended survey questions are provided below.

Are there additional challenges that you feel are important for us to consider?

- *“Computer Science is a new form of literacy. It is not sufficient to provide access, we need to see effective engagement in high quality, inclusive, culturally-affirming educational opportunities by all students.”*
- *“How do we support moving courses to our Middle School? Often funding is available to support these initiatives at the high school level, but our students need earlier exposure to computer science options.”*
- *“It could be very powerful to include the how and why of computer science into our current elementary content standards. We have historically isolated standards by subject and finding these connections would help teachers and students develop robust and comprehensive learning opportunities.”*
- *“Rural communities are forgotten or not fully considered, please don't forget about the smaller school districts.”*

Why do these goals feel important to you? Feel free to share any other outcomes you are hoping for.

- *“Computer science is important because in Oregon and nationally it is behind a significant amount of economic growth in multiple areas, including tech and medicine. Ignoring a high-wage, high-growth, highly-needed sector makes no sense.”*
- *“I'm very puzzled that Computer Science isn't a required course in Oregon and that there are not state standards. In addition to that, at the very least, students should be able to take a computer science course and receive a science credit.”*

Please share any other ideas you have to make computer science education easier for Oregon students to access.

- *“Allow in-service teachers certified in any subject to teach computer science after participation in recommended best-practice professional development. Track the classroom diversity of those teachers. Celebrate those teachers.”*
- *“Don't make barriers to further educational opportunities (admission or grad requirement).”*

Is there any additional information that you would like to share about your experiences with computer science or your hopes for the future of computer science education in Oregon?

- *“As stated above, representation matters. We need underrepresented teachers of computer science so that ALL students can see themselves as computer scientists. We need to make computer science an everyday thing for all children so that they are not intimidated. It is NOT just for boys, or nerds, or rich people, or whatever stereotypes people have. We all use computers and we have a responsibility to our children to teach them how computing works.”*
- *“Computer science is a great field for rural areas because of the ability to do these jobs from anywhere. I hope that we can find more opportunities for students to connect with the industry right here in eastern Oregon.”*
- *“I am very concerned about unfunded mandates...Adding on to elementary teacher's plates instead of removing or replacing something just isn't a solution. Maybe elements of computer science should start to show up in our curriculum adoptions for math and literacy? I'm not seeing what we would stop teaching to make time to teach computer science as a stand-alone component.”*
- *“I hope we can disrupt the systemic exclusion based on race and gender that has been present in computer science education for the past 50 years. Computer science is essential knowledge. It should be provided to all learners in a welcoming, culturally affirming, and inclusive environment. All opportunities created by mastery of computer science knowledge should be open to all members of our community.”*
- *“I think we need to be very careful about not just adding more to educators' plates. They are already very overwhelmed by taxing workloads, lack of recognition/value*

from the community and governmental agencies. We are losing good people by the droves.”

- *“We have no computer science teacher prep programs and yet we are asking if it should be a requirement for all schools. Create the prep programs and scale them to meet the need to support that requirement. Then consider implementing that requirement.”*
- *“Si el estado va a exigir que haya clases de computación, debe también proveer los fondos porque de otra manera los distritos escolares rurales estarán en desventaja a otros escolares grandes como los que están en Portland. En mi opinión los lugares rurales siempre han estado a una desventaja con aquellos que asisten a otros lugares más grandes.” - Padre de Oregón (***“If the State is going to mandate computer classes, it should also provide the funding because otherwise the rural school districts will be at a disadvantage compared to other larger ones, such as those that are in Portland. In my opinion, rural places have always been at a disadvantage with those who attend other larger places.” - Oregon Parent***)*

Future Engagement Efforts

In addition to the Phase I engagement sessions hosted by ODE and HECC, a Consult Group⁴ of 40+ educators, parents, and industry professionals, selected through an application process, will serve as an advisory body during the writing of the Computer Science Implementation Plan. The primary function of the Consult Group is to provide feedback on early drafts of the implementation plan, prior to the start of Phase II engagement sessions, wherein the general public will be invited to comment on the draft implementation plan.

In early spring ODE and HECC will host another round of engagement sessions where Oregonians will be invited to provide commentary and feedback on early drafts of the implementation prior to its official release in September 2023. For details on upcoming engagement sessions or to join our mailing list, please visit [ODE's Computer Science Implementation Plan Website](#).

⁴ Note that the Consult Group will not be directly responsible for writing any part of the implementation plan as final editing authority remains with ODE and HECC. The members are volunteers who are asked to commit to a monthly 2 hour meeting and 2-4 hours of subcommittee or asynchronous work independently as well.

Conclusion

Through Phase I Engagement, approximately 550 Oregonians engaged with the Oregon Department of Education and the Higher Education Coordinating Commission to share their perspectives, experiences, and hopes for computer science education in our state. Families, students, educators, community members, and industry professionals shared more than 1,500 comments and ideas. While it is difficult to articulate every perspective shared, some key themes that will guide the drafting of the Statewide Computer Science Implementation Plan include:

- The importance of starting computer science education early.
- The value of developing a working definition of computer science and K-12 learning standards.
- The importance of sustaining computer science education efforts through both funding and state level positions.
- The necessity of a culturally responsive and sustaining computer science curriculum.
- The need to address pre-service teacher training and professional development for current teachers.
- The importance of strong connections between high school courses, post-secondary institutions, and industry.
- The urgent need to consider policy recommendations through an equity lens to ensure that the disparities seen in access and participation are addressed in the years ahead.

Oregon voices express hope, a sense of urgency, and optimism for the future of computer science education statewide. As one parent shared...

“I’m excited that this long overdue approach is being considered for our students Pre-K through post-secondary!” - Oregon Parent

The Statewide Computer Science Education Implementation Plan is expected to be released in September 2023.

Appendix A: Phase I Engagement Questions

Career-Connected and Education Partners

- What goal(s) for computer science education in Oregon do you think is the most important to attend to in the implementation plan? (May or may not be one of the goals listed above.)
- What do you see as the central challenge(s) to ensuring equitable opportunities and outcomes in computer science?
- What promising practice(s) have you experienced or learned about with regards to broadening participation in computer science?
- What do you see as most important to be included in the Computer Science Implementation Plan?
- What immediate actions/next steps do you see as important to implement within Oregon?
- What long-term changes do you see as important to implement within Oregon?
- What do you hope that ODE/HECC considers or understands when developing the Computer Science Implementation plan?

Students, Families, Community Members

- Have you or your child participated in computer science education? What has that looked like/felt like?
- If you or your child has participated in computer science, what do you see as the benefits (short-term and long-term)?
- What do you see as barriers to participation? What do you see as the impact (short-term and long-term)?
- What do you hope to see continue in schools next year to support computer science education?
- What do you hope to see change in your schools next year to support access to computer science education?
- Is there anything else you would like us to know when writing the Computer Science Implementation Plan?