Interim
Cross Sector Computer Science Plan

Prepared by Washington STEM and Washington Technology Industry Association

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EXECUTIVE SUMMARY

Stakeholders across Washington state understand that access to computer science education is critical for growing our economy through local talent and closing pervasive income gaps. Washington needs a strategic statewide plan, with clear goals and metrics, to chart a course for strengthening computer science education. To date, implementation and investment in computer science has been inequitable and siloed, though well-intentioned. It has been difficult to track implementation of computer science education mandates, and to assess any progress in improving outcomes for underserved students.

The goal in this project: To create, iterate, and operationalize a statewide Cross-Sector Computer Science Strategic Plan (CSSP) that will help provide access to computer science for all Washington students, outline specific policy, implementation, and educator development goals, as well as a timeline and lead entities to achieve set goals. And we agree with our partners at the Office of the Superintendent of Public Instruction (OSPI), as stated in [Washington State Computer Science Education Strategic Plan](#) to ensure that: *All K-12 schools in Washington will offer CS instruction aligned to the state-approved standards and have a qualified CS teacher to deliver this instruction. Students will have equitable access to CS instruction by a diverse and qualified teaching pool and high school graduates will be prepared for post-graduation opportunities in CS.*

At a time when it's nearly impossible to find an industry or field of study not being transformed, disrupted, or reimagined using software and computer science, all students can benefit from learning computer science. The computational thinking, critical thinking, and creativity skills acquired through computer science education will prepare them throughout their education and beyond. Seven different studies show that children who study computer science perform better in math and science, excel at problem-solving, and are 17% more likely to attend college.[1]

[1] 1. Scherer, Ronny et al. "The cognitive benefits of learning computer programming: A meta-analysis of transfer effects." *Journal of Educational Psychology* (2019): n. Pag.
2. Century, Jeanne et al. "Finding time for computer science in the elementary day: Preliminary findings of an exploratory study." *Outlier Research & Evaluation | UChicago STEM Education at the University of Chicago.* (2018).
3. Buckley, Jack. "Preliminary results of AP computer science analyses." *College Board.* (July 2015).
4. Brown, Emily Anne and Brown, Richard S. "The effect of advanced placement computer science course taking on college enrollment." *West Coast Analytics.* (March 4, 2020).
5. Arfé, Barbara et al. "The effects of coding on children's planning and inhibition skills." *Computers and Education, 148.* (April 2020). n. Pag.
6. Prat, Chantel S. et al. "Relating natural language aptitude to individual differences in learning programming languages." *Scientific Reports*, *10.* (March 2020).
7. 2019 State of Computer Science Education. (2019). Retrieved from https://advocacy.code.org/

With more than 20,000 open computing jobs in Washington today—many of which are high-paying jobs that only require a 2-year degree—entering post-secondary with a strong basic foundation in computer science is critical for accessing these pathways

OVERVIEW

Washington STEM worked closely with corporate stakeholders and sponsors to provide feedback and iterate with the project leads, in contribution toward a cohesive plan and next steps. We also worked with stakeholders to identify necessary data to measure progress toward our shared goals as well as data that can measure progress toward the reinvisioned goals of the Cross-Sector Computer Science Strategic Plan.

In Washington, STEM skills and post-secondary education provide a pathway that leads to economic opportunity and family-wages jobs in every region of our state. And yet, not all students have equitable access to these opportunities. Our work primarily focuses on ensuring students of color, rural students, students experiencing poverty, and girls and young women have equitable access to the skills, education, and transformational possibilities that STEM has to offer

The purpose of this report is to share work to date in partnership with Washington STEM and the Washington Technology Industry Association (WTIA) and to engage with funders to support the work moving forward.

Engagement of Stakeholders
Over the course of four months, we held a sequence of focused feedback conversations with internal and external partners including University of Washington, Code.org, Educational Service Districts (ESD), and Regional STEM Networks. We asked partners and stakeholders these five questions:
- What are barriers to achieving the goals outlined (funding/policy change/culture change/awareness etc)
- Are these strategies clear and easy to understand for implementation?
- Is this the right entity responsible to lead this work? Any partner entities you would add?
- Are these the right metrics for progress? What would you add? What would you remove?
- Who else should be talking to for feedback?

In partnership with the WTIA, we held an additional feedback conversation with industry partners from Amazon, Apple, Google, Microsoft, Meta, and Salesforce. These industry partners were key in refining the recommendations below.

What we found:

In tandem to this process, OSPI has prepared and released their final version of the K-12 focused Washington State Computer Science Education Strategic Plan. Washington STEM partnered with OSPI throughout this process, providing feedback and sharing what we continue to hear from partners. OSPI received and implemented some of the recommendations including reorganizing the plan itself but what has been released does not address or recommend solutions to known barriers and is missing connections to postsecondary pathways and industries.

In the focused conversations held by Washington STEM, partners and stakeholders shared their experience with computer science in K-12, higher education, and industry spaces. Highlighted most in the conversations are barriers to expansion and implementation of Computer Science-Dedicated FTE for computer science; data that focuses on pathways and includes industry; funding for regional programs that can be scaled; investments in teacher preparation to combat a growing workforce shortage; and continued coordination and partnership with industry partners who can bring career activities to the classroom.

Below are more details of the recommendations for action at the policy and industry level that will impact Washington students.

1. **SUPPORT K-12 IMPLEMENTATION OF EQUITABLE ACCESS TO CS:** Fully funded statewide, cross-sector Computer Science leadership structure.
2. **ACCOUNTABILITY THROUGH DATA:** Mandate improved data visualizations and accountability metrics in statute
3. **TEACHER PREPARATION:** Expansion of teacher training programs (ex. UW)
4. **COORDINATION & PARTNERSHIP:** Provide input on Cross-sector Strategic Plan & support implementation; Organize and host convenings to connect educators, Computer Science advisory, stakeholders
5. **UNDERSTAND POSTSECONDARY PATHWAYS INTO CS:** Utilize data from Washington STEM's Computer Science Credential Opportunities by Region Index (CORI) dashboard to prioritize policies and funding for increasing access to computer science programs in each region of the state.

1. SUPPORT K-12 IMPLEMENTATION OF EQUITABLE ACCESS TO CS

Why: OSPI's role is generally to coordinate/guide statewide strategy for content areas and programs, in close partnership with the Washington Association of Educational Service Districts (AESD). While OSPI is a resource for districts and schools, it is the ESDs that provide regional support, guidance, professional development, and sometimes resources for teaching and learning. This is particularly true for smaller and rural districts. However, currently there is one (1) position at OSPI that coordinates all computer science implementation across the state and

295 school districts. A few ESDs have small amounts of FTE dedicated to computer science but there is not a systemic approach, meaning, the likelihood of reaching smaller, rural, and/or under-resourced districts is diminished. **Washington STEM advocated in 2022 for regional ESD-based leads in computer science. While the proviso was not introduced, the need for a statewide cross-sector computer science leadership structure remains.**

What was proposed:
Computer science leads will help district implementation and strategic planning by:
- Ensuring the mandate to offer CS courses and to ensure equitable accessibility is delivered with fidelity by each school and district in the state.
- Increasing awareness of professional learning standards and expanding professional development opportunities for teachers, administrators, and district CS leaders;
- Supporting teachers integrating CS standards into their current practices;

Computer science leads will support diversity, equity, and inclusion efforts by:
- Helping districts identify curricula and resources that are culturally relevant, accessible, and inclusive;
- Utilizing inclusive instructional practices and applying for grants to expand equitable access to CS; and
- Supporting districts, OSPI, and the Office of Equity to measure and report local and statewide metrics.

Cross Sector Connection: A stateside computer science leadership structure will foster relationships and partnerships by connecting community members, trusted messengers, community-based organizations, nonprofit organizations, businesses, and industry with school districts to increase computer science access and inclusion initiatives. Structures could include ESD Computer Science leads at each of the nine Education Services Districts, sustainable for existing leadership groups like CS 4 All Washington, or other structures. Leadership will also liaise and support implementation and scale of current programing (eg: Career Connect Washington Sector Intermediary strategy and/or Computing For All programming.)

Policy Recommendation/Action: Build from the momentum of 2022 to ensure a proviso is introduced and passed in the 2023 legislative session to support a cross-sector statewide computer science leadership structure focused on building a coalition of support from industry, agency, community, and education; identifying the leader; cultivating a relationship with a sponsor and legislative champions; supporting the proviso through legislative process, tracking implementation.

2. ACCOUNTABILITY THROUGH DATA

Why: While the legislature has made moves to mandate availability of, equitable access to, and improved improve data collection and reporting about access to computer science across the state, Washington STEM and partners reviewed raw data released in 2021 that suggest that not all districts offer computer science courses and/or that even if courses are technically listed on

school or district course catalogs, students are unable to enroll in the courses and/or cannot access the courses equitably across demographics.

We intend to access updated data when OSPI releases it at the end of June/beginning of July 2022 to confirm whether and where courses are offered and taken and whether equitable access is available across the state. We also have received information from schools, districts, and their partners that the data released in 2021 may have had inaccuracies due to data inputting errors, data coding errors, or other unknown factors. Releasing a transparent, local, relevant data dashboard that provides all of these measurement elements will allow OSPI and others to understand the extent to which schools and districts have been able to implement the legislative mandates and will realize the intent of the legislature's mandate for release of the data itself.

The following bills have been signed into law related to equitable availability of, engagement in, and data about K-12 computer science across the state:

SB5088 Awarding credits for Computer science (2019)
- Requires each school district that operates a high school to offer an opportunity to access an elective computer science course by the 2022-23 school year.
- Allows school districts to award academic credit for computer science to students based on student completion of a competency examination starting with the 2019-20 school year.

SHB1577 K-12 Computer Science Education Data (2019)
- Mandates school districts report the following data to OSPI *and* for OSPI to post a publicly-available data report about the following measures related to computer science courses and equitable access:
    - The total number of CS courses offered in each school (including advanced placement designation);
    - The number and percentage of students who enrolled in CS, disaggregated;
    - The number of computer science instructors at each school, disaggregated.

SB 5299 Use of CS Credits for the Purpose of Graduation Requirements (2021)
- Allows a student to substitute an approved CS course for a third-year math or science credit for high school graduation.

Even with these legislative investments, available data from OSPI via their 2021 report shows that in the 2019-2020 school year only 8.7% of students in grades 9-12 were enrolled in a computer science course (8.7% is based on Washington STEM's calculation using the most recently updated enrollment data for grades 9-12 in the 2019-2020 school year). Further data collected from Code.org reported that in 2019, only 49% of public high schools in the state offered a computer science course. Washington STEM's analysis of OSPI-released data in their 2021 report reveals that up to 58.3% of school districts overall offered a computer science

course, though availability by high school was not provided in that report, resulting in differences from Code.org's report. Washington STEM hopes to be able to examine updated data, to be released very soon by OSPI, to see if progress was made.

Teacher workforce data from OSPI's 2021 report reveals computersScience teachers in grades 9-12 were more likely than teachers statewide to hold limited certificates-limited certificate status means a teacher taught under a certificate that was initiated by a school district on behalf of the educator because the educator was not (yet) eligible for full certification. OSPI currently only reports teaching workforce data by certification, gender, and highest degree.

Cross Sector Connection: Data is currently siloed from early learning (limited to no data available), K-12 (OSPI), Higher Education (each institution reports, or SBCTC), teacher workforce (PESB) and additional data that is collected in other agencies and nonprofits like Education Research and Data Center and Code.org. Labor market data reflects the industry need.

Policy Recommendation/Action: Legislate and fund a statewide, comprehensive Computer Science Data Dashboard. Dashboards should be housed on a publicly available website, easily accessible, and updated when new data sets are available. Data points could include:

- Student pathway data (course completion, dual credit completion, High School and Beyond Plan and Graduation pathways)
- K-12 and HS to college enrollment data/ Post-college data (e.g., from Higher Ed. and/or community partners)
- Post-secondary pathway participation data and subsequent admissions/enrollment data
- Seats available in post secondary computer science
- Addition of basic elementary science data with a specific question around computational thinking in elementary science time (how many districts, how much time offered)
- Current dual credit articulations in computer science in Washington
- Data of the OSPI Computer Science Grants- grantees, regions, impact
- Teacher Educator Prep enrollment, completion and endorsement data
- Professional Development Enroller participation data
- Educator Data System state teacher certification data
- SCRIPT participation and implementation data
- District curriculum adoption data

3. EXPAND TEACHER PREPARATION

Why: Washington State is experiencing a statewide teacher shortage in specific content areas and endorsement areas, including STEM. Data currently available from the Professional Educator Standards Board (PESB) shows computer science has been included on the subject area lists facing the highest shortages since 2019.

There are promising programs that support teacher prep program innovation to increase the number of computer science teaching credentials. At the University of Washington, [Dr. Amy J. Ko](#) is working to create a new pre-service secondary computer science teacher education program, preparing grade 6-12 educators to teach computer science and data science in middle and high schools, either as standalone computer science courses or through integration in existing subject areas. It is built upon the existing highly regarded University of Washington College of Education Secondary Teacher Education Program (STEP), which has a successful history of recruiting gender, ethnicity, and race diverse teacher cohorts, placing them in underserved schools and districts, and preparing teachers for future leadership. Currently, the STEP program graduates about 70 teachers per year across all disciplines. Similar pre-service programs across 4-year institutions have shared struggles in recruitment due to tuition. [2]

Specific to computer science, between 2018-2020, there has been a 5% decline of computer science teachers in the state leading to approximately 300 teachers for 650 high schools who are to offer computer science courses. This is a deficit of 350 teachers in high school level computer science. [3]

There is also a growing consortium of pre-service providers in Washington, Oregon, Alaska, Idaho, and Hawaii to do regular information sharing, strategize on program structure, share data on demand and placement. At the Community and Technical College level, there is a consortium called AppConnect Northwest (AppConnect NW) composed of seven colleges working collaboratively to offer Bachelor of Science in Computer Science and BAS degree in Software and Application Development. A key function of the collaboration is sharing teaching resources and instructors across the colleges to fill demand and gaps of credentialed instructors.

Cross-Sector Connection: More credentialed K-12 computer science teachers are necessary to reach statewide goals for high school CS course availability, expansion of Computer Science Bachelor of Science/IT degrees at community and technical colleges and continued expansion of computer science related workforce.

Policy Recommendation/Action: System-level investments in supporting, retaining, and expanding the computer science and STEM teaching workforce.
- Legislate collection and dissemination of longitudinal data around the teaching workforce to align teacher preparation programs with workforce demand.

- Invest in teacher retention by providing more support for early-career teachers (first 5 years.)

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[2] Direct email communication from Dr. Amy J. Ko, University of Washington
[3] Direct email communication from Dr. Amy J. Ko, University of Washington

- Invest in public/private partnerships provide scholarships and free tuition to future teachers at the community and technical college level and at the four-year institutions. Computer science and STEM teachers are KEY to our future workforce.

4. COORDINATION AND PARTNERSHIP

Why: In absence of a unified vision and strategic plan, implementation and investment in computer science has been inequitable, siloed, and missing critical partnership between community, educators, and industry.

Policy Recommendations/Actions:
- Support implementation of a statewide cross-sector leadership structure with ESD regional leads
  - Find volunteers for classrooms presentations in local schools
  - Connect with the CCL Coordinator to discuss apprenticeship and Career Launch opportunities
  - Connect with teachers for summer internships
  - Connect with CTE Advisory Boards
  - Connect with CS leads for Classroom needs

- Organize and host convenings to connect educators, CS advisory, stakeholders and industry
  - Provide venues to share resources & best practices
  - Support/ fund opportunities for educator travel & professional development
  - Strategize grassroots advocacy

Example of Partnership In Action: Regional STEM Networks
STEM Networks are deeply rooted in their communities and provide local expertise to ensure that local needs are met. Each area of our state is unique and STEM Networks know how to drive maximum impact in STEM for every student in their region. Learn and connect with Regional STEM Networks.

Case Study Example (one of many): Apple STEM Network (Wenatchee, WA)
In partnership with Microsoft Philanthropies and TEALS (Technology Education & Literacy in Schools), North Central Educational Services District, OSPI, Code.org and Career Connect Washington, the Apple STEM Network leveraged just over $378,000 in the last year to expand access to computer science education in the region. Four school districts have strategic plans for K-12 computer science education (SCRIPT plans) that identify teaching capacity as a top priority for implementing equitable computer science education. In 2021, the regional network helped with outreach and recruitment, and NCESD and Code.org provided professional learning for just over 200 elementary educators and counting.

NCESD partnered with Microsoft TEALS to support CS implementation efforts in 18 regional school districts, and through regional network collaboration, students can now articulate their coursework to Big Bend Community College, Wenatchee Valley College, or Central Washington University to get ahead in certificate and degree programs. In the fall of 2021, Microsoft Techspark and the Apple STEM Network recruited Seattle-based nonprofit, Computing for All, to the region to support the development of a Data Center Technician prep pathway for Quincy High School Students in partnership with Big Bend Community College, and the Grant County Industrial Alliance. The region also hosted a Computer Science Education week.

The above is just one example of the work currently happening in regions. Support for these partnerships and together, we will:
- Achieves high-quality CS education in Washington
- Facilitates CS education equity for all students in Washington
- Identifies root causes of inequity in access to participation in, and success in CS for Black, Brown, and Indigenous students, rural and low-income students, and girls. Identifies solutions and operationalizes access to CS
- Includes specific and sequenced milestones and actions that create measurable outcomes (not recommendations).
- Identifies issues by region and by target population and provides strategic solutions
- Includes next steps and future implementation goals to keep CS education growing and developing beyond 2022-23 to be relevant and responsive to the evolving educational needs of students and the workforce needs in Washington
- Provides recommendations for statewide and agency-level policy change to further pathways to CS
- Provides regional supply data and technical assistance to drive an expansion of WA-originating CS workforce in the state
- Provides data and measurement for current career pathways or degree programs providing credentials for each CS and related occupations
- Has buy-in from a variety of stakeholders including students, families, educators, business, philanthropy, agencies, and community-based organization.
- Moves educators beyond their personal training to defined CS instructional practice
- Helps align authentic CS pathways for students
- Addresses the root problems surrounding the lack of CS education and pushes the limits of solutions

5. DATA DASHBOARD

Washington STEM has produced a **Computer Science Credential Opportunities by Region Index (CORI) dashboard**. The Credential Opportunities by Region and Industry Index is a tool designed to inform users of in-demand occupations, the credentials typically needed to enter those occupations, and the institutions or apprenticeship programs offering those credentials in a given region. The tool reveals whether enough capacity exists in a given region and across

the state to adequately prepare young adults to enter into particular occupations and industries. In this case, the tool displays this for computer science occupations in Washington.

This tool informs 2-year and 4-year colleges, apprenticeship providers, employers, and K-12 schools about what career pathways are available in their region. Users can compare the data to future job openings so that they can work with the community to add or scale programs.

Computer science occupations were selected from the Standard Occupation Classification Code system using the Washington State Definition of Computer Science as guidance.The list of careers in computer science from ComputerScience.org was also used to identify relevant occupations.

CORI COMPUTER SCIENCE DATA DASHBOARD

Access the Data Dashboard: https://washingtonstem.org/cori/

Quick Start Guide	CORI	Aligned Credentials and Related Occupations
Instructions	Wage Ranges	Sources

Credential Opportunities by Region and Industry (CORI) is a tool designed to inform users of in-demand occupations, the credentials typically needed to enter those occupations, and the institutions or apprenticeship programs offering those credentials in a given region.

Using the tool
Hover your mouse over a title or column header to access additional information about the field. As an example hover your mouse over the word **Region** in Step 1 below to see how Regions are defined.

To begin, follow the instructions below or select the CORI tab.

Step 1. Select a region (see map):

Region   Seattle-King County ▾

Step 2. (Optional) Select a wage range:

Wage Range   Family ▾

Step 3. (Optional) Select an industry sector:

Sector   Computer Science ▾

Step 4. (Optional) Select occupation demand:

		tial tion	Credential Gap
		1,936	-18,880
		1,203	-19,053
		781	-19,880
		1,881	-2,156
		1,881	-752
		6	-1,469
27-1024	Graphic Designers	846	2,885	307	-3,424
15-1244	Network and Computer Systems Administrators	629	19,958	673	-19,914
27-1014	Multimedia Artists and Animators	493	17,158	206	-17,445
15-2051	Data Scientists	369	26,194	1,997	-24,566
15-1242	Database Administrators	340	20,361	571	-20,130
15-1221	Computer and Information Research Scientists	295	20,485	1,634	-19,146

	Occupation Title	Job Openings	Related Job Openings	Credential Production	Credential Gap
27-1021	Commercial and Industrial Designers	135	53	218	30
17-2071	Electrical Engineers	128	206	348	14
17-2141	Mechanical Engineers	120	0	356	236
17-3011	Architectural and Civil Drafters	95	0	199	104
17-2031	Biomedical Engineers	45	0	96	51
17-3023	Engineering Technicians, Except Drafters, All ..	0	0	38	38

Washington ST

NEXT STEPS:

There is more work to be done in partnership with industry, K-12, higher education, state agencies, and students and families. OSPI has just released their final version of the OSPI Computer Science Strategic Plan and we anticipate a release of a raw data summary report in a matter of days.

Washington STEM and WTIA are turning focus to:
- The emergent legislative proposals to further support and codify computer science expansion, including:;
  - Fidelity of computer science offerings and equitable access and uptake among students, district-by-district across the state;
  - Availability of computer science postsecondary programming at the regional level and overall capacity across the state;
  - Dual credit course offerings (computer science among them) as related to funding formulas between high schools and local community and technical colleges;
  - Equitable access to computer science majors and programs within higher education institutions for Washington state resident students/K-12 originators in comparison to non-resident students;
  - Availability of teacher education and certification programs for computer science endorsement as well as subsidized funding for prospective teachers and inservice teachers that represent underserved student demographics;
  - Incentives and data tracking on the part of individual districts related to the district and school strategic plans and continuous improvement plans.
  - Mandating data reporting on the number and demographics of students who have completed and been awarded credit for taking a competency examination for computer science proficiency.
    - This would include the data on which districts have developed a competency examination policy for the awarding of credits.
  - Availability of and access to student/youth/early career computer science internships via mechanisms like Career Connect Washington initiative's career launch and career prep endorsed and registered programs, including:
    - Pre-apprenticeships
    - Approved State Registered Apprenticeships
    - Career & Technical Education coursework pathways
    - Career prep internships offered in each region of the state
    - Career Launch Endorsed programs that lead to industry recognized credentials, 2-year degrees, 4-year degrees, and other higher education outcomes.

- Access to OSPI-held data:
  - availability of courses school-by-school, including listing of courses, offering of courses, and availability of contiguous CS course pathways;
  - access and engagement in those courses by students from key populations that have been systematically underserved, and
  - certification, training, and demographics of teachers who could or do teach computer science to determine equitable access to adults who reflect student demographics of the school or district.
- Creation of data dashboards related to the above data from OSPI as well as:
  - Longitudinal data that follows Washington's K-12 students, including those to take computer science courses in their time in K-12, through higher education (inside and outside of the state), and into the workforce to understand patterns of access by demographic and geography to computer science programming and higher ed programming as well as eventual access to high-demand computer science jobs, especially related to race, income, originating geography/school district, and other factors and student characteristics.
- Seeking funding support to partner and scale programs across the state that are addressing all of the above issues, including actions like supporting teacher workforce, expansion of computer science degrees, access to computer science career pathways, and expansion of access to internships.

ACKNOWLEDGEMENTS

WASHINGTON STEM

Washington STEM is a statewide, education nonprofit leveraging STEM for social change, removing barriers to credential attainment, and creating pathways to long-term economic security for systemically underserved students.

At Washington STEM, our work revolves around three main strategies:

- **PARTNERSHIP:** We collaborate with 10 STEM Networks across the state to identify, scale, and spread effective local solutions and convene cross sector partners in business, education, and the community to solve big problems.
- **DIRECT SUPPORT:** We provide direct support through targeted community investments, open-source access to data and measurement tools, and technical assistance.
- **ADVOCACY:** We champion transformative solutions through educating decision makers, storytelling, and collaboration to create the foundation for lasting, equitable change in Washington.

OUR FOCUS

Career Pathways - we work with business, education, and community partners to increase access, opportunity, and the necessary experiences students need for high-demand, family-wage careers in health care, agriculture, technology, advanced manufacturing, and other STEM industries.

Early Learning - We're investing directly in communities, partners, and STEM Networks across the state to foster innovative models of family and community engagement in STEM so that our systems can better serve Washington earliest learners from birth to 8 years old.

Diversity, Equity and Inclusion- In Washington, STEM education provides a pathway that leads to economic opportunity in every region of our state. These career opportunities lead to the family-wage careers that are essential to growing Washington communities, and yet, some students in our state face far greater barriers to accessing these careers. Our work primarily focuses on Black, Brown, and Indigenous students, students living in rural communities, students from low-income backgrounds, and young women.

STEM Networks - STEM Networks are deeply rooted in their communities and provide local expertise to ensure that local needs are met. Each area of our state is unique and STEM Networks know how to drive maximum impact in STEM for every student in their region.

ABOUT WASHINGTON TECHNOLOGY INDUSTRY ASSOCIATION (WTIA)

WTIA is a consortium that includes a not-for-profit member trade association, a not-for-profit tech apprenticeship intermediary, and a for profit corporation delivering business services. Our mission is to foster a robust, equity-centered technology sector that empowers thriving communities. We recruit technology companies and allies that view diversity as a competitive advantage, value collaboration as essential to sustainable growth, and fully embrace the opportunity to partner with and empower the communities in which we operate.

Our primary areas of focus include:

- **Workforce development and organizational change:** WTIA is leading the way nationally in helping the tech sector make actionable and sustainable changes to develop diverse talent through registered tech apprenticeship and the Diversity, Equity, and Inclusion Center of Excellence.
- **Responsible advocacy that supports thriving communities:** WTIA is a recognized and powerful voice in public policy. Representing the collective interest of the tech sector and our communities, we facilitate productive collaboration among industry leaders, regulatory agencies, and elected officials toward economically sustainable outcomes.
- **Convening thought leaders to solve complex challenges:** WTIA convenes leaders from companies, educational institutions, and government to combine skills, expertise, and resources to address persistent challenges in our communities. We facilitate and lead conversations that drive innovation and accelerate solutions that any one organization would find too challenging to pursue alone.
- **Helping small and medium businesses grow and scale:** The WTIA startup programs include the largest network of startups in Washington and support startups from rural areas and founders from underrepresented populations. We build connections for high-potential startups, help them launch their products, and raise investment capital. In the last few years alone, WTIA has helped founders raise more than $200 million. In addition, we support more than 500 small and medium tech companies with business insurance, employee & family health plans, and 401(k) plans that help these companies attract and retain talent.

DRAFT Cross-Sector Computer Science Strategic Plan

Washington STEM set out to create, iterate, and operationalize a cross-sector statewide Computer Science Strategic Plan that will help provide access to computer science for all Washington students. Using the OSPI Statewide Computer Science Strategic Plan draft, our intent is to create a cross-sector version with policy, implementation, and educator development goals, as well as a timeline and lead entities to achieve set goals. We had hoped to complement the plan with comprehensive data dashboards that accurately reflect the computer science landscape in our state including course availability, completion, and educator data. During this time, OSPI was finalizing a legislatively mandated Statewide Computer Science Strategic Plan and data dashboard. Washington STEM and many mutual stakeholders were involved in the initial discussions and iterations of the OSPI plan but the plan remained focused on the K-12 space and was missing a connection to early learning, career pathways, and industry.

We held focus group discussions with stakeholders that revealed an earnest interest in computer science expansion and connections to careers but surfaced policy and data barriers to truly implement what OSPI was proposing in their plan. We shared feedback throughout the process to OSPI leading to a redesign and reorganizing of OSPI's plan. This plan includes funding recommendations to support sections of the plan. Washington STEM does not have a formal position on the funding recommendations but supports the agency efforts to fully implement. OSPI's final version is here: OSPI Statewide Computer Science Strategic Plan.

Washington STEM's proposed Cross-Sector Statewide Computer Science Strategic plan below reflects the feedback from partners across sectors. There are four main sections to the plan: Outreach, Diversity, Equity, and Inclusion, Curriculum and Courses,and Teacher Pathways. Within each section, we propose strategies to reach the goal, suggested partners and leads, and recommendations to address known barriers. The recommendations are the current best thinking Washington STEM has but we invite feedback. Washington STEM does not have sole ownership of these recommendations. Each section includes a status column that we hope to use in the future to measure progress to achieving the goals of the plan.

We look forward to future iterations of this work in partnership.

OUTREACH

Vision: WA State seeks to provide open communication channels for students, educators, administrators, community members, and industry leaders from diverse backgrounds and identities to learn more about CS, ask questions and
provide feedback using a variety of channels.

Goal: Computer Science PR campaign: Develop communication materials that present general messaging across multiple channels and multiple audiences. Review messaging plans with the Computer Science Advisory Committee.

Strategies	Suggested Leads/Partners	Recommendations	Status
Collaborate with trusted messengers in communities, community-based organizations (CBOs), nonprofit organizations, and industry to make clear, consistent, and timely messaging about CS opportunities available and to decentralize OSPI's communications role, including but not limited to: - Use AESD network to create clear, consistent, and timely messaging about CS opportunities. - Connect with tribal partners for outreach in their communities. - Use the Digital Navigator platform to explore	Suggested Lead(s): OSPI, CBOs and Community Partners Suggested Partners: AESD, Districts, Industry Leaders	DEI: Educators actively seek out vetted resources and regular opportunities to learn about the current and historical cultures of their students (Kapor Framework Core Component 3.3) Educators incorporate student voices and perspectives throughout the curriculum and classroom experience, engaging them as cultural experts (Kapor Framework Core Component 4.1) Policy: Form a Computer Science consortium in statute, including implementation of ESD based Computer Science Leads. Data: Partnerships will include cross-sector representation and represent regional demographics. Partnership: Internally shared list of partnerships (existing and possible) Externally shared list of CS	

community connections. - Provide a script for each of the legislators (legislators have a communications budget and could put together a video about updates/successes in CS education). - Connect with the military for outreach in their communities. - Ask local school boards and PTSAs to tailor information to the needs of their communities.		opportunities available through current partnerships (e.g., summer programs, HS internships, alignment with CCW Computer Science statewide sector strategy)	

Goal: Maintain and increase current partnerships and continue to explore possible partnerships with local, national, and international CS/STEM organizations.

Strategies	Suggested Leads/Partners	Recommendations	Status
Collaborate with trusted messengers in communities, community-based organizations (CBOs), nonprofit organizations, and industry to make clear, consistent, and timely messaging about CS opportunities available and to decentralize OSPI's communications role, including but not limited to:	Suggested Lead(s): Community Partners, OSPI Suggested Partners: AESD, Code.org CS4All, Industry Partners, Higher Education Partners	DEI: Educators actively seek out vetted resources and regular opportunities to learn about the current and historical cultures of their students (Kapor Framework Core Component 3.3) Educators incorporate student voices and perspectives throughout the curriculum and classroom experience, engaging them as cultural experts (Kapor Framework Core Component 4.1)	

Strategies		Recommendations	
- Use AESD network to create clear, consistent, and timely messaging about CS opportunities. - Connect with tribal partners for outreach in their communities. - Use the Digital Navigator platform to explore community connections. - Provide a script for each of the legislators (legislators have a communications budget and could put together a video about updates/successes in CS education). - Connect with the military for outreach in their communities. - Ask local school boards and PTSAs to tailor information to the needs of their communities.		Policy: Form a Computer Science consortium in statute, including implementation of ESD based Computer Science Leads. Data: Partnerships will include cross-sector representation and represent regional demographics. Partnership: Internally shared list of partnerships (existing and possible) Externally shared list of CS opportunities available through current partnerships (e.g., summer programs, HS internships)	

Goal: Create a CS dashboard to provide access to planning tools and resources for district leadership to engage with and use.

Strategies	Suggested Leads/Partners	Recommendations	Status

Create an OSPI managed WA State CS data dashboard that is open to all and will allow users to examine and analyze current data in order to evaluate CS at all levels in WA State. Create guidelines and methods for how data will be collected. Partner with CS implementation leads and CBOs on data collection and production	Suggested Lead(s): OSPI & WA STEM Suggested Partners: STEM, Networks, Implementation Leads, ERDC, PESB	DEI: Partners are paid for their time and represent the regional demographics. Policy: Comprehensive Data Dashboard Data: Data Dashboard will include course availability by school, district and course type; students enrolled in CS courses by region, school, district, and by demographic; teachers who teach courses by demographic, region, school district. Demographics will include data disaggregated by: gender; race and ethnicity; special education status; English learner status; eligibility for the free and reduced-price lunch program; grade level. Partnership: OSPI will partner with CS Implementation leads, CBOs, and districts on data collection and dissemination, and user statistics.	

Goal: Conduct focus groups to solicit annual feedback on the implementation of the state plan.

Strategies	Suggested Leads/Partners	Recommendations	Status
Engage and partner with leadership organizations (listed below) to support and fund focus groups.	Key leadership organizations, including but not limited to: WA STEM, PESB, ESDs, AESD, CSforAll Fellows, higher ed/TEPs, school districts, as well as	DEI: Educators actively seek out vetted resources and regular opportunities to learn about the current and historical cultures of their students (Kapor Framework Core Component 3.3) Educators incorporate student	

| | principal and teacher unions and parent/caregiver organizations (e.g., WSPTA), families, and students | voices and perspectives throughout the curriculum and classroom experience, engaging them as cultural experts (Kapor Framework Core Component 4.1)

Policy: Funding for focus groups, report to legislature

Data: Number of participants, demographics, and regions. Frequency of focus groups

Partnerships: Expansion of partnerships to include CBOs, industry partners, and students. | |

Goal: Host events for community partners to connect with each other to support possible collaborations.

Strategies	Suggested Leads/Partners	Recommendations	Status
Provide funding support for events.

Collaborate with trusted messengers in communities, community-based organizations (CBOs), nonprofit organizations, and industry to make clear, consistent, and timely messaging about CS opportunities available. | Suggested Lead (s): OSPI, STEM Networks

Suggested Partners: Code.org, CBOs, community partners, industry partners, districts, parent groups | DEI: Develop opportunities for community participation that are visible to everyone. Increase opportunities for potential partners (including nonprofits, NGOs, corporations, etc.). Promote district-level support and implementation efforts

Policy: Provide a dedicated funding pool from the agency to support events.

Data: Number of events per region, report of event outcomes (e.g., partner collaborations), Number of attendees, demographics and regions. | |

		Partnerships: Increased connections to pathways for students and families through districts and industry partnerships.	

DIVERSITY, EQUITY, AND INCLUSION

Vision: Increase equity in access to CS opportunities for students and teachers in underserved groups ; Connect students to communities that represent their unique identities and circumstances, providing experiences that are culturally and socially relevant, responsive, and sustaining; Address the unique circumstances, challenges, and opportunities, across the different geographic regions across the state (especially rural and small schools).

Goal: Increase CS course enrollment for students from underserved groups; Integrate CS into K-5 and K-8 courses; 100% of students in Washington engaged with CS curriculum.

Strategies	Suggested Leads/Partners	Recommendations	Status
Mandate CS as a graduation requirement or count towards a graduation requirement for all students in Washington. Support current teacher programs to integrate CS into pre-service teacher education. Support districts to integrate CS into K-5/K-8 learning. .	Suggested Lead(s): OSPI, SBE, WA STEM Suggested Partners: Industry partners, ESDs, Districts, PESB, Curriculum Providers, Higher Ed	DEI: Pre/Post CS course enrollment data shows an increase in the number of students from underrepresented groups. CS achievement data shows continuous improvement for the number of students from underrepresented and underserved groups through the CEDARS system. Policy: Advocate for Computer Science to be a graduation requirement as a part of the core science courses and graduation pathways. Data: Collect and disseminate data around student course taking including data for Number of students and demographics who take CS courses; Number students and demographics who take CS courses /saturation/sequence; Number of courses with CS integration Partnerships: Partnerships	

		between state agencies, and collectors of the data, with community input.	

Goal: Ensure that the racial, cultural, and ethnic identities of CS teachers reflect the identities of students in their communities.

Strategies	Suggested Leads/Partners	Recommendations	Status
Further references in recruitment and retention in Teacher Pathways. Support programs for recruitment of teachers of color (ex: UW Centers of Excellence, PSESD's Grow Your Own) Support increasing numbers of CS endorsed staff in all districts. Provide support to districts/schools in rural areas with a limited CS teacher pool to expand the CS teaching skills of their in-service teachers	Suggested Lead(s): PESB, OSPI, Higher Education Partners Suggested Partners: STEM Networks, ESDs and Implementation leads, Districts, Industry partners, Community Partners, Diversity Engagement Partners, CSTA	DEI: Data shows that the racial, cultural, and ethnic identities of CS teachers reflect the students in their communities Policy: ESD Implementation leads, propose a public/private partnership to support teacher tuition, scholarships. Data: Number of teachers of color with CS endorsements by region and demographic. Number of teaching positions available in CS by region. Number of available CS teacher prep programs per region, and who is completing programs Partnerships: Partnerships between districts, higher ed, industry, and community to showcase pathways to teacher workforce.	

Goal: Develop and implement comprehensive training for teachers to use DEI as a lens for continuous improvement); Provide equitable and inclusive access for teachers to resources and CS professional development.

Strategies	Suggested Leads/Partners	Recommendations	Status
Provide professional learning opportunities for educators based on the Kapor Center's (2021) framework for Culturally Responsive-Sustaining CS Education (Kapor Center, 2021; see also Recommendations in Teacher Pathways section). Develop training modules for teachers to use equity/diversity as a lens for continuous improvement. Offer training and guidance for educators, including counselors/graduation specialists, to help students navigate secondary to post-secondary CS pathways.	Suggested Lead (s): OSPI, ESDs, PESB Suggested partners: Curriculum Providers, Districts/ Schools, STEM Networks, OSPI, ESDs, (WINforCS network)	DEI: Develop training modules with community using the Kapor Framework for teachers to use equity/diversity as a lens for continuous improvement Policy: ESD Implementation leads funded to help districts identify curricula and resources that are culturally relevant, accessible, and inclusive; Utilizing inclusive instructional practices and applying for grants to expand equitable access to CS; and Supporting districts, the OSPI, and the Office of Equity to measure and report local and statewide metrics Data: Number of teachers and demographics who complete trainings Partnerships: Industry partners with training developers to provide examples of current and future CS pathways.	

Goal: Provide guidance about currently available accessible CS teaching materials.

Strategies	Suggested Leads/Partners	Recommendations	Status
Develop training modules for specific strategies to	Suggested Lead: OSPI, STEM	DEI: Develop training modules with community using the Kapor	

locate and/or create accessible CS learning materials. Use a data-informed decision-making process when choosing and/or creating resources. Directly coordinate device and internet access gap efforts with CS education efforts to ensure that device efforts are compatible with CS pedagogy	Networks, PESB, ESDs Suggested Partners: Higher Education, Curriculum Providers, Districts/ Schools, teacher associations	Framework for teachers to use equity/diversity as a lens for continuous improvement Policy: Comprehensive statewide data dashboard. Data: Collect, disseminate and use data including region of who is accessing materials. Partnerships: Develop opportunities for funding that are visible to everyone. Increase opportunities for corporate involvement and potential funding partners. Promote district-level funding support and implementation efforts.	

CURRICULUM & COURSES

Vision: Standards allow curriculum to be created and selected based on a coherent vision of CS education that sets learning goals for all students, from kindergarten through high school graduation. To provide guidance in curriculum and courses, WA State adopted the CSTA Standards in 2016 (revised 2018).

Goal: OSPI will maintain and update the CS Standards to reflect current changes in the industry (e.g., AI, cybersecurity, robotics, virtual reality), as well as to address issues of social justice, which increases the range of CS curriculum topics.

Strategies	Suggested Leads/Partners	Recommendations	Status
Provide guidance for implementing CS standards at all grade levels though CS data dashboard, professional learning, full time implementation lead. Regularly review and revise CS Standards to include elements of the new knowledge bases (e.g., cybersecurity, artificial intelligence (AI), cloud computing, etc.), based on information gleaned from industry experts	Suggested Lead(s): CS Advisory Board with industry and content experts. Led by CS Leads and OSPI. Suggested Partners: ESDs, Districts, Curriculum Providers, Higher Ed	DEI: Educators demonstrate awareness of white supremacy and racism in education, computing, and CS classrooms as well as commit to ongoing learning to understand systemic racism as a part of their commitment to anti-racist and traumainformed pedagogy (Kapor Framework Core Component 1.2). Policy: Standards are reviewed every 3-4 years. Data: Who is accessing and implementing standards. Partnerships: Align with industry recommendations through CCW CS sector strategy	

Goal: OSPI will perform regular review of CS Standards to integrate new knowledge bases, including relevant education research.

Strategies	Suggested Leads/Partners	Recommendations	Status
Support integration of CS with all subject areas, including literacy, along with standalone CS teaching.	Suggested Lead(s): CS Advisory, CS Leads and OSPI Suggested Partners: ESDs, Districts, Curriculum Providers, Higher Ed	DEI: Educators utilize pedagogy and curriculum which equips students to critically examine technology and interrogate its role in society as well as its ethical, political, and societal implications (Kapor Framework Core Component 3.4 Policy: Computer Science is a graduation requirement; support for basic elementary science education integration. Data: Standards are reviewed every 3-4 years. Partnerships: Districts and local school boards are key partners, working with OSPI and CS leads/advisory to ensure equitable implementation.	

Goal: All districts in Washington integrate CS with all subject areas, including literacy, along with standalone CS teaching; All districts in Washington develop and implement multiple K-12 pathways, including HS to post-secondary pathways and CS in elementary.

Strategies	Suggested Leads/Partners	Recommendations	Status
Districts and teachers attend and participate in training of integration of CS standards in elementary	Suggested Lead (s): CS Leads, curricula providers and PD providers.	DEI: Educators honor and affirm students' intersecting identities within the curriculum, instructional practices, and classroom culture and support students' navigation	

Districts and teachers attend and participate in training of integration of CS standards in secondary. Provide elementary school administrators and teachers with a CT Integration Framework Help make preliminary determinations about their and their school's readiness to integrate an instructional focus on CT across the elementary school curriculum Help to develop an implementation plan based on the results of their readiness assessment	Suggested Partners: OSPI, ESDs, Districts, Curriculum Providers, Higher Ed	of CS and society at large (Kapor Framework Core Component 2.3) Policy: Awareness and scaling of state approved Computer Science equivalencies.Computer Science as a graduation requirement. Data: Number of districts who currently have integrated CS standards in elementary and secondary district wide CS plan. Number of districts who currently have developed and implemented multiple K-12 pathways in CS. Include access and participation data for students Partnerships:Educators actively build relationships with members of the local and national tech community who can lend their knowledge and expertise to the classroom experience (Kapor Framework Core Component 6.2)

Goal: High-quality CS curricula adopted by all districts/schools.

Strategies	Suggested Leads/Partners	Recommendations	Status
Provide curricular resources for districts Provide support and guidance to districts about available high-quality CS curriculum opportunities (including, but not limited to cybersecurity, artificial intelligence (AI), and cloud computing). Provide elementary school administrators and teachers with a CT Integration Framework Help make preliminary determinations about their and their school's readiness to integrate an instructional focus on CT across the elementary school curriculum Help them to develop an implementation plan based on the results of their readiness assessment	Suggested Lead(s): CS Advisory Committee (defining HQ), CS Leads and OSPI Suggested Partners: OSPI, ESDs, Districts, STEM Networks, Curriculum Providers, Higher Ed	DEI: Educators honor and affirm students' intersecting identities within the curriculum, instructional practices, and classroom culture and support students' navigation of CS and society at large (Kapor Framework Core Component 2.3) Educators expose students to a range of computing and technology-related careers, programs, and opportunities that are aligned to student interests (Kapor Framework Core Component 6.1) Policy: Funding to support partnerships between districts and industry for Computational Thinking integration. Data: Number of districts with current District curriculum adoption. Number of districts in progress and number of districts that have not started. Partnerships: Educators leverage a variety of tech tools to introduce students to industry professionals and career pathways within their classroom, especially when in-person opportunities are a challenge (Kapor Framework Core Component 6.4	

Goal: Schools implement guidance and opportunities for multiple post-secondary pathways. (4 or 2 year, career)

Strategies	Suggested Leads/Partners	Recommendations	Status
Provide examples of K-12 pathways during training. Provide guidance to Districts for implementation of standards-based CS courses. Forge and sustain connections between school levels (elementary, middle, high school, post-secondary, industry, government, and nonprofits)	Suggested Lead(s): CS Leads, Districts, Higher Ed, OSPI Suggested Partners: ESDs, Districts, STEM Networks, SBE, Curriculum Providers, Higher Ed, Career Launch programs/Intermediaries	DEI: Educators honor and affirm students' intersecting identities within the curriculum, instructional practices, and classroom culture and support students' navigation of CS and society at large (Kapor Framework Core Component 2.3) Policy: Support for counselors and career navigators. Expansion of HSBP and the computer science pathway. Statewide dual credit articulations. Data: Student demographic for current graduation pathways (SBE); Partnerships: Forge and sustain connections between school levels (elementary, middle, high school, post-secondary, industry, government, and nonprofits)	

Goal: By 2024, CS credits will count as part of the STEM requirement for graduation.

Strategies	Suggested Leads/Partners	Recommendations	Status
Provide examples of K-12 pathways during training. Provide guidance to Districts for implementation of standards-based CS	Suggested Lead(s): CS Leads, Industry, higher education, OSPI, and SBE	DEI: Educators honor and affirm students' intersecting identities within the curriculum, instructional practices, and classroom culture and support students' navigation of CS and society at large (Kapor	

courses. Expand support to districts to implement AP and early college experience credit courses in CS in HS in partnership with community and state institutes of higher education. Collaborate with Higher Education to allow CS to satisfy an admissions requirement	Suggested Partners: OSPI, ESDs, Districts, STEM Networks, Curriculum Providers, Higher Ed	Framework Core Component 2.3) Educators expose students to a range of computing and technology-related careers, programs, and opportunities that are aligned to student interests (Kapor Framework Core Component 6.1) Policy: Statewide dual credit articulations Data: Amount of students are participating in requirement, completion rates, post-secondary achievement and demographic data. District curriculum adoption data Partnerships: Forge and sustain connections between school levels (elementary, middle, high school, post-secondary, industry, government, and nonprofits)	

TEACHER PATHWAYS

Vision: The purpose of providing CS professional learning for teachers of other subjects is to leverage the existing pool of teachers and provide both a short-term approach for increasing the number of CS opportunities in schools and a long-term approach for cross-curricular integration of CS literacy.

Goal: Recruit, train, and retain a diverse and highly qualified pool of K-12 CS teachers..
Professional Learning

Strategies	Suggested Leads/Partners	Recommendations	Status
Support K-12 teacher preparation programs to prepare teachers for endorsement in both primary and secondary CS Gather data from school districts about their CS needs and share this data with TEPs to help guide their programs to match what districts needed, especially rural districts.	Suggested Lead(s): ESDs Suggested Partners: OSPI, Districts, STEM Networks, Curriculum Providers, Higher Ed, Community Partners	DEI: Educators actively and intentionally confront and dispel stereotypes and biases about the abilities and skills of students from groups marginalized in CS (Kapor Framework Core Component 2.1). Policy: Invest in public/private partnerships provide scholarships and free tuition to future teachers at the community and technical college level and at the four-year institutions Data: Data from school district leads resulting in X teachers participating in high quality professional learning in CS/Early Elementary. Current PD Enroller Data. Partnerships: Industry partnerships with externships as a part of PD	

Goal: Support equitable and inclusive continued professional development opportunities for CS teachers that incorporate culturally relevant CS. Expand the capacity of regions within the state to plan and offer professional learning aligned with state CS goals

Strategies	Suggested Leads/Partners	Recommendations	Status
Support equitable and inclusive continued professional development opportunities for CS teachers that incorporate culturally relevant CS. Provide training for teachers on curricula and content for integrating CS literacy and CS into other K-12 subject areas. Create regional teams of CS teachers to build a supportive community. a. Include CSTA regional chapters b. Ensure that high-quality professional development strategies are leveraged for new CS teachers c. Provide incentives for districts that create alternative pathways for teacher certification (e.g., "Grow Your Own" initiatives, etc.) and who retain teachers with non-CTE endorsements or with specialty endorsements.	Suggested Lead(s): ESDs Suggested Partners: OSPI, CS for All, Washington (ECEP), STEM Networks, Washington MESA, Washington STEM, Microsoft, Code.org, higher ed/TEP	DEI: Educators ensure curriculum is high-quality, rigorous, challenging, and aligned to state and national standards (Kapor Framework Core Component 3.1 Policy:Invest in public/private partnerships provide scholarships and free tuition to future teachers at the community and technical college level and at the four-year institutions/ scale current programs Data: PD Enroller participation data, integration of CS into teacher prep programs, teacher prep program metric. Partnerships: Regional teams, partnership with industry, higher ed and K-12	

Goal: Recruit diverse teacher candidates to join CS programs. Support recruitment and retention of CS teachers.

Strategies	Suggested Leads/Partners	Recommendations	Status
Provide guidance for pre service TEPs to offer both elementary and secondary certifications in CS. Develop and implement an incentive program designed to recruit teachers from currently underrepresented groups and from industry or education to get/add the CS endorsement. Provide incentives for teachers (from industry or education) to get the CS endorsement and for districts to hire CS endorsed teachers (like CTE incentive). Provide incentives for pre-service CS teacher education faculty in pre-service TEPs. Support K-12 teacher preparation programs to prepare teachers for endorsement in both primary and secondary CS	Suggested Leads: ESDs, Higher Education including CTCs, PESB Suggested Partners: OSPI, WEA, CSTA, CS for All, Washington (ECEP)	DEI: Educators demonstrate awareness of white supremacy and racism in education, computing, and CS classrooms as well as commit to ongoing learning to understand systemic racism as a part of their commitment to anti-racist and traumainformed pedagogy (Kapor Framework Core Component 1.2) Policy: TEPs develop and implement a strategic plan for CS endorsement. TEP enrollment and endorsement data. Funding to support from Legislature. Data: Data collection shows number of teachers receive CS certification in elementary grades, number of teachers receive CS certification for secondary grades Partnerships: Industry can fund these efforts and incentives. Educators actively build relationships with members of the local and national tech community who can lend their knowledge and expertise to the classroom experience (Kapor Framework Core Component 6.2)	

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