



STEM EDUCATION INNOVATION ALLIANCE

September 20, 2017

Meeting Location: University of Washington Paul G. Allen Center for Computer Science and Engineering, 185 Stevens Way NE, Seattle, Washington 98195

MEETING NOTES

Gene Sharratt, STEM Alliance Co-Chair, welcomed the group and facilitated a round robin of introductions and brief announcements from STEM Alliance members and guests. A list of attendees follows these notes.

Career Connect Washington

NGA Policy Academy on Work-Based Learning & Career Connect Washington Task Force Update
Eleni Papadakis, *Executive Director, Washington State Workforce Training & Education Coordinating Board*

The National Governor Association-convened Policy Academy on Work-Based Learning complements and collaborates with the Governor's initiative Career Connect Washington. The Policy Academy had 60 organizations work together to scale work opportunities for young people in our state. The recession unfortunately led to very low employment rates for young people.

The policy framework developed for this project is now posted on the Workforce Board's [website](#). There are barriers to address, including: improving the structure for business engagement and coordination with youth service, and improved "stop out" opportunities and transcription of learning and permeability to allow for multiple student-centered learning pathways.

Phase I of the [Policy Academy](#) ended on June 30, 2017. Phase II - in which Washington is participating as a Leader State and will help mentor a new cohort of states - will begin in mid-October and run through May 2019.

The goal of Governor Inslee's Career Connect Washington initiative is to provide high-quality career connected learning opportunities to 100,000 young people in five years. A part of this effort is the [Career Connect Washington Task Force](#), which led by Workforce Board Chair Perry

England and Microsoft President Brad Smith. The Task Force is dedicated toward developing policy recommendations on career-connected learning.

Center on the Economics and Management of Education and Training Systems (CEMETS)
Activities Update

Amy Liu, *Senior Officer, Education, Workforce and Human Services, Microsoft Philanthropies*

Microsoft coordinated a delegation from Washington to attend a ten-day institute to learn about the youth apprenticeship program in Switzerland, held at ETH Zurich – often referred to as the “Massachusetts Institute of Technology (MIT) of Europe.” The purpose was to learn about the Swiss model, widely regarded as one of the best youth apprenticeship systems in the world, to inform strategies for building a robust career connected learning system in Washington State. The delegation had 11 people from a variety of organizations.

There are similarities and differences between Switzerland and the United States. Compulsory education goes through 10th grade; there are many pathways to advanced learning and students can go between systems. In Switzerland, the system is federally directed and experiences fewer policy shifts.

In Switzerland, businesses need certain skills and want cost-benefit-balanced training. The resources invested by the private sector into the Swiss youth apprenticeship system are substantial but, interestingly, there is little concern about trainees leaving the company. It is viewed as a pipeline development system within and across industries. There are 290 occupations in the apprenticeship program. Students can see multiple pathways in their future with vocational educational training (VET), higher certificates, and university applied and advanced programs.

The VET program model includes practical skills with in-company training on-the job and intercompany courses along with theoretical skills; these are all addressed at the vocational schools. Education providers, companies and government work together in the system design. Hallmarks of the program include transparency, permeability and employer engagement.

There is less of a stigma around career versus academic tracks in Switzerland than in the United States. The state needs to maintain a high level of rigor in any apprenticeship system it builds. It took Switzerland 25 years to get to this level of success. The Swiss do not seem very concerned with providing accommodations for students with disabilities or students who may otherwise need extra supports. Other differences include the Swiss practice of importing lower-skilled labor into the economy.

Switzerland is not part of the European Union.

P-20 APPROACH TO COMPUTER SCIENCE IN WASHINGTON STATE

University of Washington Paul G. Allen School of Computer Science & Engineering

Ed Lazowska, Bill & Melinda Gates Chair

Demand for computer science at the University of Washington (UW) and at other top bachelors and graduate institutions nationally is exploding. Professor Ed Lazowska presented an overview of computer science at UW. Associate Professor Luis Ceze, Professor Zoran Popovic and Doctoral Student Alex Mariakakis introduced the STEM Alliance to applications and initiatives in computer science, providing the group with a sense of the profundity of discoveries and innovations happening at UW. The [UW CSE Presentation Summary](#) contains the highlights of the presentations & tours and links to the slide decks.

Washington Technology Industry Association - Apprenti Program

Sasha Rayburn, *Washington Project Manager, Washington Technology Industry Association*

Michael Cooper, *Cloud Support Associate Apprentice, Amazon*

Abbie Wise, *IT Support Professional Apprentice, Silicon Mechanics*

There are now 100 students participating in the Apprenti program, working in Washington, Virginia and Oregon. A student needs to be over 18-years-old and have a high school diploma or equivalent. There is a three-part assessment and two-step interview before a student is sent to an employer. About 90% identify as female, Veteran or person of color.

Michael Cooper and Abbie Wise (Apprenti students) spoke about their successful experiences in getting on-the-job training without background and moving into paid positions.

The ability to agree upon skills to ensure certificates are portable currency is similar to the Swiss model in some ways. The program allows the use of GI Bill benefits, if it is an eligible training provider and then, once in the position, a housing allowance can be provided.

Computer Science Programs at Community and Technical Colleges

Nancy Dick, *Director, Workforce Education, State Board for Community and Technical Colleges*

There were about 800 Associate in Science for Transfer (AS-T) completions (engineering, physics and computer science) and 45 in electrical and computer engineering at community and technical colleges in Washington. The computer science direct transfer/major-ready program was recently approved. About 35% of STEM students started at a community and technical college. The Mathematics, Engineering, Science Achievement (MESA) program provides support to underrepresented students in STEM. Nearly 500 Information Technology (IT) degrees/certificates are offered at community and technical colleges. 2016-17 preliminary data indicates completion numbers of: 158 applied baccalaureate degrees, 1034 applied science associate degrees, 492 long certificates, and 1908 short certificates. The certificates are often targeted to skill upgrades or transitioning occupations. There are ten Centers of Excellence in

the community and technical college system, including Computing and Information Technology. Challenges that include resources for program development, recruitment of students and employer awareness of the workforce readiness of community and technical college graduates.

Direct Transfer Agreements

Paul Francis, *Executive Director, Council of Presidents*

Washington maintains one of the strongest transfer systems of student transfer and articulation in the nation. Unlike in many other states, the majority of two-year college students who transfer to a four-year college or university transfer with a degree.

Most Major Related Programs (MRP) help students prepare to transfer into high demand bachelor's degree programs that require specific courses in the first two years. Business, biology, engineering and nursing are a few examples. Each MRP is based on one of the statewide transfer agreements: Direct Transfer Agreement (DTA) or the Associate in Science-Transfer (AST) and can reduce the time it takes to complete a specific bachelor degree pathway.

In 2016, an Associate in Computer Science DTA/MRP was completed that will be reviewed this fall. The major related programs help students understand requirements in their major and minimize time to degree; it is not a guarantee of admission. The transfer agreements are excellent examples of the collaboration between higher education's major sectors, working together and allowing each to play to strengths.

Private colleges develop STEM within a liberal arts environment.

K-12 Computer Science

K-12 computer science teacher training needs assessment survey results

Greg Bianchi, *STEM Curriculum Developer, Bellevue School District*

The needs assessment survey was conducted during May of 2017 to determine needs related to the expansion of K-12 computer science (CS) programs across Washington. Participants included staff at Educational Service Districts (ESDs), school districts, and OSPI. There were 40 total respondents.

The survey confirms that there is currently a wide range of CS-related offerings across the state. The most frequently cited programs include Code.org, Technology Education and Literacy in Schools (Microsoft Philanthropies), Project Lead The Way (PLTW), and LEGO Robotics.

While there is a wide range of programs, opportunity gaps continue to persist by region. Most of the existing trainings occur at ESDs. However, there is not equitable participation across or within the ESDs.

The sources of funding for K-12 CS efforts are diverse. Participants cited everything from larger corporate donors such as Microsoft and Code.org, to local businesses and libraries. Overwhelmingly, the survey participants strongly endorsed the need for greater fiscal and personnel support in order to expand current CS efforts.

Categorically, the participants identified the following as needs for expanding CS efforts: 1) Equitable provision of funding through state grant programs or other means; 2) Statewide strategic plan for implementing K-12 CS; 3) Leadership in the form of CS coordinator roles for each ESD; and 4) Implementation tools (e.g., asset mapping tools and implementation framework).

OSPI K-12 Computer Science Grants

Michaela Miller, *Deputy Superintendent, OSPI*

Shannon Thissen, *Computer Science Program Supervisor, OSPI*

OSPI provides opportunities for schools to access funding for computer science education. Assessing the community needs is important in the application process. Grantees will spend current funds by June 30, 2018; second year funding will be available and school districts will need to provide performance metrics. The funding totals \$1 million and grant sizes will be variable amounts. See handout for eligibility and requirements. The program will allow TechStart to be leveraged as match.

Partner Organizations in Computer Science

TechStart Update

Shannon Thissen, *Computer Science Program Supervisor, OSPI*

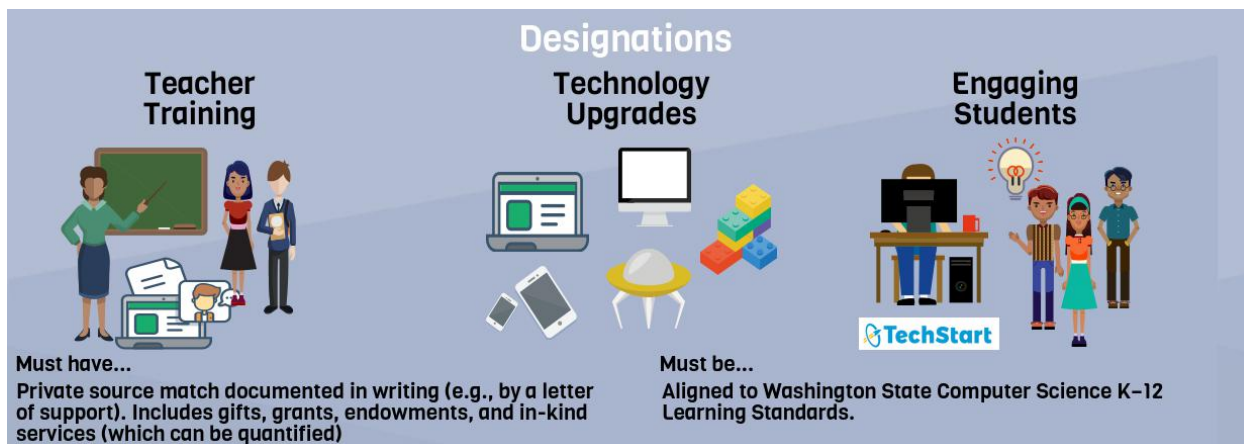
The 2017 Washington State Legislature allocated \$1,000,000 of the general fund in Fiscal Year 2018 and \$1,000,000 in Fiscal Year 2019 for computer science education.



These funds are designated for:

- (1) Teacher training and credentialing in computer science.
- (2) Technology upgrades needed to learn computer science.
- (3) Engaging students in computer science.

Funds for the computer science education competitive grant may be expended only to the extent that they are equally matched by private sources for the program, including gifts, grants, endowments, and in-kind services which can be quantified. All grant activities must align to Washington State Computer Science K–12 Learning Standards.



As students learn computer science, they may use a wide variety of programmable hardware and software. Aspects of computer science can be learned without the use of computer hardware or technology of any kind. Applicants are encouraged to:

- Think creatively about the most effective means of advancing student knowledge and skill in computer science.
- Consider and demonstrate how their proposal supports the integration of computer science in other content areas.
- Provide an inspiring and inclusive K–12 computer science experience that empowers students at every age level, appeals to students of diverse backgrounds, and challenges them to solve real-world problems.



Technology Education and Literacy in Schools (TEALS) Update

Patrick O'Steen, *Senior Regional Manager, TEALS Pacific Northwest, Microsoft Philanthropies*

- TEALS recruits industry volunteers to support teachers in high schools and add industry relevance to computer science classes.
- Working with 350 schools, 85 are in Washington and funded by Microsoft Philanthropies.
- Approximate 340 volunteers from over 100 companies in Washington State are participating.
- Volunteers give up to 250 hours each year. About ¼ of schools are in rural areas, using a remote support model and travel on occasion.
- The 2018-19 school application will be open late October 2017. From 2016, about ½ of those high school students in Washington State who took Advanced Placement Computer Science A came from TEALS partner schools. Students from TEALS partner schools scored 10% higher than the national average.
- The TEALS student site promotes scholarship, internship and other opportunities for students.
- TEALS hosts an annual Computer Science Fair for computer science students in TEALS-partnered high schools. Students come to Microsoft to hear from speakers and panelists, participate in hands-on activities and workshops, and to interact with booths/representatives from college, career, and other computer science-focused programs. Last year approximately 1,350 students attended.
- TEALS has been supporting partner districts, schools and ESDs by writing letters of support and documenting the value of in-kind services provided by volunteers for those partners applying for the OSPI Computer Science grant.
- Contact patrick@tealsk12.org with questions or to learn more.

Code.org Update

Nimisha Ghosh Roy, *National Program Manager, Code.org*

Computer Science Education Week & District Computer Science Pledges -

[Computer Science Education Week](#) (CSEdWeek) is an annual program dedicated to inspiring K-12 students to take an interest in computer science. Originally conceived by the Computing in the Core coalition, Code.org now organizes CSEdWeek as a grassroots campaign supported by 350 partners and 100,000 educators worldwide.

Code.org is kicking off this year's CSEdWeek on Monday, December 4, 2017, in Palo Alto, California. Click [here](#) for up-to-date information about this event.

District Computer Science Pledges: Code.org is hoping to announce the names of many school districts who are pledging to bring computer science into their schools. It has asked partners to

gather pledges and ask districts to submit their pledges and announcements using this [form](#). You can find example pledges and announcements [here](#). These announcements represent an opportunity to celebrate a recent achievement or the launch of a new initiative. Pledges represent a clear and measurable goal to expand access and diversity in computer science and includes specifying the number of participating teachers, schools, and/or students. Announcements and pledges should be new and newsworthy.

[Hour of Code 2017](#) – December 4-10, 2017, during CSEdWeek. Please help Code.org promote Hour of Code this year, by using these [resources](#).

Code.org is a non-profit organization dedicated to expanding computer science education. The Code.org vision is that computer science should be part of the core curriculum in every school, alongside other science, technology, engineering, and mathematics (STEM) courses, such as biology, physics, chemistry and algebra.

Legislative Update & Recommendations for 2018 Session

Maddy Thompson, *Director of Policy & Government Relations, Washington Student Achievement Council*

In preparation for the 2018 legislative recommendations and the 2018 STEM Education Report Card, Maddy handed out the 2017-2019 supplemental budget and associated STEM Alliance legislative recommendations – in the form of an Operating Budget comparison chart for legislative investments in STEM during 2017-2019. The summary lists the STEM Alliance recommendations, the Governor’s budget proposal (House Bill 1067), and the final Operating Budget (Substitute Senate Bill 5883). The chart is available in the [handouts](#) for this meeting.

Caroline King, *CEO, Washington STEM*

Caroline shared the Washington STEM Legislative Priorities from 2017-2019. Washington STEM will update its priorities for the 2018 legislative session.

The current legislative priorities highlight the need to expand access to computer science education and connect students with career goals and pathways. To support the achievement of this goal, Washington STEM states the following “cradle to career STEM priorities:”

1. Start Strong with access to quality preschools
2. Graduate high school students who are inspired and prepared
3. Complete a future ready degree or credential

The [summary](#) outlines powerful strategies to achieve these goals.

Deferred Action for Childhood Arrivals (DACA) Update

Rachelle Sharpe, *Deputy Executive Director, Washington Student Achievement Council*

For information on the impact of the rescission of DACA to state aid programs, visit www.readysetgrad.org/wasfa .

Washington Student Achievement Council is hosting the upcoming Pave the Way 2017 Conference on October 19, 2017, at Central Washington University in Ellensburg, Washington. The Conference is a statewide convening of P-20 educators to share strategies to support underserved and underrepresented students. To register and for more information, visit the [conference website](#).

Washington State Opportunity Scholarship (WSOS) Update

Naria Santa Lucia, *Executive Director, WSOS*

During the upcoming supplemental legislative session, WSOS will continue to work to advocate for Substitute House Bill (SHB) 1452 (“Concerning the opportunity scholarship program”) which would provide WSOS the opportunity to fund students for professional/technical degree programs. In addition to SHB 1452, WSOS will support Engrossed Second SHB 2143 (“Expanding opportunities for higher education students”) which would allow WSOS to fund students pursuing advanced healthcare degrees with a service obligation (underrepresented urban and rural areas). Santa Lucia reported that WSOS believes both of these bills will move quickly to the Washington State Senate for consideration, and she requested that STEM Alliance members refer to her any prospective students who could testify on behalf of the bills.

Tour of Paul G. Allen School Facilities

UW Computer Science & Engineering faculty provided tours of three laboratories: Molecular Information Systems, Robotics and Zero-Power Computing.

NEXT MEETING

Tuesday, November 28, 2017 – Microsoft Conference Center (Redmond, Washington) in conjunction with the Washington STEM Summit.

Staff at the Washington Student Achievement Council compiled the meeting notes, with edits and additions by the presenters.

MEETING ATTENDEES

STEM EDUCATION INNOVATION ALLIANCE - Meeting Participants - September 20, 2017			
STEM ALLIANCE MEMBERS		Position Title	Organization
First Name	Last Name		
John	Aultman	Executive Policy Advisor for Higher Education and Workforce Development	Washington State Office of the Governor
Brian	Bonlander	Director	Washington State Department of Commerce
Violet	Boyer	President and CEO	Independent Colleges of Washington
Michael	Cheever	Interim President & Chief Advancement Officer	College Success Foundation
Maud	Daudon	President & CEO	Seattle Metropolitan Chamber of Commerce
Paul	Francis	Executive Director	Council of Presidents
Janet	Frost	Director	WSU Spokane Health Science STEM Education Research Center
Evangelina	Galvan Shreeve	Director, Office of STEM Education	Pacific Northwest National Laboratory
Caroline	King	CEO	Washington STEM
Ed	Lazowska	Bill & Melinda Gates Chair	University of Washington Paul G. Allen School of Computer Science & Engineering
Glenn	Malone	Executive Director	Puyallup School District - Assessment, Accountability & Student Success
Marcie	Maxwell	Citizen Member	Former State Representative
Mike	Meotti	Executive Director	Washington Student Achievement Council
Rai Nauman	Mumtaz	Graduate & Professional Student	Student Representative
Isabel	Munoz-Colon	Senior Program Officer, Pacific Northwest Team	Gates Foundation
Eleni	Papadakis	Executive Director	Workforce Training and Education Coordinating Board
Ben	Rarick	Executive Director	Washington State Board of Education
Dana	Riley Black	Executive Director STEM, Legislation & Partnerships	Everett Public Schools
Naria	Santa Lucia	Executive Director	Washington State Opportunity Scholarship
Gene	Sharatt	College Promise Coalition and Executive Director	Office of Superintendent of Public Instruction/Association of Educational Service Districts Network
Ron	Sisson	Director of Principal Support and Elementary Programs	Association of Washington School Principals
Nancy	Truitt Pierce	Director, School Board	Monroe Public Schools
OTHERS			
Greg	Bianchi	STEM Curriculum Developer	Bellevue School District
Jim	Brady	Dean of Computing, Math and Science	Spokane Falls Community College
Jane	Broom Davidson	Community Affairs Director	Microsoft Corporation
Luis	Ceze	Associate Professor	University of Washington Paul G. Allen School of Computer Science & Engineering
Michael	Cooper	Cloud Support Associate Apprentice	Amazon
Nancy	Dick	Director of Workforce Education	State Board for Community and Technical Colleges
Nova	Gattman	Legislative Director	Workforce Training and Education Coordinating Board
Nimisha	Ghosh Roy	Program Manager, Regional Partnerships	Code.org
Becky	Howson	Student Success and Engagement Manager	Technology Education and Literacy in Schools (TEALS) / Microsoft Philanthropies
Amy	Liu	Senior Officer, Education, Workforce and Human Services Initiative	Microsoft Philanthropies
Alex	Mariakakis	Doctoral Student	University of Washington Paul G. Allen School of Computer Science & Engineering
Ellen	Matheny	Assistant Director of Operations	Washington Student Achievement Council
Daryl	Monear	Deputy Superintendent	Office of Superintendent of Public Instruction
Patrick	O'Steen	Associate Director for Academic Affairs and Policy	Washington Student Achievement Council
Abel	Pacheco	Senior Regional Manager, TEALS Pacific Northwest	Technology Education and Literacy in Schools (TEALS) / Microsoft Philanthropies
Zoran	Popovic	Professor	Washington Mathematics Engineering and Science Achievement (MESA)
Tim	Probst	Director, Workforce Development Strategic Initiatives, Executive Programs	University of Washington Paul G. Allen School of Computer Science & Engineering
Sasha	Rayburn	Washington Project Manager	Washington Technology Industry Association
Rachelle	Sharpe	Executive Deputy Director	Washington Student Achievement Council
Elizabeth	Smith	A/D Fraud Prev. & Fraud Prevention Labor Standards	Washington State Department of Labor & Industries
Randy	Spaulding	Director, Academic Affairs & Policy	Washington Student Achievement Council
Afi	Tenque	Executive Vice President for Statewide Collective Impact	Thrive Washington
Shannon	Thissen	Computer Science Program Supervisor	Office of Superintendent of Public Instruction
Maddy	Thompson	Director of Policy & Government Relations	Washington Student Achievement Council
Abbie	Wise	IT Support Professional Apprentice	Silicon Mechanics