



STEM EDUCATION INNOVATION ALLIANCE

Meeting Notes

September 27, 2016

Meeting Location: World Trade Center West – 2200 Alaskan Way, 4th floor, Board Room A/B/C, Seattle Washington 98121

WELCOME & INTRODUCTIONS

Gene Sharratt, Executive Director of the Office of Superintendent of Public Instruction/Association of Educational Service Districts Network and former Executive Director of the Washington Student Achievement Council, welcomed everyone to the meeting and reviewed the agenda and purpose of the meeting.

Michael Schutzler, CEO of Washington Technology Industry Association welcomed the group to the meeting. Michael has been part of the technology industry for 30 years and a CEO of the Washington Technology Industry Association for the last three years. In talking about the Trade Association, he compared it to an obstacle race, designed to help companies overcome tough obstacles that they cannot overcome on their own. There are obstacle courses that make it impossible for one person to achieve the end goal all alone. This is a perfect metaphor for what we do. What we do is quite typical for a Trade Association, we combine the buying power of all the smaller Tech Companies and make it possible to do things like provide healthcare or 401Ks which no little company would be able to do effectively alone. Ninety percent (90%) of those companies have less than 24 employees. What do the smaller companies have in common with the larger companies? There is a supply and demand problem in all sizes of companies. The big challenge is, how can we help? The Washington Student Achievement Council and other organizations typically fall on the supply side, while the Trade Association falls on the demand side. A program was launched roughly a year ago to create the first apprenticeship in the industry – APPRENTI. What is an apprenticeship? An apprenticeship is not a training program it is a job.

Michael introduced Jennifer Carlson, the director of the program.

APPRENTI

Jennifer Carlson, Executive Director, Washington Technology Industry Association Workforce Institute

Jennifer Carlson gave an overview of what APPRENTI is all about. It is a registered apprenticeship, a pilot program that combines on-the-job training and classroom instruction in which an apprentice learns a highly skilled occupation. The formation of APPRENTI was funded by an AAI grant in October 2015. The goal was to build a program for registered apprenticeships in the technology industry. APPRENTI has Washington State Labor and Industries as a partner, helping them build and replicate a model that follows all the best practices of traditional trade industries. Washington Labor & Industry has been instrumental and flexible in letting APPRENTI develop this in a way that industries will embrace and accept. APPRENTI is the intermediary in this program.

In the United States, one in twenty (1:20) jobs are in technology fields. Fewer than 1,000 four-year college graduates fill these jobs annually. Jobs are increasing by roughly 5,000 each year in the State of Washington. We are also a massive importer of talent. That import of talent isn't always coming from overseas but around the country as well. We are migrating talent from around the country to help to fill these jobs. We have an opportunity when we are working with the membership of the Washington Technology Industry Association (WTIA) to talk about how to fix this problem. Companies that are members of the WTIA are actively engaged in stratifying the workforce and we talked to them about registered apprenticeships. We are not talking about higher education jobs, four-year degrees, we are talking about what's in the middle. Middle-skilled jobs, the quasi-tech jobs that can be done by highly skilled workers and accelerated by vocational training. Apprenticeships provide skills to do the work but not traditional way of learning.

The State of Washington is the fastest growing population in the country. Based on data, Washington has outpaced other technology hubs such as, Austin, Boston and Denver in terms of job growth and company growth. Washington State has nearly 8,000 skilled technology job openings and 4,000 of those are considered quasi-technical roles. Over the next 15-20 years, the demand for technology jobs will grow significantly – over 80,000 new jobs. We are not producing enough bodies for high-skilled to mid-skilled jobs out of our current education system.

How does an apprenticeship work? And, how does it differ from an internship? After college, graduates are struggling and students are frustrated. Often times, companies want job-seekers that have 2-3 years' of work experience. The challenge? Internships are not teaching specific skills. Internships are helpful, but it is not enough to bridge the gap between school and the workforce. Companies have made it much harder to get in the door. Companies are making an investment in employees, but once graduates get the 2-3 years' experience they move on to better jobs. Apprenticeships do basically the same thing but now they are investing in people

who come from non-traditional backgrounds and they get a full year of learning on the job. Because apprenticeships are registered, they are paid at apprentice rates which are slightly lower than starting rates of someone fully qualified for the job. They are receiving a lower wage but are paired with journeyman. The company retains that person at the end of term and companies are getting the quality person that they want. In return, APPRENTI is creating a pathway for someone to get into the industry that may have come through the community college system, secondary college system, military background without a degree, or someone who has a certificate or a registered certificate within the industry.

Training is designed to meet industry requirements and deliver recognized certifications. This attracts talent by providing on-the-job training for one year, while offering benefits such as healthcare and retirement. Again, this allows companies to retain their investment by getting a quality employee. APPRENTI is the intermediary in the whole process.

Apprenticeships enable the technology industry to increase diversity among the workforce while addressing urgent work force needs. There are two issues, not enough bodies to fill positions and a lack of minorities in technology fields. There are low numbers of women, minorities, and veterans in technology fields. Women in the industry have decreased from 34% to 17% today, minorities less than 3%, and veterans less than 1%. The program is designed right now to attract women minorities and veterans to come into the program and fill positions. We are working across all sectors in the program to meet industry needs. It is industry driven but community engaged. Connecting with Community Partners, Hiring Partnerships, Educational Partners and Community partners, we'll drive the results we want with the communities we are trying to serve.

Community partners include: 34 community organizations serving women, minorities and veterans.

Hiring partners include: Accenture, Microsoft, F5, Impinj, MacDonald Miller, Russell Investments, Silicon Mechanics and 6 others are in process.

Educational Partners include: Microsoft Academy, Code Fellows, Lean on Demand, Cisco, Northeastern University, and 11 Community and Technical Colleges.

Service Providers include: Community Partners, Workforce Development Council (WDC), State Board for Community and Technical Colleges (SBCTC), Employment Security Department (ESD), Labor and Industries (L&I).

Q & A

What is the relationship with the hiring partners and the educational partners? APPRENTI is the training trust. We are hiring the organization that is training in the accelerated platform. We did not create any new curricula; we match the job that is filled based on industry feedback. Companies came together to refine this process. It started with the certifications that we think

are the root of the job and that are already industry standards. We didn't want to start with creating new curricula. For these jobs, we have a committee of companies, we pulled together a technology version of an apprenticeship council. We standardized the job titles, and documented the 80% of the job that is consistent in all of them, the other 20% being proprietary to the companies themselves. Some companies cultures are difference that others. But, 80% of the job has been standardized and filed with the state.

What is the relationship with the Trades? Jennifer meets with them 2-3 times a year and gets feedback on best practices and pitfalls. EXAMPLE: What do we do with the rank list with people at the bottom of the rank list that are not moving up and do we serve them? This is something we are still working on. We have open conversations on how to deal with these types of issues.

What is needed to encourage or convince hiring partners to get involved? Its two fold. First, necessity is the mother of invention and companies do not see an end in sight. Second, we didn't try to compete with those four-year jobs, those jobs are sometimes going to change for companies. We asked them to stratify their hiring needs, and look at the positions more critically. We also looked at their job hiring process, and noted that discount hiring helps play into it and then showed them how to make an investment that is reasonable. They are not paying for the education, APPRENTI is paying for those through a grant from JP Morgan Chase and we're looking for other private funding as well.

Looking at the job hiring process is key. Ninety percent (90%) of talent is hired from somewhere else. Recruiting fees alone are a minimum of \$20,000 and it goes up after that for some of the more technical jobs and then there is a relocation fee on top of that. The need for local talent is fundamental, simple economics. Companies are pretty desperate to get this done and that's what makes them such wonderful partners, in terms of defining what it is that needs to be built to make this successful.

Do the community and technical colleges receive a credentials and are students considered on an educational pathway to a four-year degree? At present if they have gotten their certification before they come to us, then we can grant them prior learning credit and they would be credit bearing. We have not set this up to be credit bearing on the certifications yet; however, we've met with Marty Brown, Executive Director of SBCTC, about trying to get one master that would apply to all schools. Because of time and work restraints, we need a master agreement and we are working on that.

Is it because students are getting a lot of the non-technical skills at the community college level? What is the value added? Jennifer said: the value added is twofold. Of the 11 schools we work with, we've created a pipeline and reviewed their curriculum and have given them feedback on the curricula also pointing out gaps in curricula. Some schools have different levels of communication, so that needs to be taken into consideration.

Mike Schutzler said: Don't think this is for just community college students. There are a lot of four-year degree students. There are fabulous women who have four-year degrees, they chose not to go down the path of the technology industry and now they want in. The industry does not have a pathway for a female math major for some reason decided to leave her job (example: to start a family) and then return to the workforce. Now, she's told that all the jobs are in the technology industry and she can't get back in. We're not on the supply side, but we are trying to shift the demand behavior so the industry increases its aperture, allowing other mechanisms to come in. Our diversity challenges aren't just about the lack of women, minorities or veterans in the pipelines, our diversity challenge is that these groups are in other pipelines. We need to change the pipeline mechanism.

HOW IT WORKS – APPRENTICAREERS.ORG

It starts off with registration. Everyone is going to set up an account and then take an assessment which is an online non-proctored examine that has three sections – Math, Logic & Critical Thinking and EQ (emotional intelligence). We've worked with the same organization that has helped build the Western Governor's examine online. Once registrants take the exam they will rank or non-rank. If you rank, you will be told by section how you did. You either pass, there is room for improvement or you will be told what you did not do well in an area. If you did not do well in an area, you will not make the rank list. You will receive an email that tells you how you performed so you will know what area to focus your attention on before retesting. Second, students that did not rank, will get a list of direct contacts for schools closest to you that can help. A privacy notice was built in at the beginning giving permission to share information. Those not ranking will receive resources and colleges nearby will be sent contact information so they can follow up directly.

Again, if you make the ranks list, you come down the pipeline and are in the system and calls for interviews with begin. Right now, the program is set up for quarterly cohorts/companies and we starting first interviews with companies very soon. Jobs are lined up and ready to go. About 25-30 people are coming in to fill the first 20 jobs.

Are people who do not meet the demographic able to be ranked? Jennifer responds: only in-state will be considered with the primary focus being the 3 populations (women, minorities and veterans).

The good news is that last week APPRENTI learned they will receive support from the Department of Labor contact for expanding APPRENTI nationally. It will be expanded using the employer focus. We are taking this out and working with the Department of Labor to identify the process and determine what they are looking for. We will be building this on a national level, and it will be a busy year. This is a five (5) year federal contract. Soon APPRENTI will be rolling out in Washington State and across the United States.

Michael Schutzler: This is a big deal. Jennifer has done such a great job building the beta program here in Washington, that the Department of Labor has decided that she needs to deploy this across the country. This is a really amazing accomplishment.

Is there a cap on jobs? The pilot that we agreed to with the State of Washington and the Federal Department of Labor is 600 jobs. We are starting to work with 25-30 in each of the first cohorts to make sure everything is running properly before scaling it, and ramping it up significantly. The federal contact commits to 450 jobs a year maximum on national level. Times that by 5 years and we are looking at a few thousand on top of the 600, so over the next few years it will be several thousand jobs across the country.

Do applicants that get accepted in the program have to sign a term of agreement? Yes, the one year is the minimum threshold for apprenticeship. The 2,000 hours is the minimum be able learn competency on the job. The same process as the Trade Association, they have to have a mid-term increase in salary based on competency improvement and then at the end of the year they are treated like any full-time employee.

Starting with this 20-25 group of people, is there work to take advantage of the best they have to offer? It seems like there is real power there bringing them together for a variety of reasons. Jennifer said: the word “cohort” is about time and not a group or company. Due to requirements, we are treating them like a company they have to meet monthly as a group and do this peer counseling of coaching and we facilitate this with a HR person. In the future, we may build an alumni network. We can use them as a resource to come back and teach other coaches.

WASHINGTON STEM’S 2017-19 K-12 PRIORITIES AND STATE FUNDING REQUEST **Caroline King, Chief Policy Officer, Washington STEM**

Gene Sharratt introduced Caroline King.

Caroline King: As you recall from our last meeting WA STEM was just kicking off a policy and priority setting process with all the community networks around the state. I really appreciate being able to come back and share with you where that process has landed. Many people here are trying to figure out how we can get our young people set up for success in our economy. Washington STEM, in our non-profit role, is able to help connect the dots within a community and across the school system. This involves rallying around common goals across the state. We can all be working together to climb the wall and help our kids be successful.

State-wide we are working STEM education and workforce issues from cradle to career. Our mission is to advance equity, innovation and opportunity through STEM. As I mentioned, over the past few months we are working with our board and our regional directors and other partners across the state to touch base on where the biggest needs are across the communities. What do we know from the evidence about what works and where do we see

opportunities? Where do we think it is going to make the biggest impact? WA STEM didn't want to take a short term view when it comes to the budget cycle, we really wanted to put it in the context of a broader vision. What would success look like and how would it dramatically change outcomes specifically on equity? What would that look like in ten years? We worked really hard to set-up a big picture vision but then said, how can we accelerate progress in the 2017 session and budget cycle? I just wanted to make everyone aware of the long term and short term.

Along with the legislature, we have a challenge of fully funding basic education. What are some policy funding recommendations from a STEM perspective? We look at basic education, and the goals are to prepare kids for post-secondary education and careers. Let's ensure the STEM opportunities that support general college and career readiness and support the pathways and jobs that are being created all across our state and in industry. Let's ensure that we are bringing forth the strategic investments as the legislature thinks not about more money but best use of more money. We looked at research, national best practices, community access and innovations. There is exciting working being done on the ground. We are tapping into this work and connecting the dots within communities so we are not recreating the wheel over and over again. Our approach and priority for goals for WA STEM are really aligned with HB 1872 (2013). This law called for the establishment the Governor's STEM Alliance, it created the funding vehicle for at statewide STEM organization, regional networks across the state, advancing outcomes for Cradle to Careers and all of the work that WA STEM is doing to support these initiatives. How can we use our state investments to drive the best possible outcomes with equity and in a really specific and targeted way get back our investments? Public and private partners have shared goals that align and we've watched some really incredible things happen.

Look at the 10 year goal – What would this look like? What would success look like by 2025 in setting kids up for success? We are talking a lot about Future Ready WA. How can we be prepared for so many unknowns? How is STEM equipped with innovation? We want to contribute to the state's attainment goals and 70% of jobs are going to require some sort of secondary education. We know that math is the key gate keeper, it is STEM at large. We think it's exciting and important even if it's math. Kids are showing up in kindergarten not ready for math and leaving K12 not ready to take on the credit bearing classes or being able to qualify for an apprenticeships. Thinking about the postsecondary landscape, we need to really focus on students of color, women, diversifying the talent pool and setting up students for success. WA STEM works on the full continuum we see a really specific role in K12, with goals around computer science, setting up for success, pathways, and early math. Students need to have computer science and we've talked a lot about this as a group. Students today are on a very different trajectory. We have new science standards that call for engineering also. Our state provides very low levels of science education, about two hours per week on average.

Questions: How are we using outdoors? How do we get kids excited about opportunities? We wanted to provide a big picture that will provide a back drop in ways to make significant progress in the next legislative session.

FOUR PRIORITY INITIATIVES

- Computer Science
- Career connected Learning
- Early Math
- Science and Engineering

FOCUS

- Equity – All Students deserve the opportunities that come with being STEM ready. We focus our work and encourage networks to target gaps in gender, race, income, and geography.
- Teaching Quality – Quality instruction can unlock so much student potential. We support professional development, standards, implementation, and resource dissemination in service of these objectives.

PRIORITIES

- All K12 student have access to computer science learning opportunities.
- All high school graduates are aware of and prepare to succeed in a STEM degree or job pathway.
- All of Washington’s children enter kindergarten and reach 3rd grade on track in math.
- All students demonstrate proficiency in science & engineering practices.

Cradle to Career: Our Legislative agenda focuses on building student opportunity and success through STEM from cradle to career, with a focus on underserved and underrepresented students.

We need to dive deep into K12 as we are preparing for this session given McCleary and basic education conversations. How can we best impact the use of dollars towards equity, college education, and career readiness which lands on STEM? We want to support initiatives in early learning and postsecondary phase with focus on early math. We are having a lot of conversations to figure out where we can lend our support.

In the postsecondary phase, like many of you, we are trying to figure out where we can lend our voices around capacity issues, teacher preparation, community college expansions, apprenticeships and K12.

In K12, drive equity and career readiness through STEM.

How do we feel about driving equity and career readiness, with a focus, on computer science, career connected learning and work based learning. How do we get kids learning about what is happening in the workplace?

We are informed by best practices around the country, informed and vetted by regional STEM networks, statewide partners and other key stake holders. We can look around the country, and see what other states and doing in K12. What policies and investments have they made to support STEM education and in setting students up for success in post-secondary education and careers?

We are calling for a 45 million dollar investment in the next budget that would be a 1:1 public/private match. Our models are showing that our state investment has reached 50% of the K12 students. We are also trying to build capacity in the system. We want to see our grant program grow but at the same time we want to support it with statewide capacity building. Grants are great for the people who get them, but how do we build the support and sustainability whether there is a grant or not? In Higher Education, expand incentives and support for high-demand, technical and two and four-year degrees (Washington State Opportunity Scholarship (WSOS), MESA community college footprint, Apprenticeships and four-year degree opportunities).

LEGISLATIVE 2017-19 K12 LEGISLATIVE PRIORITIES:

- Ensure all students have access to computer science learning opportunities by 2025.
- By 2025 all high school graduates have the communication, problem solving, and collaboration skills necessary to thrive in work and life supported by high-quality career-connected learning experiences at elementary, middle and high school.
- Ensure that all PreK-3 student demonstrate grade-level competency in math by 2025.
- All students engage in investigations aligned with newly adopted state standards to learn how science and engineering relate to natural systems, challenges, and key industries throughout the state.
- We've been a leader in our state. We want to continue to build momentum, build equity and better outcomes.

Questions/Feedback

How can we lift up best practices, provide high quality and good access?

STEM Alliance Comments

The McCleary money is spoken for, and districts are paying salaries and state is not paying enough to cover those. We can't do any of these things without added funding. We need to create lists, for priorities and have the legislators back up our decisions.

We need to focus on engagement. Math for instance, they will love it if they are engaged in solving a problem. We need to get the language right, to help move people forward.

Suggestion: Call it early creative math.

If we need more technology industry needs, is computer science a misleading term? Are we introducing computer science or are introducing technical fields? This can be a confusing subject within the school district and for students when they leave the school district. Caroline replies: There's nationally accepted standards across the board for computer science, etc. It's the critical thinking and the logic that goes with it.

When you are working with computer science in rural districts, that match piece becomes confusing. Where each district is with computer science is difference and it becomes challenging. We are talking about the equity piece and the infrastructure and access for all the districts that are not in this corridor. It come down to the basics, internet for example. If too many students are on there at once, everything shuts down. This happens in the Seattle and Tacoma area, not to mention rural areas that have the very basics. So as we talk about computer science, not only how do we define it, we need to talk about the access and equity piece. Caroline: WA STEM is trying to take the matching burden off and help better direct the funding.

This conversation has been going on for years. We are not the only ones grappling with the definition of computer science. States are way ahead in defining but as good as it is, it's too peanut butter, its spread out all over the place. It's got four objectives. To the north, we have our friends in Vancouver, British Columbia whose statement and execution strategy is as follows: One hundred and fifty (150) million dollars is invested to ensure every child in the school system can code by the time they finish the 9th grade. Not because they want them to be a software developer but when you code you know how to apply math in problem solving. Example: predicting the growth of seeds they're studying, physic to study trajectories, basketball statistics, all kinds of things. Millions are invested so every single child in British Columbia gets coding skills by 2020. We are not in this game alone, why does this matter? Why am I bringing it up? Rhode Island already made a commitment to Technology Education and Literacy in Schools (TEALS) to code in every single school. They are already down the path, so we do not have to go to the north to see the Canadians do this. I met two dozen start up CEOs last week in Vancouver and guess where all the money is coming from? They are skipping right over Seattle and going straight to Vancouver. The strategy in British Columbia - not only are they producing talent locally but they are importing PhDs from all over the world. We have to resolve this language, get the language clear, correct and simplified. You can't mobilize the legislature around a whole bunch of language. You have to do what they are doing up north and come up with a simplistic goal. We need to solve these problems fast.

If we do not touch students with computer science by the 9th grade they are not going to pursue it. And, that why we are not seeing the underrepresented in technology fields.

Carolyn King: Thank you everyone for your time. There is an urgent need to take action on many of these points. This is the time, our kids can't wait. The legislature is going to debate

about the size of the pie and where it comes from but we need to be united about what is the best use of the dollars and the equity.

ANNOUNCEMENT

Leah Hausman, Thrive Washington: Good news – Thrive has a new CEO! Allan Cohen is coming to be our president/CEO on November 7th. He is moving from Texas, and we are very proud to have a very national pool of applicants for this position. For the last few years, Allan has been leading the early education department. He has been doing exciting things around preschool, equity and workforce. Press release is available.

GOVERNOR'S LEGISLATIVE PRIORITIES

John Aultman, Office of Governor Policy Office

John Aultman: As you remember in July the Governor came to the STEM Alliance. He really values the insight and the work around STEM. You can see some of the benefits that are happening with the APPRENTI and the full-fledged WA STEM work, the community partners, Cradle to Career, Higher Education, and P20. Any way you look at it, it's a high priority for the Governor. At the July meeting, the Governor said, "Bring me 3-4 big ideas we can work through, not dollar amounts next to them but priorities areas." There were some surveys and some other pieces that Randy Spaulding is going to want to go over some of the strategies. In your packet, there should be a three-pager that shows there were 3 areas of major importance.

BUCKETS WERE IDENTIFIED:

- Increasing support for underrepresented populations in STEM fields. There are many, many strategies to do that.
- To make sure our education system is STEM ready by providing resources to teachers to provide a rich STEM experience, including computer science for are students. Just like Michael talked about, you can look north and you can look to Arkansas and Rhode Island and there are different models out there. We want the Washington model to end in success for Washington State but we need to feel that sense of urgency.
- Expand opportunities for career connected learning. There is a lot of discussion around what does it mean to combine classroom work with a possible career or work experience. We need to keep students in school, get students outside, or whatever it takes to engage and make life relevant to what is being studied.

In those areas, there's been some work done and as Randy goes through the different strategies that we are talking about, just keep in mind that these are not specific dollar amounts. As this goes into the budgeting process, the Governor is one of many people with their hands on the budget. Many people here have had that experience; it can get dialed up or

it can get dialed down. Or other unforeseen things can happen. We want to make sure these are the priorities I can take to the Governor and say, “This group is behind this, here are some of the pieces and this comes from the best thinking groups around the state.”

POLICY RECOMMENDATION DISCUSSION

Randy Spaulding, Washington Student Achievement Council

Randy Spaulding: I want to thank this group because we’ve been working on these policy recommendations for at least three meetings now, brainstorming, and sharing ideas. Many of you have completed the survey where we put out a fairly long list of policy ideas in the survey and we thought there would be some sorting but found that everyone likes all the ideas. Needless to say, it didn’t help us to sort them. We took another look at the list and asked, “How can we group these into ideas that make better sense and raise it up to a higher level?” We worked with Washington STEM on alignment and you’ll see that there is a lot of alignment in the recommendations Caroline talked about and the strategies are outlined. That process, got us here now. We’d like to do is an exercise and we’ll take 20-30 minutes share as a group. Let’s look at the three big ideas or recommendations and gauge if we grouped those right and get feedback.

As John Aultman mentioned, the first one is increasing support for underrepresented populations in STEM fields. Investments in the MESA Program, support of the Washington Opportunity Scholarship, and provide Dual Credit Programs (College in the High School) to provide greater access for success in STEM majors.

Another is ensuring the system is STEM ready. There two sides: Students need to be STEM ready but we need to make sure the system has the resources. Teachers must have what they need, professional development and the capacity to get the equipment or other resources. So this is another recommendation we see in that bucket. In general, we’re talking about building capacity and providing opportunities for our students.

Finally, expanding opportunities for career-connected learning. These are things like apprenticeship, high school planning and work-study opportunities.

Randy Spaulding: I would like to know if people are feeling good about the big buckets.

FEEDBACK:

This is the year we need to take a look at the election process and it could be pivotal. We need to get more assessment built into moving towards STEM and interactive learning. That would be profound and because the federal government has changed, so it’s a timely year to get involved. This would be a good thing to consider, and we need to use strategies to move

forward rather than relying on data we don't need or will not contribute to moving forward. Randy mentions: A Next Generation Science Standards (NGSS) assessment will be done.

Randy Spaulding: Please see the document with three questions. These will be collected and we'll have a discussion at the end. If you see other strategies that are not on here, please note those.

DISCUSSION NOTES

LEGISLATIVE RECOMMENDATIONS TO THE GOVERNOR

BREAKOUT GROUP #1

Discussion Group Members: James Dorsey, Janet Frost, Nova Gattman, Caroline King, Rachelle Sharpe

Recommendations

- Add specificity about applied learning in K12 and the value of hands on educational experiences
- Note the need for improved/additional course equivalencies
- To address the early math goal, consider using the Elementary Mathematics Specialist approach
(<http://www.nctm.org/Standards-and-Positions/Position-Statements/The-Role-of-Elementary-Mathematics-Specialists-in-the-Teaching-and-Learning-of-Mathematics/>)
Incenting schools to provide; perhaps adding to the retooling program, and/or providing scholarship funds or student debt relief for teachers who get this endorsement.
- Focus on broader than computational and computer science – the document seems too focused
- The goals are good but there is some miscategorization
 - Some are broad and some are so specific and need to be unpacked – some are applicable to more than one segment of education but look like they apply to one – perhaps a re-formatting would help
 - Additional means... such as High School and Beyond, advisory, integrated work opportunities, Jobs for Washington's Graduates – unpack
 - Last bullet in career-connected - unpack
 - Could add some guiding principles
- Underrepresented support only lists postsecondary examples
 - Focus on providing professional development to historically low performing schools and rural schools
 - We are talking about the educational continuum as well as the profession
- Really like the last part of last bullet, so possibly separate from Work Study to emphasize engaging college students to work with PK-12 students in order to provide career education, role modeling and exposure, particularly looking for ways to engage

college students with same demographics as underrepresented students as a means of counteracting beliefs that “people like me don’t have careers like this.”

Other

- There is a timely opportunity here to build on the new assessment process
- What should all kids be getting – be sure we are not dependent on leadership or grant funding
- We need comprehensive career guidance – referencing a potential guiding principle
- We need a repository of best practices

Group Discussion:

Rachelle Sharpe

- Add specificity in K12.
- Include a last bullet on Career Connected Learning.
- We should target underrepresented students and provide support.

A STEM Alliance member asks: Should we add sentence or two with more narrative and add data? Randy: In the report card, rationale background information and data will be added.

BREAKOUT GROUP #2

Discussion Group Members: Juliette Schindler Kelly, Paul Francis, Tom Fitzsimmons

Support for Recommendations:

- 1) The focus on increased support for underrepresented, first general students.
- 2) Expanded opportunities for career-connected learning.
- 3) Cradle to career focus.

Issues/Concerns About Recommendations:

- 1) Funding the State Need Grant is the missing piece. Should be added under the first and/or third strategy.
- 2) Many proposals, some very specific, but without financial price tag. Makes it challenging to determine what is realistic and how to prioritize.
- 3) Call out need for student supports especially for underrepresented populations at both secondary and postsecondary levels.

Friendly Amendments:

- 1) Add fully funding state need grant.
- 2) Under third priority, add “with focus on underrepresented populations” or similar to “provide additional means” bullet.
- 3) Divide final bullet in this section into two bullets:

- a. Increase funding (\$10 million over biennium) for State Work Study
- b. Allow colleges to create mentor partnerships (this bullet confusing – is it a budget ask for the match program?)

Group Discussion:

Paul Francis: What is missing?

- We need to continue to support the State Work Study Program.
- Nothing has been mentioned about funding the State Need Grant.
- We need to increase support in mentoring, advising and student support services. Student support services is important and very necessary.
- Focus should be on Work study, Dual Credit and the State Need Grant, not specific WSAC goals.

BREAKOUT GROUP #3

Discussion Group Members: Jennifer Carlson, Clarence Dancer, Leah Hausman, Michael Schutzler

Support for Recommendations:

- 1) Core of the three objectives are agreeable to the group with recommendations as follows.
 - a. Expand WSOS funding access to two-year and accelerated certificates to allow for broader consumption by public to re-educate and/or move
- 2) Why MESA only? What about TAF? TAF needs modest financial support to expand to Renton, Tacoma, etc.
- 3) Need to expand WSOS to two-year and certificate programs, not just 4-year programs.
- 4) Running start has mixed results. Need standardization and clear consistent path to AA/AS and four-year programs.

Issues/Concerns About Recommendations:

- 1) Availability of two-year in high school needs to be standardized – no continuity about associates of arts (AA) versus associates of science (AS) degrees from one community college to area high schools today. Seems to be a disconnect or push/pull between the public school and community college. AS has to be an option without requirement of “drop out” from high school. GED necessary. Example: Olympia High School versus South Puget Sound Community College – versus not a problem in Kirkland
- 2) The language implies that a special teacher and/or class time is required to teach yet another subject. Best practice is to integrate computational thinking, algorithmic problem solving and statistical modeling into every subject already being taught.

- 3) Imperative that coding (not computer science) is a tool that kids are exposed to well before grade 8. K-5 is optimal.

Friendly Amendments:

- 1) Addition of TAF to MESA as recipient of funding to scale outreach in computer science for minorities and other at-risk youth.
- 2) Opportunities presented work for/designed for those straight out of high school - but what about access to capital for older folks. Industry transitional on skilling up. Need access to stipends for living to cover the training (re-training) periods – apprenticeship
 - a. Salary starts with job, not training
- 3) Apprenticeships: The biggest need and opportunity for the state to support thousands of eligible apprentices. We need to stipend those who quit a job to become an apprentice. Currently the state allows apprentices to file for unemployment taken they quit a job to become a registered apprentice. We need more than that. The education cost can be born by industry. Philanthropic organizations can cover the costs.

Group Discussion:

Michael Schutzler: Why fund MESA only?

- What about the Technology Access Foundation (TAF). TAF needs a tremendous amount of funding.
- Running Start has mixed results and needs standardization. Support apprenticeships and support those eligible for stipends to quit job.
- Tens of thousands of people can get into STEM industries through the apprenticeships program.

BREAKOUT GROUP #4

Discussion Group Members: Margaret Tudor, Ron Sisson, Brian Teppner

Support for Recommendations:

- 1) Advance basic education outcomes and equity thru STEM
- 2) Community assets and innovations
- 3) Future ready
- 4) Focus – equity and teaching quality –
 - a. Building partnerships
 - b. Leveraging policies
 - c. Expanding innovation
- 5) Education First
 - a. Computer science

- b. CCL
 - c. Thrive (early childhood) ← early not the gatekeeper
 - d. Science and engineering
- 6) Early learning in science and math is critical, especially in K-5.

Issues/Concerns about Recommendations:

- 1) Career and technical education (CTE) endorsements – a science specialty endorsements not available in STEM and computer science.
- 2) NGSS is missing in the language.
- 3) School leadership – needs to be addressed

Group Discussion:

Margaret Tudor

- Support Early Learning, and make sure students are math prepared.
- Endorsements and support for teachers is not available.
- School leadership needs to be addressed.
- There is a lack of understanding by teachers about how STEM overlaps. We need to fix this.
- How can we build capacity in elementary schools?
- We need to create and build rich STEM experiences for students.

BREAKOUT GROUP #5

Discussion Group Members: Nancy Truitt Pierce, Dana Riley Black, Marcie Maxwell

Recommendations:

- 1) Change “computer science” to “computer science learning.” The term, ‘computer science’ has connotations for a college major. It should include simple coding skills, etc.
- 2) Need bullet under career-connected learning about career and technical education (CTE). (CTE-MSOC [materials, supplies and operating costs] and equipment dollars needed). Middle income jobs. We need to find revenue for equipment, supplies and the support of teachers.
- 3) Early Math: call it/focus on early math engagement so it includes play-centered learning versus “drill and kill”
- 4) We do like the stated recommendations as written. We agree.

Issues/Concerns:

- 1) Add recommendation from Alliance:

- a. New revenue needed to fully fund basic education, amply fund entire education continuum and support our STEM education/workforce talent needs. Note: all strategies listed add costs to budget, and we haven't yet fully funded basic education.
- 2) Consider value of / changes needed to summative assessments.
- a. Balance time spent learning versus assessing. We spend too much time to get the data we need which cuts into the time to learn.
 - b. Ensure useful data; pick a subset of the data that is the most useful and stop collecting the rest.
 - c. Be better balanced between academics and soft skills.
 - d. The time is good for this work given the recent passage of the Federal ESSA act.

Friendly amendments to recommendations:

Add a fourth recommendation: "Alliance urges new revenue for state budget." This is appropriate advice to Governor from STEM Alliance.

Group Discussion:

A STEM Alliance member asks: Should we add a 4th bullet to the recommendations for the Governor? She mentions revenues were taken from other programs. Early education, K12 and Higher Education and Workforce needs new revenue.

- We need to support Career Connected Learning, and find revenue for equipment, supplies, and the support of teachers.

A STEM Alliance member asks: Are all of us agreed that revenue is needed? Is another bullet needed? John Aultman states: Adding bullet is not necessary. The Governor is aware that revenue is needed. The need for revenue is very clear already and I'm not sure that this needs to be addressed at this time.

BREAKOUT GROUP #6

Discussion Group Members: Jeff Estes, Naria Santa Lucia

Recommendations

- 1) It makes sense to support underrepresented populations in STEM. The strategies and approaches are interesting. Are there other best practices to drawn from? We support funding for MESA and WSOS. What is the level of aid for MESA? Should we look a little more thoughtfully about the chokepoints (elementary to middle school, middle school to high school, high school to higher education)?

- 2) We ____ emphasize equity of debt of resources versus equality. Believe SD will need less support than _____. Let's call that one Next Generation Science Standards – crosscutting concepts and interdisciplinary ideas. Teacher learning support should be more than just the supplies (kits). Can we engage _____ to have more public private partnerships – get more companies to go in _____ → _____ STEM _____. Perhaps shift the forms from computer science to computational thinking. Let's consider the language and that the language is _____ (infinity, unity, equity) everyone and lead people to develop a new definition for computer science.
- 3) Career-connected learning is no _____. Can't be done in a vacuum or stove pipe approach. Reengagement for adults in STEM. State service corps. Great to expand to teachers too; they are the experts.

Group Discussion:

Jeff Estes: Are we increasing equity vs. equality?

- We need teacher and learning support.
- Next Generation Science Standards – we should challenge the 3 dimensionality of it.
- Give teachers help and support by professional learning.
- Expand opportunities for connected learning.
- Help teachers be aware of STEM and invest in them.
- We need to add language to support all of this.

BREAKOUT GROUP #7

Discussion Group Participants: Daryl Monear, Gene Sharratt, Amy Hirota, Debora Munguia

Comments on Recommendations:

- In the high level broad recommendations, the 2nd calls for Ensuring that “our education system is STEM ready by providing resources to schools and to teachers to provide a rich STEM experience for students, including Computer Science for All students.” Some in our group thought that we should avoid the phrase “computer science for all,” since it echoes Obama’s federal initiative. The thought was that we don’t know what the longevity of this initiative will be and it would be best to rephrase the end of this second bullet in a different way. For example, we could say . . . to provide a rich STEM experience for students, “with a special focus on expanding opportunities to learn computer science.”
- On page 2, in the section on Early Learning and Elementary, the toolkits for pre-kindergarten through grade 5 (especially for pre-school kids) could be focused on general problem solving with mathematical components rather than straight mathematics.

- On page 2, in the section on Middle and High School, the 1st bullet should read: Provide opportunities for students in every high school to engage in rigorous computer science instruction and incorporate engagement in community problem solving (environmental, social, etc.)
- On page 2, in the section on Middle and High School, the 4th bullet refers to creating “incentives” to expand opportunities in high school to develop computational thinking skills. This is vague. This point could be helped by offering some examples.
- On page 2, in the section on Middle and High School, the 2nd bullet calls for the expansion of professional development in computer science through innovative programs. It mentions one, TELS, but others could be mentioned as well: for example, Code.org and the Pacific Education Institute.
- On page 2, in the section on Middle and High School, the word ‘meaningful’ is a little vague. It could be replaced by another word more pointed in meaning, such as ‘rigorous.’
- On page 2, in the section on Middle and High School, in the 5th bullet replace the word ‘additional’ with ‘STEM’ and add “middle and” before “high school teachers”
- On page 2, in the section on Middle and High School, in the 6th bullet add connectivity to the goal of keeping equipment updated. So the end of the sentence would read . . . “to keep equipment *and connectivity* updated to industry standards.”

Group Discussion:

Daryl Monear

- We need to make computer science accessible to all students.
- Provide resources for rich STEM experience for all students.
- Explain what kind of incentives we have in mind.
- Terminology such as “meaningful” can be improved by replacing with “rigorous.”
- We should invest in computer and connectivity equipment and make sure it is updated to current standards.
- In elementary school, we should provide opportunities for children to be involved in science programs.

John Aultman: I appreciate everyone’s input. In July, the Governor asked for three recommendations and now he has three buckets with many recommendations. The good thing

about is it can be a champion list for a lot of people. In the legislature, there is a lot of members that will be looking at these pieces. Once we get these cleaned up and shared back, remember these are for the Governor but they are also for the State of Washington.

Thank you again! This is something I can take and say here's the thought process, and this is where we want to go with it, while stressing the urgency that Michael and others keep talking about.

Questions and Comments

The bucket for revenue, is that open for other discussion? John: I hear the message loud and clear. I think the Governor is going to say, he knows revenue is needed but what he wants is strategies and ideas for moving forward and then revenue will have to be built into all of them.

How supported is the need for revenue around this table? It's time, for us to figure this out. Is this just a few of us feeling this way or all of us? John: It's a very complex question. This question has been around a long time. But, I do hear it very clearly. It's great when our own organizations are willing to step forward and have a collective voice around STEM education. It's just one component of that, and I think if we can leave it as the major levers for moving forward. I'd feel more comfortable sitting down with the Governor and saying here's all the pieces. He knows there has to be system, but making that message very clear will help also.

Can we include an introduction paragraph to include a sentence or two with a compelling statement prior to the recommendation? Randy: This will be part of the report card and there will be some narrative and data.

As part of the report card will there be a part concerning rationale? Randy responds: I'm not sure it will be called rationale but there will be a rationale included.

SUBCOMMITTEES AND DISCUSSION FORMATION

What should the focus of the STEM Alliance be going forward from this point? We currently have four areas we are focusing on: computer science and technology for all, STEM talent and Demand Dashboard, the Education Report Card and the Strategic Plan. But Washington State does not have a 5 or 10 year strategic plan. We'd like to form subcommittees and get some thoughts about what the next two years should look like. Are these areas that we can support?

Caroline King: Washington STEM is happy to help in any way, shape or form on all four. As for the strategic plan, we want to continue with the work we've been doing around goals, community and outreach. We are happy to talk about what that might look like. We are working very closely with OSPI and across the spectrum on computer science broadly. We are willing to work with others around this table and across the state.

John Aultman: There was a meeting about a month ago with Code.org, TEALS, WTIA and Washington STEM. There's models in other states that have MOUs between different entities in their state and they each have different roles in higher education. The ultimate goal is that every student has activities related to or access to STEM by 2025. What's that look like and what our roadmap to get there is?

Another is a STEM Talent and Supply and Demand Dashboard. Randy: The Dashboard and the report card are linked but they're products. The Dashboard system of metrics has been developed by our group's work. In terms of a workgroup, we are looking for the technical people of the group. Ones that understand the data. We've actually had a group in the past, but we want to open it up here. Dashboard is our system of metrics.

Gene Sharratt: We need a state plan for P20, which includes STEM goals. We need to start writing a STEM five-year plan for the state. Embed professional learning, while working with Washington STEM. We need a strategic plan for the state. Gene will be taking lead in this.

John Aultman: Please volunteer and connect with WSAC Staff to join these subcommittees.

NEXT STEPS

Washington STEM Summit will be at Microsoft on November 29, 2016. It will include legislative and strategic plan and a summary of today's meeting. Gene will give mini report. Hopefully, the Governor will attend. We'd like to ask Michael and Jennifer to give an update, if possible. Others are welcome to help with the agenda and the development - you are invited to participate. We'll also take a look at the STEM Education Report Card.

Gene Sharratt: The four sub topics are something to consider. We need to spend some time thinking about where we should go from here and what's the plan? Our focus should be not so much on the money but who will be taking the lead in these different efforts and how that fits in our group work? We need to feel good as an Alliance.

Meeting minutes compiled by Washington Student Achievement Council staff.

STEM EDUCATION INNOVATION ALLIANCE - Meeting Participants - September 27, 2016

ALLIANCE MEMBERS			
First Name	Last Name	Position Title	Organization
John	Aultman	Executive Policy Advisor for Higher Education and Workforce Development	Washington State Office of the Governor
Jeff	Estes	Director, Office of STEM Education	Pacific Northwest National Laboratory
Paul	Francis	Executive Director	Council of Presidents
Christine	Johnson	Chancellor	Community Colleges of Spokane
Caroline	King	Chief Policy Officer	Washington STEM
Marcie	Maxwell	Citizen Member	Former State Representative
Dana	Riley Black	Executive Director STEM, Legislation & Partnerships	Everett Public Schools
Naria	Santa Lucia	Executive Director	Washington State Opportunity Scholarship
Rachelle	Sharpe	Interim Executive Director	Washington Student Achievement Council
Gene	Sharratt	Executive Director, OSPI/AESD Professional Learning Network	Office of Superintendent of Public Instruction/Association of Educational Service Districts Network
Brian	Teppner	Principal, McKnight Middle School	Renton School District
Nancy	Truitt Pierce	Director, School Board	Monroe Public Schools
Margaret	Tudor	Executive Director	Pacific Education Institute
ALLIANCE ALTERNATE MEMBERS			
First Name	Last Name	Position Title	Organization
Jane	Broom Davidson	Community Affairs Director	Microsoft Corporation
Randy	Spaulding	Director, Academic Affairs & Policy	Washington Student Achievement Council
OTHERS			
First Name	Last Name	Position Title	Organization
Chadd	Bennett	Assistant Director of Digital Information	Washington Student Achievement Council
Amy	Buck	Administrative Assistant	Washington Student Achievement Council
Jennifer	Carlson	Executive Director	Washington Technology Industry Association Workforce Institute
Clarence	Dancer	STEM Program Supervisor	Office of Superintendent of Public Instruction
James	Dorsey	Executive Director	Washington Mathematics Engineering and Science Achievement (MESA)
Tom	Fitzsimmons	Vice President	Independent Colleges of Washington
Janet	Frost	Director	WSU Spokane Health Science STEM Education Research Center
Nova	Gattman	Legislative Director	Workforce Training and Education Coordinating Board
Leah	Hausman	Director of Fund Development	Thrive Washington
Kaaren	Heikes	Director of Policy and Partnerships	State Board of Education
Amy	Hirota	Director, State Government Affairs	Code.org
Ellen	Matheny	Assistant Director of Operations	Washington Student Achievement Council
Daryl	Monear	Associate Director for Academic Affairs and Policy	Washington Student Achievement Council
Debra	Muguia	President & CEO	Capitol Consulting
Juliette	Schindler Kelly	Director, Government Relations and Advocacy	College Success Foundation
Michael	Schutzler	CEO	Washington Technology Industry Association
Ron	Sisson	Director of Principal Support and Elementary Programs	Association of Washington School Principals