



STATE OF WASHINGTON
OFFICE OF THE GOVERNOR



WASHINGTON STUDENT
ACHIEVEMENT COUNCIL
EDUCATION · OPPORTUNITY · RESULTS

STEM Education Innovation Alliance Meeting

February 10, 2016

1:30 PM – 4:30 PM

**Washington State Capitol
Legislative Building, Senate Rules Room**

**RECEPTION
State Reception Room**

Today's Agenda

1:30 PM Welcome

John Aultman – *Washington State Office of the Governor*
Gene Sharratt – *Washington Student Achievement Council*

1:40 PM STEM Talent Supply and Demand Dashboard Update

Mary Kay Dugan – *IMPAQ International*

1:45 PM Legislative Update and Discussion

John Aultman – *Washington State Office of the Governor*
Maddy Thompson – *Washington Student Achievement Council*

2:10 PM Strategies for Expanding and Leveraging Partnerships

Caroline King – *Washington STEM*
Daryl Monear – *Washington Student Achievement Council*
Eleni Papadakis – *Workforce Training and Education Coordinating Board*

Today's Agenda (continued)

2:55 PM Scholarship's Positive Impact on Students

Britney Allison – *South Puget Sound Community College*
Recipient of *Washington State Opportunity Scholarship* [Nursing]

3:05 PM The Realities of the K12 System

Jeff Charbonneau – *Zillah High School*
Susan Enfield – *Highline School District*
Brian Teppner – *Bellevue Public Schools*
Nancy Truitt Pierce – *Monroe Public Schools' Board of Directors*

3:25 PM Next Steps

John Aultman – *Washington State Office of the Governor*
Gene Sharratt – *Washington Student Achievement Council*

3:30 PM Reception with Washington State Legislators and Washington STEM Regional Networks members

Location: Washington State Capitol - State Reception Room

4:30 PM Adjourn

Industry Education Partnerships

Today's Goals:

- ✓ Provide an overview of existing partnership initiatives and grants
- ✓ Engage in small group discussions around what makes for effective partnerships and the role for the Alliance in fostering partnerships

Presentation:

- **Daryl Monear** – Washington Student Achievement Council
- **Eleni Papadakis** – Workforce Training and Education Coordinating Board
- **Caroline King** – Washington STEM

Small Group Discussion:

- Brainstorm on effective partnerships (20 minutes)
 - Handout: Strategies for Expanding and Leveraging Partnerships
- Report out on key recommendations of the group

Industry Education Partnerships

National Governors Association Grant – Key Deliverables

Identify high-quality partnerships

- Adopt a list of criteria for high-quality industry-education partnerships.
- Create an asset map of existing partnerships.

Establish a state structure to support and coordinate state and regional industry-education partnerships

- Develop a system of support and technical assistance to foster regional and state-level partnerships.
- Create a plan for scaling effective partnerships and assisting the development of new partnerships.

Learning from Other States

- Illinois Learning Exchange – industry associations, labor and professional organizations lead the creation of K-12 learning objectives, curricular and classroom resources, and work-integrated learning opportunities.
- Kentucky's Plan for Economic and Education Transformation – Alignment of vision and goals for economic and workforce development and K-20 education system. Also state and local alignment.
- Colorado – regional sector partnerships; K-14 career pathway development; Business Experiential Learning Commission
- New Jersey – Business-lead Talent Networks created for alignment of post-secondary education and businesses. Statewide policy reform to support talent pipeline development and accountability. Now expanded to include K-12.

The Five Stages of Sector Partnership Industry Skill Panels

Stage One: Convene:

Bring together leaders from key sector to identify critical skill or business workforce issue and Success Indicators

Stage Two: Governance

Identify partnership members, responsibilities and commitments. How will decisions be made. Process for oversight, evaluation.

Stage Three: Strategize

Use the partnership to develop industry Skill Standards and/or other solutions. Develop program plan and tactics.

Stage Four: resource and Implement

Deploy partnership resources to implement the plan. All partners are Shareholders/investors.

Stage Five: Evaluate and Improve

Evaluate training against success Indicators; Make mid-course corrections as needed



Industry Education Partnerships:

Washington STEM & Regional STEM Networks

Background

- Issue is a top priority for Washington STEM
- Why?
 - Young people can't aspire to careers they don't know exist
 - Our education and business partners want to take on this challenge
- What we're learning:
 - Lots of – activity and enthusiasm
 - Lack of – coordination, “what works,” systemic solutions
- What's our role?
 - leverage private sector resources, innovate and partner
 - spread best practices and help spur systemic solutions

Industry Education Partnerships:

Washington STEM & Regional STEM Networks

What we have done

- Created industry-education partnership continuum
 - Shared definitions and outcomes drive effectiveness and sharing
- Gathered stakeholder feedback at 2015 STEM Summit
- Started landscape review to identify partners, gaps and opportunities

Next steps: Preparing to launch major new initiative in 2017

- Now – research, planning and testing
 - Conduct research and planning: JPMC and The Boeing Company grants
 - Test and learn: 100K in 10 Engineering Fellows
 - Coordinate with existing efforts

Our opportunity: Drive Greater Impact Together

Industry Education Partnerships

Small Group Discussions

Format:

- Divide into four groups
- Brainstorm (20 minutes) using the Strategies handout as a guide and the NGA partnership criteria handout
- Briefly report out on the role of the Alliance (Q3a) and (Q3b) partnership recommendations (two minutes per group)
- Turn in handout with (legible!) notes to Mary Kay following the session

Three Key Questions to Consider:

1. In addition to what you heard presented today about existing partnerships, what other key partnerships are you engaged in and/or aware of?
2. Provide feedback on National Governors Association partnership criteria in light of: 1) our landscape and needs in Washington State; 2) other state examples; and 3) your own expertise. What should be retained, changed, added or dropped?

Reference: *NGA's Building Partnerships to Get Results Workgroup Overview*

3. How can the STEM Alliance help provide leadership, partnership/connectivity across efforts and spur greater impacts?

Reference: *Strategies for Expanding and Leveraging Partnerships – Questions 3(a), 3(b), and 3(c)*

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Building Partnerships to Get Results Workgroup Overview

Functional partnerships between education, workforce, economic development and industry are instrumental to efforts to align the education and training pipeline with the needs of the economy. Based on the analysis of national resources and leading state practice, the workgroup drafted baseline criteria for high-quality talent pipeline partnerships useful for identifying, seeding, and supporting productive partnerships for talent development.

What are High-Quality Talent Pipeline Partnerships?

The workgroup recognizes there is a need for functional partnerships at multiple levels – all which add value - but the workgroup is focused specifically on partnerships that enable strategic communication between education, workforce and industry about talent pipeline issues facing a region and/or sector:

Strategic State Level Partnerships	System Specific Partnerships	Talent Pipeline Partnerships	Program Specific Partnerships
<i>For example:</i> <ul style="list-style-type: none"> ▪ P-20 Councils ▪ State Workforce Investment Boards 	<i>For example:</i> <ul style="list-style-type: none"> ▪ Local Workforce Investment Boards ▪ Chambers of Commerce 	<ul style="list-style-type: none"> ▪ Enable strategic communication between industry, education and workforce about the talent issues facing a region and/or sector. ▪ Focused on systems alignment and are beyond the scope of a single policy area of program. ▪ Examples of well-established approaches: <ul style="list-style-type: none"> ○ Sector partnerships ○ Career pathways partnerships 	<i>For example:</i> <ul style="list-style-type: none"> ▪ Community College Advisory Boards ▪ Career and Technical Education Advisory Committees

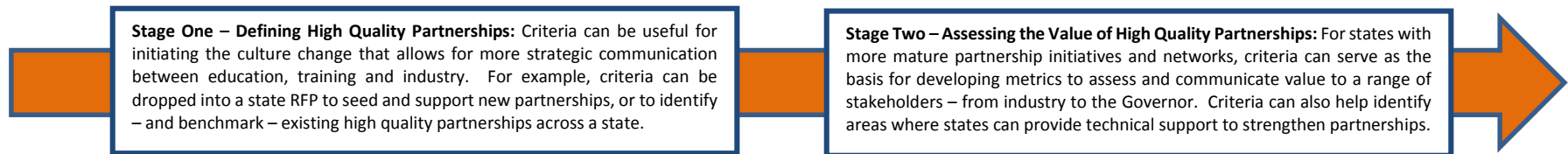
Developing the Baseline Criteria: The Partnerships Workgroup’s Approach

To develop the baseline criteria, the workgroup assessed leading state practice surfaced from discussions and reviewed existing national resources:

NGA Sector Strategies Evaluation Framework	National Fund for Workforce Solutions: Characteristics of High Performing Partnerships	USDOL, HHS, Department of Education: Career Pathway Toolkit
CLASP Career Pathway Framework, Criteria and Metrics	US Chamber of Commerce Foundation: Managing the Talent Pipeline	American Association of Community Colleges: Sustaining Partnerships for Growth

Evolving From Criteria to Metrics

Workgroup members recognized the multiple and evolving roles that criteria can play in a state’s overall alignment strategy:



Next Steps for the Partnerships Workgroup

The criteria presented in this document represents “Version 1.0” and the workgroup is seeking feedback from peers on how to improve and/or build upon these criteria. Further, the workgroup is looking to identify and document state experience using criteria to advance their talent pipeline strategies. It is the goal of the group to expand upon the criteria and present a toolkit for states on high quality partnerships. If you have feedback or interest in joining the workgroup, contact Brent Parton (bparton@nga.org).

Baseline Criteria for High Quality Talent Pipeline Partnerships

Stage One – Defining High Quality Partnerships

Stage Two – Assessing the Value of High Quality Partnerships

Baseline High Quality Criteria – For defining and identifying high quality talent pipeline partnerships	Criteria Indicators – For recognizing the high-quality criteria within partnerships	Examples of Partnership Metrics - For measuring and communicating the value of high quality partnerships (both process and outcomes)
Employers Lead the Partnership	<ul style="list-style-type: none"> Employers play leadership roles Consistent and regular participation of employers in partnerships activities 	<p><i>Process: (i.e. number of employer partners, regular attendance, holding leadership positions)</i></p> <p><i>Outcomes: (i.e. employer investment in partnership)</i></p>
A Shared Vision and Clear Roles and Responsibilities Guide Partnership Activities	<ul style="list-style-type: none"> A clear strategy and action plan Delineated roles and responsibilities for all partners A coordinator, convener, or backbone organization 	<p><i>Process: (i.e. creation of an strategy and action plan, designation of partnership support team)</i></p> <p><i>Outcomes: (i.e. resources to support backbone capacity)</i></p>
Data Drives the Scope and Operation of the Partnership	<ul style="list-style-type: none"> Scope of partnership shaped by industry and labor realities Uses quantitative and qualitative data to identify industry sector demand and relevant credentials 	<p><i>Process: (i.e. engagement of state data to identify regional/sector skills gaps, industry concentrations)</i></p> <p><i>Outcomes: (i.e., quantifiable and partnership specific credential attainment/employment goals)</i></p>
The Partnership Impacts Education and Training Decision-making	<ul style="list-style-type: none"> Includes all critical partners across education and training pipeline Shapes the development of career pathways and programs (i.e. career readiness, apprenticeships) 	<p><i>Process: (i.e. number of education and training partners, establishment of new career pathways)</i></p> <p><i>Outcomes: (i.e. articulation agreement time savings, investment in work-based learning programs)</i></p>
The Partnership Demonstrates Tangible Results and Shared Value	<ul style="list-style-type: none"> Capacity to demonstrate outcomes for pathway participants, the relevant sector and/or region Attention to continuous improvement and sharing best practices 	<p><i>Process: (i.e., data systems alignment, balanced scorecard for partnership)</i></p> <p><i>Outcomes: (i.e. attainment, employment, employer satisfaction, employee retention, reduced time to hire)</i></p>
There is a Strategy and Plan to Sustain Partnership Activities	<ul style="list-style-type: none"> Leverages diverse, braided funding resources A plan for securing sustained funding as appropriate 	<p><i>Process: (i.e. development of sustainability plan)</i></p> <p><i>Outcomes: (i.e. amount of resources secured to support implementation of time-fixed strategic plan)</i></p>

3. How can the STEM Alliance help provide leadership, partnership/connectivity across efforts and spur greater impacts? Please consider the sub-questions (a-c) below in your discussion:

a. Should we start new task force on Partnerships? Or should we plug into existing efforts – e.g., new NGA grant led by Eleni’s group? Why?

b. Please list recommendations you have for either forming, developing, or sustaining partnerships around STEM in our state?

c. What policy and budget guidance would you offer to the Governor for the 2017-19 biennium to help scale and sustain effective partnerships?



CAREER CONNECTED LEARNING WASHINGTON LANDSCAPE

WASHINGTON STEM PROGRAM WORK

Track, Coordinate, Convene, and Leverage Career Connected Learning Initiatives: In addition to the three career connected learning funded initiatives in which Washington STEM is directly engaged, there are numerous other initiatives underway or newly launched at the regional, state, and national levels. There are untapped work opportunities in our state. However, youth, especially those of color, girls, and low income, often do not receive knowledge about these career pathways during their K-12 experience, nor do they engage in attendant activities such as career networking events, internships, and job shadowing. Washington STEM has been deeply engaged in this space since early 2015 when our STEM Networks developed a Career Connected Learning Continuum describing common definitions, strategies and, outcomes. Given the strong need and groundswell of interest in this area, we are well poised to build partnerships around shared goals and drive greater impact together. Through our career connected learning strategy we will track these existing and emerging activities, act as a convener where appropriate, and leverage each other's work so that the efforts are coordinated, connected, and effective in supporting career connected learning for youth across our state.

Washington STEM's initiatives are described below followed by related state, regional, and national activities.

JP MORGAN CHASE

OCT 2015 – SEP 2016

Work-Based Learning Stakeholder Engagement and Implementation Plan: The first phase of the project focuses on engaging in a comprehensive survey of programming, challenges, and opportunities for growth. Key activities will include: convening a strong strategic design team, identifying key stakeholder groups – including target STEM sector business partners and strong Washington equity organizations – for engagement as advisors, developing a strategy to engage these stakeholders throughout the Initiative, further developing baseline research, conducting a market analysis of existing state and national work-based learning (WBL) programs, and defining a working definition of WBL experiences. We will then convene a strong project advisory council made-up of representative stakeholder groups from across the state. This council will guide the work of the project, including a statewide survey and interview process to gather information about needs and challenges and review a list of prospective systems or initiatives for further analysis. Following these two phases we will develop a clear, effective, and scalable strategy to implement impactful WBL programming with the goal of positively impacting tens of thousands of students in the state. This strategy will include key components such as a technology platform recommendation, implementation plan, policy engagement strategy, stakeholder/community engagement strategy, and recommended budget and timeframe.

THE BOEING COMPANY

OCT 2015 – OCT 2016

Strengthening STEM Pathways between K-12 CTE and CTC: Washington STEM will develop a comprehensive white paper report that examines our state's landscape of K-12 Career-Technical Education (CTE) pathways through Community Technical College (CTC) and into STEM careers. The paper will examine three key areas of the K-12 CTE system: 1) student awareness and communications; 2) systems alignment between K-12 CTE programming, CTC, and employers; and 3) policy and funding structures. In each of these areas we will highlight key issues, lift up bright spots of highly-effective programming and policy across the nation, and make actionable recommendations for ways to reimagine our state's systems of K-12 CTE to CTC and STEM careers.

We will also review and document alignment which currently exists between K-12 CTE courses, CTC, and STEM careers/employer demand; identify critical gaps; and make recommendations for initial steps to address them. The results will include answers to these questions:

- What policies need to be championed or changed to transform and revitalize K-12 CTE education and align pathways into CTC and career?
- How might Washington STEM and its STEM Networks act as champions to advocate for change?

OSPI – IMPLEMENTING FIELDSTEM LEARNING K-12

NOV 2015 – JUN 2016

Building capacity through the Washington STEM Networks to provide career-connected learning:

Washington STEM is working as a consultant to Pacific Education Institute (PEI) for the OSPI grant - Implementing FieldSTEM learning across K-12. FieldSTEM literacy is the ability to identify, apply, and integrate concepts from science, technology, engineering, and mathematics specifically related to the natural resource, agricultural, and environmental sectors and their careers. We will: 1) generate student career interest through STEM field work experience; and 2) identify and implement work study opportunities for high school students. A FieldSTEM Working Group will craft a career-connected approach to FieldSTEM high school teaching and learning to disseminate to the ten regional STEM Networks.

RELATED ACTIVITIES (STATEWIDE, REGIONAL, NATIONAL)

STATEWIDE EFFORTS

STEM Education Innovation Alliance: In response to Washington’s STEM challenge, Governor Inslee formed the STEM Education Innovation Alliance (the Alliance) in 2014. Its members represent a broad range of business, labor, non-profit, and educational organizations with the role of advising the Governor on strategic planning and the formation of effective partnerships in support of STEM initiatives in the state. In addition, the Alliance is charged with submitting an annual STEM Benchmark Report Card to the Legislature each January in order to report on STEM economic and workforce trends, measure progress in improving STEM education in Washington, and communicate strategic priorities. The Alliance specifically calls out the need for aligning STEM education programs with workforce needs of key economic sectors and notes the need for community-based STEM learning experiences. Caroline King, Washington STEM’s Chief Policy Officer, is a member of the Alliance. The Alliance has been supported by a National Governors Association grant with key additional in-kind support from Washington STEM. For more information, please see: <http://www.wsac.wa.gov/STEM-Alliance>.

National Governors Association Policy Academy on Work-Based Learning: In December 2015, through the Workforce Training and Education Coordinating Board, Washington state applied for a National Governors Association Policy Academy grant on Work-Based Learning. The three primary goals of the grant are:

- Create the administrative and statutory policy framework to ensure work-based learning opportunities are available for all young people aged 16-29, with an emphasis on disadvantaged, marginalized, and place-bound youth.
- Design a fundable and sustainable infrastructure that supports businesses to create work-based learning opportunities, helps students to access and benefit from such opportunities, and provides frontline staff to help students and businesses make meaningful connections.
- Learn from and support other states to expand work-based learning concepts and programs.

The Policy Academy will help Washington state achieve these goals by mapping current practices, assessing labor market information (focusing on STEM middle skill careers), setting goals and developing an implementation plan, creating a performance accountability system for work-based learning, and initiating a Governor’s Summit on Youth Employment and Work-Based Learning. For more information, please see: <http://www.nga.org/cms/home/news-room/news-releases/2015--news-releases/col2-content/states-look-to-increase-career.html>.

Workforce Board Youth Works Initiative: Governor Inslee launched the Youth Works Initiative in September of 2014, tapping the Workforce Board to help lead this career-connected learning initiative for the state's low-income youth. The state's Employment Security Department will administer \$1.9 million in Workforce Investment Act discretionary funds to help more youth get connected to learning and find a pathway to a viable career. Please see: <http://www.wtb.wa.gov/YouthWorks.asp> for more information.

REGIONAL EFFORTS

Race to the Top-District (RTTT-D) Regional Career Exploration System Design, Implementation and Sustainability Plan: This Initiative is a collaborative approach between Educurious and Big Picture learning with Washington STEM support as a member of the planning and advisory team. Building on combined organizational expertise and incorporating input from a range of stakeholders, the regional system will serve 800 high school students drawing on multiple student experiences and integrated technical supports with five core student experiences:

- Networking Events
- Work-Based Problems
- Virtual Mentoring
- Job Shadows
- Internships

The program is piloting from March 2015 to December 2016.

Washington Technology Industry Association (WTIA) Workforce Institute: In September 2015 WTIA was awarded \$5 million to expand high-tech job opportunities for women, minorities and veterans in Washington state. Specifically, they have launched a registered tech apprenticeship program to recruit, train, and place 600 registered apprentices over the next five years delivering much needed skilled workers to the state's high-demand tech sector. This industry-backed program plans to build the best possible homegrown candidate pool by emphasizing diversity and assisting those underrepresented in the tech sector in successfully entering this high wage, rapid growth industry. To find new talent, the association will turn to partnerships with programs at Joint Base Lewis McCord, Goodwill, and others to identify apprenticeship candidates. Once a candidate is accepted into the program, they'll receive three to four months of pre-apprenticeship training in one of many industry-recognized certificate programs such as Microsoft MCSE or CISCO, IT Security, and others. Participants who complete training then enter a one-year apprenticeship in a full-time, paid, entry-level position with one of the WTIA's hiring partner tech companies; afterwards, they are eligible for a full-time position. Please see <http://washingtontechnology.org/workforce/> for additional information.

Challenge Seattle: Challenge Seattle is a private sector initiative led by former Governor Christine Gregoire and many of the region's CEOs; they are working to address issues that our region faces, which will determine our future, for our economy and for our families. Seattle Challenge wants to build on our history and focus on making improvements that will enable our continued growth and transformation while maintaining our quality of life. Challenge Seattle was formed to ensure that our region thrives as one of the most innovative, vibrant, and globally competitive regions in the world. Their vision is to:

- Provide our children the opportunity through education to compete for the jobs of the future right here in Washington state
- Develop world leading infrastructure that drives our future growth and vitality and improves quality of life
- Create and maintain good jobs while preserving our values
- Telling the Seattle story here and around the world

For additional information, please see: <http://www.challengeseattle.org/>.

Seattle Chamber's Regional Partnership: Education and workforce development are key priorities for the Chamber because the region's economy depends on people having the knowledge and skills they need to work in its current and future job markets. The Chamber advocates at the local, state, and federal levels to advance policies that align education and training with employer needs and support common-sense immigration reforms that ensure Puget Sound employers can hire talent to fill short-term needs.

Access2Experience: Access2Experience, based in Spokane, Washington, is an online platform bridging the gap between industry and education by putting seasoned professionals in classrooms and putting students and career seekers in work-based learning environments. This gives our next generation workforce the opportunity to learn, develop, and be inspired by real-world professionals through classroom presentations, internships, job shadowing, apprenticeships and more. Please see: <https://greaterspokane.org/blog/tag/access-2-experience/> for more information.

NATIONAL EFFORTS

WITHIN WASHINGTON (Real or Potential)

100,000 Opportunities Initiative: The 100,000 Opportunities Initiative is a coalition of leading U.S.-based companies committed to training and hiring 100,000 Americans between the ages of 16 and 24 who are out of school and not working by 2018. This Initiative launched in August of 2015 to create more pathways to economic opportunity for young Americans and aims to be the largest employer-led coalition in the country. Members of the Initiative are committed to engaging at least 100,000 "opportunity youth" (16-24 year olds who face systemic barriers to jobs and education) by 2018 through apprenticeships, internships, and both part-time and full-time jobs.

Washington based employers that have joined the Initiative include Alaska Airlines, JP Morgan Chase & Co., Microsoft, Nordstrom, and Starbucks among others, and the Initiative is supported by JP Morgan Chase & Co., Schultz Family Foundation, Starbucks, and others. For more information see: <http://www.100kopportunities.org/>.

CCSSO State Action to Advance Career Pathways: The Council of Chief State School Officers (CCSSO) launched its Career Readiness Task Force in the spring of 2014 to increase the rigor in career education to meet expectations of the current labor market. Using economic development data and partnerships with community employers, 17 states will design more rigorous career pathways that span secondary and postsecondary levels, culminating in credentials for students. CCSSO is facilitating this work, which pursues recommendations made in Opportunities and Options, a report of CCSSO's Career Readiness Task Force.

For all states, CCSSO will develop an online resource center to provide strategies, case studies, self-assessment tools, communications materials, and models of best practice. The 17 states are California, Colorado, Hawaii, Illinois, Kentucky, Louisiana, Maryland, Mississippi, New Jersey, New Mexico, Nevada, North Carolina, Ohio, Rhode Island, Tennessee, Wisconsin, and Wyoming. Visit http://www.ccsso.org/News_and_Events/Press_Releases/CCSSO_Announces_State_Action_to_Advance_Career_Pathways_.html for additional information.

CCSSO New Skills for Youth Initiative: Launched in 2016, CCSSO, in partnership with the National Association of State Directors of Career Technical Education Consortium (NASDCTEc) and the Education Strategy Group (ESG), have partnered with JPMorgan Chase & Co. on an ambitious new \$75 million, five-year initiative known as New Skills for Youth (NSFY). NSFY will provide a select group of state-led teams with expert technical assistance and peer support through CCSSO's Career Readiness Initiative (CRI), as well as with financial resources to transform their systems of career preparation through higher quality and more demand-driven, rigorous, and accountable approaches to career-focused programs, including, but not limited to, CTE. NSFY will invest in the development of new and effective strategies to scale high-quality career pathways. While all students are expected to benefit from this transformational approach regardless of their school setting, the initiative seeks to promote equity and access to high-quality pathways, targeting resources on underserved populations and districts to create economic opportunity. Additional information on the initiative can be found here: http://www.ccsso.org/Resources/Programs/Career_Readiness_Initiative.html.

OTHER STATES' EFFORTS

Other states are taking steps to align their education and workforce systems with industry needs and economic realities. A few of these efforts are described here.

Kentucky Skills Network

The Kentucky Skills Network is a partnership of local and state workforce development organizations dedicated to helping businesses recruit top talent, train new and existing employees, and develop tomorrow's workforce. More information can be found here: <http://www.thinkkentucky.com/kentuckyskillsnetwork/>.

Illinois Pathways

Illinois Pathways is a public-private education partnership organized to support implementation of P-20 STEM Programs of Study by coordinating and reducing the transaction cost among statewide networks of education partners, businesses, industry associations, labor organizations, and other organizations. Additional information can be found here: <https://www2.illinoisworknet.com/ilpathways/Pages/default.aspx>.

Colorado Business Experiential-Learning Commission

The Commission focuses on three main areas: 1) engaging business involvement in educating and training students and workers in partnership with the state's K-16 education system, workforce system, and related civic agencies; 2) creating electronic access for students, interns, apprentices, and workers to document skills they have obtained in the workplace and to share that information with the K-16 system to support curriculum development; and 3) leveraging existing resources to create a portal of information to connect students, job-seekers, schools, employers, and civic agencies with experiential learning, training opportunities, and careers. For more information please see: <https://www.colorado.gov/pacific/cwdc/bel-commission>.

New Jersey Talent Networks

In 2012 the State Employment and Training Commission passed a resolution establishing sector strategies as the framework for New Jersey's workforce system to align economic development and workforce efforts. Talent Networks have been established to focus on the specific needs of key industries in the state in order to connect employers, job seekers, the state's One Stop Career Centers, and educational institutions to achieve the common goal of helping current job seekers develop relevant skills that lead to job opportunities, helping employers find qualified employees, and ensuring access to training and educational opportunities that lead to the jobs of the future. More information about New Jersey's Talent Networks can be found here: <http://jobs4jersey.com/jobs4jersey/toolkit/talent/>

CAREER CONNECTED LEARNING CONTINUUM

Created by the Washington STEM Networks' Career Connected Learning Committee | May-July 2015

The table below was created by a committee of representatives from the regional Washington STEM Networks, and it was used as a discussion item to answer the following questions.

- What are the career connected learning experiences available to students in Washington state and where does each occur at scale?
- What is the definition and expected student outcome for each experience?
- What are the barriers that must be overcome so that all students in Washington have access to these rich career connected learning experiences?
- What are the policy solutions that if enacted would make these career connected learning experiences available to all students, especially students with limited access and those from racial or cultural groups underrepresented in STEM careers?

The policy solutions identified by the committee as necessary to open student access to each career connected learning experience are listed below and embedded in the table.

Additional policy solutions identified for a specific experience are highlighted in **RED** text:

- Adjust school funding formula to support community engagement activities in schools
- Create a centralized system where business/industry volunteers can post their opportunities.
- Provide incentives for businesses to participate
- Statewide common language for a career connected learning continuum
- Common grade level definition/rubric of 21st century skills
- Best practices guide and tools to prepare students and business volunteers

CAREER FAIR

Definition	Student Outcomes	Barriers	Policy Solutions	Location at Scale and Contact
Industry experts set up a display and speak with those students who are interested in their information	<ul style="list-style-type: none"> ● Students explore a variety but not all the careers showcased at the fair 	<ul style="list-style-type: none"> ● Lack of human capital to coordinate events and recruit and support volunteers ● Lack of easy access to volunteers ● Lack of time or protocols to prepare students, teachers and business contacts to engage with each other ● Lack of time to support student follow up including thank you messages to business volunteers 	<ul style="list-style-type: none"> ● Adjust school funding formula to support community engagement activities in schools ● Create a centralized system where business/industry volunteers can post their opportunities ● Provide incentives for businesses to participate ● Create statewide common language for a career connected learning continuum ● Create a common grade level definition/rubric of 21st century skills ● Best practices guide and tools to prepare students and business volunteers 	

CAREER PRESENTATIONS: Career Panels + Classroom Speakers

Definition	Student Outcomes	Barriers	Policy Solutions	Location at Scale and Contact
<p>Industry experts present, in person or virtually, information about their career, their typical work day, and the knowledge, skills, and attributes required to pursue and be successful in their work.</p> <p>Students have an opportunity to talk with and ask questions of the professionals.</p>	<ul style="list-style-type: none"> Students learn about specific skills needed to be successful in the industry and future educational opportunities 	<ul style="list-style-type: none"> Lack of time or curricular connections for teachers or counselors to coordinate events Lack of time or protocols to prepare students, teachers and business volunteers to engage effectively with each other Lack of easy access to volunteers from business and industry Human capital to recruit and support business/industry volunteers 	<ul style="list-style-type: none"> Adjust school funding formula to support community engagement activities in schools Create a centralized system where business/industry volunteers can post their opportunities Provide incentives for businesses to participate Create statewide common language for a career connected learning continuum Create a common grade level definition/rubric of 21st century skills Best practices guide and tools to prepare students and business volunteers 	

NETWORKING EVENTS

Definition	Student Outcomes	Barriers	Policy Solutions	Location at Scale and Contact
<p>Workers from a particular career cluster engage with students and school-based staff to share information about their industry, job and associated career pathways.</p> <p>These events can occur at the school or business site. Students learn more about potential careers of interest. Students also practice professional behavior and gain confidence communicating with professionals.</p>	<ul style="list-style-type: none"> Students receive guidance on academic attainment or guidance on authentic projects Students are connected to a resource if interested in pursuing a similar occupation 	<ul style="list-style-type: none"> Lack of time or curricular connections for teachers or counselors to coordinate events Lack of time or protocols to prepare students, teachers and business volunteers to engage effectively with each other Lack of easy access to volunteers for student interviews Human capital to recruit and support business/industry volunteers 	<ul style="list-style-type: none"> Adjust school funding formula to support community engagement activities in schools Create a centralized system where business/industry volunteers can post their opportunities Provide incentives for businesses to participate Create statewide common language for a career connected learning continuum Create a common grade level definition/rubric of 21st century skills Best practices guide and tools to prepare students and business volunteers 	South King County STEM Network - Career Connection

WORKSITE TOURS

Definition	Student Outcomes	Barriers	Policy Solutions	Location at Scale and Contact
<p>Students visit worksites to explore a particular industry. Students usually spend time with a primary host and a variety of employees observing daily activities and asking questions about the organization and the work environment.</p>	<ul style="list-style-type: none"> • Students learn about the nature of particular jobs, industries, and workplace • Students learn what it is like to be on an actual worksite 	<ul style="list-style-type: none"> • Lack of funding for transportation of students and teacher substitute costs • Lack of support from administration when tours impact student access to core content classes • Lack of curricular connections to make the case for the value of worksite tours • Lack of easy access to business and industry tour sites • Smaller, poorer districts are left behind. MSOC funding typically covers these trips. The good news is that there is more MSOC (maintenance, supplies and operating costs) funding via the legislature. The challenge is there is a lot of demand on these funds. • Consistent, effective use of these experiences (e.g., important to frontload, prep students for active learning, and expect follow up or reflection) for meaning 	<ul style="list-style-type: none"> • Adjust school funding formula to support community engagement activities in schools • Create a centralized system where business/industry volunteers can post their opportunities • Provide incentives for businesses to participate • Create statewide common language for a career connected learning continuum • Create a common grade level definition/rubric of 21st century skills • Best practices guide and tools to prepare students and business volunteers • Funding for transportation 	<p>Junior Achievement</p>

INFORMATIONAL INTERVIEWS

Definition	Student Outcomes	Barriers	Policy Solutions	Location at Scale and Contact
<p>Students interview experts about their work to obtain insights into the nature of particular jobs, career fields, and workplaces and to learn about associated career pathways.</p> <p>These may occur in the context of identifying a job shadow and/or internship, to support specific classroom-based learning, or as an end in themselves.</p>	<ul style="list-style-type: none"> Students learn about the nature of particular jobs, industries, and workplaces and the associated career pathways 	<ul style="list-style-type: none"> Lack of human capital to coordinate events and recruit and support volunteers Lack of time, curriculum or protocols to prepare students to make 1-on-1 connections Lack of time or protocols to prepare students, teachers and business contacts to engage effectively with each other Lack of time to support student follow up including thank you messages to business volunteers Lack of easy access to volunteers from business and industry Human capital to recruit and support business/industry volunteers 	<ul style="list-style-type: none"> Adjust school funding formula to support community engagement activities in schools Create a centralized system where business/industry volunteers can post their opportunities Provide incentives for businesses to participate Create statewide common language for a career connected learning continuum Create a common grade level definition/rubric of 21st century skills Best practices guide and tools to prepare students and business volunteers 	<p>Big Picture Learning Schools (Highline School District, Bellevue School District)</p>

JOB SHADOWS

Definition	Student Outcomes	Barriers	Policy Solutions	Location at Scale and Contact
<p>Students follow an employee for one or more days to learn a about particular occupation or industry.</p> <p>These opportunities allow students to experience a day in the life of a particular employee and workplace. In some cases, they may be virtual.</p> <p>Job shadows may be connected to the learning in a particular class or project or part of an exploratory process toward establishing an internship.</p>	<ul style="list-style-type: none"> • Students identify technical and employability skills needed to be successful in the industry • Students explore careers to better inform High School and Beyond Planning 	<ul style="list-style-type: none"> • Job Shadows are great BUT it is not easy to do these without tight coordination (it is easy to overwhelm employers) • Lack of human capital to support student access to job shadow opportunities and to support employer engagement • Lack of easy access to business and industry volunteers and job shadow sites • Coordination requires documentation and monitoring in addition to setting up opportunities between students and sites • Lack of curricular connections to make the case that job shadows are a valuable learning opportunity • Entrenched master schedules that do not support student engagement in the community; this results in students missing classroom instruction • Lack of student/family resources to travel to job shadow site 	<ul style="list-style-type: none"> • Adjust school funding formula to support community engagement activities in schools • Create a centralized system where business/industry volunteers can post their opportunities • Provide incentives for businesses to participate • Create statewide common language for a career connected learning continuum • Create a common grade level definition/rubric of 21st century skills • Best practices guide and tools to prepare students and business volunteers • Funding for student transportation 	<p>South King County STEM Network - Career Connection</p>

WORK-BASED PROBLEMS WITH CLASSROOM MENTORING

Definition	Student Outcomes	Barriers	Policy Solutions	Location at Scale and Contact
<p>In the context of their classes, students engage in authentic work-based problems using tools and approaches present in the field.</p> <p>Experts from the field “mentor” students and/or teachers through the problem and otherwise support instruction either in person or virtually.</p> <p>Electronic discussions supported by discussion boards amongst students, experts and teachers may also be used.</p>	<ul style="list-style-type: none"> ● Students realize the relevance of their education and apply knowledge in meaningful way ● Explore career options ● Increase self-confidence ● Acquire real workplace experience and employability skills ● Connect with an adult role model ● Improve chances of post-secondary education 	<ul style="list-style-type: none"> ● Need to develop culture with staff as to value of experience for students ● Lack of awareness of administrators and teachers regarding how the standards are imbedded in this type of curriculum along with how to assess the standards including 21st century skills ● Lack of time, funding and pedagogical training for teachers to be able to teach in a PBL manner and develop standards-aligned problems within a career exploration context ● Lack of time and protocols to train mentors/experts to engage effectively with students and teachers ● Lack of easy access to mentors/experts ● Lack of system to distribute lesson plans and problems to teachers ● No CTE funding to support personnel; no allocation of general education funding to support these teachers to embed career contexts within their units 	<ul style="list-style-type: none"> ● Adjust school funding formula to support community engagement activities in schools ● Create a centralized system where business/industry volunteers can post their opportunities ● Provide incentives for businesses to participate ● Create statewide common language for a career connected learning continuum ● Create a common grade level definition/rubric of 21st century skills ● Mentor’s guide ● Database of career connected problems and lesson plans ● Teacher professional learning opportunities to develop and/or use career connected problems in their classroom 	<p>South King County STEM Network - Career Connection</p>

DISTANCE OR VIRTUAL INTERNSHIPS

Definition	Student Outcomes	Barriers	Policy Solutions	Location at Scale and Contact
<p>Highly structured, time-limited experience for high school students who are interested in exploring careers in situations where the worksite is not available to minors due to safety issues, laws or company policy.</p> <p>Students work with professionals that deepen/extend their classroom learning.</p>	<ul style="list-style-type: none"> • Develop foundational technical skills such as lean manufacturing or floor safety • Develop soft skills such as communication and conflict management 	<ul style="list-style-type: none"> • Paid and Unpaid? • Lack of appropriate technology and curriculum development • Project development tied to clear learning standards • Employer cost of redirecting employee time • Lack of human capital to support student access to distance or virtual internships and to support employer engagement • Lack of easy access to business and industry volunteers and job shadow sites • Lack of curricular connections to make the case that virtual internships are a valuable learning opportunity • Lack of student/family resources if virtual connections occur away from school 	<ul style="list-style-type: none"> • Adjust school funding formula to support community engagement activities in schools • Create a centralized system where business/industry volunteers can post their opportunities • Provide incentives for businesses to participate • Create statewide common language for a career connected learning continuum • Create a common grade level definition/rubric of 21st century skills • Best practices guide and tools to prepare students and business volunteers • Database of career connected problems and lesson plans • Teacher professional learning to develop and/or use career connected problems in their classroom 	<p>SW STEM Alliance - 12th grade advanced manufacturing virtual internships</p>

INSTRUCTIONAL WORKSITE LEARNING

Definition	Student Outcomes	Barriers	Policy Solutions	Location at Scale and Contact
<p>Blended learning experience that occurs at a qualified worksite outside the classroom in fulfillment of a student's educational or career plan through the coordination of a worksite-learning certified teacher. (WAC – see below)</p>		<ul style="list-style-type: none"> • No funding (teacher/coordinator salary) attached to coordination of experiences beyond school day • Lack of easy access to volunteer worksites • Requires specific certification for coordinator if CTE; requires specific professional development regardless if student receives credit • Need to develop culture with staff as to the value of experience for students • Project development tied to clear learning standards • Employer cost of redirecting employee time. We have estimated this is about \$3000 per intern to ensure that is done correctly and not have the results of the New York Times cited study. 	<ul style="list-style-type: none"> • Adjust school funding formula to support community engagement activities in schools • Create a centralized system where business/industry volunteers can post their opportunities • Provide incentives for businesses to participate • Create a common business site certification • Create statewide common language for a career connected learning continuum • Create a common grade level definition/rubric of 21st century skills • Funding for student transportation to worksite • Streamline system to offer student graduation credit for out-of-school employment or internship experiences 	

COOPERATIVE WORKSITE LEARNING

Definition	Student Outcomes	Barriers	Policy Solutions	Location at Scale and Contact
<p>Learning experience where students practice in the community the skills and knowledge learned in the classroom.</p> <p>An employer/employee relationship must exist if the work performed by the student results in a net increase in productivity or profitability for the business or organization. (WAC – see below)</p>	<ul style="list-style-type: none"> • Apply classroom and employability skills in an authentic workplace setting • Explore career pathways to determine post-secondary plans 	<ul style="list-style-type: none"> • No funding (teacher/coordinator salary) attached to coordination of experiences beyond school day • Need to develop culture with staff as to the value of experience for students • Requires coordination by certified instructor who has completed Coordination Techniques course OR (if CTE) WSL certification • Lack of easy access to volunteer worksites 	<ul style="list-style-type: none"> • Adjust school funding formula to support community engagement activities in schools • Create a centralized system where business/industry volunteers can post their opportunities • Provide incentives for businesses to participate • Create a common business site certification • Create statewide common language for a career connected learning continuum • Create a common grade level definition/rubric of 21st century skills • Best practices guide and tools to prepare students and business volunteers • Funding for student transportation to worksite • Streamline system to offer student graduation credit for out-of-school employment or internship experiences 	

EXTENDED LEARNING

Definition	Student Outcomes	Barriers	Policy Solutions	Location at Scale and Contact
<p>Learning and teaching activities related to Career and Technical Education course or program competencies that occur beyond the scheduled school day and/or school year under the supervision of a certified CTE teacher.</p>		<ul style="list-style-type: none">• Not happening at scale	<ul style="list-style-type: none">• Adjust school funding formula to support community engagement activities in schools• Create a centralized system where business/industry volunteers can post their opportunities• Provide incentives for businesses to participate• Create a common business site certification• Create statewide common language for a career connected learning continuum• Create a common grade level definition/rubric of 21st century skills• Best practices guide and tools to prepare students and business volunteers• Broaden the accepted definition to include non-CTE experiences• Funding for student transportation to worksite• Streamline system to offer student graduation credit for out-of-school employment or internship experiences	

ON-SITE INTERNSHIPS

Definition	Student Outcomes	Barriers	Policy Solutions	Location at Scale and Contact
<p>With some regularity and over some period of time, students work under the supervision of a mentor in a workplace to engage with the content and context of the mentor's professional work. This typically occurs during out-of-school time.</p> <p><i>To note: Anything credit bearing falls under the WAC whether or not the experience is affiliated with CTE programs.</i></p>		<ul style="list-style-type: none"> ● Lack of human capital and funding to support coordination ● Lack of connection to specific learning outcomes ● Only offered by specific schools (Big Picture) or school districts (Highline) ● Underrepresented students & their parents lack the network necessary to identify an internship experience ● Lack of easy access to business and industry volunteers and internship sites ● Employer cost of redirecting employee time. We have estimated this is about \$3000 per intern to ensure that is done correctly and not have the results of the New York Times cited study. ● Lack of consistency in definition and application 	<ul style="list-style-type: none"> ● Adjust school funding formula to support community engagement activities in schools ● Create a centralized system where business/industry volunteers can post their opportunities ● Provide incentives for businesses to participate ● Create a common business site certification ● Create statewide common language for a career connected learning continuum ● Create a common grade level definition/rubric of 21st century skills ● Best practices guide and tools to prepare students and business volunteers ● Funding for student transportation to worksite ● Streamline system to offer student graduation credit for out-of-school employment or internship experiences 	<p>South King County STEM Network - Career Connection</p>

TEACHER EXTERNSHIPS

Definition	Student Outcomes	Barriers	Policy Solutions	Location at Scale and Contact
<p>A unique professional development opportunity connecting the classroom to the workplace.</p> <p>Teachers spend time in a workplace to learn through direct experience about trends, skill requirements and opportunities in industries related to their academic subject area in order to enrich and strengthen their teaching and bring relevance to student learning.</p>	<ul style="list-style-type: none"> Teachers gain insight into the real-world context of their courses Teachers build content knowledge Teachers make connections with potential business/industry volunteers 	<ul style="list-style-type: none"> These need to be focused with clear learning outcomes for teachers and industry; that takes coordination and support Resources Format, structure, pay, clock hours Lack of human capital to support teacher access to externships and to support employer engagement Lack of easy access to business and industry volunteers and job shadow sites Lack of curricular connections to make the case that externships are a valuable learning opportunity; need to develop culture with staff as to value of experience for students Lack of awareness of administrators and teachers regarding how the standards can be imbedded in career contexts along with how to assess the standards including 21st century skills 	<ul style="list-style-type: none"> Adjust school funding formula to support community engagement activities in schools Create a centralized system where business/industry volunteers can post their opportunities Provide incentives for businesses to participate Create statewide common language for a career connected learning continuum Create a common grade level definition/rubric of 21st century skills Database of career connected problems and lesson plans Funding for teachers for out of school time 	<p>Washington Alliance for Better Schools</p>

To note: All experiences where students are at a worksite in an unpaid capacity without a certified staff member with (e.g. job shadows, internships) create the possibility of liability or perceived liability on the part of the educational institution, the business organization or both.

WAC 392-410-315: School districts may accept worksite learning in lieu of either required or elective high school credits if such worksite learning meets the standards under subsections (1) through (5) of this section. Comprehensive guidelines are available on the OSPI web site in the worksite learning manual.

(1) Definitions:

- (a) **"Work based learning"** means a learning experience that connects knowledge and skills obtained in the classroom to those needed outside the classroom, and comprises a range of activities and instructional strategies designed to assist students in developing or fulfilling their education plans.
- (b) **"Worksite learning"** means a learning experience that occurs at a qualified worksite outside the classroom in fulfillment of a student's educational or career plan through the coordination of a worksite learning certified teacher. Direct instruction and supervision is provided by a qualified worksite supervisor.
- (c) "Worksite learning coordinator" means a certified school district employee responsible for coordinating worksite learning experiences. For career and technical education programs, the coordinator must possess a worksite learning certificate (WAC [181-77-068](#)). For non-career and technical education programs, the coordinator must successfully demonstrate competencies related to coordination techniques as verified by a professional educator standards board approved program.
- (d) "Worksite supervisor" means a qualified adult from the worksite responsible for overseeing the worksite learning experience and acting as liaison between the worksite and school district.
- (e) "Worksite learning agreement" means a contract that specifies the terms and conditions under which the worksite learning experience shall occur. It is agreed to and signed by the school district, worksite supervisor, student, and the student's parents/guardians.
- (f) "Program orientation" means a meeting conducted by a worksite learning coordinator giving information to a worksite supervisor about the worksite learning program of the school. The orientation clarifies program objectives, establishes support systems, and delineates the responsibilities and rights of the various parties—school/district, worksite, students, and parents/guardians. The worksite learning coordinator qualifies the worksite and the worksite supervisor.
- (g) "Employee orientation" means training for the student facilitated by a worksite supervisor or designee (e.g., human resources). This is necessary for students in cooperative worksite learning and instructional worksite learning experiences. The orientation includes worksite safety procedures and practices, workers' rights and responsibilities, issues related to harassment, and employer policies, procedures and expectations. The orientation shall also include a description of the formal accident prevention program of the worksite.
- (h) **"Instructional worksite learning"** means a learning experience that takes place in the community (or school if the experience is comparable to that in a community setting) as part of a specific course content where the student performs tasks in order to gain desired skills, competencies, qualifications or industry certifications through direct instruction.
- (i) **"Cooperative worksite learning"** means a learning experience where a student practices in the community (or school if the experience is comparable to that in a community setting) the skills and knowledge learned in the classroom. An employer/employee relationship must exist if the work performed by the student results in a net increase in productivity or profitability for the business or organization.
- (j) "Qualifying class" means any high school class previously completed (successfully) or concurrently taken that directly connects the knowledge and skills learned in the class to opportunities provided by the worksite learning experience. For career and technical education funding, "qualifying classes" mean classes approved for career and technical education in the district offering worksite learning credit.



of New Jersey's competitiveness in the 21st Century global talent marketplace.

New Jersey Policy Academy

Industry Driven: High Quality Workforce and Education Partnerships

Definition and Criteria

High Quality workforce and education partnerships are employer led, and have developed a clearly defined mission and vision statement, with defined roles and responsibilities for all partners. These partnerships will drive programs and investments with current industry and workforce data, and will focus on collaborative curriculum development based on industry need.

All programs will integrate the use of career pathways, and provide both interim process measures as well as outcome measures, which will be particularly focused on industry valued credentials, employability skills, and experiential learning. It is additionally expected that programs will develop plans for sustainability beyond the life of any one funding stream.

1. **Employer Driven Partnerships** – Partnerships shall include private sector employers, and may include but are not limited to: educational institutions; nonprofit organizations or industry associations; and local or state government agencies.
2. **Clear Roles and Responsibilities** – The program shall have clearly delineated roles and responsibilities for all partner participants, including a clear coordinator, convener, or backbone organization. Participants should have a shared vision and mission around a challenge area, and a joint approach to solving it through agreed upon actions, such as may be found in a strategic plan.
3. **Employer Valued Degree or Credential** – The education and/or training provided by the program leads to skills, degrees, or credentials that create advanced opportunities for students or job seekers in high-demand fields or identifiable career pathways. Programs should use existing career pathways models, or develop new pathways models.
4. **Data Informed Strategies** – The program shall integrate quantitative and qualitative labor market or institutional data in identifying industry sector demand. This data will be shared broadly among all partner participants. The program will endeavor to provide education and/or training in a skills or credentials in-demand category as identified by the NJ Department of Labor and Workforce Development's Credential Review Board.
5. **Collaborative Curriculum** – Curriculum shall be demand based, and developed in collaboration with partnership participants. The program includes at least one of the following: career readiness; mentorship; internship, apprenticeship, or other experiential learning; and/or employability skills training.
6. **Program Effectiveness** – Program provides for measurable evaluation of the partnership which could include such tangibles as evaluation of improved skills, employment for students or job seekers, program growth, or increased funding. Additionally, the program shall lead to an industry valued degree, credential, or employment for students or job seekers. Program measures and evaluates job placement effort made by, or in collaboration with, a Partner Organization responsible for connecting students or job seekers to employment opportunities.
7. **Sustainable Plans**– The program shall have a plan for continued funding of initiative, which may include single-source or a variety of funding streams, including braided funding strategies. This should include a plan for continuing staffing and resource allocation sufficient to continue or expand the effort.



Accelerate the Pace

of New Jersey's competitiveness in the 21st Century global talent marketplace.

New Jersey to “Accelerate the Pace” for Employment

State to increase aligning workforce Education and Training programs with the needs of the 21st Century economy

TRENTON, N.J., JUNE 22, 2015 - Under the State Employment and Training Commission, leaders from state government, business and industry are transforming New Jersey's traditional workforce development system.

To *Accelerate the Pace* of New Jersey's competitiveness in the 21st Century global talent marketplace, government, academia and industry are working to increase the number of residents with an industry-valued credential or degree through employer-driven, high quality partnerships and integrated investments.

New Jersey was recently selected to participate in the National Governor's Association Policy Academy on aligning education and training systems. Through “New Jersey's Policy Academy,” the Commission in partnership with the New Jersey departments of Labor and Workforce Development and Education, and the Offices of the Secretary of Higher Education and Economic Development, are working to ensure that each citizen has access to the career information and learning opportunities needed to attain and maintain high levels of productivity and earning power.

Early successes for the New Jersey Policy Academy include the State Employment and Training Commission's creation of workforce strategies and tools focused on creating employer- driven High Quality Partnerships; launch of the statewide Employability Skills Call to Action to address the employer- reported “soft skills” crisis within the State and the execution of the first Youth Career Awareness summits in partnership with the Department of Education.

Additionally, the Department of Education, with strong support from the New Jersey Business and Industry Association, had a historic year with the passage of the Career Ready Standards by the State Board of Education. Under these policies, school boards are required to integrate career ready practices into planning and classroom teaching within the next year. Capacity building and training for local teachers and school boards, is currently underway.

As for training programs, the Department of Labor and Workforce Development's alignment of training investments in response to industry skill needs and the efforts of their statewide, industry-specific Talent Networks have been critical in building impactful employer-driven partnerships. Furthermore the Labor Department's leadership in the collaborative career awareness efforts with the Office of the Secretary of Higher Education and Department of Education have led to standardized materials for the State's key industries. The development of virtual tools, career content sharing and pipeline resource linkages as well as a formalized partnership on long term data collection and sharing are underway among the agencies.

New Jersey's Office of the Secretary of Higher Education has been instrumental in expanding the opportunity for students and job seekers eligibility of college credit for prior learning and life experiences. The pilot of NJPLAN (NJ Prior Learning Assessment Network) and has resulted in eight colleges and universities within the state adopting the framework for awarding credit to students for what they can prove they already know.

10 Indicators of a High Performing *Colorado Sector Partnership*

1. **Operates strategically and effectively.** Sector Partnership has a clear coordinator, convener, or convening team, and operates under some kind of shared, up-to-date strategic plan, action plan or road map.
2. **Is led by, and continually attracts, influential, engaged private sector leaders.** Sector partnership is led by industry, demonstrated by private sector members playing leadership roles (Chairperson, etc), and has broad industry engagement as demonstrated by industry members attending meetings, partnering on activities, providing in-kind or financial resources, or similar;
3. **Is supported by a comprehensive “regional support team” of non-employer partners, with demonstrated commitment to each other.** Sector partnership includes critical and engaged partners across programs from workforce development, economic development, education, community organizations and others;
4. **Focuses on solutions with economic impact.** Sector partnership can demonstrate that the partnership is not “just a workforce thing”, nor just an economic development, or just an education “thing”; can demonstrate priorities and actions within each of these areas that support the overall economic health of the target sector and region.
5. **Fosters continuous improvement of Colorado’s education, workforce development and economic development systems.** Sector partnership takes responsibility for sharing knowledge and products with other sector partnerships and with peers across the state that are marked improvements or best practices for their system and programs.
6. **Operates in a true labor market region.** Sector partnership defines its geographic scope based on locations of companies, commuter sheds, and other important labor market information, not per the confines of a workforce area, city, county or other geopolitical boundary. Sector partnership is not too big, and not too small, and willing to adjust its scope as it evolves.
7. **Can demonstrate action.** Sector partnership can demonstrate current activities, services or products that are a direct outcome of the partnership’s priorities and agenda.
8. **Self-promotes and markets achievements.** Sector partnership regularly shares products and outcomes with employer members, industry broadly, public program and community partners, the CWDC and CDLE, and the media. There is a built-in mechanism for self-promotion.
9. **Impacts Decision makers and related industry efforts.** Sector partnership input is considered before any decisions made related to target industry by legislators, state agencies and programs, career pathway efforts, industry associations, etc. Sector Partnerships are the “go-to” when information is needed about an industry, at regional and statewide levels.
10. **Sustains itself over time.** Sector partnership proactively seeks funding from diverse funding sources, including in-kind and staff time. Sector partnership does not die when a funding stream dries up. It continually attracts funding and resources from more than one source. It deliberately operates under a business model that blends and integrates funding streams and staff time from across public-private partners.

Policy Academy on Work-Based Learning

National Governors Association

Grant Overview



Washington was awarded a \$100,000 grant from the National Governors Association to create a policy framework to increase work-based learning for youth ages 16-29, particularly in STEM fields. (Turn the page for more details on Washington's academy goals.)



The Workforce Board was honored to be asked by Governor Inslee to lead the effort on the policy academy. The Workforce Board and the Governor's Office will co-chair the Core Team.



Increasing access to work-based learning is a longstanding initiative of the Workforce Board and its Core Team partners. The Policy Academy will work to connect young adults to middle-skill opportunities in STEM fields, including advanced manufacturing, healthcare, IT, and energy.



Timeline: This 18-month leadership program runs through June 30, 2017.



Six states were selected to participate: Indiana, Iowa, Montana, New Hampshire, Utah and Washington. These states will work together to develop individual state policies, share what they've learned, and look for federal policy reform opportunities.

State Core Team Members

- Association of Washington Business
- Department of Commerce
- Department of Social and Health Services
- Employment Security Department
- Governor's Office
- Office of Superintendent of Public Instruction
- State Board for Community and Technical Colleges
- Washington Building & Construction Trades Council
- Washington Student Achievement Council
- Workforce Training and Education Coordinating Board

Join our Home Team!

- Not a member of the state's Core Team? We still want your input! The Workforce Board is recruiting members for a Home Team that serves as an advisory board for the Core Team.
- Contact Workforce Board Legislative Director Nova Gattman at nova.gattman@wtb.wa.gov or (360) 709-4612 for more details.



Policy Academy on Work-Based Learning

National Governors Association

Washington's Policy Academy Goals

Create a state plan for an administrative and statutory policy framework that helps ensure work-based learning opportunities for all young people aged 16-29.

- Identify policy and funding roadblocks to scaling and creating work-based learning opportunities—and propose solutions.
- Place emphasis on disadvantaged, marginalized, and place-bound youth.



Design a fundable and sustainable infrastructure to expand work-based learning.

- Offer technical support for businesses to create work-based learning opportunities.
- Ensure students can access and benefit from such opportunities.
- Provide professional development for frontline staff to help students and businesses make meaningful connections.



Create a performance accountability system for work-based learning.

- Identify the metrics and create a system to evaluate the impact of investments in work-based learning.
- Develop a rubric to help practitioners assess the quality of their program designs.



Host a Governor's Summit on Youth Employment and Work-Based Learning.

- Increasing work-based learning opportunities requires stronger partnerships among stakeholders. Governor Inslee's Summit will:
 - ◇ Build a network of committed champions.
 - ◇ Gather initial feedback and encourage ongoing participation in developing a new system.
 - ◇ Provide a professional development program to establish a common knowledge base among stakeholders.



The Five Stages of Sector Partnership Industry Skill Panels

Stage One: Convene:

Bring together leaders from key sector to identify critical skill or business workforce issue and Success Indicators

Stage Two: Governance

Identify partnership members, responsibilities and commitments. How will decisions be made. Process for oversight, evaluation.

Stage Three: Strategize

Use the partnership to develop industry Skill Standards and/or other solutions. Develop program plan and tactics.

Stage Four: resource and Implement

Deploy partnership resources to implement the plan. All partners are Shareholders/investors.

Stage Five: Evaluate and Improve

Evaluate training against success Indicators; Make mid-course corrections as needed





STEM Education Innovation Alliance: Legislative Update

February 10, 2015

John Aultman, Governor's Office

Maddy Thompson, Director of Policy &
Government Relations





Recommendations and Results to Date

STEM Education Innovation Alliance 2016 Recommendations	Legislative Results
<ul style="list-style-type: none">• Fund College in the High School courses with a priority on STEM-related courses and low-income students.	<ul style="list-style-type: none">• Possible proviso
<ul style="list-style-type: none">• Increase MESA funding and expand the program to increase its outreach to underrepresented minorities and women in STEM studies	<ul style="list-style-type: none">• Community and technical college request for expansion• Included in the Governor's proposed
<ul style="list-style-type: none">• Invest in educators' endorsements in Computer Science teaching by providing professional development opportunities.	<ul style="list-style-type: none">• Various proposal related to general professional development opportunities
<ul style="list-style-type: none">• Fund the STEM Education Innovation Alliance and continue to build the STEM Talent Supply and Demand Data Dashboard.	<ul style="list-style-type: none">• Included in the Governor's proposed budget



Postsecondary Bills

Bill	Description	Status	Sponsor	Position
Affordability / Financial Aid				
HB 2955	Creating the WA free to finish college program	H Approps	Hansen	Support
HB 2820	Establishing the Washington promise program, which provides for universal and affordable access to community and technical colleges for all Washingtonians	H Approps	Pollet	Support
HB 2691	Concerning CWU's fifth year promise program	H Approps	Pollet	Monitor
State Need Grant & College Bound				
HB 2801	Expanding higher education opportunities for certain students.	Rules	Hansen	Support
HB 1236	College bound scholarship / Allowing certain school personnel to witness a student's college bound scholarship pledge if the student's parent or guardian is unavailable.	H Rules R	Ortiz-Self	Support



Postsecondary Bills

Bill	Description	Status	Sponsor	Position
Target Populations				
HB 2619	Providing postsecondary education to enhance education opportunities and public safety.	H Approps	Haler	Support
HB 2329 / SB 6161	Including certain residents who do not have a high school diploma or credential and the number of students expected to enroll in basic education for adults courses at community and technical colleges in caseload forecast council forecasting.	H Approps Ways & Means	Haler / Bailey	Support
HB 2825 / SB 6466	Concerning student services for students with disabilities	H Approps/ Ways & Means	Frame / Habib	Information
Efficiencies				
HB 2755 / SB 6409	Creating administrative efficiencies for institutions of higher education	H Approps/ Ways & Means	Zeiger / Bailey	Support
SB 6354	Adopting a higher education reverse transfer agreements	S 2 nd Reading	Lias	Monitor
SB 6626	Creating a work group on accelerated baccalaureate degree programs	Ways & Means	Bailey	Monitor



Postsecondary Bills

Bill	Description	Status	Sponsor	Position
Various				
SB 6233	Concerning freedom of expression rights of students at public schools and institutions of Higher Ed.	S Rules 2	Fain	Monitor
SB 6587	Changing provisions relating to services and activities fees at institutions of higher education	Ways & Means	Lias	Monitor
HB 2769	Creating a pilot program for community and technical colleges to offer bachelors degrees	Ways & Means	Senn	Monitor
Workforce Related				
HB 2618	Concerning port district worker development training	Rules 2	Tarleton	Monitor
HB 2675 / SB 6457	Updating workforce investment act references	H Rules R	Sells	Monitor
HCR 4415	Approving the state comprehensive plan for workforce training and education	House Higher Ed	Sells	Support
SB 6512	Requiring that a certain percentage of SNG students be pursuing degrees in STEM	S 2 nd Reading	Baumgartner	Information



Education Bills

Bill	Description	Status	Sponsor	Position
Teacher / Teacher Shortages				
HB 1737	Retired teachers / Substitutes	S EL/K12	Orcutt	Monitor
HB 1900	Defining the role of the school counselor, social worker, and psychologist.	H Rules R	Ortiz-Self	Monitor
SB 1983	Creating the TEACH pilot project of financial assistance for teachers taking basic skills and content tests for teacher certification programs.	H Approps	Pollet	Monitor
HB 2472	Improving the recruitment and retention of qualified teachers by raising salaries and strengthening teacher mentoring.	H Approps	Santos	Monitor
HB 2381	Establishing a legislative task force on school counselors, psychologists, and social workers.	Rules	Ortiz-Self	Monitor
HB 2573	Concerning the shortage of public school teachers and substitute teachers.	Rules	Santos	Monitor
SB 6097	Modifying the future teachers conditional scholarship and loan repayment program to increase the number of early elementary teachers.	Ways & Means	Ranker	Monitor
SB 6455	Expanding the professional educator workforce by increasing career opportunities in education, creating a more robust enrollment forecasting, and enhancing recruitment efforts.	Ways & Means	Dammeier	Monitor



Education Bills

Bill	Description	Status	Sponsor	Position
Assessments / Learning				
SB 1855	Waiving local graduation requirements for certain students.	S EL/K12	Calider	Monitor
SB 2214	Increasing academic rigor and streamlining assessment requirements for high school students.	S EL/K12	Reykdal	Monitor
HB 2429	Concerning the provision of assessment results to students and their parents or guardians.	H Approps	Caldier	Monitor
SB 2743	Concerning the issuance of a Washington state high school diploma.	H Rules R	Reykdal	
HB 2734	Changing high school science assessment requirements.	H Approps	McCaslin	Monitor
Budget Related / Governance				
HB 2295	Eliminating the reduction in state basic education funding that occurs in counties with federal forest lands.	H Approps.	Rossettii	Monitor
HB 2360	Eliminating the quality education council.	Rules	Lytton	Monitor
HB 2361 SB 6353	Delaying implementation of revisions to the school levy lid.	H Approps S EL/K12	Lytton McAuliffe	Monitor



Education Bills

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HB 2360	Eliminating the quality education council.	Rules	Lytton	Monitor
HB 2361 SB 6353	Delaying implementation of revisions to the school levy lid.	H Approps S EL/K12	Lytton McAuliffe	Monitor
HB 2366 SB 6195	Concerning basic education obligations.	S EL/K-12 Rules	Lytton Roach	Monitor
SB 6194	Concerning public schools that are not common schools.	Ways & Means	Litzow	Monitor
HB 2476	Concerning waivers from the one hundred eighty-day school year requirement.	H Rules R	Johnson	Monitor
HJR 4216	Eliminating OSPI	H Gen Govt	Sullivan	Monitor



Education Bills

Bill	Description	Status	Sponsor	Position
Target Populations				
SB 1541	Implementing strategies to close the educational opportunity gap, based on the recommendations of the educational opportunity gap oversight and accountability committee.	S EL/K12	Santos	Support
SB 6244	Implementing strategies to close the educational opportunity gap.	Ways & Means	Litzow	Support
HB 1682	Concerning data reported by the office of the superintendent of public instruction for homeless students.	S EL/K12	Fey	Monitor
HB1999	Coordinating services and programs for foster youth in order to improve educational outcomes.	H Approps	Carlyle	Support
HB 2409	Increasing support for special needs students	H Approps	Orwall	Monitor
SB 5065	Improving educational opportunities for homeless students through increased state-funded in-school supports, housing stability, and reporting.	Ways & Means	Frockt	Monitor
SB 6298	Enacting the homeless student stability and oppor. gap act.	Ways & Means	Frockt	Monitor
Workforce Related				
HB 2948	Creating career and college-ready lighthouse pilot project.	H Approps	Santos	Support



Session Schedule and Cutoff Dates

- January 11: First Day of Session
- February 5: Policy Committee Cutoff
- February 9: Fiscal Committee Cutoff
- February 17 (5pm): House of Origin Cutoff
- February 26: Policy Committee Cutoff (to hear bills from other House)
- February 29: Fiscal Committee Cutoff (to hear bills from other House)
- March 3 (5pm): Opposite House Cutoff
- March 10: Sine Die (Last day of Session)



Questions & Discussion

Maddy Thompson

maddyt@wsac.wa.gov

360-753-7635

K-12 education

Jobs for Washington Graduates

\$500,000 General Fund -State

Expands the program to 25 more schools, districts or consortiums from the current total of 43. Jobs for Washington Graduates is an intervention program that supports traditionally vulnerable youth (such as those in foster care, served in the juvenile justice system or who are homeless) and students struggling to stay on track to graduation. The program includes graduation coaches who assist students in applying for jobs, exploring colleges and accessing other postsecondary options.

Core-Plus

\$500,000 GF-S

Expands the program to 10 new sites each year. Core-Plus, now operating in 45 schools statewide, is a direct school-to-career program that aligns school curriculum with the skills employers need while engaging students and motivating them to graduate. Schools partner with businesses in such high-demand industries as aerospace manufacturing, maritime, construction and agricultural mechanics.

Healthiest Next Generation

\$264,000 GF-S

Continues efforts by the Office of Superintendent of Public Instruction and the departments of Health and Early Learning related to children's nutrition services, physical education and health services. The agencies coordinate effective policies and programs, and encourage school, community and family involvement through shared information and communication.

CTE course equivalencies

\$250,000 GF-S

Expands career and technical education math and science course equivalency frameworks authorized in state law. This includes developing more equivalency course frameworks, course performance

assessments and professional development for districts implementing the new frameworks. These frameworks are guides that align national and industry standards to state core content standards, performance assessments and other elements. This will expand the options students have to meet the 24-credit graduation requirement.

Language access for parents

\$201,000 GF-S

Requires OSPI to translate essential information about educational services into the major languages spoken by Washington families. This includes translating the materials developed under a 2015–17 budget proviso which requires OSPI to develop materials for families about their rights to language assistance services. Provides funding for ongoing translation needs.

Equity in student discipline

\$170,000 GF-S

Provides a program supervisor to help districts and communities implement evidence-based practices to eliminate disparities, reduce the overall use of exclusionary discipline, and maintain safe and positive school climates. OSPI is directed to work with an external advisory committee to keep track of school and community needs, offer feedback and policy recommendations, and coordinate efforts.

Higher education

MESA community college program

\$450,000 GF-S

Brings six Mathematics, Engineering, Science Achievement pilot program sites to scale. MESA improves student math outcomes, degree completion rates and educational attainment, resulting in more underrepresented students entering careers in engineering and technology. With these resources, MESA will reach 350 more community college students.

MESA pre-college program

\$250,000 GF-5

Expands the MESA pre-college program to reach 1,000 11th- and 12th-grade students in six regional centers with college readiness services to help with the critical transition to college. Maintains MESA services at the First Nations Center in Yakima Valley.

Governor's STEM Alliance

\$200,000 GF-5

Builds on progress made by the Governor's STEM Education Innovation Alliance to better align higher education programs and career training systems with the workforce needs of Washington's technology-driven economy. The alliance will continue development of a STEM talent supply-and-demand dashboard to give business leaders and regional network partners the ability to track the effects of STEM education and workforce initiatives against a common set of indicators. These funds will allow work to continue in fiscal year 2017, when a National Governors Association grant ends.

HOUSING

Department of Commerce

Affordable housing preservation, weatherization and rapid housing improvements

\$11.5 million State Building Construction Account

Preserves aging housing inventory to keep it habitable and affordable for low-income and vulnerable individuals and families, and to reduce homelessness. Cuts costs and saves energy through improvements to approximately 1,433 single-family homes and apartment buildings occupied by low-income families. Repairs private market rental units to bring them into compliance with federal and state standards, which will quickly increase access to housing for those using rental assistance programs.

FIRE RESPONSE

Department of Commerce

Public works infrastructure emergency assistance

\$5.0 million Disaster Response Account

Provides grants and loans to local governments that cannot afford to repair, replace, reconstruct or improve drinking water, sewer, stormwater and solid waste/recycling public works systems damaged in the 2015 wildfires and other disasters.

POLLUTION CLEANUP

Department of Ecology

Model toxics control programs (various)

\$25.5 million State Building Construction Account

Provides general obligation bonds in lieu of Model Toxics Control Account funds to conduct approximately 36 toxics cleanup projects statewide, including sites near the Puget Sound shoreline and in Eastern Washington, which would otherwise be delayed or terminated due to low petroleum prices that have depressed MCTA revenues. Cleanup activities are crucial in protecting public and environmental health, creating jobs and promoting economic development by allowing redevelopment of contaminated sites.

RECREATION

Recreation and Conservation Funding Board

Boating facilities program and nonhighway off-road vehicle activities

\$7.4 million Recreation Resources Account, NOVA Program Account

Develops and manages recreational opportunities for off-road vehicles, hikers, equestrians, bicyclists, hunters and other users of nonhighway roads. Grants will also be used to purchase, develop and renovate facilities for motorized recreational boating, including boat launches and ramps, transient moorage and upland boating support facilities.

HABITAT RESTORATION

Department of Fish and Wildlife

Puget Sound and nearshore restoration

\$1.0 million State Building Construction Account and General Fund-Federal

Funds design work and permits to restore marshland and estuary habitat in the Snohomish River delta. Ecosystem restoration is crucial to the sustainability of salmon, steelhead and trout that use the delta as habitat.

COMMON SCHOOL TRUST LANDS

Department of Natural Resources

Trust land transfer

\$18.8 million State Building Construction Account

The Trust Land Transfer program transfers ownership of lands held in trust for the benefit of K-12 schools when a determination is made that the lands are not income-producing and are more suitable for natural or wildlife areas, parks, recreation or open space. The timber or lease value of the transferred trust lands is granted to school districts for construction, renovation and modernization of K-12 public school facility projects. The land value of the transferred properties is then used to purchase replacement trust lands with better income potential for K-12 trust beneficiaries.

K-12

Office of Superintendent of Public Instruction

2015–17 School Construction Assistance

Program

\$3.0 million State Building Construction Account; \$31.8 million Common School Construction Account

Grants state matching funds to local school districts for construction, renovation and modernization of K-12 public school facilities. Supplemental funds reflect updated estimates of state grant obligations for the biennium.

HIGHER EDUCATION – STATE BOARD FOR COMMUNITY AND TECHNICAL COLLEGES

Edmonds Community College

Science, Engineering and Technology Building

\$36.1 million certificate of participation authorization

Funds a new, 70,000 square foot Science, Engineering and Technology building to accommodate the growth needs of the allied health, engineering, materials science, mathematics and natural sciences, construction management, occupational safety and construction trades programs.

Whatcom Community College

Learning Commons

\$32.2 million certificate of participation authorization

Funds a new, 65,000 square foot Learning Commons to provide space for academic support services, including tutoring, math and writing centers and library resources.

JUVENILE REHABILITATION

Department of Social and Health Services

Improvements to juvenile community facilities

\$1.0 million State Building Construction Account

Makes safety, security and health-related repairs in seven juvenile community facilities, including upgrades to interior security and camera systems; replacement of exterior doors and sleeping room windows, including perimeter monitoring and alarms; and other safety repairs.

Department of Social and Health Services

Program space for job skills residential program

\$700,000 State Building Construction Account

Funds modifications to an underused building to accommodate a medium-security residential program to house incarcerated youth who are learning job skills.

MENTAL HEALTH

Department of Commerce

Crisis triage centers and competitive grants

\$15.1 million State Building Construction Account

Funds competitive grants for the community behavioral health beds program and four 16-bed crisis triage centers to assess, diagnose and treat individuals experiencing an acute crisis without the use of long-term hospitalization.

Department of Social and Health Services

Improved housing for female juveniles

\$450,000 State Building Construction Account

Provides design funding to renovate an additional medium- and maximum-security housing unit at Echo Glen Children's Center for female juveniles with mental health issues, including a four-bed pod for residents with acute mental health needs.

Department of Social and Health Services

Reduced wait time for children requiring evaluations

\$450,000 State Building Construction Account

Provides design funding for a new 18-bed treatment unit at the Child Study and Treatment Center in Lakewood. This unit will reduce wait times for children requiring both civil and forensic evaluations as part of the Children's Long-term Inpatient Program.

Department of Social and Health Services

State hospital forensic ward

\$400,000 State Building Construction Account

Completes the new 30-bed forensic ward at Eastern State Hospital. This project will reduce wait times for persons confined in jails awaiting competency evaluation or competency restoration services.

REPAIRING AND PRESERVING STATE ASSETS

Department of Social and Health Services

Repairing and preserving state hospitals

\$3.6 million State Building Construction Account

Makes improvements to ensure patient and employee safety at Eastern State and Western State hospitals.

Department of Corrections, Department of Social and Health Services

McNeil Island upgrades

\$3.2 million State Building Construction Account

Completes repairs and upgrades to support the continued use of McNeil Island for the Special Commitment Center.

Department of Social and Health Services

Lakeland Village infrastructure upgrades

\$1.6 million State Building Construction Account

Improves the electrical distribution system and installs a new, code-compliant emergency power backup system for this facility, which provides 24-hour support for approximately 210 individuals with intellectual disabilities.

Eastern Washington Historical Society, Washington State Historical Society

State historical museums

\$545,000 State Building Construction Account

Replaces two failing roofs and makes exterior repairs to ensure preservation of important collections at the Spokane and Tacoma state historical museums.

K-12 Education

Approaching Critical System Failure

Our Objectives

To paint the picture of reality in Public Education today

Achieve greater alignment of the members of the STEM Alliance
to ensure better recommendations

Common Picture

Common Language for change

The Key Strategic Role of Leadership?

Decide ***Which & Why***

The what, when, who, how, etc.
are all the logistics

My favorite quote

“Pile it on until
they wiggle then
back off a notch.”

- Charlie Earl



Start with the End in Mind

What do we REALLY want as an outcome?

Collaborative, creative problem solving
with strong foundational skills

Megan Smith

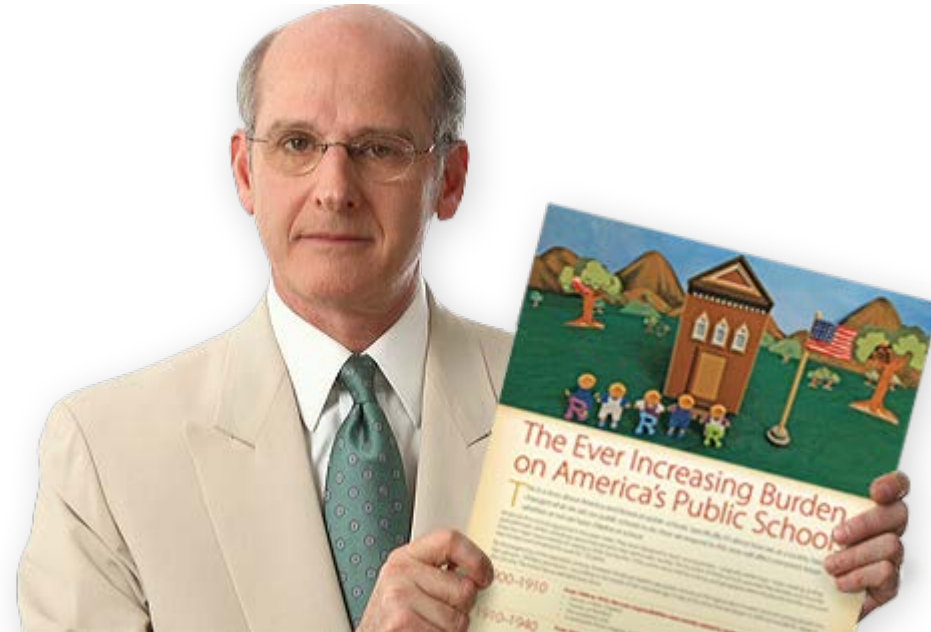
US CTO & former Google Exec.

During the White House briefing announcing \$4B for
the 'Computer Science for All Initiative'

January 30, 2016

**“We have to make sure that all of our children are
equipped to be innovators and entrepreneurs.”**

Changes in the last few decades



Based on the work of Jamie Vollmer: www.jaimievollmer.com

From 1900 – 1970

1080 Hours of Instruction to work with

All the basic education requirements PLUS we added (partial list):

- Physical Ed; organized athletics
- Domestic science / Home Ec
- Vocational Ed / industrial & ag
- Business Ed / typing, shorthand and bookkeeping
- Art and Music, speech and drama
- Career education
- Foreign Language requirements
- Sex education

From 1970 – 1980

1080 Hours of Instruction to work with

All the basic education requirements PLUS we added (partial list):

- Drug & Alcohol abuse ed
- Behavior adjustment for classrooms and communication
- Character Education
- Special education
- Environmental education
- Women's studies
- African-American heritage

From 1980 – 1990

1080 Hours of Instruction to work with

All the basic education requirements PLUS we added (partial list):

- Keyboarding & computer ed
- Global ed
- Multicultural / Ethnic ed
- ESL and Bilingual ed
- Teen pregnancy awareness
- Early Childhood Ed
- Alternative ed

Plus standardized assessments

From 1990 – 2000

1080 Hours of Instruction to work with

PLUS 24 hours of PD

All the basic education requirements PLUS we added (partial list):

- Expanded Special Ed
- Conflict resolution
- HIV / AIDS education
- Expanded computer and internet education
- Tech Prep and School to Work programs
- Talented and gifted programs

Plus new standardized assessments and increased **documentation**

From 2000 - 2010

1080 Hours of Instruction to work with

plus 24 18 hours of PD

All the basic education requirements PLUS we added (partial list):

- Dramatically changing demographics – dozens of languages in schools
- Expanded Special Ed – 504 plans explode
- No Child Left Behind reforms
- Bully prevention
- Wrap around programs
- Personal financial literacy
- Obesity prevention
- Media literacy

Plus new standardized assessments and increased **documentation**

From 2010 - 2015

1080 Hours of Instruction to work with plus ~~24~~ ~~18~~ 6 hours of PD

All the basic education requirements PLUS we added (partial list):

- Common Core and Smarter Balance
- New content in all areas and new curriculum
- All Day K
- Next Generation Science standards
- 21st Century Skills

Plus new standardized assessments and increased

documentation

This is how you boil a frog!

Assessments R Us

We LOVE Assessments

We Thrive on Data

We do assessments all the time

Formative & Summative

Objectives of Assessments

Formative:

To know how each kid is doing so teacher's can adjust

To know how the school is doing so the leaders can adjust the plan

Summative (standardized):

To know how we compare

School to school, District to district

State to state, Student to Benchmark

Testing at Highline

Out of 180 days of School, students spend
less than 20 hours on district and state
testing

(see the attached Infographic)

2016 Testing at Maltby Elementary

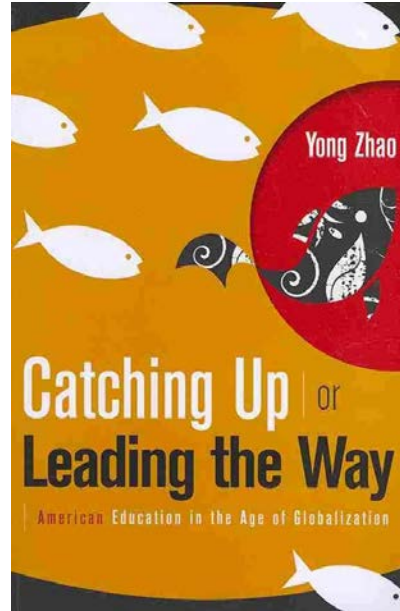
- Week of March 14 ELPA in Chromebook lab
- Week of March 21 ELA in Chromebook Lab
- Week of March 28 ELA in Chromebook Lab
- Week of April 4 ELA in Chromebook Lab
- Week of April 18 Math in Chromebook Lab
- Week of April 25 Math in Chromebook Lab
- Week of May 2 Math in Chromebook Lab
- Week of May 9 Math & Science in Chromebook Lab

Outcomes of Standardized Testing

- Can't use that computer lab for other things (library)
- Takes up time of the adults and kids
- Can't provide field trips, can't start new curriculum, can't do enrichment exercises that require all students
- Plays havoc with Special Ed
- We spend 8 weeks to get information we can't, yet, use very effectively - Never achieved alignment

Is America Falling Behind or Forgetting what makes us great?

Yong Zhao Message



- How do we define and measure success?
- Test scores or the ability to solve problems?

Reading
Writing
Math
Science
Social Studies
Social/Emotional
Health Education
Physical Education
Assessment
Art
Technology

If Time is Money...
Teachers are Broke!



How do we improve STEM Education, raise test scores, increase engagement, and relieve the stress on teachers?

ACTION STEPS

Do LESS and do it better!

Focus on Integration ~~S.T.E.M.~~ STEAM

Problem Solving

Some Actions

Time for Leadership!

- Demand full funding for McLeary
 - Focus on the goal – innovators and entrepreneurs
- Right size assessments – fewer, more targeted, soft skills
 - Limit additions to requirements – nothing new
 - Look for things to stop doing
- Find metrics that track innovation, creativity & collaboration

And it's Urgent

Indicators of a Looming System Failure

- Teacher Shortage
- Top talent retiring early
- Students and parents are revolting
- Top teachers are losing hope

One nationally acclaimed third grade teacher says it's worse than he's ever seen in 30 years – and he and his colleagues don't know how much longer they can keep doing it.

TESTING

AKA: Assessments

What are the tests my student has to take? And why?

Test results help teachers know what students are learning and who needs extra help or more challenge. State-required tests show if students are meeting learning standards.

Pre-K and Kindergarten:

Teaching Strategies Gold (TSGold) Assessment

TSGold **3x** PER YEAR for Pre-K

1x PER YEAR for Kindergarten

Grades K*-8:

K* F&P 2x per year
HBA 1x per year

<p>F&P 3x PER YEAR</p> <p>5-15 MINUTES (15-45 minutes)</p>	<p>HBA 2-3x PER YEAR</p> <p>30-60 MINUTES per subject (150-300 minutes)</p>	<p>SBA 1x PER YEAR</p> <p>3-6 HOURS per subject (8-10 hours average total)</p> <p>GRADES 3 through 8</p>	<p>MSP 1x PER YEAR</p> <p>90 MINUTES (90 minutes)</p> <p>GRADES 5 and 8 ONLY</p>
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Grades 9-12:

<p>HBA 2-3x PER YEAR</p> <p>30-60 MINUTES per subject (150-300 minutes)</p>	<p>EOC 1x PER YEAR</p> <p>120 MINUTES per subject (240 minutes)</p>	<p>SBA 1x PER YEAR</p> <p>3-6 HOURS per subject (8-10 hours average total)</p> <p>GRADES 10 and 11</p>	<p>WA</p> <p>Make-up tests as needed to meet graduation requirements</p>
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How much time does my student really spend on testing?

LET'S DO THE MATH...

$$180 \text{ SCHOOL DAYS PER YEAR} \times 6.5 \text{ HOURS PER SCHOOL DAY} = 1,170 \text{ HOURS OF SCHOOL PER YEAR}$$

Out of 1,170 school hours, a typical student spends less than 20 hours on district and state testing.

OUT OF 180 SCHOOL DAYS = Less than 20 HOURS OF TESTING

TYPES OF TESTS, WHAT THEY MEASURE, AND HOW THE RESULTS ARE USED

= STATE-REQUIRED TESTING

What is the test?
What does it measure?
How are results used?

F&P

FOUNTAS AND PINNELL (F&P)
Benchmark Assessment in Reading
Tracks reading ability and comprehension.

Students read short books and teacher tracks accuracy and fluency. The teacher asks questions to ensure the student understands the meaning of what was read.

5 minutes for new reader; up to 15 minutes for children reading lengthy text.

Helps teachers and students choose books at the correct reading level and helps us to know that students are growing as readers.

HBA

HIGHLINE BENCHMARK ASSESSMENT (HBA)
Reading: Grades 2-10
Math: Grades 1-10

Measures student mastery of skills, concepts, and standards.

Untimed, multiple choice items.
60 minutes per subject on average.

Informs teachers about specific areas of strength and need and supports personalized instruction.

TSGold

Teaching Strategies Gold
A whole-child observational assessment
Teachers observe students in six different developmental areas: social/emotional, physical, cognitive, literacy, language, and mathematics.

This provides teachers with information about each student to tailor individual instruction.

The state requires 1x per year for Kindergarten. Highline uses TSGold 3x per year for Pre-K. Highline does additional assessments to inform instruction and measure growth.

MSP

Measurements of Student Progress (MSP)
Science

Grades 5 and 8 only
(90 minutes)

Required by the state of Washington and federal government.

Demonstrates proficiency of state learning standards in English Language Arts, math, and science. HSPE and EOC assessments are used for high school graduation requirement. Retakes available until student meets standard.

Untimed, multiple-choice, short answer, and essay questions (writing).

SBA

Smarter Balanced Assessment (SBA)
English Language Arts and Math

Grades 3-8, 10, 11
(3-6 hours per subject)

EOC

End of Course (EOC)
Math and Science

Grades 10-12
(120 minutes per subject)

ADDITIONAL TESTING NOT REQUIRED FOR ALL STUDENTS

HSPE

High School Proficiency Exam (HSPE)
Reading and Writing

(90 minute per subject)
This test applies only to classes of 2015 and 2016. It will be discontinued after 2016.

ELL

Grades K-12
1x/year; February

for English Language Learners only
Proficiency in listening, reading, writing, writing conventions, and speaking in English.
Part administered in writing and part orally.
100 minutes on average.

EXAMENES

también conocidos como **Evaluaciones**

¿Cuáles son los exámenes que mi estudiante debe tomar?
¿Y Por qué?

Los resultados de los exámenes ayudan a los maestros a saber lo que los estudiantes están aprendiendo y quien necesita ayuda extra o más reto. Los exámenes requeridos por el estado demuestran si los estudiantes están alcanzando los estándares de aprendizajes.

En realidad, ¿cuánto tiempo pasa mi estudiante tomando los exámenes?

HAGAMOS LA CUENTA...

$$180 \text{ días por año escolar} \\ \times 6.5 \text{ horas por día escolar} \\ = 1,170 \text{ horas por año escolar}$$

De las 1,170 horas escolares, un estudiante típico pasa menos de 20 horas tomando exámenes del distrito y estatales.

DE LOS 180 DÍAS ESCOLARES = MENOS DE 20 HORAS DE PRUEBAS

Prescolar y Kinder:

Teaching Strategies Gold (TSGold) Evaluaciones

TSGold **3x** POR AÑO para prescolar
1x POR AÑO para kinder

Kinder*-8° grados:

K* F&P 2x por año
HBA 1x por año

F&P 3x POR AÑO 5-15 MINUTOS (15-45 minutos)	HBA 2-3x POR AÑO 30-60 MINUTOS por materia (150-300 minutos)	SBA 1x POR AÑO 3-6 HORAS por materia (promedio total de 8-10 horas)	MSP 1x POR AÑO 90 MINUTOS Ciencias SOLAMENTE 5° y 8° (90 minutos)
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9°-12° grados:

HBA 2-3x POR AÑO 30-60 MINUTOS por materia (150-300 minutos)	EOC 1x POR AÑO 120 MINUTOS por materia (240 minutos)	SBA 1x POR AÑO 3-6 HORAS por materia (promedio total de 8-10 horas)	Exámenes de recuperación, si es necesario, para cumplir con los requisitos de graduación.
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¿Cuál es el examen?
¿Que mide?
¿Cómo se usan los resultados?

TIPOS DE EXAMENES, LO QUE MIDEN Y COMO SE USAN LOS RESULTADOS

 = EXAMENES REQUERIDOS POR EL ESTADO

F&P

FOUNTAS AND PINNELL

(F&P por sus siglas en inglés)

Una evaluación de lectura, se alinea con la habilidad y comprensión en la lectura.

Los estudiantes leen libros cortos y el maestro lleva la cuenta de la precisión y fluidez. El maestro le hace preguntas al estudiante para asegurarse que entiende el significado de lo que se ha leído.

5 minutos para un nuevo lector; hasta 15 minutos para niños que leen un texto largo.

Le ayuda a los maestros y a los estudiantes escoger libros en el nivel de lectura correcto y nos ayuda a saber que los estudiantes están progresando como lectores.

HBA

HIGHLINE BENCHMARK ASSESSMENT

(HBA por sus siglas en inglés)

Lectura: 2°-10° grado
Matemáticas 1°-10° grado

Mide el dominio de las habilidades, conceptos y niveles del estudiante.

Sin límite de tiempo, opción múltiple. Un promedio de 60 minutos por materia.

Les informa a los maestros sobre las áreas específicas de fortaleza y necesidades; apoya instrucción personalizada.

TSGold

Teaching Strategies Gold

Una evaluación observacional integral del niño

Teaching Strategies Gold es una evaluación integral del niño. Los maestros observan las aptitudes de desarrollo de los estudiantes al principio del año escolar en seis diferentes áreas de desarrollo: socio-emocional, física, cognitiva, alfabetización, lenguaje, y matemáticas.

Esto les provee a los maestros información para adaptar la instrucción individual de cada estudiante.

El estado requiere 1X al año para el kinder. Highline usa TSGold 3X al año para prescolar. Highline realiza evaluaciones adicionales para guiar la instrucción y medir el progreso

MSP

Medida del progreso del estudiante (MSP)

(MSP por sus siglas en inglés)

Ciencias
Solamente el 5° y el 8° grado
(90 minutos)

Requerido por el estado de Washington y el gobierno federal

Demuestran competencia en los estándares estatales en arte de lenguaje inglés, matemáticas y ciencias. Las evaluaciones HSPE y EOC se usan para los requisitos de graduación del bachillerato. Exámenes de recuperación disponibles hasta que los estudiantes cumplan con los estándares.

Sin límite de tiempo, opción múltiple, respuestas cortas y preguntas de ensayo (escritura).

SBA

Evaluaciones Smarter Balanced (SBA por sus siglas en inglés)

Arte de lenguaje inglés y matemáticas
3°-8°, 10°, 11° grados
(90 minutos)
(3-6 horas por materia)

EOC

Examen del final de curso (EOC por sus siglas en inglés)

Matemáticas y ciencias
(120 minutos por materia)

HSPE

High School Proficiency Exam (HSPE por sus siglas en inglés)

Lectura y escritura
(90 minutos por materia)
Esta prueba aplica solamente a la clase del 2015 y 2016. Será descontinuado después del 2016.

ELL

Kinder-12° grado

1x al año; febrero

Para los estudiantes aprendices de inglés solamente, competencia en escuchar, leer, escribir y convenciones de escritura, hablar en inglés. Administrado parte por escrito y parte oralmente. Promedio de 100 minutos.



HIGHLINE
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Meeting Notes

STEM Education Innovation Alliance

December 16, 2015

Seattle Metropolitan Chamber of Commerce (Seattle, Washington)

Microsoft Event Center Room A

Welcome

Maud Daudon, *President and CEO* of the Seattle Metropolitan Chamber of Commerce, welcomed the STEM Alliance and expressed her support for a productive meeting. The group acknowledged their gratefulness to the Seattle Chamber and Maud for hosting the meeting. They commented on the lovely meeting facilities and views.

Discussion of STEM Education Report Card

Discussion led by: **Mary Kay Dugan**, *Managing Director–Education*, IMPAQ International

The first topic on the agenda was a discussion of the final draft of the STEM Education Report Card and a request to approve the text as the final version to be submitted to the Washington State Legislature. The STEM Education Report Card is due to the legislature by January 10, 2016.

The recommendations and review subcommittee – which included Violet Boyer, Jane Broom Davidson, Jeff Charbonneau, Caroline King, Marcie Maxwell, Gil Mendoza, Daryl Monear, Maddy Thompson, and Sam Whiting – worked over the last three months to articulate and extend the ideas and discussions generated at the September 17, 2015, meeting of the STEM Alliance. From a broader list of proposed activity that could advance STEM education and career training in Washington, the subcommittee narrowed it down to four key recommendations that would not overload the legislature with high-dollar requests in a non-budget year and would have the potential for substantial impact:

1. Fund College in the High School courses for more low income students in STEM-related courses.

2. Increase MESA funding and expand the program from 6 Community Colleges to 12 Community and Technical Colleges this session, then to 34 CTC's in the following biennium.
3. Invest in educators' endorsements in computer science teaching by providing professional development opportunities so that they can nurture student interest in computational thinking in preparation for post-secondary programs and good jobs in this high demand field. Our specific recommendation is to consider accelerating the path to provide computer science opportunities for all students in Washington by investing more in the computer science endorsement scholarships for educators legislated last year. Our goal is for every student to experience computer science learning as a part of his/her education. As well, we recommend that EVERY classroom in the state participate in the Hour of Code during Computer Science Education week in December.
4. Endorse the Washington Student Achievement Council's (WSAC) request to sustain the STEM Education Innovation Alliance and the STEM Talent Supply and Demand Data Dashboard.

Comments on the Draft Report Card and Recommendations

The Report Card needs to be succinct, readable and approachable while giving legislators enough data, background and information to be helpful and useable.

A question was raised about one of the metrics in the Report Card. What schools are administering the Washington Kindergarten Inventory of Developing Skills (WaKIDS) assessment and is this an appropriate metric to measure growth over time for the math standard of early learning? A member pointed out that kindergarteners at his school do not take this assessment and that WaKIDS is primarily given as a mandate for schools who receive Title I (part of the Elementary and Secondary Education Act) funds. As a result, only those schools are being documented in this data. Do those results present a representative group of kindergarteners in the State of Washington?

In response it was pointed out that WaKIDS is the state assessment for all full day kindergarteners and will be required by every full day classroom starting in school year 2017-2018. Many schools are using it now in addition to the schools receiving Title I funds. The WaKIDS assessment started being used only with the lower income schools, but, by school year 2017-2018, everyone will be taking it.

[OSPI Note: WAKIDS is a required assessment for all buildings – not just Title I. It is required for administration in the fall, by the teacher of the students. It is not required beyond that; however, it is available for and may be administered any time during the year.]

The power of the WaKIDS assessment stems from it being administered by the teacher of the student. It is an observational assessment over time, not a one-time assessment, conducted by classroom teachers, and they use the results to inform their practice. The assessment is repeated at the end of each year. This is the only assessment done in this way.

A question was raised about whether there is a general overreliance on math metrics as a driver. A major effect of this overreliance is that it may be driving us away from the experiential learning that we all know is important. Emphasizing this metric in kindergarten may pose a problem because this is a time when students should be getting their hands dirty. Only measuring math metrics may not reflect the total person.

A suggestion was made about using the existing structures in our K-12 education system that don't require additional funding but have the potential for positive impact. What about leveraging mechanisms in place for school improvement plans? Currently, OSPI requires each district to report its progress on school improvement plans. Could we require a STEM component in the school improvement plans? Is this reasonable?

[OSPI Note: All buildings are required to complete School Improvement Plans under state law. These plans should focus on needed areas for improvement based on data from multiple measures.]

Under the current system, schools ranking at the bottom 5% and 10% on state assessments have to address where their deficiencies are. If that deficiency is in mathematics, it would be a natural transition to extend that to STEM. Since all schools have to do a school improvement plan, it would not be unreasonable to include STEM in their planning. Many districts would be interested in including this as part of a school improvement plan.

[OSPI Note: OSPI identifies its Priority Schools as the bottom 5% based on all student data over 3 years in reading and math, and high schools with graduation rates less than 60%. OSPI identifies its Focus Schools based as the bottom 10% using the same criteria as above, based on subgroup performance. STEM offerings could be used as a strategy to address the identified need, as appropriate.]

Another issue is the Accountability Index used to determine currently struggling schools. It includes only a small component measuring proficiency of science which does not significantly impact a school's total score on the index. Mathematics is a big part of the current index that determines individual school success as well as reading. Improvements in mathematics and/or reading is where schools get the biggest change in the index scores; science has less impact. To correct this, we could work with OSPI and the State Board of Education as they work to revise the Accountability Index especially with the new mandates of the Every Student Succeeds Act (ESSA).

It was agreed that these ideas are well-worth pursuing but that further discussion will be needed. Not enough time is available to include these ideas in the STEM Education Report Card. We will revisit this discussion in future meetings.

A question was asked about data supporting framework indicator #4. As it stands, the measure only focuses on computer science. Could it be expanded to cover dual credit courses, like Advanced Placement (AP) Biology, Physics, and Chemistry? To expand upon this, we should work toward adding other metrics.

It was agreed that expanding these metrics should be a priority going forward, but this may have to wait. As it stands currently, the metrics are still being developed. We don't have the AP scores from The College Board yet. It was agreed that a note will be added to the STEM Education Report Card indicating that more metrics will follow.

The Alliance members present and on the phone agreed that the STEM Education Report Card content is completed and acceptable as is.

Strategies for Engaging with Legislators during the Upcoming Legislative Session

The Governor plans to release his budget at 11:00 AM, December 17, 2015. Overall, the Governor's Office has been very positive about the \$155,000 budget request and support for the STEM Alliance work going forward.

With respect to advocacy, a meeting with the Washington State Senate and House of Representatives Education committees will need to be scheduled very soon because it is a short session. It would be helpful to see who has a strong interest in the report. In addition, we should coordinate through John Aultman, as he joins the Office of the Governor, to help promote and support these priorities.

It would be best if a panel of Alliance members from the recommendations subcommittee could give a presentation of the report to the legislators. Jeff Charbonneau volunteered that he is ready and willing to present in Olympia.

[Note: Governor Jay Inslee's 2016 Proposed Supplemental Budget included \$450,000 for the MESA community college program, \$250,000 for the MESA pre-college program, and \$155,000 for the Governor's STEM Alliance. Published December 17, 2015.]

The New NGA Work-Based Learning Grant Project and its Alignment with STEM Alliance Objectives

Discussion led by: **Eleni Papadakis**, *Executive Director*, Washington State Workforce Training and Education Board

On December 1, 2015, it was announced that the Governor's Office was awarded a new \$100,000 National Governors Association Grant: *2016 Policy Academy on Scaling Work-Based Learning*. This Policy Academy will be co-chaired by Eleni Papadakis and John Aultman from the Governor's Office. The focus of this grant project will align well with the work and goals of the STEM Alliance and our current NGA grant. The activity of this grant will be centered on developing strategies to scale high-quality, work-based learning opportunities for young adults, especially disadvantaged or Opportunity Youth. The idea is to connect 16- to 29-year-olds with middle-skills career opportunities in STEM industries.

Eleni Papadakis provided a broad overview of her vision for the grant and how it will complement the work of the STEM Alliance. For this project, the Workforce Board and its Core Team partners will create a policy framework to increase work-based learning for youth ages

16-29, particularly in STEM fields. Increasing access to work-based learning is a longstanding initiative of the Workforce Board and its partners. The Policy Academy will bring together stakeholders and will work to connect young adults to middle-skill opportunities in STEM fields, including advanced manufacturing, healthcare, IT, and energy. The goal is to make work-based learning available to all students—although initially, the group will focus on ensuring that disadvantaged young people have access, as they are the least likely to get early work experience opportunities.

The work of the Workforce Board is laser-focused on employment and earnings outcomes for system customers, including our state’s businesses. Aligning the state’s education and career training system—the talent development pipeline—with workforce demand has been a primary strategy of the Board’s since its inception. The Workforce Board tracks and analyzes trends in program outcomes, employment participation rates, skills gap analyzes and other data. For nine years, the Workforce Board has been monitoring what is going on with young people in the state. Disturbingly, the labor force participation rate among young people 16-25 has been on a downward spiral for many years—even prior to the Great Recession. The statistics are worse for those without a high school diploma, students with disabilities, and students of color—but all education levels have been affected. One thing it has noticed is that even if students go through a postsecondary program, they do not necessarily become connected to the labor force in the way they want and hope to.

The Workforce Board has been looking over the years at a model that makes a difference in the success trajectory for young people - a model that includes experiential learning. Experiential learning is a huge bonus and, if it is work and career contextualized, it is even better. It makes a huge difference for the youth caught in the opportunity and achievement gap, those who are least likely to get attached to the labor market. If they start learning about the world of work and the role they can play early on (even in pre-school), they can start developing a success vision for themselves. That aids perseverance, and they are much more likely to make it through their educational programs.

The Workforce Board has been advocating for new investments in work-based learning (or “work integrated learning”) for many years. They have managed to get some pilot program money for boutique programs around the state. This has resulted in some growth in career and technical education (CTE) programs at both secondary and postsecondary levels. But it is not sustainable, and it is not growing.

When the NGA grant came along, the Workforce Board was primed and ready. They had a compelling story to tell about what they’ve been able to do in Washington and where they haven’t been successful. This Work-Based Learning Policy Academy is an opportunity to bring a lot of stakeholders together to create a framework in the state that will make work-based learning available to every student who wants and needs it. That is the focus.

The overall goal is to design a fundable and sustainable infrastructure to expand work-based learning in the state. A key feature will be to create a performance accountability system for work-based learning. People often say they are doing work-based learning, but it doesn’t have

many of the key features that make it valuable. The plan is to create a set of metrics and standards to measure this.

The State Core Team Members for this project include:

- Association of Washington Business
- Washington State Labor Council
- Department of Commerce
- Department of Social and Health Services
- Employment Security Department
- Governor's Office
- Office of Superintendent of Public Instruction
- State Board for Community and Technical Colleges
- Washington Building & Construction Trades Council
- Washington Student Achievement Council
- Workforce Training and Education Coordinating Board

The Washington State Labor Council and the Association of Washington Business (AWB) are linking arms with the Workforce Board on this project. They have been big proponents over the past years on this.

John Aultman has had a long history building highly effective industry-education partnerships as well.

It was suggested that the AWB is not the only business organization in Washington State and does not speak for all businesses. AWB has its own agenda that influences the policies and direction it follows. Eleni responded that the Policy Academy will form a subcommittee (work group) made up of the state's industry associations that will work them to include biomedical, health care labor, manufacturing labor, and recruiting professional organizations from mid-level STEM fields (the focus of this grant). They will also be working with the chamber of commerce association, economic development organizations, and rotary clubs. The Washington State Department of Commerce has committed a linkage to their industry sector leads as well.

Several members expressed enthusiastic support for this work, stressing that it is important for students. Public education is right now at super saturation. It is hard to find teachers and substitutes because the schools keeps piling on requirements. If you want to do something different that will have immediate impact on schools, put the same amount of thought and conversation into strategizing about how to engage businesses as to how you are going to engage the teachers. Scheduling a meeting with corporate executives and business managers during the school day requires the classroom teacher to have a substitute. K-12 classroom teachers will need to be actively involved in this. If you get buy in from them and you get their

perspective, then you will get something that works and will be more than just another task force or report. It will actually move the needle. In setting up an effective framework for this, both educators and representatives of industry need to be integrally involved - the classroom teachers' expertise in instruction needs to be mirrored by the expertise of industry.

As these experiences are expanded into the public schools, it will be important that people understand that ownership needs to be shared and broadened. Currently, work-based learning is understood to be contained within the smaller umbrella of CTE. The approach needs to make certain that CTE doesn't claim ownership of this and that the other educators do not believe that work-based learning belongs in CTE - and then they don't want to participate. It's about bringing this broader context to all learning, empowering all teachers to convey the connection of what they teach with life outside of academics. The work-based learning system ideally should be built so that it exists in a symbiotic relationship with P-20 education, so kids see that connection not only through their academic learning but through the outcomes.

A number of companies, such as Boeing and SkillUp Washington, have been engaged in work-based learning efforts. The Workforce Board has been working with a few companies so far along with SkillUp Washington and will contact them about this project.

The Seattle Metropolitan Chamber of Commerce and other public partners are launching an initiative to better connect the jobs of today with workers. Fifteen different companies are working on this. The most effective approach would be to assess quickly where the most extraordinary efforts are, amp those up, and determine what other efforts are underway, to develop a more coordinated strategy. The Seattle Chamber will likely have good data on this by March 2016 and have a good picture of the landscape, showing who is doing what, and will be happy to share that information.

The Workforce Board is trying to create a policy framework for the project and welcomes any help the STEM Alliance members can provide in conceptualizing what partnerships with industry should look like and developing strategies for convincing industries to come to the table.

Summary of Site Visits with National Governors Association (NGA) Work-Based Learning Policy Academy Team

Discussion led by: **Daryl Monear**, *Associate Director of Academic Affairs and Policy*, Washington Student Achievement Council

To help them in their efforts as members of the leadership team who will be coordinating the NGA's Work-Based Learning Policy Academy, NGA staff leads Brent Parton and Natalie Truong were interested in visiting some leading institutions in the state with innovative programs in work-integrated learning. Since they were planning to attend the STEM Summit on December 1 and would be in the area, Daryl Monear arranged for site visits the following day at Raisbeck Aviation High School and the Georgetown Campus of South Seattle College. Nova Gattman and

Eric Wolf, staff from the Workforce Board, joined the tour as well. So this was a great opportunity to connect with key policy specialists at NGA and also begin to see the points of convergence between the work of the STEM Alliance and the two NGA grant projects.

At Raisbeck, the tour began with the mentor breakfast, at which students connect with potential mentors in industries and occupations that they are interested in. In addition to being shown the various classrooms and labs, the group met with the director of the internship program, in which more than 50 percent of the students participate.

At the Georgetown Campus, we toured the Apprenticeship Center, which trains more than 4,000 apprentices annually in 20 different trades, including manufacturing, mechanics, construction and aerospace. Curricula are developed in collaboration with business, labor, and industry partners, with each program offering certificate options and pathways to associate degrees. The Center offers a wide range of pre-apprenticeships, in which students can earn college credit.

These were both excellent tours, which gave us the opportunity to strengthen our rapport with folks at the NGA Center for Best Practices and begin to explore the substantial overlap between our current STEM grant program and the new work-based learning grant and ways that we can leverage both projects to advance the work of the Alliance and STEM education in Washington.

Comments on the Possibility of Expanding these Educational Models to Other Institutions in the State

Career-based education programs at the community colleges are best created by the will of a group of people, so you usually don't have to wait for any one person to take the lead on this activity. South Seattle College (Georgetown campus) is the second largest community college in state in terms of career-based education. Every community college has an apprenticeship program, but the drive that makes these things take shape tends to happen only once and is seldom repeated.

Several other public schools in the state have a STEM and career-based learning focus: in addition to Raisbeck Aviation High School (Highline School District), there is Science and Math Institute (SAMI) (Tacoma Public Schools) located in Point Defiance Park, Rosalind Franklin STEM Elementary School (Pasco School District), Delta High School (Pasco School District), Project Lead the Way (Toppenish School District), and STEM Pals (Olympia School District Education Foundation). We have many progressive STEM programs and need to expand our thinking past the successes of Raisbeck Aviation High School. There are individual teachers that are doing very innovative things, using many learning styles in STEM education to see what works best in each community.

Industry-Education Partnerships Task Force

Discussion led by: **Mary Kay Dugan**, *Managing Director-Education*, IMPAQ International

With respect to the Industry-Education Partnerships Task Force, the goal for this meeting is to begin thinking about what the membership of the work group might be like and what the goals should be over the next year.

Some potential outcomes for this group might be to define the features of effective partnerships, create an asset map of existing partnerships in the state, and explore ways in which those partnerships could be leveraged, improved, and expanded for maximum impact. NGA Policy Analyst Brent Parton's handout on high quality partnerships, distributed at the December 1, 2015, meeting outlined some of the key characteristics of effective and sustainable partnerships.

The Industry-Education Partnership Task Force should rely as much as possible on information that already exists. Industry associations are good resources but more information on hiring can be gathered from actual companies.

The board at Washington STEM has a good mix of educators and employers in its composition. They have seven regional networks around the state and three more in the planning mode. A cornerstone of their work is connecting educators and employers in helping students be aware of the opportunities. A subset of these networks formed to understand barriers to growth and what approaches work best. Washington STEM would be happy to share this information.

The process of engaging with employers could be streamlined. We need to understand what features are present in high-quality partnerships. We should research best practices on this issue, develop an asset map of current partnerships, and then bring together industries statewide. We could put together a one day summit that shares with employers what high quality partnerships look like and enlist their support in moving forward. One of the key features of successful partnerships identified in Brent Parton's handout was that they are led by business. With this precept in mind, it may be easier to get business to an event that is organized by business rather than state government.

This activity could proceed in two phases. In Phase One, the task force would create an asset map and document and benchmark current thoughts about partnerships. Phase Two would be more action-oriented, bringing together educators and industry with a call to action and making an "ask."

A potential resource we could leverage in this work is the Employer-Educator Forum that will be held in Spokane in April or May 2016. Sponsored by the Washington Consortium for the Liberal Arts, the forum is entitled, "Higher Education as Collaboration: Partnering for Work, Leadership, and Life." This forum has been designed as a way for leaders from higher education institutions to engage in purposeful dialogue with local and regional employer representatives and policy

leaders about creating more intentional partnerships that give college students hands-on learning experiences that will be useful for their careers.

It would be optimal for both NGA projects to collaborate on the industry education partnerships work. It is planned to be the next focus of the NGA-STEM project, and will be a key component of the new NGA Work-Based Learning grant project. In fact, the first task on the Workforce Board's project agenda is to create an asset map of partnerships. As another key part of this project, the governor will host a work-based learning summit to advocate for this new infrastructure - to build a network of champions and wide range of stakeholders across the state. In this regard, the work of the two grant projects will dovetail perfectly, with great potential for a productive collaborative synergy.

Maud Daudon and other Alliance members asked for a recap at our next meeting regarding what's already underway in the state regarding industry education partnerships. From that, the Alliance could thoughtfully discuss and decide if there is a need for another task force or if Alliance members could be strategically plugged into existing efforts.

Alliance Activities Feedback and Plans for Next Year

A recap of what the STEM Alliance accomplished in 2015 was presented.

2015 Meetings of the STEM Education Innovation Alliance:

March 6 (Olympia) - Discussed priorities with the Governor and objectives for the Alliance, including formation of Metrics and Industry/Education Partnership workgroups.

May 6 (Seattle) – Toured Institute for Systems Biology and discussed the measures for the Dashboard and the STEM Education Report Card.

September 17 (Olympia) - Met with Governor Inslee, discussed STEM Education Report Card, brainstorming on recommendations to the legislature and formed the STEM Education Report Card recommendations subcommittee.

December 1 (Redmond) – Washington STEM Summit - Matt Steuerwalt on Governor's budget priorities, Brent Parton on the NGA grant and Industry/Education Partnerships, and a demonstration of Washington's Talent Supply and Demand Dashboard.

December 16 (Seattle) - Finalized STEM Education Report Card, began formation of Industry/Education Partnerships task force and planned for next year's activities.

Suggestions for What the Alliance Should Focus on Next Year

The Alliance should align with the work of the Workforce Board and its newly funded grant, work to expand the STEM Education Report Card in 2016, and continue the practice of holding meetings in varied locations combined with industry site visits when possible.

We need to have a more clear understanding of the real issues here. We don't currently have a combined and collective vision of the problem, which needs to be considered more broadly.

We need to take action with regard to the additional funding associated with the McCleary court decision: the STEM Alliance could share what STEM related stuff should be put into this funding and provide a list of ideas on how to advance education for kids in STEM.

The STEM Alliance should consider things happening in the public schools that are related to STEM, develop strategies for supporting these things, and make sure the public and business communities are aware of them.

The voice of those with firsthand experience in the schools was not as prominent at the Washington STEM Summit as it could have been. Glenn Malone offered to host a STEM Alliance meeting next year in Puyallup School District, giving the Alliance members a firsthand experience of what is happening in STEM in their schools.

We should also visit schools where there is a lack of resources and advanced facilities or a lack of innovation happening because of limiting circumstances. It is important to see lighthouse schools. But it is also important to see what the barriers are for those schools that are seen as not performing in STEM. We need to understand the broader issue. Greater outreach to classroom teachers, university professors and administrators is needed, so they can understand exactly what they need from us. A major issue for the state is that we are going to have a shortage of STEM teachers. What can we do to help OSPI? It would be very helpful to hold a meeting specifically designed towards figuring out what the big questions are, what the legislature needs help answering, and what our universities and K-12 partners need help answering. Rather than us coming up with questions, let's get them to ask the questions. It would help us in our efforts to get a clear picture of what is and what needs to be done in STEM education.

Jeff Charbonneau, Brian Teppner, Susan Enfield and Nancy Truitt Pierce will put together a briefing for the STEM Alliance on the realities in public education these days so all can be more informed about actions and policies to recommend. The briefing would be inclusive of all students and address what it looks like to be a STEM school. It will not be about creating a STEM school but rather fostering problem solving abilities and closing the achievement gap.

We should plan a presentation to the Legislature and schedule the next meeting around that. It is challenging for most legislators to engage in things during session that are not session related. In general, if we plan to make recommendations to the legislature, it needs to be done earlier (perhaps as early as September) to be most effective. In retrospect, it may have been better to have held the discussion we had today during the Washington STEM Summit.

We should survey the full Alliance membership to gather input about where and when they would like to meet, particularly gathering information from those that have not been showing up. We have heavy attendance from those in the education community but also need our members representing businesses.

The first meeting next year should be held at the end of January or in early February in Olympia, when we present to the Legislature.

We should plan a meeting in June as well, focused on industry-education partnerships.

Next Steps

A group of Alliance members would like to present the Alliance's recommendations to the House of Representatives Higher Education Committee. Eleni Papadakis will speak on the 2016 Policy Academy on Scaling Work-Based Learning project funded by NGA.

Meeting Attendance

Members and staff attending remotely via webinar are noted as (webinar).

Alliance Members and Alternates:

John Aultman – Office of the Governor (webinar)

Brian Bonlender – Washington State Department of Commerce

Violet Boyer - Independent Colleges of Washington

Marty Brown – State Board for Community and Technical Colleges (webinar)

Jeff Charbonneau – Zillah High School (webinar)

Maud Daudon – Seattle Metropolitan Chamber of Commerce

Caroline King – Washington STEM

Glenn Malone – Puyallup School District - Assessment, Accountability & Student Success (webinar)

Marcie Maxwell – Former State Representative

Gil Mendoza – Office of Superintendent of Public Instruction

Eleni Papadakis – Workforce Training and Education Coordinating Board

Dana Riley Black – Institute for Systems Biology - Logan Center for Education

Gene Sharratt – Washington Student Achievement Council

Brian Teppner – Bellevue School District

Nancy Truitt Pierce – Monroe Public Schools

Sam Whiting – Thrive Washington

Operations and Management Staff:

Mary Kay Dugan – IMPAQ International

Ellen Matheny – Washington Student Achievement Council

Daryl Monear – Washington Student Achievement Council

Jim Schmidt – Washington State Office of Financial Management, Educational Research Data Center (webinar)

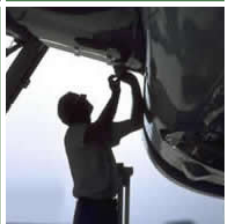
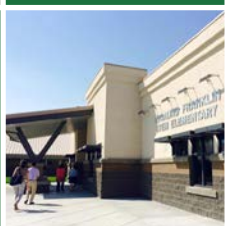
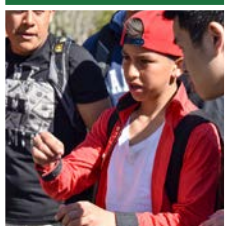
Randy Spaulding – Washington Student Achievement Council

Meeting notes compiled by Washington Student Achievement Council staff members Ellen Matheny and Daryl Monear.

STEM EDUCATION INNOVATION ALLIANCE

STEM Education Report Card

January 10, 2016



**STEM EDUCATION
INNOVATION ALLIANCE
MEMBERS**

- John Aultman**
Washington State Office of the Governor
- Brian Bonlender**
Washington State Department of Commerce
- Violet Boyer**
Independent Colleges of Washington
- Marty Brown**
State Board for Community and Technical Colleges
- Jeff Charbonneau**
Zillah High School
- Maud Daudon**
Seattle Metropolitan Chamber of Commerce
- Randy Dorn**
Office of Superintendent of Public Instruction
- Susan Enfield**
Highline School District
- Jeff Estes**
Pacific Northwest National Laboratory
- Paul Francis**
Council of Presidents
- Christine Johnson**
Community Colleges of Spokane
- Scott Keeney**
nLIGHT Corporation
- Caroline King**
Washington STEM
- Ed Lazowska**
University of Washington Computer Science & Engineering
- Glenn Malone**
Puyallup School District
- Marcie Maxwell**
Former State Representative
- Rai Nauman Mumtaz**
Student Representative
- Isabel Munoz-Colon**
City of Seattle
- Eleni Papadakis**
Workforce Training and Education Coordinating Board
- Dana Riley Black**
Institute for Systems Biology
- Gene Sharratt**
Washington Student Achievement Council
- Brad Smith**
Microsoft Corporation
- Stan Sorscher**
Society of Professional Engineering Employees in Aerospace
- Brian Teppner**
Newport Heights Elementary School
- Nancy Truitt Pierce**
Monroe Public Schools' Board of Directors
- Margaret Tudor**
Pacific Education Institute
- Joyce Walters**
Corporate Education Strategies
- Yolanda Watson Spiva**
College Success Foundation
- Sam Whiting**
Thrive Washington
- Yale Wong**
General Biodiesel

JAY INSLEE
Governor



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The Honorable Members of the Senate and House of Representatives:

On behalf of the STEM Education Innovation Alliance, I am pleased to submit to you the second annual STEM Education Report Card. The Alliance brings together some of the best minds in the State from business, industry, labor, and education to focus on STEM education and the workforce. This year the Alliance has provided valuable advice and guidance on a spectrum of educational matters that I am confident will enhance educational achievement for students in our state and prepare them for opportunities in Washington's twenty-first century, technology-based work landscape.

With Washington State's economy booming in industries that require skills ranging from basic STEM literacy to complex applications in computer science, engineering and health care, Washington State urgently needs to prepare its students to take on these great high-paying jobs. In the past year, we've seen important advances in STEM opportunities thanks, in part, to your support of programs to increase access to STEM education. Forward steps have been taken in the key areas of kindergarten readiness, new state learning standards, computer science education programs, and others. But we still have more steps to take to ensure that all of Washington's students have access to STEM educational opportunities.

The Report Card provides recommendations for improving STEM opportunities for all residents in our state. We urgently need to increase student preparation in early childhood math, continue to expand access to computer science classes, align STEM education programs with workforce needs, and ensure we are graduating enough STEM students from post-secondary degree programs to meet our state's workforce needs.

I strongly encourage the Legislature to consider moving forward on the following Alliance recommendations:

1. Fund College in the High School courses with a priority on STEM-related courses and low-income students.
2. Increase MESA funding and expand the program to increase its outreach to underrepresented minorities and women in STEM studies.
3. Invest in educators' endorsements in computer science teaching by providing professional development opportunities.
4. Fund the Washington Student Achievement Council's request to continue building and supporting the STEM Education Innovation Alliance and associated STEM Talent Supply and Demand Data Dashboard.

I have included recommendations two and four in my current budget proposal and suggest we should move forward immediately to take advantage of their potential for key impact and excellent return on investment. I anticipate a great session this year, working with you to pass legislation that allows Washington's students to seize the opportunities an education rich in STEM-related curriculum provides.

Very truly yours,

A handwritten signature in black ink, appearing to read "Jay Inslee".

Jay Inslee
Governor

EXECUTIVE SUMMARY

Washington state's economy is booming, producing great jobs that offer competitive salaries in world-class technology, aerospace, clean-energy, and biomedical companies. But there is a critical shortage of workers needed to fill these jobs, and it is most acute in the state's high demand jobs in science, technology, engineering, and math – collectively known as STEM.

In response to Washington's STEM challenge, Governor Inslee proposed the creation of the STEM Education Innovation Alliance. Formed in 2014, its members are to represent a broad range of business, labor, non-profit, and educational organizations, with the role of advising the governor on strategic planning and the formation of effective partnerships in support of STEM initiatives in the state. In addition, the STEM Education Innovation Alliance is charged with submitting a STEM Education Report Card to the Legislature each January in order to report on STEM economic and workforce trends, measure progress in improving STEM education in Washington, and communicate strategic priorities.

The following report serves as the STEM Education Innovation Alliance's second annual STEM Education Report Card to the Legislature to summarize the STEM Talent Supply and Demand Dashboard results and provide recommendations for improving STEM opportunities for all residents of our state.

STEM TALENT SUPPLY AND DEMAND DASHBOARD RESULTS:

- Raising awareness about STEM opportunities is key to STEM literacy and access to economic opportunities in our state; the good news is that knowledge of the term STEM has been growing in the last two years.
- Interest in STEM fields at early ages, an important key to increasing the number of students pursuing STEM-related fields, has increased slightly since 2010.
- Success in education, particularly in STEM subjects such as math, is affected by preparedness, especially in the early stages, but Washington has a ways to go to ensure that all students are meeting standards.
- Readiness for post-high school training and education is also key to meeting the demand for STEM-trained workers. In particular, readiness in the field of computer science is of critical importance to meeting future employer demands. Today, only about 27 districts in the state offer Advanced Placement (AP) computer science.
- Ensuring the supply of graduates from postsecondary institutions with degrees and credentials in STEM fields is critical to our state's future success. In our state, less than 20 percent of college graduates have a STEM degree.
- Aligning STEM education programs with workforce needs of key economic sectors is necessary for the growth of our economy. This includes ensuring that we have an adequate supply of STEM-trained workers in Washington to meet the demand of employers and understanding the potential gaps. Today, the answer is clear: there isn't enough supply of STEM workers to fill employer demand for these skills, and the gap is especially acute for employers seeking individuals with computer science degrees and skills.



RECOMMENDATIONS:

This report details several budget and policy recommendations that we urge you to act upon because we strongly believe they are critical to our state's economic future and build upon current successful state-wide efforts.

Important work underway, which we support, includes career and college readiness efforts such as: kindergarten readiness, Common Core State Standards, Next Generation Science Standards, Smarter Balanced assessments, dual credit/dual enrollment coursework, and computer science education programs. We believe these reforms move our state towards rigorous expectations and opportunities for all our students. Our recommendations are as follows:

1. Fund College in the High School courses with a priority on STEM-related courses and low-income students.
2. Increase the funding and expand the MESA (mathematics, engineering, science and achievement) program from six community colleges to 12 community and technical colleges (CTC) this session, then to 34 CTCs in the following biennium.
3. Invest in educators' endorsements in computer science teaching by providing professional development opportunities so they can nurture student interest in computational thinking in preparation for postsecondary programs and good jobs in this high demand field. Our specific recommendation is to consider accelerating the path to provide computer science opportunities for all students in Washington by investing more in the computer science endorsement scholarships for educators legislated last year. Our goal is for every student to experience computer science learning as a part of his/her education. As well, we recommend that EVERY classroom in the state participate in the Hour of Code during Computer Science Education week in December.
4. Endorse the Washington Student Achievement Council's (WSAC) request to sustain the STEM Education Innovation Alliance and the STEM Talent Supply and Demand Data Dashboard.

Unless much more is done to address the need for a STEM workforce, the skills gap will only increase in the years ahead. Many students will continue to leave Washington to pursue higher education elsewhere, and employers will continue to seek out-of-state and international STEM talent to fill their workforce needs. Without improvement, leading companies may be driven to locate more and more jobs outside of the state. But, with focused effort, our state could be a national leader in STEM education. Washington should seize this opportunity to lead its residents into high-paying jobs and economic prosperity in the future. Action is needed now, and the recommendations set forth in this report are critical to making progress to advance STEM education and a STEM-trained workforce in our state.



INTRODUCTION

Washington state's economy is booming, producing great jobs that offer competitive salaries in world-class technology, aerospace, clean-energy, and biomedical and natural resource based companies. But there is a critical shortage of workers needed to fill these jobs, and it is most acute in the state's most high demand jobs in science, technology, engineering, and math – collectively known as STEM.

- A 2013 joint report by the Boston Consulting Group and the Washington Roundtable calculated that, even after importing highly educated workers from out-of-state and abroad, Washington is missing out on an opportunity to fill as many as 25,000 high-skill jobs – a number that could double by 2017.
- Only nine out of 100 children born in Washington will ultimately end up as employees in a STEM-related field in the state – far fewer than the number needed to fill Washington jobs requiring STEM-related skills. The situation is worse for low-income students, who are less academically prepared for the STEM workforce than their more affluent peers. Currently, only 40 percent of high school students in Washington graduate with competency in STEM topics.¹

STEM fields hold the jobs of tomorrow – and Washingtonians need to be ready to seize them.

In response to Washington's STEM challenge, Governor Inslee proposed the creation of the STEM Education Innovation Alliance, which was approved by the Washington State Legislature in 2013 in Engrossed Second Substitute House Bill 1872 (E2SHB 1872). Its members were to represent a broad range of business, labor, non-profit, and educational organizations, with the role of advising the Governor on strategic planning and the formation of effective partnerships in support of STEM education initiatives. In addition, the STEM Education Innovation Alliance is charged with submitting a STEM Education Report Card to the Legislature each January in order to report on STEM economic and workforce trends, measure progress in improving STEM education in Washington, and communicate strategic priorities.

The following report serves as the STEM Education Innovation Alliance's second annual STEM Education Report Card to the Legislature to provide recommendations for improving STEM opportunities for all residents of our state. This report is submitted by Matt Steuerwalt, Executive Director of Policy, Office of the Governor, and Gene Sharratt, Executive Director of the Washington Student Achievement Council, on behalf of the STEM Education Innovation Alliance.

In addition to the preparation of this report, key accomplishments of the STEM Education Innovation Alliance to date are as follows:

- In March 2015, the STEM Education Innovation Alliance met with the Governor and formed a metrics sub-group committee to help in the development of state-wide STEM measures to track STEM education and workforce opportunities in the state.
- In May and August 2015, the metrics sub-group committee met to discuss and operationalize the measures that are reported in this STEM Education Report Card.
- In September 2015, the development of an on-line STEM Talent Supply and Demand Dashboard for reporting progress on state-wide STEM measures began. Completion is expected in late December 2015.
- In November 2015, the STEM Education Innovation Alliance issued four priority policy recommendations to Governor Inslee; these are detailed in the Recommendations section of this report.

¹ Boston Consulting Group, Opportunity for All: Investing in Washington States' STEM Education Pipeline, 2014

In Washington, only about 27 Districts in the state offer Advanced Placement (AP) computer science courses.

 **27 OUT OF 295**

- In December 2015, an Education and Industry partnership sub-group committee was formed to promote greater coordination of STEM activities.

Current funding to support the activities of the STEM Education Innovation Alliance is being provided by a National Governors Association (NGA) Center for Best Practices grant. This grant program supports states in planning and taking action to better align their education and training systems to meet the needs and employment opportunities in their states. Washington was one of eight states to earn a full award beginning in 2014. The two-year NGA-STEM grant provides \$170,000 in funding and other resources to advance the STEM Education Innovation Alliance agenda. Funding has been supplemented by significant in-kind contributions from WSAC, Office of Financial Management, Education Research Data Center (ERDC), and Washington STEM.

BACKGROUND

Washington sits at the top of many state rankings in the areas of innovation-related human capital and research development.² Focusing on the technology sector, we find that among a sample of states with significant technology sectors, Washington is the largest importer of technology degrees as a proportion of the population. The state has one of the highest proportions of STEM jobs in the nation.³ However, the state ranks low in the production of computer science and engineering degrees relative to job openings in those fields. And it ranks last among high-tech-intensive states in the proportion of high school graduates who go directly to college.

Washington currently cannot meet the demand for STEM talent with qualified local employees.⁴ Nationally there are two and a half times as many entry-level, STEM-related job postings as there are STEM graduates.⁵ If the education “pipeline” supplying STEM workers is not fixed in Washington, the state will not be able to preserve and expand the number of jobs in this innovative sector. Already Washington employers rely heavily on talent from other states and nations to meet demand for this dynamic sector. Without progress in this area, STEM employers may begin to look to other parts of the country for more fertile ground on which to develop their companies.

What is Holding Back Washington? Beginning in the period before kindergarten and up to the time of obtaining full-time employment, many Washingtonians fall off the track for achieving some of the state’s greatest economic opportunities. A Boston Consulting Group analysis shows that Washington loses 91 out of every 100 potential STEM employees in its workforce at some point “from cradle to career.” Many of the students who are lost in the transition do so because of a lack of academic preparedness and applied experience. Some of the key areas of concern identified in the Boston Consulting Group 2014 report are as follows:

2 STEM State-Level Analysis, Anthony P. Carnevale, Nicole Smith, and Michelle Melton, Georgetown University Center on Education and the workforce, October 2011, <https://cew.georgetown.edu/stem/states>.

3 STEM Education in Washington: The Facts of the Matter, Ed Lazowska, University of Washington, March 2013, <http://lazowska.cs.washington.edu/STEM.pdf>.

4 Washington Roundtable & The Boston Consulting Group. (2013). Great jobs within our reach: Solving the problem of Washington state’s growing job skills gap. Retrieved from <http://www.pacmtn.org/Impact/reports/documents/BCGWRTGreatJobsWithinOurStateMarch2013.pdf>. And, Washington Student Achievement Council, Washington State Board for Community and Technical Colleges, & Workforce Training and Education Coordinating Board (Forthcoming). A skilled and educated workforce. Olympia, WA: Washington Student Achievement Council.

5 <http://burning-glass.com/research/stem/>

- **Early Learning:** Nearly one-third of children are not ready for kindergarten (and even fewer are ready for math). They enter the K-12 education system at a disadvantage due to access to affordable high-quality preschool and a lack of STEM learning opportunities.
- **K-12 Education:** Of every 100 children born in Washington, only 40 will graduate high school on track for a STEM-related career. The rest will not be prepared because of poor academic performance, limited proficiency in math and science, a lack of interest in STEM subjects, and limited access to rich community-based experiences that provide the context for STEM.
- **Transition to Postsecondary Education and Training:** Only 22 of every 100 students will pursue STEM-related postsecondary education in Washington. The major factors for this sharp decline include the lack of capacity in the state’s higher education system, students’ disinterest in STEM or in attending an in-state university, and student inability to afford college and STEM training opportunities.
- **Postsecondary Education:** Of those 22 STEM-major students who do enroll in college, only 13 will graduate from a two- or four-year college with a STEM-related degree. The rest will drop out, switch majors, or fail to complete on time.
- **Career:** Finally, only nine of every 100 students born in Washington will ultimately become employees in a STEM-related field in the state. Many others will take jobs outside the state or in fields unrelated to their major, despite local demand.

Low-income students face particularly strong headwinds. Of these students, only 40 percent are ready for kindergarten at the traditional age, 25 percent are prepared for and have the opportunity to take STEM coursework in K-12, 12 percent are enrolled in STEM majors in postsecondary education, six percent graduate with STEM-related degrees, and four percent enter STEM jobs. Moreover, student aid to help low-income students is underfunded – one third of the eligible students are not funded. There is a potential to at least triple STEM graduation rates among these students by increasing access to high-quality STEM programming which would bring their achievement levels closer to those of all other students. Targeted interventions and access would have the dual effects of reducing the STEM jobs gap in Washington state and helping to break the cycle of poverty for low-income students in the state.



If Washington invests in STEM education, it could change the lives of thousands of students and fuel economic growth in our state. There is no single solution to this problem. Washington must invest in multiple strategies to improve education and training across the spectrum: early learning, K-12, postsecondary and workforce education and training, and career preparation.

STEM FRAMEWORK FOR ACTION AND ACCOUNTABILITY

To address the challenges facing our state with respect to STEM education, a statewide Framework for Action and Accountability (“the Framework”) was developed and adopted by the STEM Education Innovation Alliance.⁶ The Framework is a research-based tool developed to support greater coordination, smarter investments, and clear results. Under the Framework, the vision is for all Washingtonians to have the STEM skills necessary to live a life of opportunity and success in the state’s thriving innovation economy and democratic society. Our goal is for

⁶ A summary of the Framework for Action and Accountability can be found here: <http://www.washingtonstem.org/STEM/media/Media/STEM%20Policy/WASTEM-excSummary-final.pdf>

Washington state to lead the nation in STEM literacy for all and to create a diverse, world-class workforce. The Framework was developed to help measure and track progress towards meeting our goals.

The Framework identifies four key areas to show our progress:

- Early learning through high school students;
- Early learning through high school educators;
- Postsecondary, workforce training, and employers; and
- Aligned systems - Washington STEM stakeholders'/partners' capacity to establish and accelerate shared STEM education and workforce goals.

A critical component of the Framework is the ability to track and measure short- and long-term progress toward reaching our goals. A measurement system via a web-based STEM Talent Supply and Demand Data Dashboard is under development to help track our progress over time. The STEM Talent Supply and Demand Data Dashboard will be publically available next year.

The Framework is already being used by stakeholders promoting STEM. The Framework is expected to accelerate the impact in our state by:

- Aligning STEM efforts across the State of Washington against a common vision, shared goals, and clear indicators;
- Improving our return on investment;
- Providing for strategic planning and a measurement tool for STEM stakeholders in the state;
- Creating a common research and development agenda to test, identify, and spread promising practices; and,
- Informing policy development and implementation.

MEASURING OUR PROGRESS

Our governor has been a leader in advancing STEM education in the state. For example, recently issuing Governor Proclamations for Computer Science Week and Environmental Education Week and challenging local schools and youth serving organizations to participate in activities such as the Hour of Code. In addition, Governor Inslee is the current chair of the Education and Workforce Committee with the National Governors Association. In that role he will help shape federal policy in the areas of early childhood, K-12, and postsecondary education and workforce development. We thank the governor for his leadership and encourage continued efforts to engage with key stakeholders to communicate the importance of STEM in Washington.

In addition, we believe, through a variety of budget and policy initiatives, our state is on track to make excellent progress in STEM education and employment opportunities in the future. Important work underway which we support includes career and college readiness efforts such as: kindergarten readiness, Common Core State Standards, Next Generation Science Standards, Smarter Balanced assessments, dual credit/dual enrollment coursework, and computer science education programs. We believe these reforms move our state toward rigorous expectations and opportunities for all of our students.

We have more progress to make if we are to be successful in reaching our goals. The Framework described above and the measurement system built to track its progress (STEM Talent Supply and Demand Data Dashboard – see Appendix A for more details) allow us to present data and trends on STEM education and workforce progress in our state.

Below, we summarize our progress in key areas as well as the challenges that remain:

Raising awareness about STEM is key to STEM literacy and access to economic opportunities in our state. The good news is that knowledge of the term STEM has been growing in the last two years.

- According to a survey of Washington residents, conducted by Washington STEM in 2015, about 50 percent of Washington voters had heard of the term STEM, up from 32 percent percent in just two years.

Interest in STEM at early ages, an important key to increasing the number of students pursuing STEM-related fields, has increased slightly since 2010.

- Among Washington SAT test takers (high school-age students), about 28 percent indicated an intention to pursue a STEM major or field in 2014, up from 25 percent in 2010.

Success in education, particularly in STEM subjects such as math, is affected by preparedness, especially in the early stages. While Washington is a leader in preparing students in math and other STEM-related subjects, not all students are prepared to meet the next academic challenge. We must make progress to ensure that all students are meeting standards. ⁷

- In 2014-2015 about half (52 percent) of Washington's kindergartners met the math standard (from WaKIDS).
- In 2013-2014 about 64 percent of fifth graders met the standard on the MSP math test (WaKIDS), up from about 54 percent in 2009-2010.



of Washington voters had heard of the term STEM; up from 32% percent in just two years.

- On the newly instituted Smarter Balanced Assessment (SBA), almost half (48.1 percent) of Washington students assessed in fifth grade met the math standard in 2014-2015. While the SBA is new, the results are encouraging as Washington is ahead of other states in the percentage of students meeting standard in math. For low-income populations, however, only 31 percent of low-income children in Washington met the standard on kindergarten math readiness in 2014-2015. More needs to be done to address this disparity.

Readiness for post-high school training and education is also key to meeting the demand for STEM-trained workers. In particular, readiness in the field of computer science is of critical importance to meeting future employer demands. Today, only about 27 districts in the state offer Advanced Placement (AP) computer science. ⁸

- In 2015, 11 percent (27) of Washington School Districts (and 47 high schools within those districts) offer AP computer science. Less than 1 percent of students in the high schools where AP Computer Science is offered take the AP course and receive credit. Among those with students who took the AP test in 2014 (1,048 students), about 66 percent scored three or above.⁹ Of students participating in AP Computer Science statewide, less than 20 percent are low-income (2015).
- Females and students of color are underrepresented in STEM fields, including computer science. Of all students enrolled in AP computer science in the state, only 22 percent are female (2015). Yet, equal percentages of females and males who take the AP test score three or better on it (66 percent in 2014).

⁷ In future reports additional metrics in science achievement will be added.

⁸ In future reports additional AP metrics for science and math will be added.

⁹ For a score of 3 or above, a student may receive college credit.

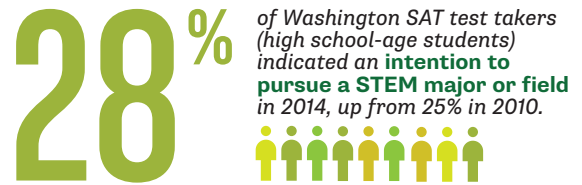
- And, there is limited access to AP course work, particularly AP Computer Science in Washington’s rural areas: AP Computer Science offerings are heavily focused in the Seattle urban area, with limited availability elsewhere in the state.

Ensuring the supply of graduates from postsecondary institutions with degrees and credentials in STEM fields is critical to our state’s future success. In our state, less than 20 percent of college graduates have a STEM degree.

- In 2013-2014 about 18 percent of graduates from postsecondary institutions graduate in a STEM field. Among those graduating in a STEM field, most are male (61 percent) and not low-income (83 percent).

Aligning STEM education programs with workforce needs of key economic sectors is necessary for the growth of our economy. This includes ensuring that we have an adequate supply of STEM-trained workers in Washington to meet the demand of employers and understanding the potential gaps. Today, the answer is clear: there isn’t enough supply of STEM workers to fill employer demand for these skills, and the gap is especially acute for employers seeking individuals with computer science degrees and skills.

- In 2015, Washington state employers advertised on average more than 30,000 STEM job postings each month. The vast majority of these jobs were in the Seattle-King County region of the state. The greatest number of STEM openings were in computer and mathematical occupations and health care. (Washington Employment Security Department).



- At the baccalaureate level, degree production in the health, computer science, engineering, and other STEM fields has increased in the last several years. Health sciences degree completions grew -- increasing by nearly 35 percent from 2007 to 2012. Degree production in the fields of engineering and related technology (27.4 percent), science and mathematics (28.4 percent), and computer science and information technology (13 percent) also grew substantially during this same time period.

Despite progress in recent years, the largest gaps between degree production and employer demand at the baccalaureate and graduate levels are in the fields of computer science and engineering. In computer science, demand exceeds the current rate of degree production by 142 percent.

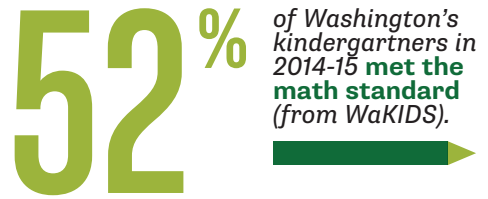
RECOMMENDATIONS

This section outlines the priority recommendations from the STEM Education Innovation Alliance for improving STEM in our state for the 2017 short legislative session. Important work underway in our state which we support includes career and college readiness efforts such as: kindergarten readiness, Common Core State Standards, Next Generation Science Standards, Smarter Balanced assessments, dual credit/dual enrollment coursework, and computer science education programs. We believe these reforms move our state towards rigorous expectations and opportunities for all of our students. Our recommendations are as follows:

1 Fund College in the High School courses with a priority on STEM-related courses and low-income students [BUDGET REQUEST: \$5M].¹⁰

¹⁰ SPI’s estimate is \$7,462,975 to fully fund the college in the high school program authorized in HB 1546 in the current year. \$2,864,000 was provided in the budget so the gap in the current year would be approximately \$5M if to fund this next year (16-17 academic year).

Students in our state need to be prepared for college-level course work in STEM fields. One mechanism for achieving this is providing for dual credit /dual enrollment coursework. Dual credit allows high school students in our state to enroll in college courses for credit prior to graduation, and the credits earned can be applied toward high school and college graduation and can be transferred to other colleges or universities. Students who complete dual credit courses are more likely to complete high school and continue on successfully to college. We support the College in the High School policy passed last year in House Bill 1546. We are aware of budget constraints, however, so if additional funding is available, we strongly support (in the following order of priority): 1) funding for dual credit for all students in the state; 2) funding for dual credit for all students in STEM-related courses; and 3) funding for students receiving free- and reduced lunch for all dual credit courses available.



2 Increase funding for the MESA program and expand it from six community colleges to 12 community and technical colleges (CTCs) this session [BUDGET REQUEST: \$1.5M], then to 34 CTCs in the following biennium [BUDGET REQUEST: \$4.3M].

The MESA program has successfully provided community college students with innovative, hands-on opportunities in mathematics, basic and applied science, and engineering in both formal and informal settings. With a STEM training focus, MESA successfully targets underrepresented minorities and women and provides this support and enrichment to at-risk and economically disadvantaged students leading to higher rates of enrollment in and completion of STEM courses and degrees. Specifically, we support increasing the amount for MESA college sites to \$125,000 (from \$58,000) and doubling MESA from six community colleges to 12 community and technical colleges this session **[BUDGET REQUEST: \$1.5M]**. In addition, we endorse the State Board of Community and Technical Colleges' request to increase the amount for MESA college sites to \$125,000 for all 34 community and technical colleges in the following biennium **[BUDGET REQUEST: \$4.3M]**.

3 Invest in educators' endorsements in computer science teaching by providing professional development opportunities so educators can nurture student interest in computational thinking in preparation for postsecondary programs and good jobs in this high demand field [BUDGET REQUEST: \$1M].

Employers in our state know that the demand for computer science graduates is at an all-time high, yet they lack the ability to fill these jobs with graduates from our state's top programs. Moreover, computer science skills and computational thinking are critical to enabling Washington state citizens to be part of a 21st century STEM capable workforce and to reach our goal of building STEM literacy for all. Meeting this demand will require investments, including exposing K-12 students to computer science and computational thinking. Our goal is for every student to experience computer science learning as a part of his/her education. As well, we recommend that EVERY classroom in the state participate in the Hour of Code during Computer Science Education week in December 2016. Previous efforts have made good progress towards this end, and we recommend building on these efforts. Recently-enacted legislation has included the following advances:

- Two years ago, schools were required to give academic credit for AP Computer Science.
- Career and Technology Education (CTE) credit equivalencies that earn students math or science credits were also implemented.
- This past session, House Bill 1813 directed development of computer science learning standards and teacher preparation.

We can build upon these successes by supporting our educators in computer science with professional development opportunities. Teachers with computer science endorsements are key to introducing our students to computer science. We advocate for funding computer science educator grants and scholarships as incentives for teacher preparatory programs in higher education to create courses for pre-service and certificated teachers to learn computer science, with targeted support for teachers who are working in schools serving low-income and underrepresented students in STEM. Our specific recommendation is to consider accelerating the path to expand computer science opportunities for all students in Washington by investing more in the computer science endorsement educator scholarships. The legislature invested \$2M in 2015-2017 with the assumption that with a 1:1 match and \$2M every biennium, all students would be reached by 2025. We recommend accelerating that path by investing an additional \$1M now in this supplemental budget.

4 Endorse the Washington Student Achievement Council's (WSAC) request to sustain the STEM Education Innovation Alliance and the STEM Talent Supply and Demand Data Dashboard [BUDGET REQUEST: \$155,000].

To date, the activities of the STEM Education Innovation Alliance and the development of the STEM Demand Data Dashboard have been supported through a National Governors Association grant and contributions from the WSAC and Washington STEM. A supplemental budget request has been submitted for \$155,000. This funding will allow the WSAC team to continue providing necessary guidance for the work of the STEM Education Innovation Alliance, workgroups, and the STEM Talent Supply and Demand Data Dashboard. The funds will support salary, benefits, and expenses for one FTE policy associate (\$115,000); and provide for Service Contract Expenses for collaborative work with Washington STEM, a nonprofit organization focused on advancing STEM education in the state, which will continue to develop and refine a STEM Demand Data Dashboard and foster the creation of robust and sustainable industry-education partnerships (\$40,000). We support WSAC's request to sustain this important work.

RECOMMENDATIONS

Unless much more is done to address the STEM education and workforce training needs, the gap in STEM-trained individuals will only increase in the years ahead. Many students will not be adequately prepared for STEM fields, and those who are prepared will continue to leave Washington to pursue higher education elsewhere. Employers will continue to seek out-of-state and international STEM talent to fill their workforce. Without improvement, leading companies may be driven to locate more and more jobs outside of the state. But, with focused effort, our state could be a national leader in STEM education. Washington should seize this opportunity to lead its residents into high-paying jobs and economic prosperity in the future. Action is needed now, and the recommendations set forth in this Benchmark Report Card are critical to making progress in our state.

Appendix A: Washington’s STEM Talent Supply and Demand Dashboard

Framework Indicator	Key Questions	Measure	Results
1 STEM awareness in Washington	Are Washington state residents aware of the term and meaning of “STEM?”	<p>[MEASURE 1] STEM Awareness</p> <p>Definition: Percentage of Washington residents indicating “yes” they have heard of the acronym STEM at the time of the survey, out of a random telephone sample of voters in Washington.</p> <p>Source: WA STEM Survey</p>	<p>Raising awareness about STEM is key to STEM literacy and access to economic opportunities in our state; the good news is that knowledge of the term STEM has been growing in the last two years.</p> <p>According to a survey of Washington state residents conducted by the Washington STEM organization, in 2015 about 50% of Washington voters had heard of the term STEM; up from 32% percent in just two years.</p>

Framework Indicator	Key Questions	Measure	Results
2 Student interest in STEM fields	Are Washington high school students interested in pursuing majors that lead to STEM careers?	<p>[MEASURE 2] Student Interest in STEM</p> <p>Definition: SAT test-takers indicating intended college major in a STEM field out of all SAT test-takers that indicated an intended college major.</p> <p>Source: College Board</p>	<p>Interest in STEM at early ages, an important key to increasing the number of students pursuing STEM-related fields, has increased slightly since 2010.</p> <p>Among Washington SAT test takers (high school-age students), about 28% indicated an intention to pursue a STEM major or field in 2014, up from 25% in 2010.</p>

Framework Indicator	Key Questions	Measure	Results
3 Student interest in STEM fields	Are Washington high school students interested in pursuing majors that lead to STEM careers?	<p>[MEASURE 3] Early Learning: Kindergarten Readiness [a]</p> <p>[MEASURE 4] K-12: Passing Grade 5 Math [b]*</p> <p>[MEASURE 5] Smarter Balanced Assessment Math (3rd – 8th and 11th grade) [c]*</p> <p>[a] Number of students meeting standard for readiness in math on WaKIDS out of the number of students assessed for readiness in math on WaKIDS.</p> <p>[b] Number of students meeting standard on the Measurements of Student Progress (MSP) for math in grade 5, out of the total number of students taking the MSP for math in grade 5, including those with “No Score.”</p> <p>Source: OSPI</p> <p>[c] Number of students meeting standard for math on Smarter Balanced Assessment for grades 3-8 in 2014-15.</p> <p>Source: OSPI</p>	<p>Success in education, particularly in STEM subjects such as math, is affected by preparedness, especially in the early stages, but Washington has a ways to go to ensure that all students are meeting standards.</p> <p>In 2014-15 about half (52%) of Washington’s kindergartners met the math standard (from WAKIDS).</p> <p>In 2013-2014 about 64% of 5th graders met the standard on the MSP math test (WaKIDS); up from about 54% in 2009-10.</p> <p>On the Smarter Balanced Assessment, a little less than half (48.1%) of Washington students assessed at 5th grade met the math standard in 2014-2015. And, at 8th grade 46.1% of students assessed met the math standard. For low-income populations, the problem is especially acute: Only 31% of low-income children met the standard on kindergarten math readiness in 2014-2015. At 5th grade, about half of low-income children met the math standard on the MSP compared to children who are not low-income (76% in 2013-2014).</p> <p>*Note: Additional metrics for K-12 in science will be added in future reports.</p>

Framework Indicator	Key Questions	Measure	Results
4 Student readiness for college-level study in STEM	How well are we preparing Washington high school students academically to pursue STEM at the postsecondary-level?	<p>[MEASURE 6] AP Computer Science:*</p> <p>Availability in Washington Districts [d]; Availability in Washington High Schools [e]; Completion [f]; Score 3 or Above [g].</p> <p>[d] Number of school districts containing a high school with students receiving credit from an AP Computer Science program, based on having at least one student receiving credit in AP Computer Science in a given year, out of the number of school districts in the state with high schools.</p> <p>[e] Number of high schools with an AP Computer Science program, based on having at least one student receiving credit in AP Computer Science in a given year, out of the number of high schools in the state.</p> <p>[f] Number of students receiving credit for AP Computer Science from OSPI Grade History.</p> <p>[g] Number of students passing with a score of 3 or higher in AP Computer Science out of the total number of students taking the AP Computer Science exam.</p> <p>Source: OSPI and College Board</p>	<p>Readiness for post-High School training and education is also key to meeting the demand for STEM-trained workers. In particular, readiness in the field of computer science is of critical importance to meeting future employer demands. Today, only about 27 Districts in the state offer Advanced Placement (AP) computer science:</p> <p>In 2015 about 11% (27) of Washington School Districts (and 47 high schools within those Districts) offer AP Computer Science. Less than 1% of students in the high schools where AP Computer science is offered take the AP course and receive credit. Among those with students who took the AP test in 2014 (1,048 students), about 66% scored 3 or above (a student may receive college credit). Of students participating in AP Computer Science state-wide, less than 20% are low-income (2015).</p> <p>Females are underrepresented in STEM fields, including computer science. Of all students enrolled in AP Computer Science in the state, only 22% are female (2015). Yet, equal percentages of females and males who take the AP test score 3 or better on it (66% in 2014).</p> <p>And, there is limited access to AP Computer Science in Washington’s rural areas: AP Computer Science offerings are heavily focused in the Seattle urban area, with limited availability elsewhere in the state.</p> <p>*Note: Additional AP metrics in STEM subjects other than computer science such as science-related AP course will be added in the future.</p>

Framework Indicator	Key Questions	Measure	Results
5 21st century skills	Have students in our state mastered the skills, knowledge, and expertise to succeed in work and life in the 21st century?	<p>21st century skills</p> <p>Under development</p>	Not available at this time

Framework Indicator	Key Questions	Measure	Results
6 PreK-12 STEM classes led by effective educators	How effective are educators/ teachers in inspiring and teaching students in STEM subjects?	<p>PreK-12 STEM classes led by effective educators</p> <p>Under development</p>	Not available at this time

Framework Indicator	Key Questions	Measure	Results
7 Teachers and school leaders with STEM-related degrees	Do our educators, teachers, and school leaders have the needed degrees and credentials to support student learning in STEM?	Teachers and school leaders with STEM-related degrees Under development	Not available at this time

Framework Indicator	Key Questions	Measure	Results
8 Graduates from postsecondary institutions with degrees in STEM fields	What is the supply of STEM graduates from post-secondary institutions?	[MEASURE 7] Postsecondary: Degree Completion [h] [h] STEM Degree completions by completion year, out of the total degree completions of all kinds by completion year. Source: PCHEES - OFM	Ensuring the supply of graduates from postsecondary institutions with degrees and credentials in STEM fields is critical to our state's future success. In our state, less than 20% of college graduates have a STEM degree: In 2013-14 about 18% of graduates from postsecondary institutions graduate in a STEM field. Among those graduating in a STEM field, most are male (61%) and not low-income (83%). Only 17% of all STEM degrees awarded are to low-income students (2013-2014) compared to 83% of students who are not low-income. Only 39% of STEM degrees awarded are to females (2013-2014) compared to 61% of males.

Framework Indicator	Key Questions	Measure	Results
9 Alignment of STEM education programs with workforce needs of key economic sectors	Do we have an adequate supply of STEM trained workers in Washington state to meet the demand of employers? If not, how large is the gap now and what is it projected to be in the future? What STEM occupations/fields are in highest demand?	[MEASURE 8] Skills Gap [i] Definition: Demand for workers in STEM occupations (growth and replacement openings) minus the supply of students expected to enter STEM selected occupations. Source: WSAC (IPEDS/ESD)	Aligning STEM education programs with workforce needs of key economic sectors is necessary for the growth of our economy. This includes ensuring that we have an adequate supply of STEM-trained workers in Washington to meet the demand of employers and understanding the potential gaps. Today, the answer is clear: there isn't enough supply of STEM workers to fill employer demand for these skills; the gap is especially acute for employers seeking individuals with computer science degrees and skills: Despite progress in recent years, the largest gaps between degree production and employer demand at the baccalaureate and graduate levels are in the fields of computer science and engineering. In computer science, demand exceeds the current rate of degree production by 146%.

Framework Indicator	Key Questions	Measure	Results
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Geographically, where are the STEM job opportunities in the state?

[MEASURE 9] WA Employment Security Department Jobs, “Gap”

[j] Definition: Difference between demand for STEM workers, given by average (across months) the Conference Board’s Help Wanted Online (HWOL) job postings, and average (across months) supply of STEM workers, given by WA Employment Security Department unemployment claimants plus WorkSource customers.*

Source: WA Employment Security Department

* Estimated number of claimants and WorkSource customers likely to work in the area based on the labor force’s commute patterns using US Census inflow/outflow data. This number subtracts the number of customers who might commute out of the area and adds the number of customers commuting in. “Demand” for an area is not the true demand: HWOL only aggregates online postings. “Supply” is an unduplicated count of current UI claimants and WorkSource customers in an area. “Gap” is the difference between Supply and Demand for a given area and occupation.

In 2015, Washington state employers advertised on average more than 30,000 STEM job postings each month. The vast majority of these jobs were in the Seattle-King County region of the state. The greatest number of STEM openings were in computer and mathematical occupations and health care. (WA Employment Security Department).

What industry sectors should be targeted in order to meet the demand for STEM workers?

[MEASURE 8] Skills Gap [i] and [MEASURE 9] ESD Jobs [j]

Definition: same as above.

At the baccalaureate level, degree production in the health, computer science, engineering, and other STEM fields has increased in the last several years. Health sciences degree completions grew -- increasing by nearly 35% from 2007 to 2012. Degree production in the fields of engineering and related technology (27.4%), science and mathematics (28.4%), and computer science and information technology (13%) also grew substantially during this same time period.

Framework Indicator	Key Questions	Measure	Results
10 State and local systems to support STEM success Collective Impact	What progress have we made collectively to enact state-wide policy change, disseminate best practices and share data, and leverage funding opportunities?	<p>State and local systems to support STEM success</p> <p>Measures (examples) to be developed in the future:</p> <p>Leveraging Funding: Evidence of increased funding and alignment of existing resources to support a common agenda and goals</p> <p>Progress: Statewide policy change/enactment; adoption of and effective implementation of evidence-based STEM policies and practices; identification and transfer of best practices across the state.</p> <p>Systems Change: Creation and alignment of statewide STEM network to improve student outcomes; shared measurement system</p> <p>Stakeholder Value: Satisfaction with progress and backbone organization</p>	Not available at this time

STEM EDUCATION INNOVATION ALLIANCE MEETING
February 10, 2016 - Washington State Capitol (Olympia)

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