STEM Education Innovation Alliance Meeting
April 28, 2016
Seattle Metropolitan Chamber of Commerce

AGENDA

12:00 PM  Working Lunch | Legislative Session Wrap-up, STEM Alliance Sustainability Update, NGA STEM Project Update
John Aultman, Office of the Governor; Maddy Thompson, Randy Spaulding, Daryl Monear
WSAC

Update: Collaboration with NGA Work-Based Learning Project
Eleni Papadakis, Workforce Training and Education Coordinating Board

Highlight key accomplishments and outline strategies going forward, including plans for collaboration with the NGA Scaling Work-Based Learning Team.

12:40 PM  Exploration of Scholarships for High Demand Career and Technical Education Degrees
Naria Santa Lucia, Executive Director, Washington State Opportunity Scholarship
Gary Rubens, Founder, Start It Labs and the Rubens Family Foundation

1:00 PM  Briefing: STEM Robotics 101 / FIRST in Class
Randy Steele, STEM Curriculum Support, Olympia School District

1:30 PM  Discussions on Key Policy Topics
Breakout Groups – Randy Spaulding

Focused discussions on key educational policy areas. Overarching themes for each topic will be educational alignment with Washington’s STEM workforce demand and planning for effective advocacy strategies. Group discussion topics:

1) Early Learning to K12 / Teachers Pipeline – Randy Spaulding
2) High School to Postsecondary Transitions – Rachelle Sharpe
3) Mid-level skills and Education – Maddy Thompson
4) Baccalaureate and Graduate Level Education – Marc Webster

A primary goal of these breakout discussions is to get an early start on defining next year’s ask to the legislature.

3:00 PM  Adjourn

NEXT STEPS
July 13 or 14, 2016 – Meeting of STEM Alliance in Seattle – The Honorable Governor Jay Inslee (invited)
## STEM Investments

### 2015-17 Biennial and 2016-17 Supplemental Budgets

<table>
<thead>
<tr>
<th>Financial Aid</th>
<th>15-17 Biennial Budget</th>
<th>16-17 Supplemental</th>
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</thead>
<tbody>
<tr>
<td>• Opportunity Scholarship (public-private partnership program): Provides $41 M to match expected private donations. (Focused on STEM and “high employer demand programs of study).</td>
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<tr>
<td>• Provides $7.65 M in new funding for health professions loan repayments (reinstatement of program administered by WSAC), and requires spending of $1.72 M in fund balance.</td>
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<tr>
<td>Note: No new funding to serve 27,000 eligible unserved students in the State Need Grant.</td>
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<tr>
<td>Note: Tuition reduced at all public institutions. $158.1 M in state funding is provided to backfill institutions for lost tuition revenue.</td>
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### Affordability and Higher Education Funding

<table>
<thead>
<tr>
<th></th>
<th>15-17 Biennial Budget</th>
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<tbody>
<tr>
<td>• Provides $2 M to expand Math, Engineering, and Science Achievement at CTCs.</td>
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<tr>
<td>• Provides $6 M for Computer Science enrollments at UW, and $1.6 M for Computer Science or engineering enrollments at WSU.</td>
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<td>• Provides $1.6 M for WATR center aerospace training.</td>
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<tr>
<td>• Provides $1.6 M for incumbent worker training to fabricate composite wings at the WA Aerospace Training and Research Center in Everett.</td>
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<tr>
<td>• $500,000 for Latino Health Ctr. At UW.</td>
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<tr>
<td>• $1.5 M to establish cyber-security program at WWU (taught at Olympic and Peninsula colleges)</td>
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<tr>
<td>• $750,000 to develop Comp. Science BS degree program at Bellevue College.</td>
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<tr>
<td>• $850,000 for Allied Health programs at Seattle Central College.</td>
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<tr>
<td>• $2 M grant program for Computer Science at OSPI, to be matched with $2 M in private funding.</td>
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<tr>
<td>• Provides $400 K for the Climate Impacts Group at UW; $1.6 M for the Washington Ocean Acidification Center at the UW.</td>
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<tr>
<td>• Medical: $2.5 M to WSU to begin accreditation of new medical school in Spokane; and $8M to UW for expanded primary care residencies; and $9M to UW to continue WWAMI medical education program.</td>
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</table>

| Note: Tuition reductions maintained. $8 million for technical corrections to tuition reduction backfill to baccalaureate institutions and SBCTC. |
| • Provides $450,000 to expand Math, Engineering, and Science Achievement at CTCs. |
| • $135,000 to WSU for a honey bee biologist position and $580,000 to WSU-Everett to develop an organic agriculture systems degree program. |
| • $580,000 to WSU-Everett to develop an organic agriculture systems degree program. |
| • Statutory authority provided for Bellevue to offer bachelors in Computer Science via (SB5298) |

Note: No new funding to serve 27,000 eligible unserved students in the State Need Grant.
<table>
<thead>
<tr>
<th>K-12 STEM Investments</th>
<th>15-17 Biennial Budget</th>
<th>16-17 Supplemental</th>
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<tbody>
<tr>
<td>$6.621 M for implementation of HB 1546 to expand Dual Credit opportunities</td>
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<tr>
<td>$500,000 for advanced Project Lead the Way courses at ten high schools. OSPI and the ERDC (research and data center at OFM) must track student participation and long-term outcome data.</td>
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<tr>
<td>$1.4 M provided to OSPI for First Robotics grants</td>
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<tr>
<td>$250,000 for (a) staff at OSPI to coordinate and promote efforts to develop integrated math, science, technology, and engineering programs in schools and districts across the state; and (b) grants of $2,500 to provide twenty middle and high school teachers each year with professional development training for implementing integrated math, science, technology, and engineering programs in their schools.</td>
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<tr>
<td>$270,000 for STEM Lighthouse Projects, consistent with RCW28A.188.090 (designated elementary, middle, and high schools serve as Lighthouse programs and provide technical assistance and advice to other schools and communities in the initial stages of creating an alternative learning environment focused on STEM).</td>
<td></td>
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<tr>
<td>$6 million for a statewide IT Academy Program, a public-private partnership to provide educational software, as well as IT certification and software training opportunities for students and staff in public schools.</td>
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<tr>
<td>$900,000 for annual start-up or expansion grants for Aerospace and Manufacturing programs at high schools and skills centers</td>
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<table>
<thead>
<tr>
<th>Capital Budget</th>
<th>15-17 Biennial Budget</th>
<th>16-17 Supplemental</th>
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<tbody>
<tr>
<td><strong>$12.5 Million in facility grants</strong> for OSPI to provide STEM pilot project grants to school districts. These grants constitute the districts' local funding for purposes of eligibility for the school construction assistance program under RCW 28A.525.166. A district must demonstrate a lack of sufficient space of science classrooms and labs to facilitate meeting statutory graduation requirements; and they must secure private donations of cash, like-kind, or equipment of no less than $100,000.</td>
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UPDATED: Washington Team Deliverables
Policy Academy on Work-Based Learning

Strategies for Achieving Policy Academy Goals

1. **Industry-Populated, Work-Based Learning Online Matching System (Lead: Cary Retlin, Commerce)**
   Create a web-based clearinghouse to match businesses who are interested in offering a work-based learning option with those students seeking the opportunity.
   - AWB and WSLC have previously committed to populating the site with industry matches; would work with their members to keep entries up-to-date.
   - The model would also link schools and youth service providers to local workforce boards, who would serve as “caretakers” of the web portal in their area.
   - Host a sponsored “hack-a-thon” – an intensive 48-72 hour competition to create models and help develop the technical specifications for an effective and secure online program.

2. **Industry Advisory Subcommittee (Lead, Amy Anderson, AWB)**
   Convene a subcommittee of the state teams to review marketing strategy, policy strategies and the proposed state plan for increasing access to work-based learning. Subcommittee should include, but is not limited to: representatives from industry associations, labor and professional organizations and Department of Commerce’s sector division. This group will be a major communications channel to industry to gather input and support as the Washington team develops new policies and practices.

3. **Learning Laboratories for Best Practices in Work-Based Learning (Lead: TBA)**
   Leverage the interest in increasing access to work-based learning opportunities by leveraging the work and resources of organizations doing this work at the ground level. Local groups would focus on the demonstration projects to show value to the system of WBL.
   - Enhance and promote best/promising practices in work-based learning for young people in STEM fields.
   - Ensure projects are structured to generate the maximum amount of data for performance accountability.
   - Highlight the ability to bring these practices to scale.

4. **Marketing and Outreach Campaign (Lead: TBA)**
   The marketing campaign, with the help of a media consultant, will inform businesses about the value of work-based learning, how to ensure compliance with state and federal laws around employing youth under age 18, and provide guidance on how to partner with schools, postsecondary institutions, and service providers in their communities to create and implement programs.
   - Create materials that describe the value proposition from each perspective.
     - Develop materials and resources for school and program staff to promote work-based learning participation to students and their families.

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**Governor’s Summit on Youth Employment and Work-Based Learning (Lead: TBA)**
The Policy Academy work will likely culminate in the Governor’s Summit.
- Governor Inslee’s Summit will serve three purposes:
  - Build a network of committed champions;
  - Gather initial input and encourage ongoing participation in development of the new system; and
  - Introduce a professional development program to establish a common knowledge base among stakeholders.
- Solicit in-kind support and sponsorship from industry and education to host this event.
Definition of Work-Based Learning (Lead: Eric Wolf, WTECB)
- Develop a definition of work-based learning that meets the unique needs of our state.
- Define what makes up a high quality program.

Performance Accountability System for Work-Based Learning (Lead: Daryl Monear, WSAC)
- Create a performance accountability framework with full participation and support from work-based learning providers and stakeholders.
- Develop a rubric to help practitioners assess the quality of their program designs. The rubric will also establish the foundation for professional development for all partners involved in work-based learning programs.

Environmental Scan of Work-Based Learning Opportunities
Mapping of current practices (Lead: Lance Wrzesinski, OSPI)
- Develop an initial catalogue of work-based learning programs operating across the state.
- Compile information on existing programs, including focus, size, employer participation, investment, connection with the education and workforce systems, outcomes, current and potential scalability/replicability, and other information relating to program quality and the extent to which they are demand-driven.

Labor market information & analysis (Lead: TBA)
- Utilize labor market data and projections to identify career pathways with substantial STEM content that have significant numbers of middle-skills jobs, and assess projected employment opportunities.
- Identify potential additional baseline indicators.

Required Reports (Lead: Nova Gattman, WTECB)
- Quarterly progress reports: Each participating state will be required to submit quarterly progress reports to the NGA Center beginning in April 2016. The progress reports will include a narrative describing the state or territory’s activities during the previous quarter and corresponding accomplishments, challenges encountered, and solutions. (Quarterly reports will be due to the NGA Center no later than April 15, 2016; July 15, 2016; October 15, 2016; January 15, 2017; and April 15, 2017. Final programmatic and financial reports will be due to the NGA Center no later than June 15, 2017.)
  - States will be asked to report on the following progress indicators:
    o Youth participation in work-based learning experiences;
    o Employer sponsorship of work-based learning opportunities;
    o The level of public (federal, state, local) funding supporting work-based learning; and
    o Business investment (wages, tuition subsidies) in work-based learning.
- Baseline data reports: Participating states and territories will submit a baseline data report on the existing scale and quality of work-based learning efforts in the state. (March, 2016)
- Assessment plan: Should be submitted to the NGA Center along with the state action plan, within a month of the spring 2016 policy academy meeting. States will implement their assessment plans throughout the policy academy and should report on results in the final project report they submit to the NGA Center.
- Final summary and lessons learned report: At the conclusion of the policy academy, participating states will be required to submit a written narrative report that summarizes the team’s accomplishments and challenges to date, demonstrates progress as measured by short and long-term indicators, and outlines future plans to sustain the work. The NGA Center will provide the team leader with a template and more detailed requirements for the report by within 90 days of the end of the policy academy.
WORK-BASED LEARNING DEFINITION

Work-based learning is a continuum of awareness, exploration, preparation and work experiences developed through strong public and private partnerships. Work-based learning participants develop, apply, and are assessed on academic, technical, trade, and entrepreneurial skills that support their future career success.
WASHINGTON STATE OPPORTUNITY SCHOLARSHIP

PRESENTATION TO GOVERNOR’S STEM ALLIANCE

GARY RUBENS, BOARD MEMBER
NARIA K. SANTA LUCIA, EXECUTIVE DIRECTOR
In 2011, Washington businesses and the State Legislature joined forces to fulfill the promise of stronger, more accessible education and career opportunities in the high-demand fields vital to our economy now and tomorrow.

WSOS contributors include Microsoft, The Boeing Company, the Rubens Family Foundation, the Ballmer Family, and taxpayers statewide.
WSOS SUBJECT INTERESTS

- Health professions and related programs
- Diverse sciences (e.g., biology, physics and chemistry)
- Engineering or engineering technologies
- Computer and information sciences and support services
- Mathematics
WSOS TODAY

• ~5,400 low- and middle-income students have received the award
• 83% renew or graduate
• ~1,200 have graduated
• 2,600 students supported today at 68 colleges statewide
• We will enroll 7,000 more in the next four years
• Record number of applicants
Support Services

- Office Hours
- Industry Exploration
- Skills that Shine
Other Big Ideas

• Opportunity Expansion Fund
• Vocational/Technical Degrees
CONTACT US

WSOS related questions:
info@waopportunityscholarship.org

Follow us online:
Founded in 2011, the Washington State Opportunity Scholarship (WSOS) increases access to STEM and health care majors for low- and middle-income students through scholarships and academic supports. Generous support from founding partners Boeing and Microsoft and ongoing private investments from individuals and organizations such as the Rubens Family Foundation drives a 100% match of funds from the state of Washington. By preparing the next generation workers for high-demand fields, WSOS will help keep our economy strong and competitive.

### ELIGIBILITY
- Resident of Washington
- Family income ≤ 125% of median
- GPA ≥ 2.75
- Eligible, high-demand STEM or health care major

### RACE/ETHNICITY
- WSOS All-Time Funded Scholars
- U.S. STEM Workers

<table>
<thead>
<tr>
<th>Race/Ethnicity</th>
<th>WSOS All-Time Funded Scholars</th>
<th>U.S. STEM Workers</th>
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</thead>
<tbody>
<tr>
<td>Black or African American</td>
<td>4%</td>
<td>2%</td>
</tr>
<tr>
<td>Hispanic/Latino of Any Race(s)</td>
<td>5%</td>
<td>6%</td>
</tr>
<tr>
<td>Asian or Pacific Islander</td>
<td>22%</td>
<td>14%</td>
</tr>
<tr>
<td>White</td>
<td>72%</td>
<td>33%</td>
</tr>
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### ANNUAL AWARD AMOUNT
- Fifth Year: $5,000
- Senior: $7,500
- Junior: $5,000
- Sophomore: $2,500
- Freshman: $2,500

**TOTAL FUNDING AVAILABLE: (PER SCHOLAR)**
$22,500

**TOTAL DOLLARS DISBURSED:** $17.4M

### FIRST GENERATION STUDENTS
- U.S. Undergraduates
- WSOS All-Time Selected Scholars

**ALL-TIME SCHOLARS FUNDED:** 4,333

**FEMALE REPRESENTATION**
- WSOS Cohort 3: 62%
- U.S. STEM Workers: 23%

### SCHOLARS FUNDED BY COHORT
- Cohort 1 (2012): 2884
- Cohort 2 (2013): 714
- Cohort 3 (2014): 735

**TOP THREE MAJOR CATEGORIES WSOS BACHELOR'S DEGREES AWARDED**
- Health Professions & Related Programs: 16%
- Biological & Biomedical Sciences: 19%
- Engineering & Engineering Technology & Related Fields: 22%

**BACHELOR'S DEGREE GRADUATES:** 996

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WSOS-specific: All data points are as of December 31, 2014, produced by the CSF R&E Team for the 2014 Legislative Report or 2015 Data Book. All-time funded Scholars include Scholars with actual disbursements as of 12/31/2014 in Cohorts 1-3.
Opportunity Knocks
Opening Doors for Washington’s Future STEM Workforce

Supporting the next generation of STEM & Health Care Leaders
THE CHALLENGE

In Washington, we are innovators: in software development, aerospace, clean technology, biotech, global health and more. We are home to one of the fastest-growing state economies, with more jobs in science, technology, engineering and math (STEM) and health care than we can fill. Yet, with rapidly rising tuition rates, college is prohibitively expensive for too many students from low- and middle-income families.

The result is costly for students and our economy.

Across Washington, we have talented young people ready to pursue their dreams of becoming engineers, computer scientists, and health care providers, but they cannot afford the staggering cost of college education. Tuition costs are rising faster in Washington than almost anywhere in the nation — an average increase of 9.5% a year* for the past decade compared to a national average of less than 4%. According to a recent report from the College Board, Washington is second only to Arizona for increasing college tuition costs since the Great Recession.

Meanwhile, our state has a critical need for graduates to fill the growing number of high-demand jobs in STEM fields.

A 2013 report by The Boston Consulting Group and The Washington Roundtable discovered 25,000 jobs in Washington unfilled due to a lack of qualified candidates — a number projected to grow to 50,000 by 2017. Approximately 80% of these unfilled jobs are in highly-skilled STEM disciplines and health care occupations. In nursing alone, the shortage is critical. A recent University of Washington study estimates that our state may be short 20,000 registered nurses by 2020.

These unfilled positions have cascading negative effects. Businesses spend valuable resources recruiting talent from out of state or overseas, or they may hire underqualified employees, which hurts productivity. Moreover, they may move jobs out of state, which reduces state tax revenue.

We have the talent here at home to meet our workforce needs, but we must make the necessary education affordable. For the health of our state economy, we cannot afford to ignore the STEM skills gap.

*Based on tuition and state-mandated fees at the most expensive Washington public universities.
In that spirit of innovation, Washington has created a novel response to this urgent workforce challenge. The Washington State Opportunity Scholarship (WSOS) is an unparalleled public-private venture that provides scholarships and support services to young low- and middle-income women and men pursuing science, technology, engineering, math (STEM) and health care degrees at Washington colleges and universities.

WSOS is the first statewide scholarship fund in the nation focused solely on making STEM degrees affordable for middle and low income students.

Founded in 2011 with bilateral support and leadership pledges from Microsoft and Boeing, our state legislature launched WSOS with HB 2088 to make Washington “the place where the world’s most productive companies find the world’s most talented people”. The bill commits the state to matching dollar for dollar all corporate and individual donations to WSOS. To date, the Opportunity Scholarship has generated more than $65 million in public and private support and awarded scholarship to 4,400 recipients.

Washington State Opportunity Scholarship is an ambitious, statewide initiative that is preparing the next generation of STEM and health care professionals for successful, high-demand careers here at home.

WHO WE SERVE

WSOS provides more scholarship dollars per student than any other state tuition grant: up to $22,500 per student over five years.

Our scholars are Washington residents with a high school diploma from a Washington high school pursuing a bachelor’s degree in an eligible, high-demand STEM or health care field from an in-state college or university.

The median family household income for WSOS applicants is $47,105. WSOS students must have a family income equal to or less than 125% of state median income (controlling for family size). This expands college financial aid to a greater group of young people since the current state need grant only reaches families with 70% of the median family income.

63% of scholarship recipients are female (13% higher than the national average of students pursuing STEM majors), and 52% are students of color (39% higher than national average). 57% are first-generation students.

In addition to scholarship dollars, students have access to 40+ hours of academic and career support annually, within and outside of the school year. As a result, WSOS scholars are completing STEM degrees and finding employment in their fields at exemplary rates:

• 90% of WSOS scholars have graduated or renewed their scholarships (compared to 43% of students who start in a STEM major and complete the degree nationally)
• Of 998 WSOS graduates to date, 69% are seeking employment, 31% attending graduate school
• Of graduates seeking employment, 65% secured a job in their field of study within six months (compared with 47% national average)

Perhaps most importantly, 90% of graduates who secured STEM-related jobs remained in Washington state.
**THE OPPORTUNITY**

Washington State Opportunity Scholarship offers an unprecedented opportunity to change the lives of low- and middle-income scholars while investing in the high-demand workforce Washington needs to thrive in the decades to come.

WSOS is uniquely positioned to:

- **Match every dollar** contributed by private sources with a dollar of state funding
- **Provide a targeted, effective solution** to filling high-demand jobs with homegrown talent
- **Make college affordable** to more young people and ensure that more women and people of color complete STEM majors and achieve their dreams.

With Microsoft’s contribution covering all administrative costs, every dollar contributed will be granted in scholarships. A donor may name an Opportunity Scholarship in a specific field of study.

There is no other state in the nation with a public-private partnership of this kind. We invite you to become part of this unparalleled investment in our state’s talent of tomorrow.

**Contact**
Naria K. Santa Lucia
**WSOS Executive Director**
nsantalucia@waopportunityscholarship.org

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**BOARD OF DIRECTORS**

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  Former CEO, Providence Health Care
STEM Robotics 101
(A Turn-Key Curriculum for New Robotics/CS Teachers
&
A Collaboration Tool for Veteran Robotics/CS Teachers)

Approachable STEM+CS for All

Collaborators:
Randy Steele
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Erin McCallum
President, Washington FIRST Robotics
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Scott Britell & Lois Delcambre
Computer Science Department
Portland State University
britell@cs.pdx.edu

Agenda
1) STEM Robotics 101 Background
2) WFR CS Education iGrant
3) FIRST in Class
4) Q&A
OSD STEM Robotics Vision

**A STEM+CS Platform:**

**Robotics as an end**
- Computer Science
- Engineering Principles
- Critical Thinking
- Teamwork/Problem Solving
- Scientific Data Logging
- Project Management

**Robotics as a means**

**Students Mastering Math/Science**
- Applied Mathematics
- Applied Science

**Students Struggling with Math/Science**
- Alternative credits

**Creator of Technology**
- Computer Science
- Robotics/System Design
- Software Engineering
- Electrical Engineering
- Mechanical Engineering

**Mission Statement**
Grow Consumers of Technology into Creators of Technology

**Full Spectrum of Students in Between**

**Elementary/Middle School**

**High School**
OSD CTE STEM Robotics Implementation

> Aligned with FIRST® Robotics continuum

**FLL (LEGO® League)**
- STEM Robotics 101 (Robo101)
  - Plastic, kit-based robots
  - Graphical software

**FTC (Tech Challenge)**
- Robo201
  - Metal, kit-based robots
  - Java-based software

**FRC (Robotics Competition)**
- Robo301 (CorePlus)
  - Custom robots
  - Java, C/C++ software

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<thead>
<tr>
<th>Middle School</th>
<th>High School</th>
<th>High School</th>
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<td>Gr. 7 &amp; 8</td>
<td>Gr. 9 &amp; 10</td>
<td>Gr. 11 &amp; 12</td>
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- Approachable
- Extendable
- Flexible

Why Robotics for CS & STEM?
- Meet **student’s** needs “where they are at”
- Meet **administrator’s** needs through multiple course models
- Meet **teacher’s** needs through robust, yet flexible, curriculum

> STEM Robotics 101 developed within Olympia SD
STEM Robotics 101: Computer Science for the Masses

Science Lessons
Technology Lessons
Math Lessons
Engineering Lessons

Curriculum Resources

Robotics Lessons

Hands-on Computer Science

Programming Software

NXT-G 2.1

EV3-G

Programming Tutorials

NXT Video Trainer 2.0

EV3 Trainer
STEM Robotics 101

Outreach

Usage Stats
2,000+ Registered Teacher-users
3,000+ Pages on Content
60+ Content Authors

2015:
- 600+ New Teacher-users
- Visits: 5,000/month
- Unique Visitors: 3,500/month

Only ~ 100 in WA
(word-of-mouth around Olympia)

Pageviews: 25,000/month
Connecting the Dots......

HB 1813 - STEM Robotics 101

Expanding CS Education
- K-12 Scope
  - Statewide teacher PD
  - Technology upgrades
  - Engage students
- Target Under-represented
  - Inspire pursuit of CS
- Sense of urgency
  - 15 months remaining
  - Immediate impact

“CS for the Masses”
- Approachable CS for pre-HS
  - PD program since 2011
  - Mature, proven technology
  - 600 FLL teams in WA
- Robotics into classrooms (CS & STEM Equity)
  - Envision CS & STEM future before high school
- 10,000’s enter HS with no exposure to CS & STEM
  - Robo101 ready to scale statewide now
Impact Classrooms Statewide

Bring the excitement of \textit{FIRST}\textsuperscript{®} into the daytime classroom to:

\begin{itemize}
  \item Enhance STEM+CS Equity around the state
  \item Reach students unable to participate in after-school programs
  \item Train/equip existing teachers to help students envision a CS & STEM career
\end{itemize}

Required Elements to Achieve Statewide Impact:

\begin{itemize}
  \item 1) Frameworks & Standards Alignment \hspace{1cm} \checkmark \hspace{1cm} \textbf{Done & Free}
    \begin{itemize}
      \item New OSPI-approved version (w. CC & NGSS) currently spotlighted here:
      \item \url{http://www.k12.wa.us/CareerTechEd/clusters/STEM.aspx}
    \end{itemize}
  \item 2) STEM Robotics 101 Curriculum \hspace{1cm} \checkmark \hspace{1cm} \textbf{Done & Free}
    \begin{itemize}
      \item Free, standards-based, customizable curriculum resources
    \end{itemize}
  \item 3) Statewide Professional Development \hspace{1cm} \checkmark \hspace{1cm} \textbf{Phase 1 underway}
    \begin{itemize}
      \item PD clock hours OPSI-approved as new STEM Clock Hours for certification
    \end{itemize}
  \item 4) Start Up Cost Support at Disadvantaged Schools \hspace{1cm} \textit{FIRST in Class}
    \begin{itemize}
      \item Need Private/Public Partnership for matching grant program
      \item \textbf{Direct & Immediate classroom impact}
    \end{itemize}
\end{itemize}
Our Answer to 1813: STEM Robotics 101 PD Proposal – Impact Additional 18-20,000 students/year

- **Phase 1 (6/30/16)**
  - STEM Robotics 101 Intro PD for **100+** teachers statewide
    - 8 two-day sessions, 6 sites around the state
    - Subsidies for highly under-represented schools (Tier 1 & 2)

- **Phase 2 (6/30/17)**
  - STEM Robotics 101 Intro PD for **250+** teachers statewide
    - 18 two-day Intro sessions, 9+ sites around state
  - STEM Robotics 101 Advanced Topics/Coaching statewide (**300+** teachers)
    - 16 one-day Advanced sessions, 9+ sites around state
    - Lesson Bounty Program – harness creativity of teachers statewide

**Status**

- Phase 1 Funded & PD Underway
  - **117** applicants (**84%** qualified from highly under-represented schools)
  - Adding bonus session for non-public school applicants (Tier 4)
- Phase 2 RFP: New proposal due May 16 >> **Funding Cap Reduced 80%**
- Need remaining **private match** & “FIRST in Class” partners by **May 9**
STEM Robotics 101 PD Effectiveness

Pre & Post PD Survey of Participating Teachers  (Vancouver, April 2016)

- **New** STEM Robotics Teachers
  - Teach CS & STEM thru Robotics
  - Master Robot Hardware/Software
  - Equipped w. Curriculum Resources
  - Meet Student Needs & School Goals

- **Veteran** Robotics Teachers
  - Teach CS & STEM thru Robotics
  - Master Robot Hardware/Software
  - Equipped w. Curriculum Resources
  - Meet Student Needs & School Goals
New Teacher Voices (from PD Evaluations, Vancouver, April 2016)

- Eric T., Leavenworth
  - Pre-PD comments:
    “I have no training in STEM or Robotics and look forward to gaining new knowledge.”
  - Post-PD comments:
    “After two days..... I understand a scope and sequence that lead students in computational thinking, the scientific process and the engineering process. I feel comfortable with the STEM Robotics 101 curriculum ......”

- Victoria W., Kalama
  - Pre-PD comments:
    “I know nothing, but I am super excited to learn!.”
  - Post-PD comments:
    “I am very excited to begin working with these robots. They will be very useful in my STEM focused classroom next year.”
Veteran Teacher Voices  (from PD Evaluations, Vancouver, April 2016)

- Sherri L., Battle Ground
  - Post-PD comments:
    “Now I understand how to move through the curriculum and customize the lessons to meet my students needs.”

- Kristy S., La Center
  - Post-PD comments:
    “This has been one of the most informative workshops that I've been to in a long time. I appreciate all the resources and knowledge that we have been given.”

- Chris S., Kalama
  - Post-PD comments:
    “Fantastic PD. I'm psyched.”
FIRST in Class: STEM+CS Equity in WA

If You share our:

- Sense of Urgency
  - 10,000’s students enter high school with no STEM+CS exposure
- Passion for STEM+CS Equity Statewide
  - Need statewide solution: proven, scalable, approachable & customizable
- Desire that Private STEM+CS Support Directly Impacts the Classroom
  - Direct & Immediate impact through a trained & equipped teacher

...then, please partner with us for FIRST in Class by:

1. Spreading awareness of STEM Robotics 101 PD opportunity (www.firstwa.org)
2. Becoming a STEM Robotic 101 PD Phase 2 Private Match Partner (5/9/16)
3. Sponsoring a start-up cost matching grant for a STEM Robotics 101 classroom at disadvantaged/highly under-represented school

Join us at: FIRSTinClass@firstwa.org
Appendices
Washington FIRST Robotics is:

- 11,239 young people who
- Make up 975 teams that
- Are supported by 5,120 adult mentors and coaches and
- 1,324 event volunteers
FIRST Metrics: Young people are more interested in STEM

- Science: 65% More Interested, 33% Just as Interested, 2% Less Interested
- Technology: 73% More Interested, 24% Just as Interested, 3% Less Interested
- Engineering: 78% More Interested, 21% Just as Interested, 1% Less Interested
- Math: 39% More Interested, 56% Just as Interested, 5% Less Interested
- STEM Careers: 59% More Interested, 38% Just as Interested, 3% Less Interested
**FIRST Metrics: Females and Males more interested in STEM**

![Chart showing interest levels in various STEM fields for females and males.]

- **Females**
  - Science: 51% More Interested, 47% Just as Interested, 2% Less Interested
  - Technology: 77% More Interested, 23% Just as Interested, 0% Less Interested
  - Engineering: 81% More Interested, 18% Just as Interested, 1% Less Interested
  - Math: 31% More Interested, 65% Just as Interested, 4% Less Interested
  - STEM Careers: 66% More Interested, 33% Just as Interested, 1% Less Interested

- **Males**
  - Science: 39% More Interested, 61% Just as Interested, 0% Less Interested
  - Technology: 66% More Interested, 28% Just as Interested, 6% Less Interested
  - Engineering: 62% More Interested, 37% Just as Interested, 1% Less Interested
  - Math: 19% More Interested, 80% Just as Interested, 1% Less Interested
  - STEM Careers: 43% More Interested, 57% Just as Interested, 0% Less Interested

Legend:
- Green: More Interested
- Orange: Just as Interested
- Light Green: Less Interested
Discussion Questions: Key Policy Topics

What are your STEM policy and budget priorities for the next legislative session?
   a. Early Learning to K-12 / Teacher pipeline (Indicators: 1, 2, 3, 4, 6, 7)
   b. High School to postsecondary transitions (Indicators: 2, 3, 4, 5)
   c. Mid-level skills and education (Indicators: 5, 9)
   d. Baccalaureate and graduate level education (Indicators: 8, 9)

Using your 2015 STEM Alliance recommendations and the Dashboard Framework as a springboard...
   a. What should be further enhanced (from current investments)?
   b. What recommendations need further development? and
   c. What is missing?
CEOs, governors, and educators unite behind computer science education
Supporters back cause with $48 million in private contributions

Washington, DC—Today, America’s leading CEOs, governors, and educators united to send an open letter to Congress, asking for funding to provide every student in every school the opportunity to learn computer science. The signatories include Fortune 100 CEOs across industries, including the nation’s largest technology companies, retailers, telecom firms, airlines, investment companies, entertainment companies, hotels, and manufacturers. They are joined by 27 governors from both sides of the aisle, as well as K-12 education leaders from the nation’s largest school districts and leading education nonprofits.

Supporters of the effort also announced $48 million in new private contributions to show their commitment to increased access to computer science:

- Microsoft, Google, Infosys Foundation USA, BlackRock, AT&T, Mark Zuckerberg and Priscilla Chan, Jeff Bezos, Omidyar Network, and others have collectively pledged $23M in contributions to Code.org.
- Google has committed an additional $10M in new funding towards computer science education efforts, to be spent in 2017.
- Microsoft has committed $10M in new funding for broadening access to K-12 computer science.
- Infosys Foundation USA has committed to issue $5M in new grants towards nonprofits and other efforts to advance computer science education.

Today, 11% of all job openings and 16% of all new wages in the U.S. are in computing fields. And aside from the jobs, Americans broadly realize that computer science is increasingly foundational to all 21st century careers.

“Ninety percent of parents want their children to have access to computer science education at school, and teachers agree,” the letter states. “Despite this groundswell, three-quarters of U.S. schools do not offer meaningful computer science courses. This bipartisan issue can be addressed without growing the Federal budget.”
While many states have been proactive in their efforts to boost computer science education in K-12 classrooms, the letter calls for a federal investment in computer science to ensure America remains globally competitive, secure, and prosperous in the future.

The full text of the letter and its signatories can be read here. The letter was organized by the Computer Science Education Coalition in partnership with Code.org. The coalition urges Congress to provide $250 million in Federal funding for school districts to broaden access to computer science. The organizers are collecting additional signatures of support on an online petition at www.change.org/computerscience.

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The Computer Science Education Coalition is a non-profit organization comprised of businesses and NGOs focused on securing federal funds that will provide computer science education to all K-12 students. More information about the Computer Science Education Coalition is available at http://www.csecoalition.org.

Code.org® is a non-profit dedicated to expanding access to computer science, and increasing participation by women and underrepresented students of color. More information about Code.org is available at http://www.code.org/about.
Every student in America should have this opportunity.

Dear Members of Congress and fellow Americans,

As business leaders, elected officials, and educators, we join forces to deliver a bipartisan message about opportunity and the American Dream. Technology is transforming society at an unprecedented rate. Whether it’s smartphones or social networks, self-driving cars or personalized medicine, new technologies change the very fabric of our everyday lives.

And participating in this world requires access to computer science in our schools. We ask you to provide funding for every student in every school to have an opportunity to learn computer science.

Support for this idea is sweeping our nation. Ninety percent of parents want their children to have access to computer science education at school, and teachers agree. They know that technology opens doors. A hundred thousand teachers have taken courses on their own hands and already begun teaching computer science. Over 100 school districts are rolling out courses from New York to Chicago, Los Angeles, from Miami to Las Vegas. Twenty states have passed policies and are now looking to support professional training for new computer science teachers. Private donors have collectively committed tens of millions of dollars to solving this problem, including $48 million of new commitments announced today by many of the undersigned.

Despite this groundswell, three-quarters of U.S. schools do not offer meaningful computer science courses. At a time when every industry in every state is impacted by advances in computer technology, our schools should give all students the opportunity to understand how this technology works, to learn how to be creators, coders, and makers — not just consumers. Instead, what is increasingly a basic skill is only available to the lucky few, leaving most students behind, particularly students of color and girls.

How is this acceptable? America leads the world in technology. We invented the personal computer, the Internet, e-commerce, social networking, and the smartphone. This is our chance to position the next generation to participate in the new American Dream.

Not only does computer science provide every student foundational knowledge, it also leads to the highest-paying, fastest-growing jobs in the U.S. economy. There are currently over 500,000 open computing jobs, in every sector, from manufacturing to banking, from agriculture to healthcare, but only 50,000 computer science graduates a year. Whether a student aspires to be a software engineer, or if she just wants a well-rounded education in today's changing world, access to computer science in school is an economic imperative for our nation to remain competitive. And with the growing threat of cyber warfare, this is even a critical matter of national security. Despite this growing need, targeted federal funding to carry out these efforts in classrooms is virtually non-existent. This bipartisan issue can be addressed without growing the federal budget.

We urge you to amplify and accelerate the local efforts in classrooms, unlock opportunity in every state, and give an answer to all the parents and teachers who believe that every student, in every school, should have a chance to learn computer science.

Join us to sign your name in support: www.Change.org/computerscience

Organized by Code.org and the Computer Science Education Coalition, for our children. Affiliations listed for identification only.

Business leaders
Arne Sorenson CEO, Marriott
Barry Diller Chairman, IAC and Expedia
Bill and Melinda Gates CEO, Microsoft
Bobby Kotick CEO, Activision Blizzard
Brad Smith President, Microsoft
Brian Chesky CEO, Airbnb
Brian Cornell Chairman and CEO, Target
Daniel Schulman CEO, PayPal, Chairman, Square
Dara Khosrowshahi CEO, Expedia
Dennis Wood Chief, Expedia
Doug McMillon CEO, Walmart
Doug Parker Chairman and CEO, American Airlines
Edward Broadman Chairman and CEO, DuPont
Eric Schmidt Executive Chairman, Alphabet, Inc.
Ginni Rometty Chairman and CEO, IBM
Grant Grant Verstandig CEO, Rally Health
Kerry Hill President, Allen & Company
Jack Dorsey CEO, Twitter and Square
James Murdoch Chairman, 21st Century Fox
James P. Gorman Chairman and CEO, Morgan Stanley
Jeff Bezos Chairman and CEO, Amazon
Jessica Alba CEO, The Honest Company
Joe Lonsdale Partner, IVC, Founder, Palantir
John Battle Chairman and CEO, Newco
John Donahoe Chairman, PayPal
Julie Sweet Chief Executive, Accenture North America
Larry Ellison
Larry Fink Chairman and CEO, BlackRock
Lowell McAdam Chairman and CEO, Verizon
Marc Benioff Chairman and CEO, Salesforce
Mark Cuban Owner, Dallas Mavericks, Magazine-Pictures, Landscape Photographs
Mark Zuckerberg Chairman and CEO, Facebook
Rami Rahim CEO, Juniper Networks
Randall Stephenson Chairman and CEO, AT&T
Reid Hoffman Chairman, LinkedIn
Rich Barton Chairman, Zillow
Richard Anderson CEO, Delta Airlines
Robert A. Iger Chairman, CEO, The Walt Disney Company
Sam Altman President, Y Combinator
Samuel Allen Chairman and CEO, The Walt Disney Company
Satya Nadella CEO, Microsoft
Sheryl Sandburg COO, Facebook
Terry J. Lundgren Chairman and CEO, Macy’s, Inc
Tim Cook CEO, Apple
Vishal Sikka CEO, Infosys
Governors
Asa Hutchinson Governor, Arkansas (R)
Brian Sandoval Governor, Nevada (R)
C.L. “Butch” Otter Governor, Idaho (R)
Charlie Baker Governor, Massachusetts (R)
Dannel P. Malloy Governor, Connecticut (D)
David Y. Ige Governor, Hawaii (D)
Earl Ray Tomblin Governor, West Virginia (D)
Edmund G. Brown, Jr. Governor, California (D)
Gina M. Raimondo Governor, Rhode Island (D)
Jack Dalrymple Governor, North Dakota (R)
Jack Markell Governor, Delaware (D)
Jay Inslee Governor, Washington (D)
John Hickenlooper Governor, Colorado (D)
Kate Brown Governor, Oregon (D)
Maggie Hassan Governor, New Hampshire (D)
Mark Dayton Governor, Minnesota (D)
Mary Fallin Governor, Oklahoma (R)
Matt Bevin Governor, Kentucky (R)
Matt Moad Governor, Wyoming (R)
Mike Pence Governor, Indiana (R)
Pete Shumlin Governor, Vermont (D)
Phil Bryant Governor, Mississippi (R)
Rick Snyder Governor, Michigan (R)
Steve Bullock Governor, Montana (D)
Susana Martinez Governor, New Mexico (R)
Terry Branstad Governor, Iowa (R)
Terry McAuliffe Governor, Virginia (D)
K-12 Leaders
Artwan Wilson Superintendent, Oakland
Bob Runcie Superintendent, Broward County Public Schools
Carmen Farilla Chancellor, NYC Department of Education
Forest Claypool CEO, Chicago Public Schools
Katherine H. Hill Superintendent, Charles County Public Schools
Michelle King President, Institute for Systems Biology. Co-founder, Amgen
Governors
Kerry Healey Chairman and CEO, American Aviation Association
Mike McCormick CEO, Association for Computing Machinery
Nate Howard President, Institute for Systems Biology
Peggy Brookins CEO, Anita Borg Institute for Women and Technology
Peggy Schmitt President, National School Boards Association
Richard Carranza Superintendent, Clark County School District
Rebecca Steinhoff CEO, Chicago Public Schools
Teddie Brown CEO, Southwest Airlines

Education & Nonprofit leaders:
Bobby Schnabel CEO, Association for Computing Machinery
Connie Brooks President and CEO, NAACP
Daniel A. Domenech Executive Director, AASA, The School Superintendents Association
David Coleman CEO, College Board
Eliza Villanueva Beard CEO, Teach For America
Gail Connelly, ED National Association of Elementary School Principals
Hadi Partovi CEO, Code.org
Lee Hood, MD, PhD President, Institute for Systems Biology. Co-founder, Amgen
Linda D. Hallman CEO, American Association of University Women
Lucy Sanders CEO, American Association of University Women
Mark Nelson Executive Director, CS Teachers Association
Matthew Randles CEO, National Math & Science Initiative
Negi Brooks CEO, National Board for Professional Teaching Standards
Phil Nair CEO, AASA, The School Superintendents Association
Suraj Gendler CEO, Teach For America

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Join us to sign your name in support: www.Change.org/computerscience

Organized by Code.org and the Computer Science Education Coalition, for our children. Affiliations listed for identification only.
Proclamation

WHEREAS, Washington state ranks second in the nation in the concentration of STEM jobs, yet roughly 45,000 STEM jobs will go unfilled due to a lack of qualified candidates by 2017; and

WHEREAS, in Washington, the most common job is software engineer, but only 7% of Washington’s public high schools offer AP computer science; and

WHEREAS, a strong STEM education sets a student on a pathway to be “future ready;” people with the technical and creative skills needed to thrive in today’s job market and excel in the unknown jobs of tomorrow; and

WHEREAS, Washington STEM has been working for the past five years to advance excellence, equity, and innovation in STEM education; and

WHEREAS, the state has partnered with Washington STEM to increase access to computer science education, increase production of post-secondary STEM degrees, and provide additional funding to fund STEM classrooms; and

WHEREAS, there are ten regional STEM networks across the state working across business, education and community sectors to advance access to STEM education and prepare a future ready workforce;

NOW, THEREFORE, I, Jay Inslee, Governor of the state of Washington, do declare March 31, 2016 as

Washington STEM Education Day

in Washington, and I urge all people in our state to join me in this special observance.

Signed this 25th day of March, 2016

Governor Jay Inslee
### APPOINTED MEMBERS

<table>
<thead>
<tr>
<th>First Name</th>
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<th>Position Title</th>
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### ALTERNATE MEMBERS

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<td>Jane</td>
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<td>Community Affairs Director</td>
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<tr>
<td>Dan</td>
<td>Grossman</td>
<td>J. Ray Bowen Professor for Innovation in Engineering Education</td>
<td>University of Washington Computer Science &amp; Engineering</td>
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