STATE OF WASHINGTON
OFFICE OF THE GOVERNOR

WASHINGTON STUDENT ACHIEVEMENT COUNCIL
EDUCATION · OPPORTUNITY · RESULTS

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)

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STEM Investments
2015-17 Biennial and 2016-17 Supplemental Budgets

	15-17 Biennial Budget	16-17 Supplemental
Financial Aid	• Opportunity Scholarship (public-private partnership program): Provides $41 M to match expected private donations. (Focused on STEM and "high employer demand programs of study). • 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. Note: No new funding to serve 27,000 eligible unserved students in the State Need Grant.	• $6 million in Opportunity Expansion funds appropriated to WSAC for distribution to institutions under direction of Opportunity Scholarship Board. Note: No new funding to serve 27,000 eligible unserved students in the State Need Grant.
Affordability and Higher Education Funding	**Note: Tuition reduced at all public institutions. $158.1 M** in state funding is provided to backfill institutions for lost tuition revenue. • Provides $2 M to expand Math, Engineering, and Science Achievement at CTCs. • Provides $6 M for Computer Science enrollments at UW, and $1.6 M for Computer Science or engineering enrollments at WSU. • Provides $1.6 M for WATR center aerospace training. • Provides $1.6 M for incumbent worker training to fabricate composite wings at the WA Aerospace Training and Research Center in Everett. • $500,000 for Latino Health Ctr. At UW. • $1.5 M to establish cyber-security program at WWU (taught at Olympic and Peninsula colleges) • $750,000 to develop Comp. Science BS degree program at Bellevue College. • $850,000 for Allied Health programs at Seattle Central College. • $2 M grant program for Computer Science at OSPI, to be matched with $2 M in private funding. • Provides $400 K for the Climate Impacts Group at UW; $1.6 M for the Washington Ocean Acidification Center at the UW. • 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.	**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)

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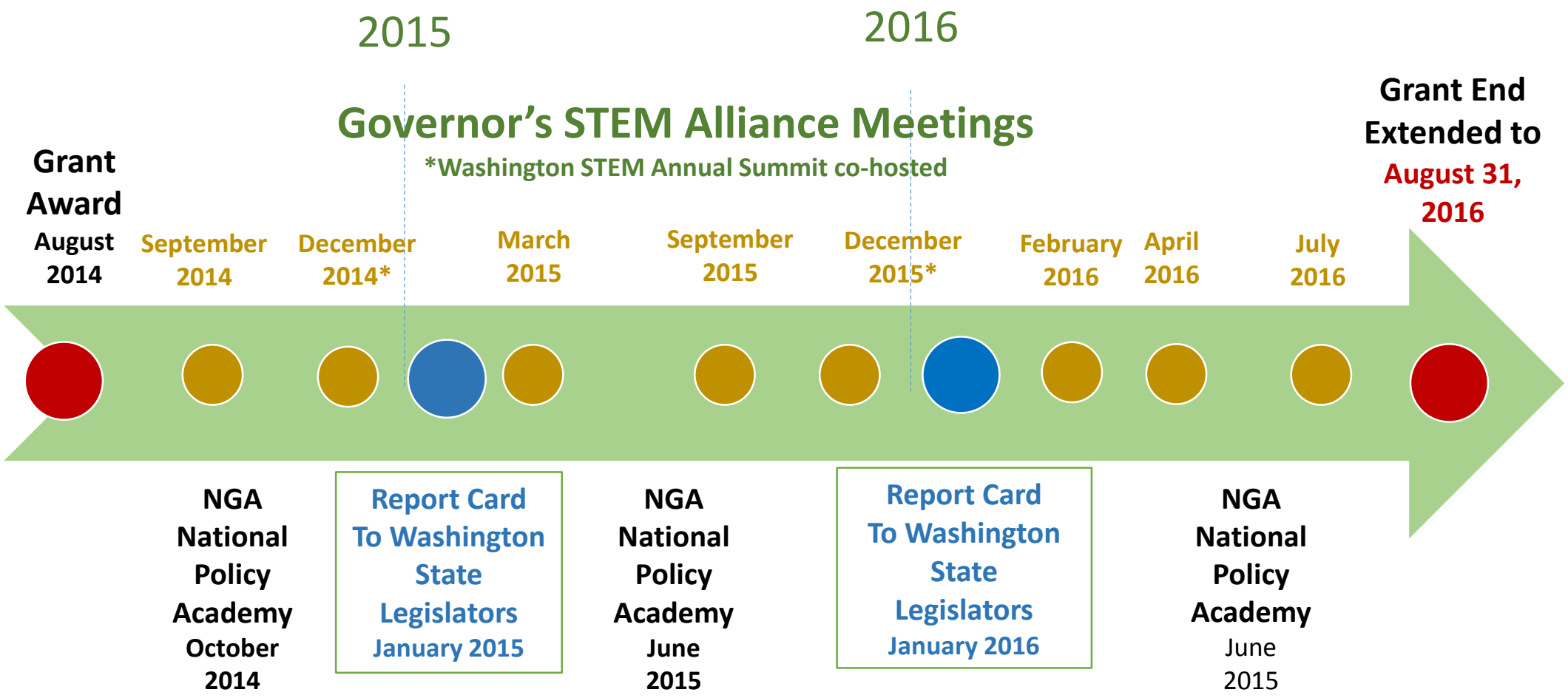
	15-17 Biennial Budget	16-17 Supplemental
K-12 STEM Investments	• $6.621 M for implementation of HB 1546 to expand Dual Credit opportunities • $500,000 for advanced Project Lead the Way courses at ten high schools. OSPI and the ERDC (research and data center at OFM) must track student participation and long-term outcome data. • $1.4 M provided to OSPI for First Robotics grants • $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. • $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). • $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. • $900,000 for annual start-up or expansion grants for Aerospace and Manufacturing programs at high schools and skills centers	
Capital Budget	• **$12.5 Million in facility grants** 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 cience 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.	

National Governors Association Grant Timeline 2014-2016 and Beyond



The Work Going Forward

- Sustain the Alliance with additional funding
- Develop 2017 Legislative Strategy
- Continue Expansion of STEM Dashboard

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.

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:
        - Youth participation in work-based learning experiences;
        - Employer sponsorship of work-based learning opportunities;
        - The level of public (federal, state, local) funding supporting work-based learning; and
        - 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

WASHINGTON STATE OPPORTUNITY SCHOLARSHIP

Supporting the next generation of STEM & health care leaders

WASHINGTON STATE OPPORTUNITY SCHOLARSHIP

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**.

WASHINGTON STATE OPPORTUNITY SCHOLARSHIP

Supporting the next generation of STEM & health care leaders

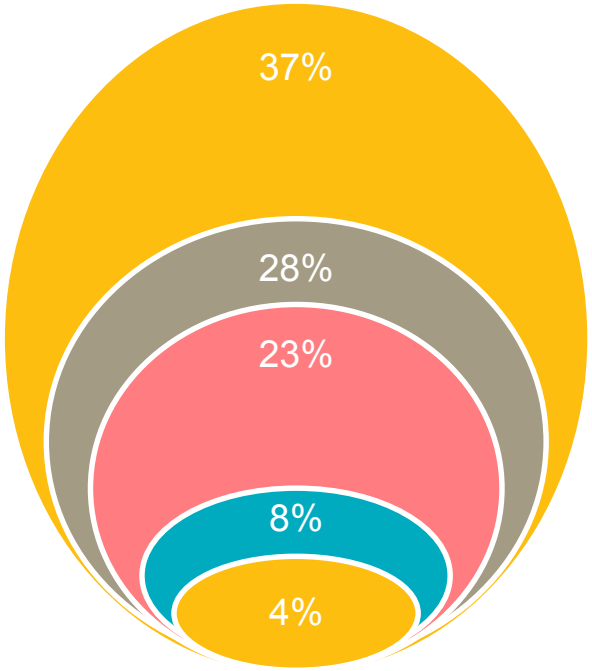
Microsoft

BOEING

THE SEAL OF THE STATE OF WASHINGTON 1889

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



WASHINGTON STATE OPPORTUNITY SCHOLARSHIP

Supporting the next generation of STEM & health care leaders

C1-3 Scholars

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

WASHINGTON STATE
OPPORTUNITY
SCHOLARSHIP

Supporting the next generation of STEM & health care leaders

Support Services

- **Office Hours**
- **Industry Exploration**
- **Skills that Shine**

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Other Big Ideas

- Opportunity Expansion Fund
- Vocational/Technical Degrees

WASHINGTON STATE OPPORTUNITY SCHOLARSHIP

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CONTACT US

WSOS related questions:

info@waopportunityscholarship.org

Follow us online:

WASHINGTON STATE OPPORTUNITY SCHOLARSHIP

Supporting the next generation of STEM & health care leaders

WSOS: BY THE NUMBERS

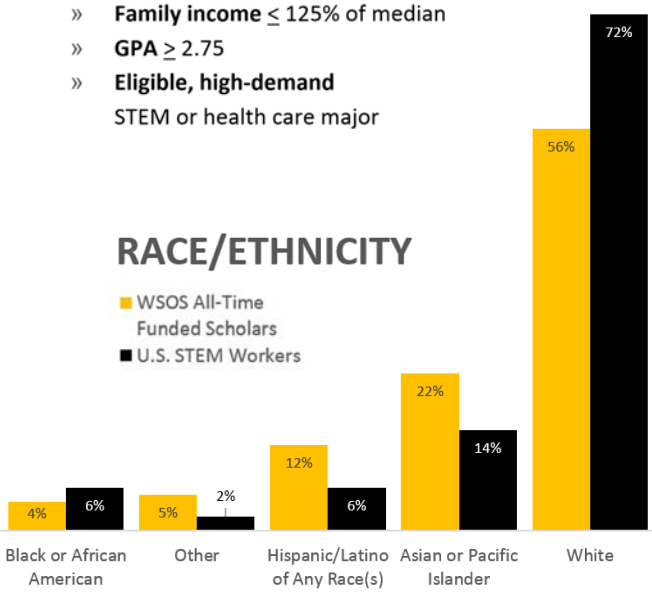
WASHINGTON STATE OPPORTUNITY SCHOLARSHIP

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**.

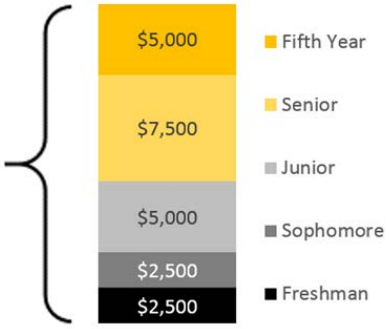
ELIGIBILITY

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

RACE/ETHNICITY



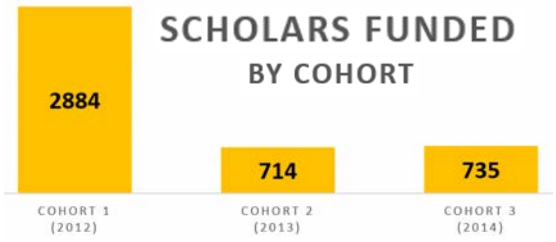
ANNUAL AWARD AMOUNT



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

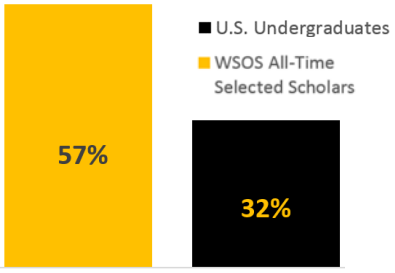
TOTAL DOLLARS DISBURSED: $17.4M

SCHOLARS FUNDED BY COHORT

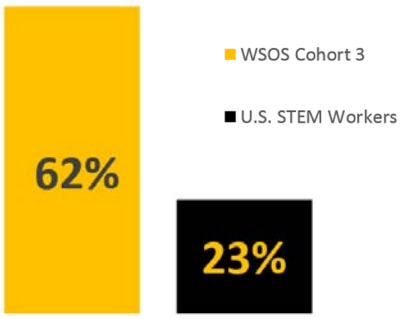


ALL-TIME SCHOLARS FUNDED: 4,333

FIRST GENERATION STUDENTS



FEMALE REPRESENTATION



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

Race/Ethnicity of U.S. STEM Workers: U.S. Department of Commerce: Economics and Statistics Administration. (2011). Education supports racial and ethnic equality in STEM. Retrieved from http://www.esa.doc.gov/sites/default/files/education_supports_racial_and_ethnic_equality_in_stem.pdf.

Gender of U.S. STEM Workers: National Math and Science Initiative. (N.D.). The STEM crisis: STEM education statistics. Retrieved from https://www.nms.org/AboutNMSI/TheSTEMCrisis/STEMEducationStatistics.aspx.

First Generation U.S. Undergraduates: Smith, N. (N.D.) First generation college students. Retrieved from http://www.cic.edu/News-and-Publications/Multimedia-Library/CICConferencePresentations/2014%20Walmart%20Symposium/First%20Generation%20College%20Students%20(Smith).pdf.

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.

Opening Doors for Washington's Future STEM Workforce

OPPORTUNITY KNOCKS

WASHINGTON STATE OPPORTUNITY SCHOLARSHIP

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 qualitied 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.

THE ANSWER

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.

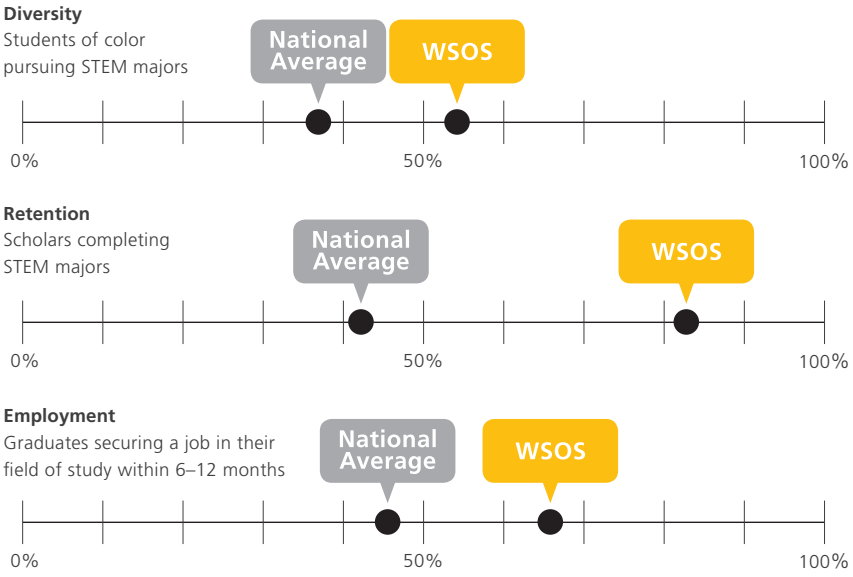
63% of scholarship recipients are female (13% higher than the national average of students pursuing STEM majors), and 52% are students of color (39% higher than national average). 57% are first-generation students.

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.

WSOS IMPACT



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

WSOS BY THE NUMBERS

(as of February 2015)

4,400
scholarships awarded for STEM and health care degrees

63%
of scholars are women

57%
are the first in their family to attend college

52%
of scholars are students of color

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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:

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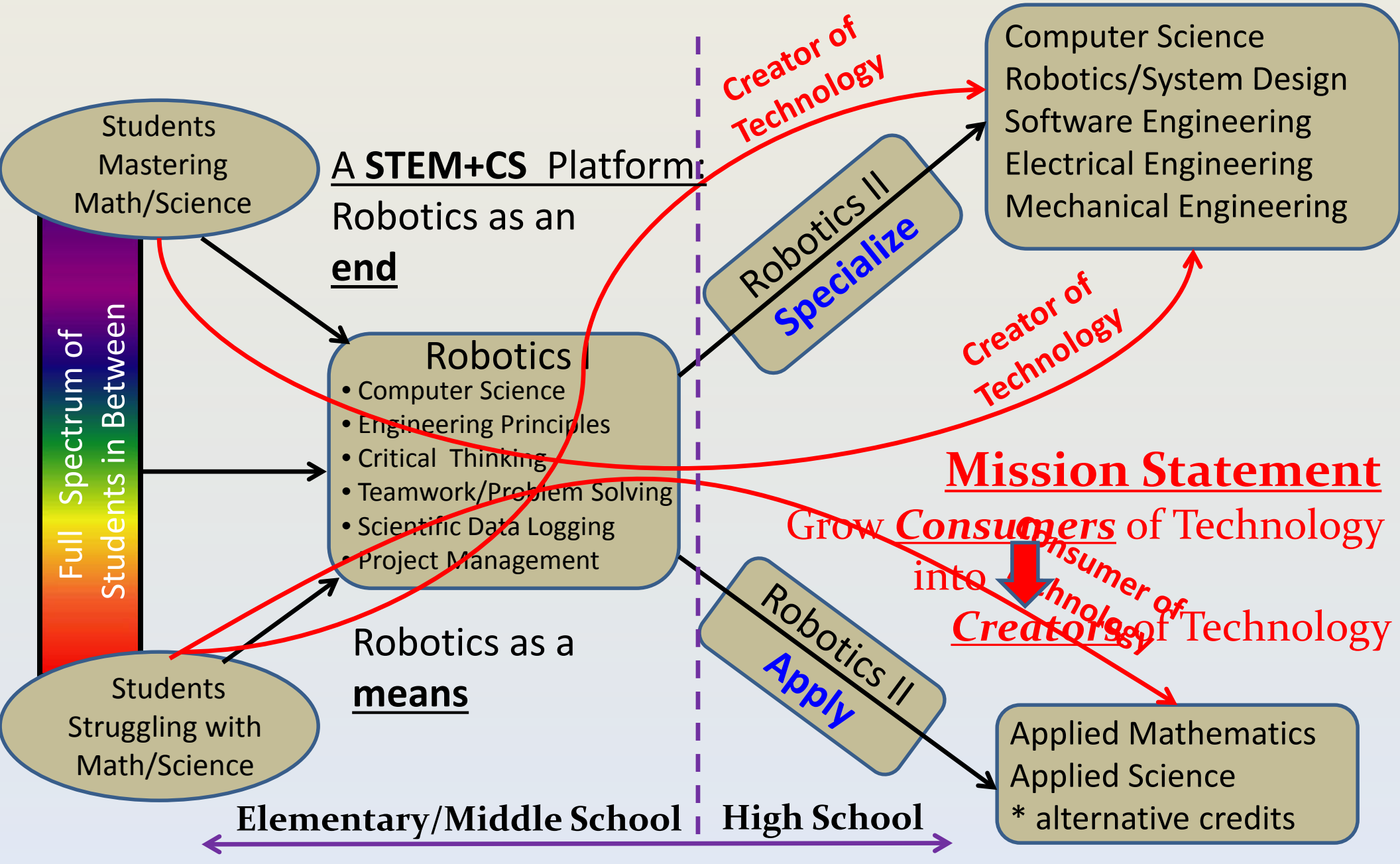
Scott Britell & Lois Delcambre
Computer Science Department
Portland State University
britell@cs.pdx.edu

Agenda

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

OSD STEM Robotics Vision

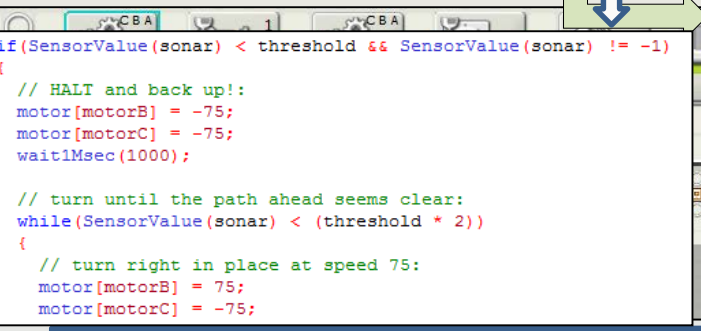


OSD CTE STEM Robotics Implementation

➢ Aligned with ***FIRST®*** Robotics continuum

FLL (LEGO® League) **STEM Robotics 101 (Robo101)**

- Plastic, kit-based robots
- Graphical software



```
if(SensorValue(sonar) < threshold && SensorValue(sonar) != -1)
{
  // HALT and back up!:
  motor[motorB] = -75;
  motor[motorC] = -75;
  wait1Msec(1000);

  // turn until the path ahead seems clear:
  while(SensorValue(sonar) < (threshold * 2))
  {
    // turn right in place at speed 75:
    motor[motorB] = 75;
    motor[motorC] = -75;
```

FTC (Tech Challenge) **Robo201**

- Metal, kit-based robots
- Java-based software

FRC (Robotics Competition)

Robo301 (CorePlus)

- Custom robots
- Java, C/C++ software

Middle School Gr. 7 & 8	High School Gr. 9 & 10	High School Gr. 11 & 12

Why Robotics for CS & STEM?

➢ Approachable

➢ Extendable

➢ Flexible

- 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

Programming Software

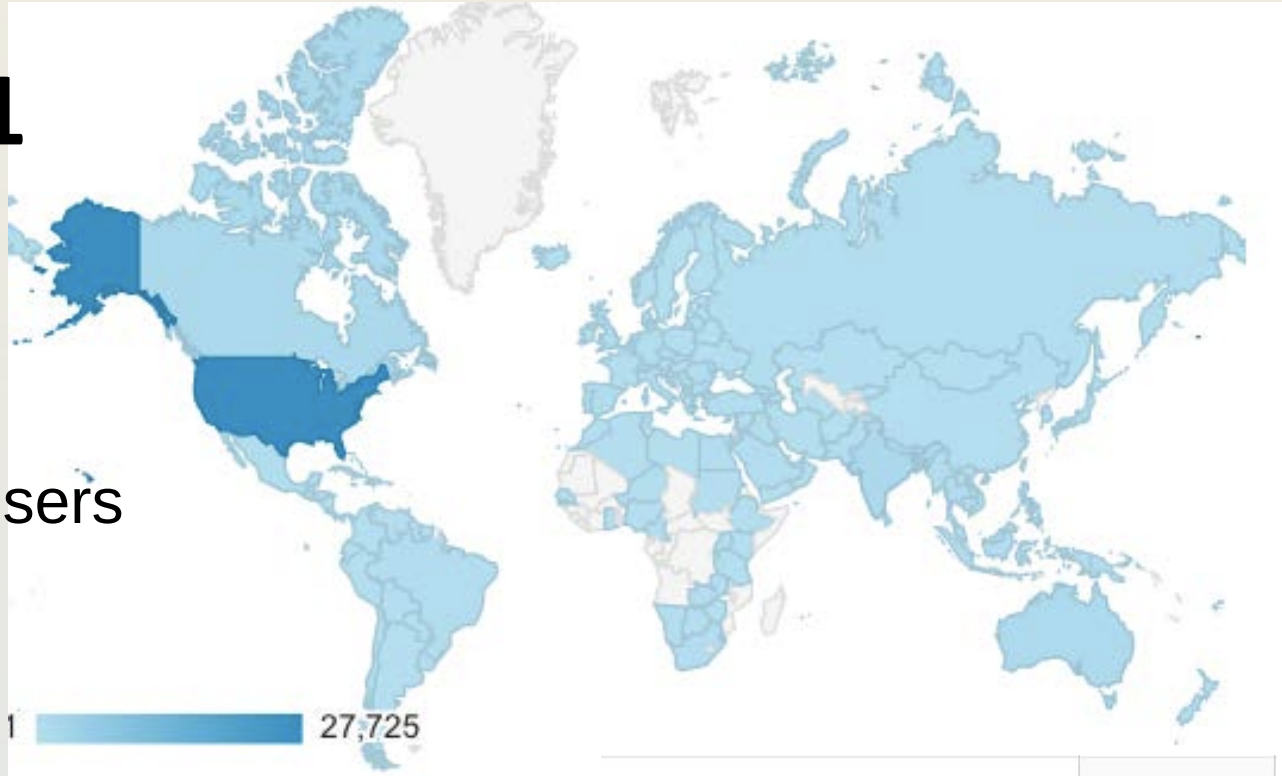
Hands-on Computer Science

Programming Tutorials

STEM Robotics 101 Outreach

Usage Stats

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



1.	United States	27,725 (61.01%)
2.	Canada	1,724 (3.79%)
3.	India	1,523 (3.35%)
4.	Australia	1,320 (2.90%)
5.	Philippines	1,080 (2.38%)
6.	United Kingdom	645 (1.42%)
7.	Malaysia	545 (1.20%)
8.	Spain	439 (0.97%)
9.	Mexico	427 (0.94%)
10.	Brazil	419 (0.92%)

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

2015:

- 600+ New Teacher-users
- Visits: 5,000/month
- Unique Visitors: 3,500/month
- 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 *FIRST*® into the daytime classroom to:

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

Required Elements to Achieve Statewide Impact:

- **1) Frameworks & Standards Alignment** ✓ **Done & Free**
  - New OSPI-approved version (w. CC & NGSS) currently spotlighted here:
    - http://www.k12.wa.us/CareerTechEd/clusters/STEM.aspx
- **2) STEM Robotics 101 Curriculum** ✓ **Done & Free**
  - Free, standards-based, customizable curriculum resources
- **3) Statewide Professional Development** ✓ **Phase 1 underway**
  - PD clock hours OPSI-approved as new STEM Clock Hours for certification
- **4) Start Up Cost Support at Disadvantaged Schools** ***FIRST* in Class**
  - Need Private/Public Partnership for matching grant program
    - **Direct & Immediate classroom impact**

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

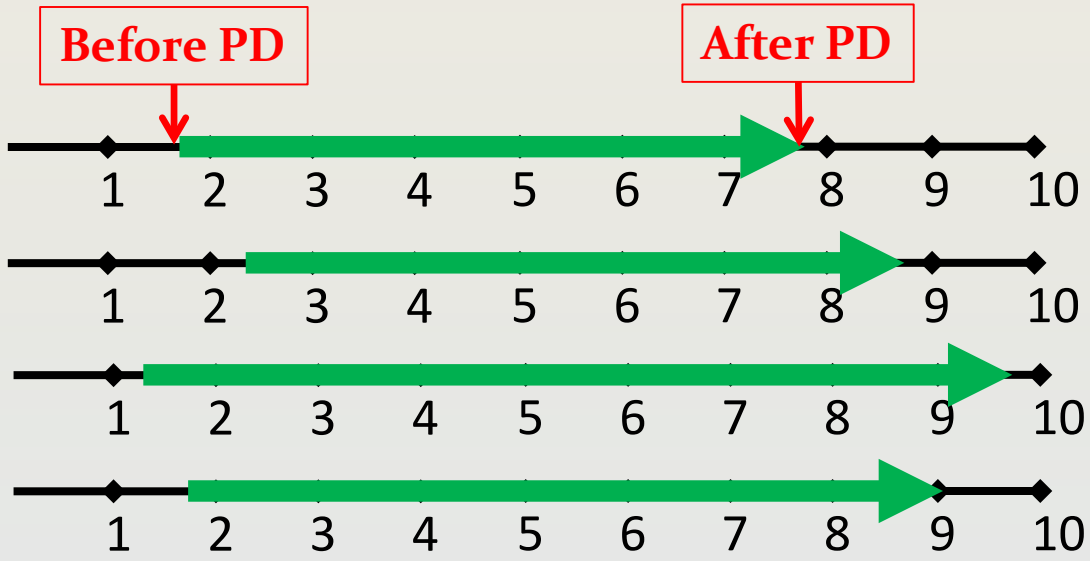
Status

- 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**

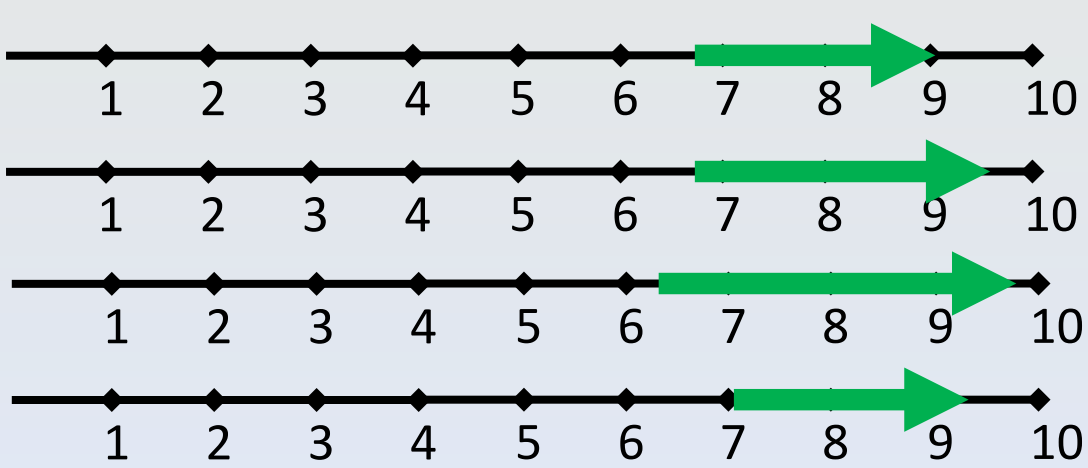
STEM Robotics 101 PD Effectiveness

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

- **New** STEM Robotics Teachers



- **Veteran** Robotics Teachers



STEM Robotics 101 PD Effectiveness

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**."

STEM Robotics 101 PD Effectiveness

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:

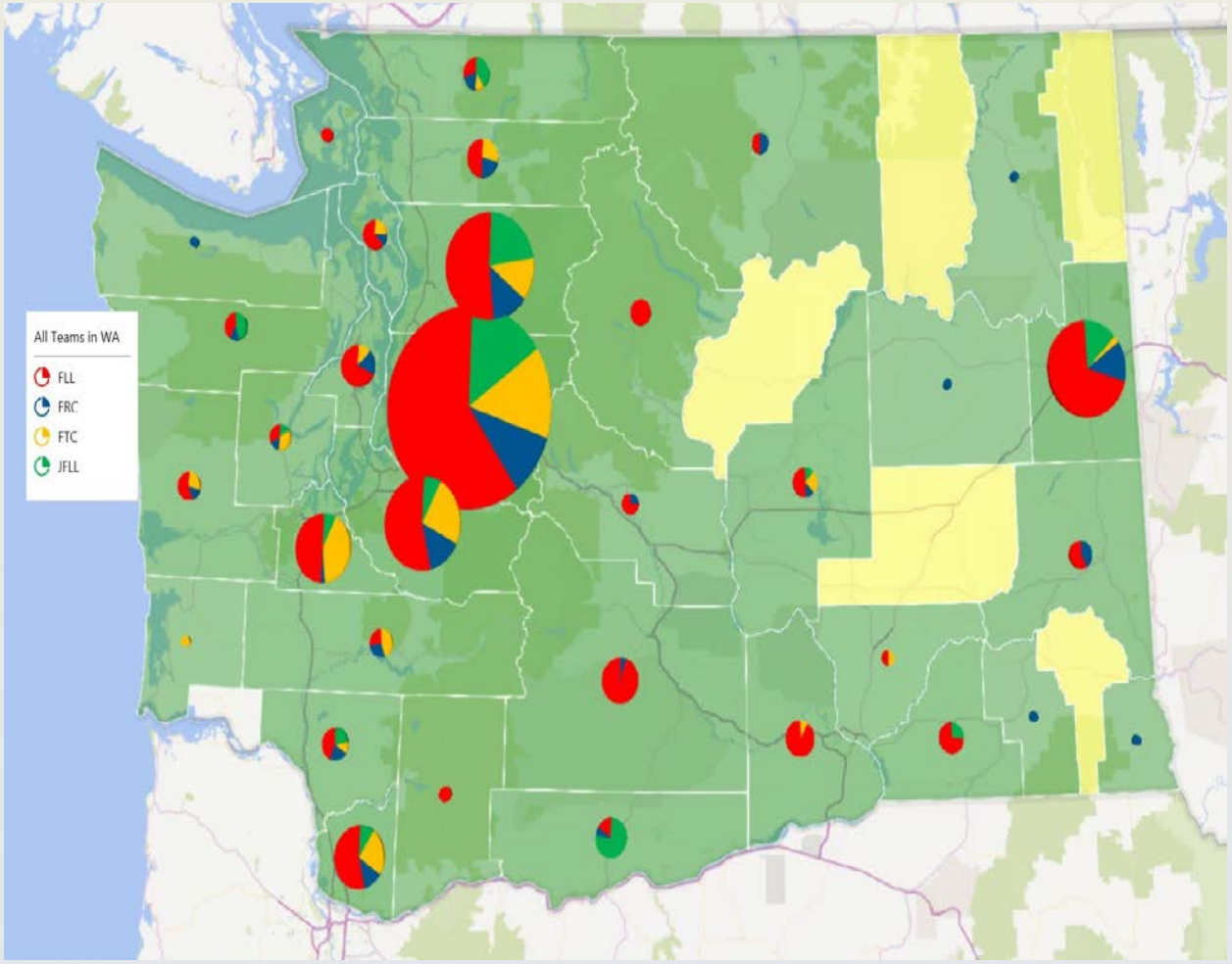
1. Spreading awareness of STEM Robotics 101 PD opportunity (www.firstwa.org)
2. Becoming a STEM Robotic 101 PD **Phase 2 Private Match** Partner (**5/9/16**)
3. Sponsoring a start-up cost matching grant for a STEM Robotics 101 classroom at disadvantaged/highly under-represented school

Join us at: ***FIRST***inClass@firstwa.org

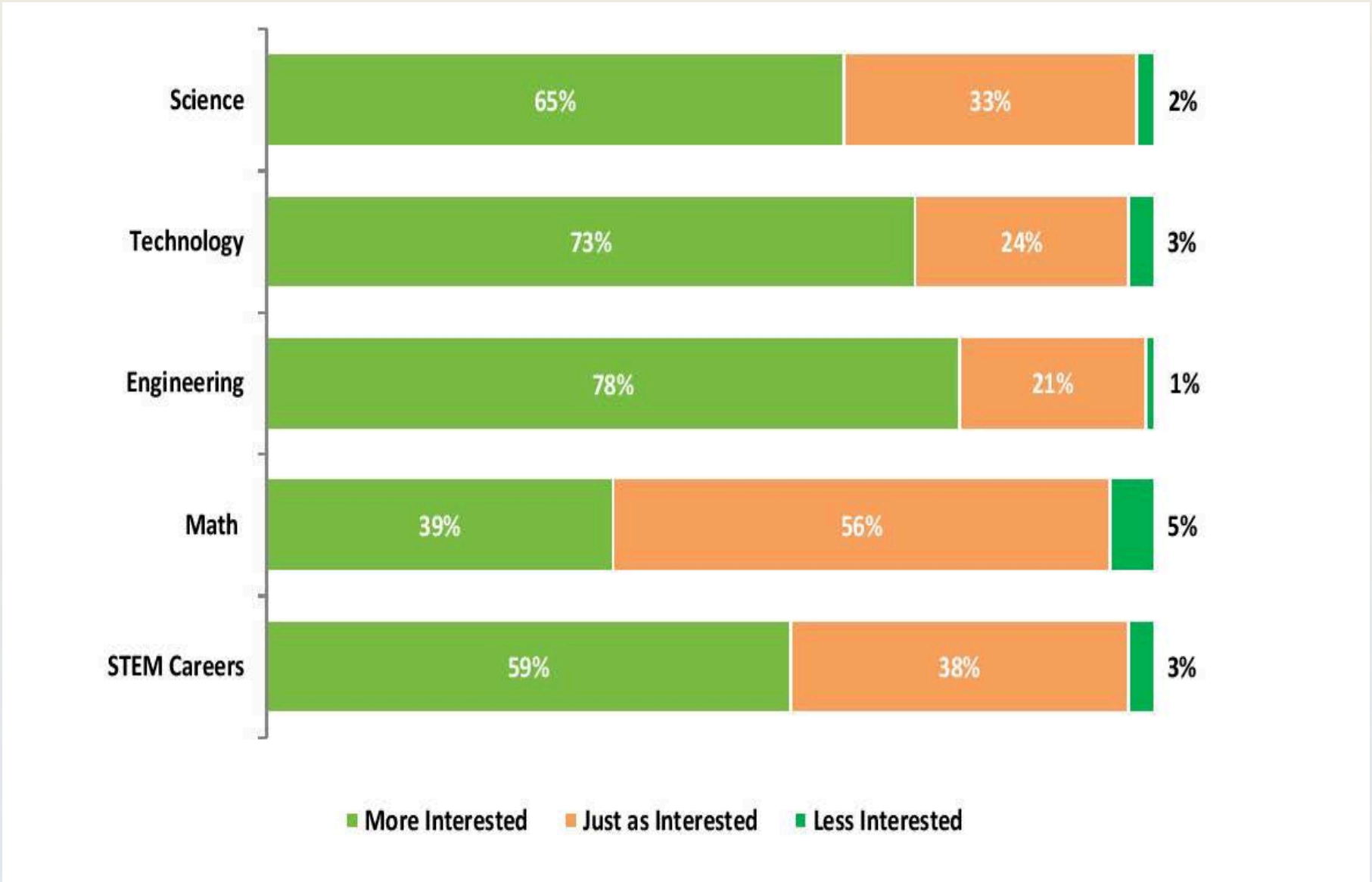
Appendices

Washington *FIRST* Robotics is:

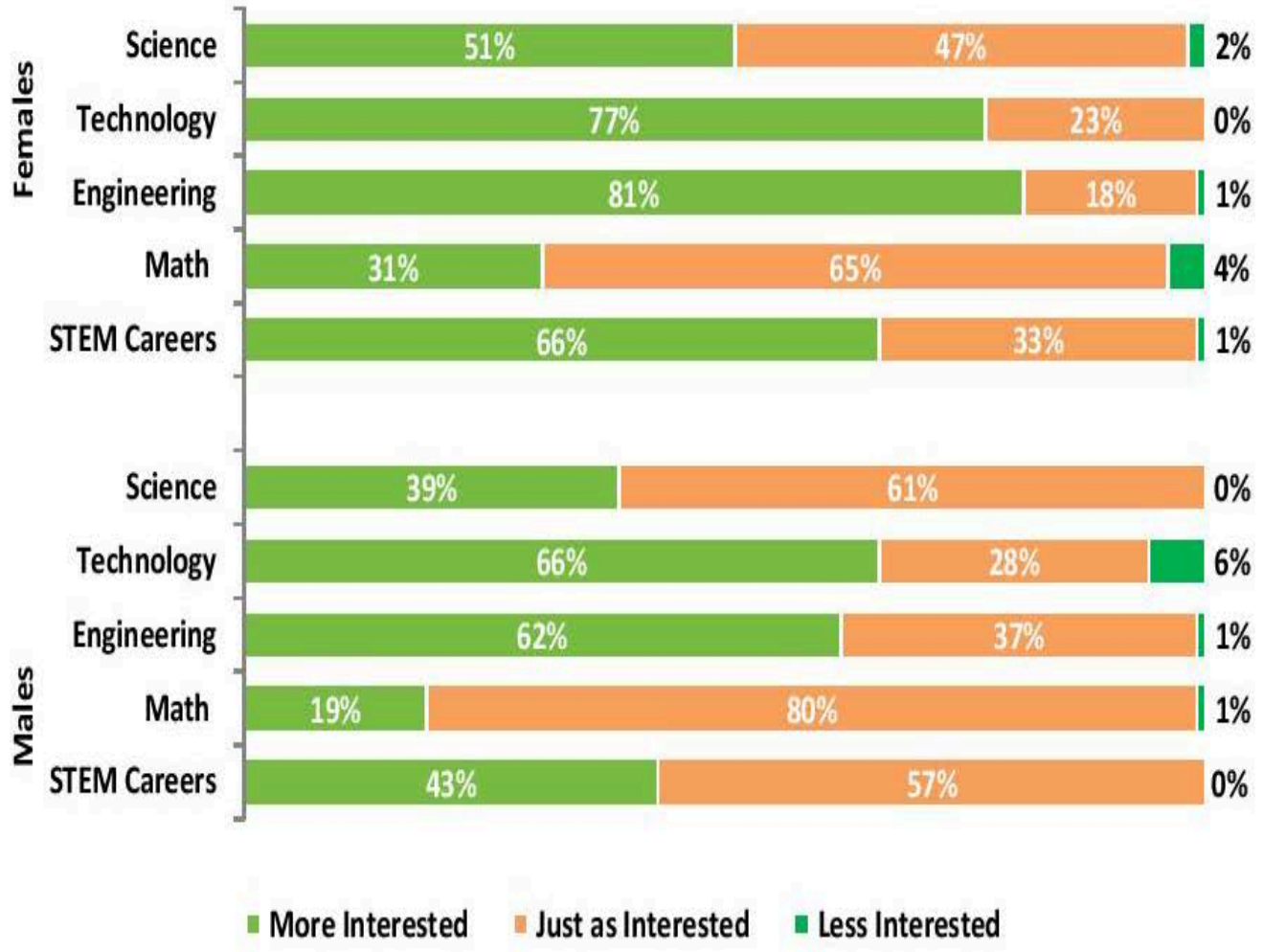
- 11,239 young people who
- Make up 975 teams that
- Are supported by 5,120 adult mentors and coaches and
- 1,324 event volunteers



FIRST Metrics: Young people are more interested in STEM



FIRST Metrics: Females and Males more interested in STEM



WASHINGTON STUDENT ACHIEVEMENT COUNCIL
EDUCATION · OPPORTUNITY · RESULTS

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?

FOR RELEASE:
April 26, 2016, 6:00amEDT

CONTACT:
Clare Flannery, (202) 365-7147
clare@csecoalition.org

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.

####

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, nothing embodies the American Dream so much as the opportunity to change or even reinvent the world with technology. 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 matters into their own hands and already begun teaching computer science. Over 100 school districts are rolling out courses, from New York to Chicago to 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

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Business leaders

Arne Sorenson
CEO, Marriott

Barry Diller
Chairman, IAC and Expedia

Bill and Melinda Gates

Bobby Kotick
CEO, Activision Blizzard

Brad Smith
President, Microsoft

Brian Chesky
CEO, Airbnb

Brian Cornell
Chairman and CEO, Target

Daniel Schulman
CEO, Paypal. Chairman, Symantec

Dara Khosrowshahi
CEO, Expedia

Devin Wenig
CEO, eBay

Doug McMillon
CEO, Walmart

Doug Parker
Chairman and CEO, American Airlines

Edward Breen
Chairman and CEO, DuPont

Eric Schmidt
Executive Chairman, Alphabet, Inc.

Ginni Rometty
Chairman and CEO, IBM

Grant Verstandig
CEO, Rally Health

Herb Allen
President, Allen & Company

Jack Dorsey
CEO, Twitter and Square

James Murdoch
CEO, 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, 8VC. Founder, Palantir

John Battelle
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, Magnolia Pictures, Landmark Theatres

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 and CEO, The Walt Disney Company

Sam Altman
President, Y Combinator

Samuel Allen
Chairman and CEO, John Deere

Satya Nadella
CEO, Microsoft

Sheryl Sandberg
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)

Dannell 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 Mead
Governor, Wyoming (R)

Mike Pence
Governor, Indiana (R)

Peter 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

Antwan Wilson
Superintendent, Oakland

Bob Runcie
Superintendent, Broward County Public Schools

Carmen Fariña
Chancellor, NYC Department of Education

Forrest Claypool
CEO, Chicago Public Schools

Kimberly Hill
Superintendent, Charles County Public Schools

Michelle King
Superintendent, Los Angeles Unified School District

Pat Skorkowsky
Superintendent, Clark County School District

Richard Carranza
Superintendent, San Francisco Unified School District

Susan Enfield
Superintendent, Highline Public Schools

Tom Torlakson
State Superintendent, California

Education & Nonprofit leaders:

Bobby Schnabel
CEO, Association for Computing Machinery

Cornell Brooks
President and CEO, NAACP

Daniel A. Domenech
Executive Director, AASA, The School Superintendents Association

David Coleman
CEO, College Board

Elisa 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, National Center for Women and IT

Mark Nelson
Executive Director, CS Teachers Association

Matthew Randazzo
CEO, National Math & Science Initiative

Peggy Brookins
CEO, National Board for Professional Teaching Standards

Telle Whitney
CEO, Anita Borg Institute for Women and Technology

Thomas J. Gentzel
Executive Director, National School Boards Association

The State of Washington

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

STEM EDUCATION INNOVATION ALLIANCE

Meeting Attendees - April 28, 2016

Seattle Metropolitan Chamber of Commerce (Seattle, Washington)

APPOINTED MEMBERS				
First Name	**Last Name**	**Position Title**	**Organization**	**Email**
John	Aultman	Executive Policy Advisor for Higher Education and Workforce Development	Washington State Office of the Governor	John.Aultman@gov.wa.gov
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Violet	Boyer	President and CEO	Independent Colleges of Washington	violet@icwashington.org
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Maud	Daudon	Director & CEO	Seattle Metropolitan Chamber of Commerce	maudd@seattlechamber.com
Susan	Enfield	Superintendent	Highline School District	susan.enfield@highlineschools.org
Jeff	Estes	Director, Office of STEM Education	Pacific Northwest National Laboratory	jeff.estes@pnnl.gov
Paul	Francis	Executive Director	Council of Presidents	pfrancis@cop.wsu.edu
Christine	Johnson	Chancellor	Community Colleges of Spokane	christine.johnson@ccs.spokane.edu
Scott	Keeney	President & CEO	nLIGHT Corporation	scott.keeney@nlight.net
Caroline	King	Chief Policy Officer	Washington STEM	caroline@washingtonstem.org
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Marcie	Maxwell	Citizen Member	Former State Representative	marcie.maxwell@live.com
Randy	Dorn	Superintendent	Office of Superintendent of Public Instruction	randy.dorn@k12.wa.us
Rai Nauman	Mumtaz	Graduate & Professional Student	Student Representative	rmumtaz@uw.edu
Isabel	Munoz-Colon	State Board of Education Member	City of Seattle, Office for Education	isabel.munoz-colon@seattle.gov
Eleni	Papadakis	Executive Director	Workforce Training and Education Coordinating Board	epapadakis@wtb.wa.gov
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Naria	Santa Lucia	Executive Director	Washington State Opportunity Scholarship	nsantalucia@waopportunityscholarship.org
Gene	Sharratt	Executive Director	Washington Student Achievement Council	genes@wsac.wa.gov
Brad	Smith	President	Microsoft Corporation	bradsmi@microsoft.com
Stan	Sorscher	Labor Representative	Society of Professional Engineering Employees in Aerospace	stans@speea.org
Brian	Teppner	Principal, Newport Heights Elementary School	Bellevue School District	teppnerb@bsd405.org
Nancy	Truitt Pierce	Director, School Board	Monroe Public Schools	nancy@woodscreek.com
Margaret	Tudor	Executive Director	Pacific Education Institute	mtudor@pacificeducationinstitute.org
Joyce	Walters	CEO and Founder	Corporate Education Strategies	joycewalters1@comcast.net
Yolanda	Watson Spiva	President & CEO	College Success Foundation	yspiva@collegesuccessfoundation.org
Sam	Whiting	President & CEO	Thrive Washington	Sam@thrivewa.org
Yale	Wong	Chairman and Founder	General Biodiesel	yalewong@yahoo.com
ALTERNATE MEMBERS				
First Name	**Last Name**	**Position Title**	**Organization**	**Email**
Jane	Broom Davidson	Community Affairs Director	Microsoft Corporation	janeb@microsoft.com
Dan	Grossman	J. Ray Bowen Professor for Innovation in Engineering Education	University of Washington Computer Science & Engineering	djg@cs.washington.edu
Gil	Mendoza	Deputy Superintendent	Office of Superintendent of Public Instruction	gil.mendoza@k12.wa.us
OTHER ATTENDEES				
First Name	**Last Name**	**Position Title**	**Organization**	**Email**
Cody	Eccles	Associate Director	Council of Presidents	ceccles@cop.wsu.edu
Cindy	Gustafson	Chief Financial Officer	Washington STEM	Cindy@washingtonstem.org
Ellen	Matheny	Administrative Specialist	Washington Student Achievement Council	ellenm@wsac.wa.gov
Daryl	Monear	Associate Director for Academic Affairs and Policy	Washington Student Achievement Council	darylm@wsac.wa.gov
Gary	Rubens	Founder	Start It Labs, Rubens Family Foundation	
Jim	Schmidt	Senior Forecast Coordinator	Washington State Office of Financial Management	jim.schmidt@ofm.wa.gov
Rachelle	Sharpe	Deputy Director	Washington Student Achievement Council	rachelles@wsac.wa.gov
Randy	Spaulding	Director of Academic Affairs and Policy	Washington Student Achievement Council	randys@wsac.wa.gov
Randy	Steele	Career & Technical Education Coach	Olympia School District	rsteele@osd.wednet.edu
Maddy	Thompson	Director of Policy & Government Relations	Washington Student Achievement Council	maddyt@wsac.wa.gov
Natalie	Truong	Policy Analyst, Education Division	National Governors Association, Center for Best Practices	ntruong@nga.org
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Gilda	Wheeler	Senior Program Officer	Washington STEM	gilda@washingtonstem.org