STEM Education Innovation Alliance

DRAFT RECOMMENDATIONS TO THE GOVERNOR AND LEGISLATURE

November 28, 2017

The STEM Education Innovation Alliance recommends the following actions to meet Washington's continuing acute need for workers prepared to work in science and technology occupations across a variety of industries. In addition to meeting the needs of industry, Washingtonians will benefit from the chance to prepare and compete for the growing opportunities in STEM occupations available in our state.

These strategies must include a focus on increasing participation of underrepresented students, and reengaging working adults in postsecondary STEM programs. While most of the recommendations are specific to STEM education, progress is dependent upon a strong foundation through a high quality, well-funded and well-aligned early learning, K-12 and postsecondary education system.

- **Inspire interest in and preparation for STEM careers through career-connected learning and enhanced STEM curricula.**
  - Integrate the High School and Beyond plan into the school curriculum, beginning in Grade 8.
  - Assign computer science and science specialists at all educational service districts.
  - Expand Computer Science and Education grants for early learning and K-12 curriculum development, teacher training, technology purchases and digital access for historically underserved groups, including girls and students from low-income, rural and ethnic minority communities.*
  - Provide work-based learning and industry-approved apprenticeships to middle and high school students integrating academic and occupational curricula, and train teachers to implement the new programs. *
  - Develop a P-12 science education strategic plan and professional development strategies that support the Next Generation Science standards.
  - Provide funding for STEM laboratories and classrooms in K-12. (Capital budget)

- **Expand postsecondary STEM education, with a focus on equitable access and retention.**
  - Expand financial aid opportunities to increase access and retention in STEM programs for low-income students:
    - Rebuild State Work Study and increase the state share of match for positions in STEM fields. This form of financial aid is available for both undergraduate and graduate students.*
    - Fully fund the State Need Grant. An estimated 21,000 students are eligible but unserved and it is estimated that 25 percent of students receiving SNG are in STEM or will enroll in STEM programs in the future.
    - Expand the Opportunity Scholarship to students in workforce training programs.*
    - Provide Tech Apprenticeship Training stipends to divde costs between the state, participants and private entities.*
  - Support institution operating and capital budget requests to expand STEM programs:

- UW: Funding for continued enrollment expansion in Computer Science & Engineering.
- TESC: CS and Cybersecurity program development and expansion.
- CWU: Game On (Coding in K-12) and Cybersecurity program development and expansion.
- WWU: STEM bottleneck reduction and gateway program expansion (math, physics and chemistry) and high-demand STEM program expansion (CS, engineering and pre-health sciences). Includes pre-advising and cohort support model for improved outcomes for underserved students. Marine, coastal and watershed sciences program expansion; and the Poulsbo Marine Science Center.
- WSU: Renewable Energy Program start-up and maintenance funding; and the Joint Center for Deployment and Research in Earth Abundant Materials (JCDREAM) in collaboration with the Pacific Northwest Laboratory and the University of Washington to develop and commercialize next-generation technologies. These technologies are designed to support energy security, economic stability and environmentally sound stewardship.
- SBCTC: Guided Pathways to redesign program delivery into career pathways and meet the needs of working adult students.

In addition to the above recommendations, the power of the collaboration of industry, educators, foundations and related state and local government entities is invaluable in identifying needs, goals and strategies that will support STEM in the future. With this in mind, the STEM Alliance requests support for the partnership to continue this vital collaboration.

*Includes a private match component.

State of SCIENCE Education 2017, Voices Across the State

Background:

In 2011, WA was selected as a lead state in the writing of the Next Generation Science Standards (NGSS). WA adopted the NGSS as the Washington State Science Learning Standards in 2013. Implementation has been occurring statewide with learning materials being revised and adapted. At OSPI, Learning and Teaching works with the Education Service Districts' Regional Science Coordinators, LASER, and many partners (including higher education, informal educators, non-profit organizations and government agencies) to ensure that all students have access to quality science/STEM education by providing guidance for the development and implementation of Washington science learning standards. **One of our greatest successes as a science education community is our ability to work together as a network of many systems.**

Focus on Equity

Statewide, Science Educators are governed by the grounding principles of *A K12 Framework for Science Education*.

> "Equity in science education requires that *all* students are provided with equitable opportunities to learn science and become engaged in science and engineering practices; with access to quality space, equipment, and teachers to support and motivate that learning and engagement; and adequate time spent on science. In addition, the issue of connecting to students' interests and experiences is particularly important for broadening participation in science" (*A Framework for K12 Science Education*, 2009, p. 28).

2017 Statewide Successes

With the adoption of the NGSS, Science education is moving from content only delivery to student focused engagement/application/process/discovery through effective implementation of the Science and Engineering Practices.

STEM Lighthouse Schools continue to innovate and foster imagination in STEM/Science Instruction.

State Science Fellows (teacher leaders) network, 300 Science Fellows this year, have provided expanded professional learning capacity for science educators throughout the state.

More than 100 community-based (informal) science educators collaborate with OSPI and the ESDs to support the NGSS in local schools using the lens of Environment and Sustainability Education.

24+ CTE courses approved by the SBE for science equivalencies providing additional opportunities for HS students. New frameworks are under development and include *Systems Medicine for Wellness* and *Climate Change Engineering and Technology*.

4th and 8th grade science student achievement increased on 2015 NAEP Assessment as compared to 2009 average scores.

US ED's Green Ribbon Schools program recognized WA's implementation of Green Ribbon Schools program as a national model. Schools and Districts have seen thousands in cost savings as a result of energy efficiency improvements.

Mathematics and Science Partnership (MSP) grants have positively impacted multiple regions statewide including ESD 123's *STEM-It* grant which was supported through MSP funding for 3 cohorts of elementary teachers. The project continues as *STEM It Now* through funding from Battelle Corporation. Concluding this year, 5 cohorts of teachers, scientists, and engineers from Pacific Northwest National Laboratory have worked together to make Washington State Science Learning Standards (NGSS) accessible in current science/STEM units emphasizing math and ELA connections. Real world STEM challenges were developed for each of the units.


Teachers and PNNL Researchers learning together in STEM IT NOW.

State-funded Leadership and Assistance for Science Education Reform (LASER) has over 17 years of successful collaboration/partnership with regional work and ESD networks continues to serve approximately 106,300 educators in more than 205 school districts.

51% of 2,852 responding educators indicated in a state survey that they had participated in NGSS professional learning. 41% identified themselves as intermediate to expert NGSS users.

WA has partnered with state and national institutions on two separate NSF grants awarded in 2016 to engage in research and tool development, gain access to science experts, develop coherency in the K-20 science education system, and to examine STEM teacher preservice education in an NGSS driven system.

WA has partnered with Association of Washington School Principals (AWSP) and statewide entities to develop systemic professional learning for elementary principals in leading the NGSS. Video training released in 2017.

Odessa High School Students use Mars Satellite (Potato) Launcher on STEM Competition Day

NextGen-WA

(NSF-IUSE #1625566)

Update on The Next Generation of STEM Teacher Preparation in Washington State

Science Leadership Team Meeting, February 16, 2017

Ed Geary, Dan Hanley, and Roxane Ronca (WWU), Jenny Dechaine (CWU), Julie Antilla (SPU), Kathryn Baldwin (EWU), Tamara Nelson (WSU-Vancouver), Ann Wright-Mockler (PNNL), Jose Rios (UW-Tacoma), Ellen Ebert (OSPI), Jacob Clark Blickenstaff (WA-LASER)

The Next 30 Minutes: An Overview of the NextGen Project

- Model Pathways and Teacher Preparation
- The Consortium
- Vision and Goals
- What We are Working to Change
- Guiding Framework
- Strategies for Change
- Plan of Action 2017
- An Invitation

Model Pathways: Implications for STEM Teacher Preparation

- What does it mean to be a STEM teacher?
- What does effective STEM teaching look like?
  - At the Elementary Level
  - At the Secondary Level
- What might a STEM endorsement(s) look like?
  - Who would earn a STEM endorsement?
- How will our teacher preparation programs (i.e. courses, curricula, pedagogies, assessments) need to change to produce STEM teachers?
- Will NGSS-CCSS K-12 schools hire STEM teachers?

Who We Are

- 12 x Four-Year Colleges & Universities--producing >90% of STEM teacher graduates in Washington State
- Two-Year College STEM Faculty
- Western Governors University
- K-12 Educators---Teachers, Principals, District Administrators
- Businesses---Google, Code.org
- Govt. Orgs---OSPI, PESB, ESDs, PNNL
- NGO's—MESA, Pacific Science Center, Washington LASER, WA-STEM, WA-ToToS, WA-ToToM, Compass 2 Campus

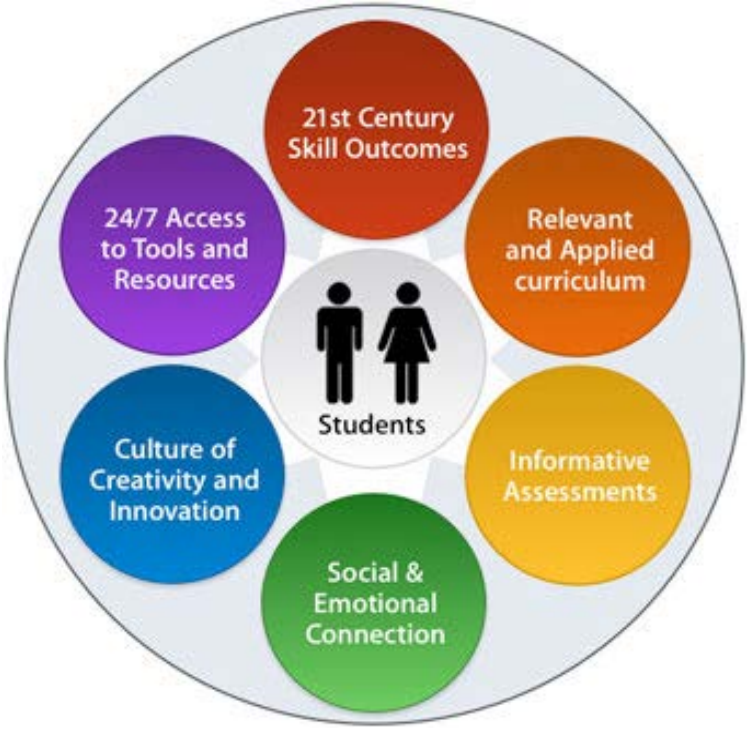
Vision for the 2030 Teachers of STEM Education

In order to create a
thriving, sustainable, equitable society,
all the graduates of Washington's
teacher preparation programs are
innovative, life-long learners who **integrate** relevant
mathematics, science, technology, and engineering practices, concepts, and skills
into **meaningful learning experiences** that
inspire and prepare all their **students**.

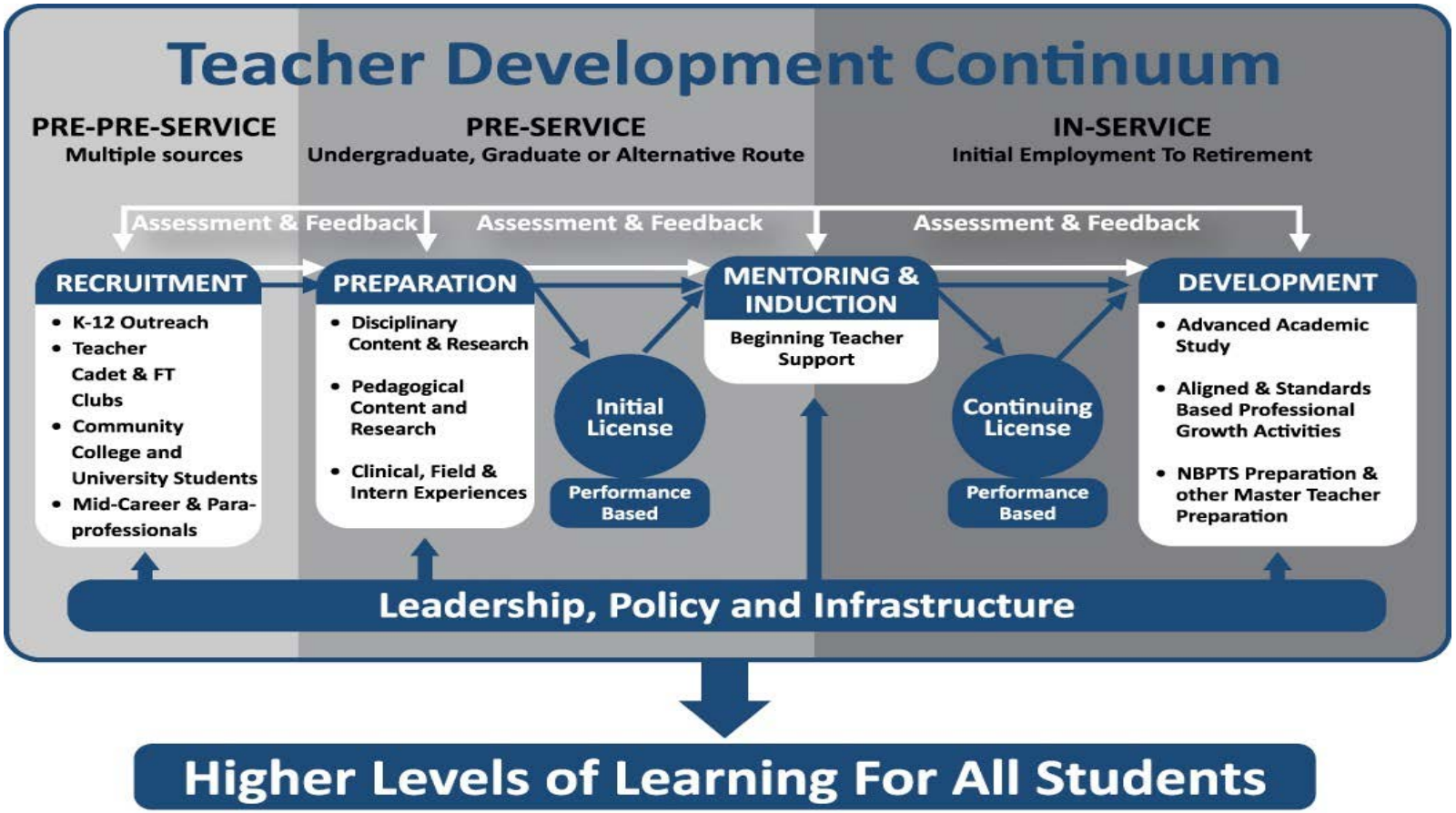
NSF-IUSE 2016-2020

Goals

- Improve STEM teacher preparation programs in the state (impacting greater than 90% of Washington's future STEM teacher graduates)
- Increase recruitment of qualified and diverse STEM students into teaching
- Create an adaptive, research-based model for improving STEM teacher preparation through collaboration.



So What Are We Trying To Change?



Collective Impact Framework

- **Common Vision**: One size does not fit all, but shared vision and goals are more likely to be realized
- **Shared Measurement**: Results are measured consistently, with shared accountability
- **Mutually Reinforcing Activities**: Activities of each group inform others' plans
- **Continuous Communication**: Builds and maintains trust, collaboration, and motivation
- **Backbone Support**: Takes on the role of overall coordination and management

Reference: Kania, J, and M. Kramer, 2011 and Hanleybrown, F., J. Kania, and M. Kramer, 2012---Stanford Innovation Review

---How We Plan to Achieve our Goals: Critical Component Working Groups

- Clinical Practice and Induction
- Computer Science Integration [into teacher education]
- Engineering Integration [into teacher education]
- Pedagogical Content Knowledge
- Education for Sustainability
- Math and STEM Integration

---and Capacity Building Working Groups

- Understanding and supporting productive Organizational Change
- Increasing the Diversity of the STEM teaching workforce
- Collaboration-building within and across institutions and disciplines

Plan of Action: 2017

- January 14, 2017—Kick-off Workshop at Seattle U
- Year 1--- Research & Development
  - Working Groups--- Find and develop models and resources to improve STEM Teacher Preparation
- Year 1--- Start building Capacity for Change at Institutions across the state
  - Capacity Building workshops summer/fall 2017
- Year 1--- Form Implementation Teams
  - To Pilot test and implement in Years 2-4
- Year 1--- Develop common metrics and Collect Baseline Data

Anticipated Outcomes and Benefits

- **State Level**
  - Adaptive Model for ongoing Program Improvement through collaboration
- **Regional Level**
  - Stronger Collaborations between IHE's, K-12, NGOs, businesses and Govt.
- **Institutional Level**
  - Stronger Collaborations between Colleges and widespread support for improvement of STEM Teacher Preparation
- **Program Level**
  - NGSS and CCSS aligned STEM Teacher Preparation Programs, Courses, and Curricula (including Computer Science, Engineering and EfS)
- **Individual Level**
  - Faculty --- understand, use, and model evidenced based teaching-learning practices
  - STEM Preservice Teachers--- Graduate ready to create student-centered learning environments that engage all students in meaningful, STEM learning

Invitation

If you or a colleague of yours might be interested in joining a Working Group or learning more about this effort please contact...

Ed Geary at Western Washington University
Edward.geary@wwu.edu

Questions

Structure of the WA NextGen STEM TP Project

Capacity-Building Working Groups:
•Organizational Change issues • Diversity Issues • Collaboration Building
Capacity Working Groups consist of 12 to 20 cross-institutions partners working collaboratively, and their results inform all aspects of the project

Implementation Groups:

State Implementation Council

Regional Implementation Teams

Management Team

External Advisory Board

STEM TP critical component Working Groups:
•Clinical Practice and Induction •Strengthening PCK • Integrating Computer Science into TP
• Integrating Engineering in TP •Integrating Education for Sustainability into TP
•Math and STEM integration
Critical Component WG's consist of 12 to 20 cross-institutional partners working collaboratively

Arrows indicate regular feedback, support, communication and assessment, as well as research and evaluation processes

Guiding Questions and Key Components of Education for Sustainability (EfS) Working Group

- What does EfS involve/include?
- **How do we incorporate EfS into teacher preparation?**
- How do our programs conceptualize EfS as a social justice /equity practice?
- How do we incorporate EfS as an integrative theme?
- How do we develop EfS programs that support inclusive and diverse recruitment, retention, and future placement of teachers?

How to Incorporate EfS into Teacher Education?

- Top down – Environmental and Sustainability Education (ESE) Add-On Endorsement
  - Currently 6 teacher prep programs in WA offer the endorsement
- Bottom up – Integrate EfS across curriculum
  - Based on state competencies for teacher preparation and the Washington State Environmental and Sustainability Education Standards

EfS Working Group Next Steps

- Explore additional existing EfS resources
- Analyze examples and models of EfS
- Pilot EfS curriculum and models among working group members
- Plan and present professional development about EfS for regional teams of STEM Educators
- Evaluate and improve EfS professional development

Questions

NextGen STEM Teacher Preparation Project Evaluation

Internal Evaluator: Dan Hanley, WWU
External Evaluators: Eric Banilower & Peggy Trygstad, Horizon Research Inc.

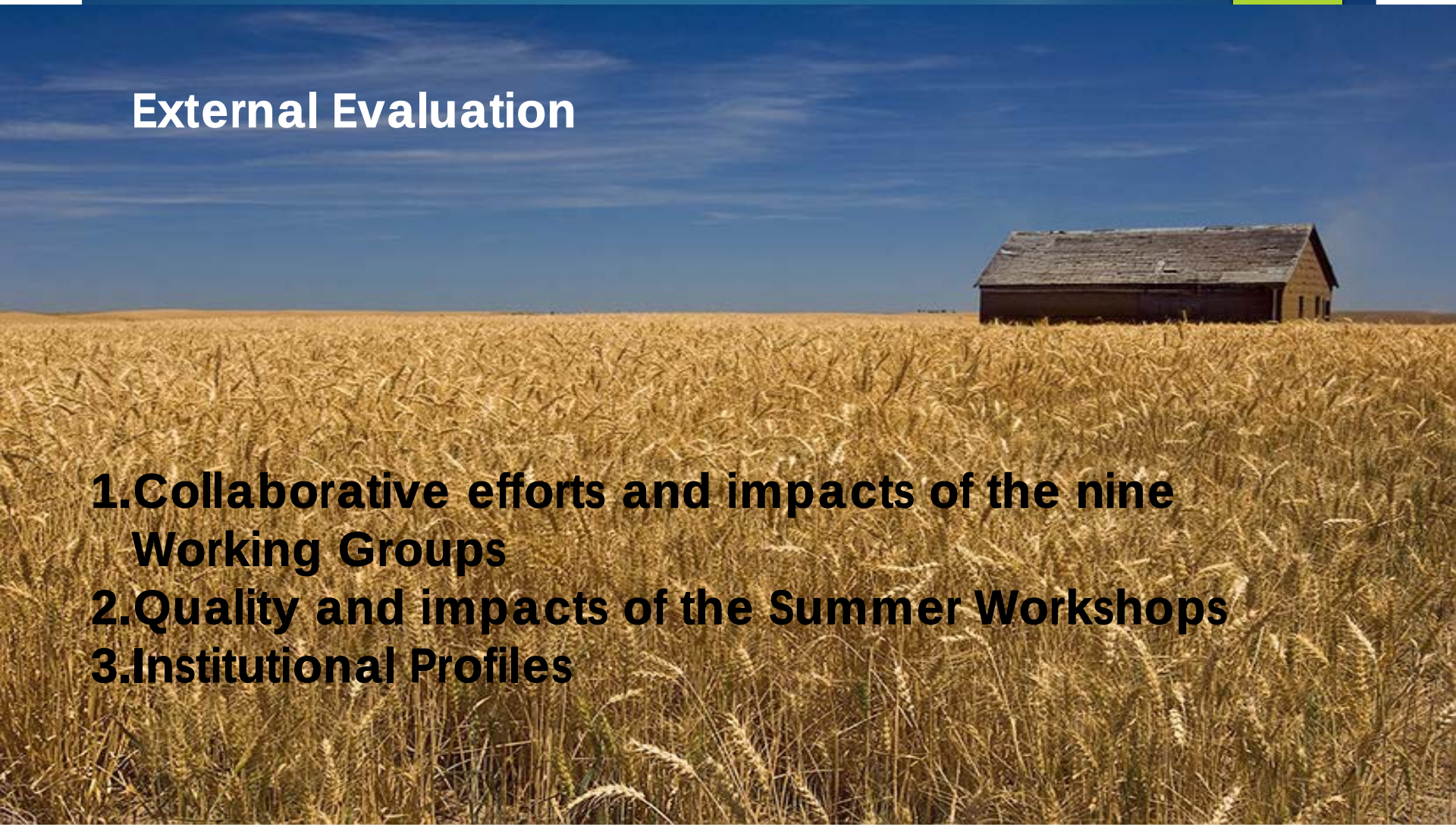
Goals and Year 4 Benchmarks

- **Improve STEM teacher preparation programs in the state**
  - Partnering HEIs have incorporated one or more of the models shared by the working groups into their STEM teacher prep programs.
- **Increase the recruitment of qualified and diverse STEM students into teaching**
  - Partnering HEIs have clearly articulated and disseminated strategies and incentives to recruit underserved student populations into their institutions and STEM teaching programs.
- **Create an adaptive, research-based model for improving STEM teacher preparation through collaboration**
  - Increased quantity and quality of collaborations across partnering HEIs, and an understanding of the factors that support or inhibit high-quality collaborations.

Internal Evaluation

1) Document the iterative design process
2) Assist working groups in pilot-testing their innovations

External Evaluation



1. Collaborative efforts and impacts of the nine Working Groups
2. Quality and impacts of the Summer Workshops
3. Institutional Profiles

Questions

WSU College of Education

STEM Education
Research Summit

September 27, 2017

Expertise

Educational Psychology

Mathematics Education

Science Education

Special Education Technology

Cultural Studies and Social Thought in Education

Focus #1: Support for Underrepresented/served Students and Adults

- **Improving educational experiences and outcomes of historically marginalized students**
- **Bridging indigenous knowledge, culture, and language with Western science in a program where elementary and middle school Native American students identify and solve local and regional environmental concerns**
- **Using emergent technology (Augmented Reality, Virtual Reality, wearable devices) to support academic and independent living needs of individuals with disabilities**

Focus #2: Mathematics and Science Education

- **Mathematics curricula effect on teachers' alignment with the Common Core Mathematical Practices**
- **Preparing teacher candidates to identify and deliver most effective teaching practices to underrepresented students**
- **Identifying Gr. K-2 students who need additional support in mathematics and designing strategies to meet their needs**

Focus #3 STEM-Focused Learning Environments

- **Integrating mathematics and computer science in project-based learning through coding based on mathematical function structures**
- **Exploring the effects of a school-wide focus on caring teacher-student relationships**
- **Investigating student development of unique "STEM Ways of Thinking"**
- **Designing and aligning statewide teacher preparation in STEM through inter-institutional partnerships between university scientists and high school teachers and students.**

Presenters

- **Janet Frost**, Mathematics Education, WSU Health Science STEM Education Research Center frost@wsu.edu
- **Chad Gotch**, Educational Psychology, Learning and Performance Research Center cgotch@wsu.edu
- **Tamara Holmlund**, Science Education tnelson1@wsu.edu
- **Don McMahon**, Special Education don.mcmahon@wsu.edu
- **Amy Roth McDuffie**, Mathematics Education mcduffie@wsu.edu
- **Paula Groves Price**, Cultural Studies and Social Thought in Education pgroves@wsu.edu
- **David Slavit**, Mathematics Education and Mathematics dslavit@wsu.edu
- More than 10 additional collaborators

College of Education

Washington State University
College of Education
STEM Education Research Summit
September 27, 2017

Janet Frost, Ph.D.
Clinical Associate Professor, Mathematics Education
Director, WSU Health Science
STEM Education Research Center

Chad Gotch, Ph.D.
Clinical Assistant Professor, Educational Psychology
Research Associate, Learning and Performance Research Center

Drs, Frost and Gotch's research team is working with Spokane's Riverpoint Academy teachers and the principal to examine how innovative entrepreneurial project-based educational strategies develop not only essential content knowledge, but also curious, self-sufficient students who can work together and persevere through failure to reach their goals.
Findings: High impact of a focus on teacher-student relationships
Unique mathematics/computer science integration throughout the project-based and entrepreneurial program via Mathematica coding, using mathematical function structures.

Tamara Holmlund, Ph.D.
Professor, Science Education

Dr. Holmlund conducts research on STEM teacher preparation, educators' understandings about and implementation of STEM education in schools and districts, and partnerships between university scientists and high school science teachers and students. The latter project is an inter-institutional collaboration of faculty from Western Washington University, Central Washington University, Eastern Washington University, Seattle Pacific University, University of Washington Tacoma, and all WSU campuses, on a National Science Foundation-funded project designed to build programs that produce K-12 teachers equipped with the knowledge and skills to inspire every student to succeed in STEM.

Don McMahon, Ph.D.
Assistant Professor, Special Education Technology
Principal Investigator, Assistive Technology Research and Development Lab

Dr. McMahon's research is focused on using emerging technologies such as augmented reality, virtual reality, and wearable devices to support the academic and independent living needs of individuals with disabilities.

Paula Groves Price, Ph.D.
Associate Professor of Cultural Studies and Social Thought in Education
Associate Dean for Diversity and International Programs

Dr. Groves Price is the lead researcher of a new National Science Foundation grant entitled, "Culturally Responsive Indigenous Science: Connecting Land, Language, and Culture." Her research team works in partnership with science teachers and tribal culture and language specialists from the Coeur d'Alene Tribe, Confederated Tribes of Warm Springs, and the Confederated Tribes of the Colville Reservation. This innovative research project bridges Indigenous knowledge, culture, and language with Western science to solve local and regional environmental concerns. By engaging elementary and middle school ages in culturally relevant science, the project aims to diversify STEM in post-secondary education fields to include more Indigenous students and Indigenous knowledge systems.

Amy Roth McDuffie, Ph.D.
Professor of Mathematics Education
Associate Dean for Research and External Funding

Dr. Roth McDuffie conducts research on the professional development of prospective and practicing teachers in mathematics education. Recent findings include how mathematics curriculum impacts teachers' alignment with the Common Core Mathematical Practices. Her research team is developing a professional development program for 1st and 2nd grade teachers to improve mathematics instruction. In partnership with general education and special education teachers, they will develop methods for the early identification of children who need additional mathematics support, as well as designing strategies to facilitate their learning needs.

David Slavit, Ph.D.
Professor of Mathematics Education and Mathematics
Director, WSU Mathematics and Science Education PhD
Director, WSU Middle Level Mathematics Endorsement

Dr. Slavit has researched numerous schools and learning contexts in regard to teacher development and student learning. His specific foci include teacher professional development, teaching and learning in STEM-focused schools, and students' understanding of algebra across the K-12 spectrum. His research team is developing a project to better understand the nature of instruction in a variety of STEM-focused learning environments Researchers would measure the degree to which these contexts support student interest in STEM, achievement, and career trajectory, and students may develop a *STEM way of thinking* to solving integrated, STEM-based, problems.

The largest learning event in history

During Computer Science Education Week
December 4-10, 2017

HOUR OF CODE

The Hour of Code is a global movement introducing tens of millions of students worldwide to computer science, inspiring kids to learn more, breaking stereotypes, and leaving them feeling empowered.



ANYONE, ANYWHERE CAN HOST AN HOUR OF CODE. JOIN US!

HourOfCode.com

What is the Hour of Code?

A one-hour introduction to computer science. The Hour of Code began as a one-hour coding challenge to give students a fun first introduction to computer science and has become a global learning event, celebration, and awareness event. HourOfCode.com offers hundreds of one-hour activities in over 48 languages for kindergarten and up. Activities require no experience and are can be run on browsers, tablets, smart phones - some don't require any computer at all.

Code.org's own activities feature Minecraft, Star Wars, Disney's Frozen, Angry Birds, and Plants vs. Zombies.

An annual global event. The Hour of Code takes place every year during Computer Science Education Week, the first week in December. With a huge groundswell of support and attention, it's an ideal time for schools and districts to put the spotlight on computer science programs and expand opportunities.

Why computer science?

Computer science is foundational. Computer science is changing every industry on the planet. Every 21st-century student should have the opportunity to learn how to create technology. Computer science concepts also help nurture creativity and problem-solving skills to prepare students for any future career.

Economic opportunity for all. Computing occupations are the fastest-growing, best-paying, and now the largest sector of all new wages in the US. Every child deserves the opportunity to succeed.

Students also love it! Recent surveys show that among classes students "like a lot," computer science and engineering rank near the top—only performing arts, art, and design are higher.

Beyond the Hour of Code

Don't stop at an hour. Add high-quality computer science to your curriculum or enroll in hands-on professional development workshop. Make a lasting change at your school. Learn how at code.org/yourschool.

The Hour of Code has made huge strides in bringing computer science to all students

Over **100 million** students have tried the Hour of Code

49% female students

431,363,247 hours served

In the first Hour of Code four years ago, more girls tried computer science than have tried in the last 70 years!

Celebrities, tech visionaries and even President Obama support Hour of Code

- Every Apple Store in the world has hosted an Hour of Code.
- Hour of Code has been featured on Apple, Amazon, Google, YouTube, Yahoo!, Bing, and Disney homepages.
- Celebrities Ashton Kutcher and Jessica Alba and tech leaders Sheryl Sandberg, Bill Gates, and Jack Dorsey have talked with classrooms in live video chats.
- President Obama wrote his first line of code to kick off the Hour of Code in 2014, and Canadian Prime Minister Justin Trudeau kicked off the Hour of Code 2016.
- Hour of Code students opened the NASDAQ at a special event in 2015.
- Over 300 partners have come together to support this grassroots campaign, including The College Board, Microsoft, Infosys Foundation USA, Google, Salesforce, BlackRock, Verizon, Disney, Teach for America, Khan Academy, DonorsChoose.org, and more.

Together, we can solve the diversity gap in computer science

Women who try AP Computer Science in high school are ten times more likely to major in it in college, but females currently only make up 25% of high school CS classrooms, and those ratios don't change inthe workforce! An Hour of Code is a great place to start addressing the diversity gap and introducing computer science to more girls in an engaging and empowering way!

"I challenge girls in every single country to learn one Hour of Code."

Malala Yousafzai
Nobel Peace Prize Winner

Join the movement December 4-10, 2017 beginning with an Hour of Code!

Hour of Code Participation Guide

Anybody can learn.

HOUR OF CODE

December 4-10, 2017

1 Choose an Hour of Code activity

There are fun activities for students of all ages, created by a variety of partners and for a variety of subjects. Want to do an Hour of Code in your English or history class? We've got options for that! Visit code.org/learn.

Different options.
Self-guided—requiring minimal teacher prep.
Teacher-led—lesson plans for any teacher.

Code.org's own activities feature Minecraft, Star Wars, Disney's Frozen, Angry Birds, and Plants vs. Zombies.

2 Sign up your classroom and recruit your school

Are you a teacher? Host an Hour of Code event for all your students throughout the week. Urge other teachers to do the same.

Are you a principal? Plan for your entire student body to do the Hour of Code. You don't need a computer for every child.

Are you a superintendent? Challenge every school in your district to sign up.

Are you a parent? Pass this guide on to your local school. Volunteer to help.

How do you go bigger with your school? Share this brochure with your principal to get every student at your school on board.

3 Plan your technology needs—computers are optional

Hour of Code is best experienced with Internet-connected computers that can access web-based activities. No downloads or sign-ins are required. And you don't need a computer for every student! Here are a few options:

In the computer lab? Bring your class to the computer lab for one period so students can do the Hour of Code together.

In the classroom? If your classroom already has Internet-connected computers, tablets, or laptop carts, your students can take turns doing the Hour of Code throughout the week.

Work in pairs. This requires fewer computers, and students collaborate to learn more. On the board: If your classroom has a web-connected projector, all students can do an Hour of Code together on the shared screen.

Engage parents to bring hardware. Ask parents to bring in tablets or laptops for the class to share (in schools that have WiFi).

Use mobile devices. If your school doesn't have enough computers or Internet access, many of the one-hour activities will also work on smartphones and tablets.

Go unplugged! IWe also offer "unplugged" activities that teach basic principles of computer science—and no electronic devices are required.

Find how-to resources for educators at hourofcode.com/resources.



4 Spread the word to students and parents

Share promotional materials. Inspire students with videos and posters. Find everything you need at hourofcode.com/promote.

Encourage parents to participate, too! Students with engaged parents are more likely to pursue computer science. See a sample email to parents at hourofcode.com/promote/resources.

Host an Hour of Code parents' night. To fully engage parents, consider inviting them to an open house where they can do an Hour of Code with their kids and teachers from your school!

Reward participants. Go big and create prizes and awards for teachers and students!

5 Celebrate your Hour of Code

There are tons of ways to kick off the Hour of Code in your community during December 4-10, and join celebrations around the world!

Host a school-wide assembly. Show a Code.org video or invite a speaker to do an "unplugged" activity with students in front of the entire school.

Contact press and local officials. Tell them about your school's participation in the international Hour of Code movement.

Invite the community. Parents, grandparents, volunteers, and business leaders can all learn to code, too. In high schools, the Hour of Code can also be used to recruit students for spring computer science courses.

Celebrate! Share your experience and photos on social media with #HourOfCode.

6 Keep learning! Go beyond the Hour of Code!

Here's what you and your students can do after finishing the Hour of Code:

Continue learning in class or online. Keep going with Code.org's online learning platform, Code Studio, where you can track student progress as they learn at their own pace, or find the best learning resources for your classroom at code.org/educate.

Expand computer science at your school or district. Visit code.org/yourschool to learn how to bring a full K-12 computer science pathway and professional development to your school or district. Encourage elementary school teachers to find free, one-day local workshops, at code.org/k5.

Help remove policy obstacles to computer science. Code.org and its partners are working to change policies at the federal, state, and local level to increase access to computer science for all students. Learn about what's happening in your area and how you can help at code.org/promote.

Mark your calendars for December 4-10, 2017!

Start at hourofcode.com

"I challenge girls in every single country to learn one Hour of Code."

Malala Yousafzai
Nobel Peace Prize Winner

In 2017, the Washington State Legislature appropriated $1 million for computer science education grant funding through the Office of Superintendent of Public Instruction (OSPI). The funding will provide schools and school districts with opportunities to train teachers, purchase technology, and engage students from underrepresented populations. So far, OSPI has awarded 25 grants to high schools, school districts, non-profits, universities, and Educational Service Districts.

OSPI is also collaborating with TechStart, an education initiative by Facebook, to engage students in computer science during the 2017–18 school year. This opportunity provides high schools with 60 percent or higher free or reduced-price lunch populations the opportunity to receive free virtual reality equipment, curriculum, teacher training, and supported student activities. The goal of these project-based learning experiences with modern technologies is to educate and promote student interest in computer science.

"More students and educators will have access to cutting-edge technology with this funding," said Superintendent of Public Instruction Chris Reykdal. "This investment is key to our vision of supporting all students, including those who have historically not been as involved in computer science education as some of their peers. These kids will now have the tools needed to engage with the industries of the future—many of which are based right here, in Washington state. Congratulations to the grantees."

Washington State's Computer Science K–12 Learning Standards must be used in the implementation of these grant projects. These programs support students from historically underrepresented groups—including girls, students who are low-income, and students of color—to computer science and to inspire them to consider computer science careers.

This year's grants were awarded to the following:

Award	**Amount**
Academy for Precision Learning	61,000
Auburn School District	35,000
Cascade School District	17,500
Chehalis School District	19,000
Colfax High School	5,000
Eatonville School District	40,000
Edmonds School District	59,000
AESD-EAST	190,000
ESD 112	22,000
ESD 113	34,000
AESD-WEST	98,000
Gates Secondary School	5,400
Lake Chelan School District	45,000
McCleary School District	10,000
Nespelem School District	17,500
Ocosta School District	2,000
Peninsula School District	78,000
Snoqualmie Valley School District	56,000
Tacoma School District	33,000
TechBridge Girls	49,000
Vancouver School District	5,000
Wahkiakum School District	24,000
Walla Walla School District	40,000
Washington High School	5,400
WSU-Tri-Cities	49,000