

A Proposal to Transform Math and Science Teaching and Learning in Washington State

Presented to the State Board of Education

Caroline King, Partnership for Learning

Sam Whiting, The Boeing Company

March 12, 2009



STEM Vital to Success in 21st Century Knowledge Economy

Residents, communities and Washington benefit from strong science, technology, engineering and math (STEM) education:

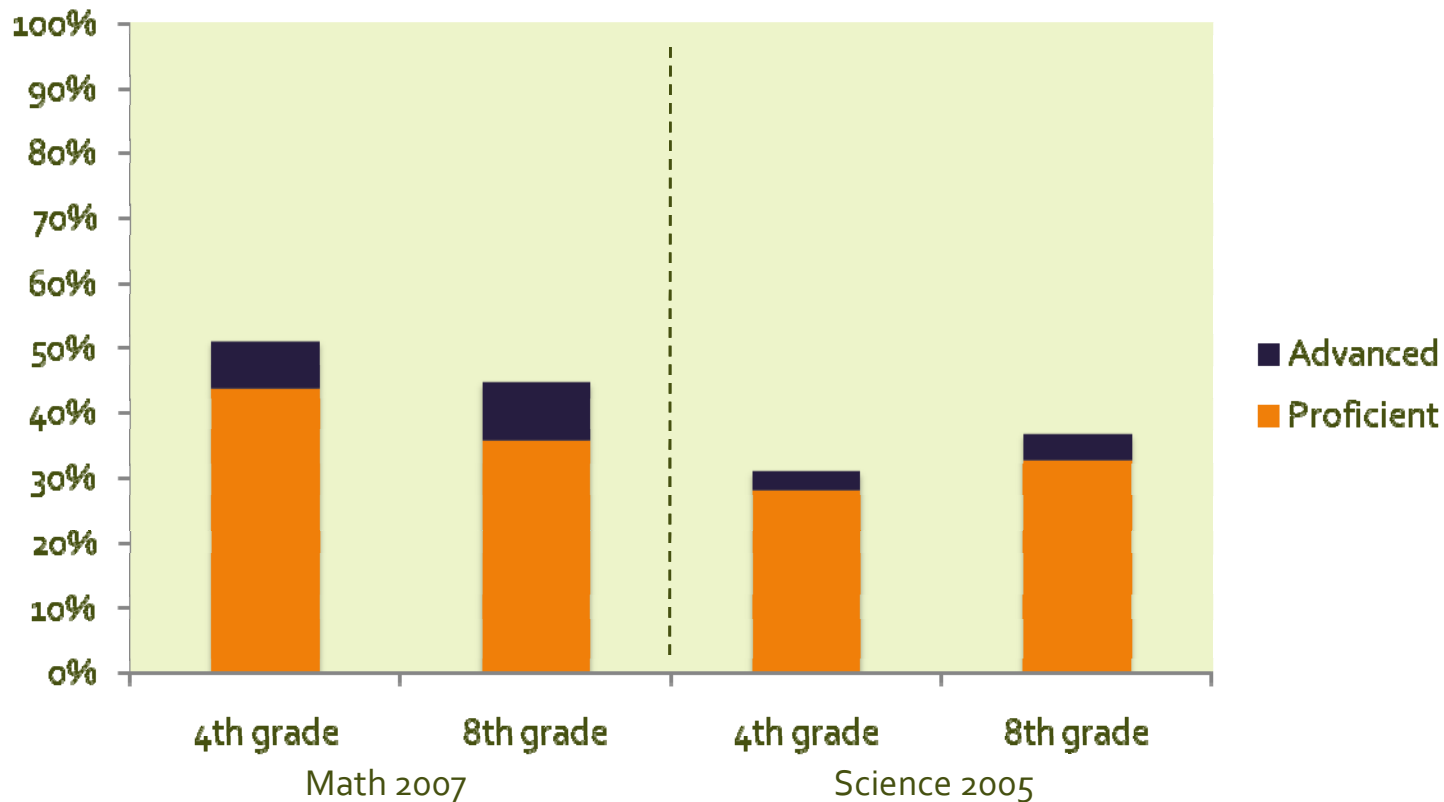
- Every student ready for college and work
- Pipeline of innovators who create opportunity
- Better quality of life
- State more economically competitive

Leadership and Partners

- Washington Roundtable—top 40 CEOs in state are leading this effort. Top staff and board leadership are actively engaged.
- Working group comprised of key private funders: Battelle, Microsoft Corporation, The Boeing Company, Paul G. Allen Foundation and The Bill & Melinda Gates Foundation. Staffed by the Washington Roundtable and Partnership for Learning.
- Strategy informed by outreach to STEM industry workers, state agency partners, state policy leaders and a broad cross section of K-12 and higher education leaders.

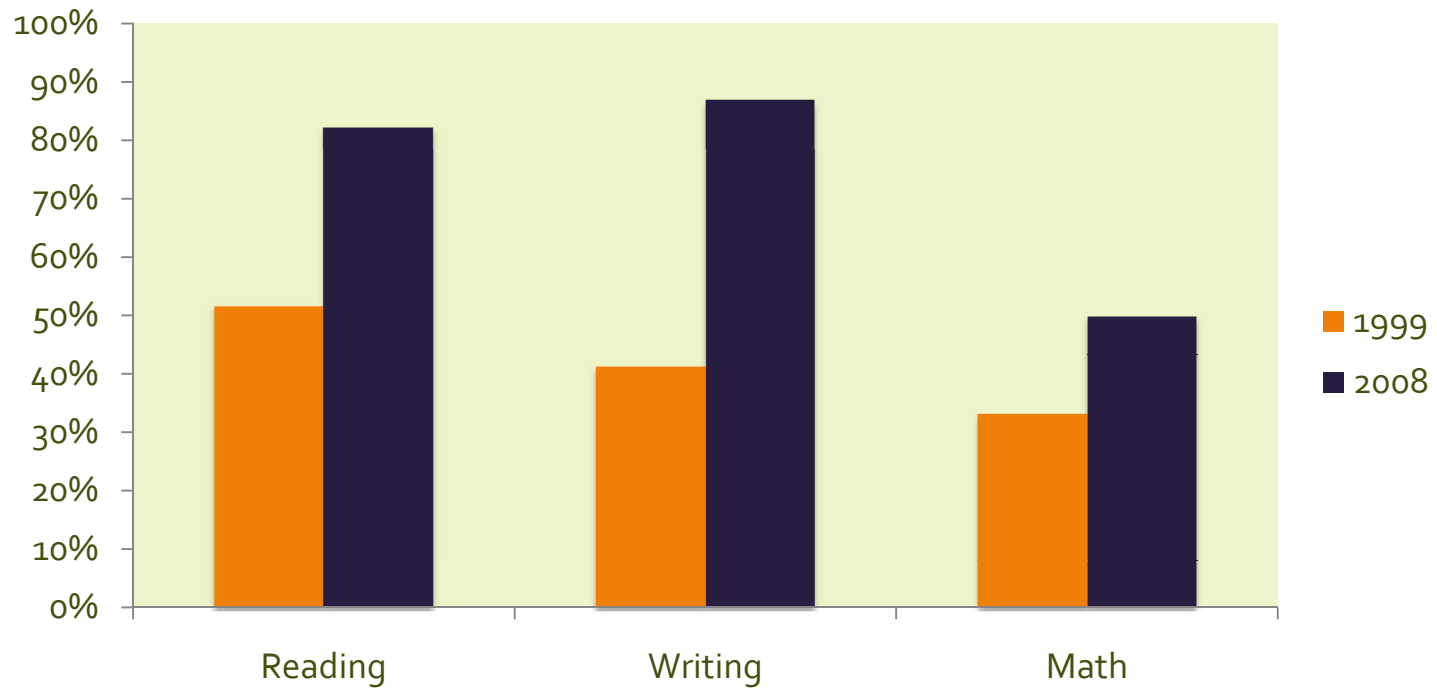
Too Few Washington Students Have the Necessary Math and Science Skills

NAEP Performance on Math and Science in Washington



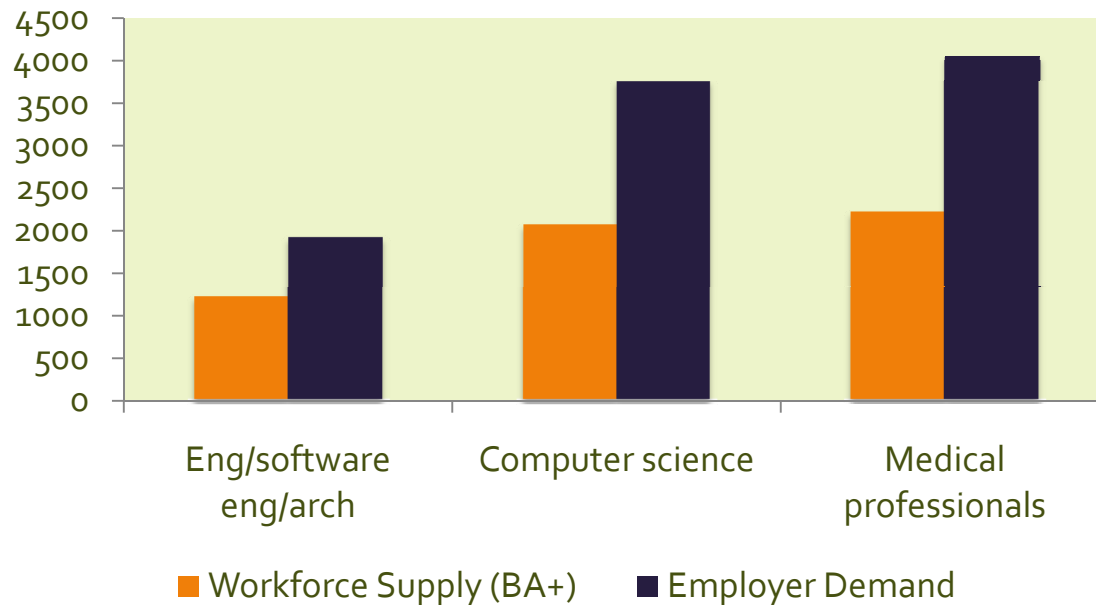
Slower Improvement in Math

High School WASL Performance 1999 to 2008



The Challenge: Demand Outpacing Supply for STEM Workers in WA

**Graduates with BA or Higher (2006) vs.
Expected Job Openings (2009-2014)**



Current degree production meets only:

- 67% of the expected annual job openings from 2009 to 2014 in engineering;
- 56% in computer science; and
- 65% in the medical profession.

(WTECB, SBCTC & HECB, 2008)

Few Minorities Earning STEM Degrees/Certificates

Degrees/Certificates Awarded in Washington in STEM-Related Fields by Race/Ethnicity, 2006–2007

	Certificate	Associate	Bachelor	Master	Doctoral
Asian	9%	7%	15%	8%	5%
Black	6%	3%	2%	2%	1%
Hispanic	6%	4%	3%	2%	1%
American Indian	1%	1%	1%	1%	0%

(Data collected from the Integrated Postsecondary Education Data System)

What We Have: Disconnected Efforts



What We Need: Coherence & Alignment



Vision

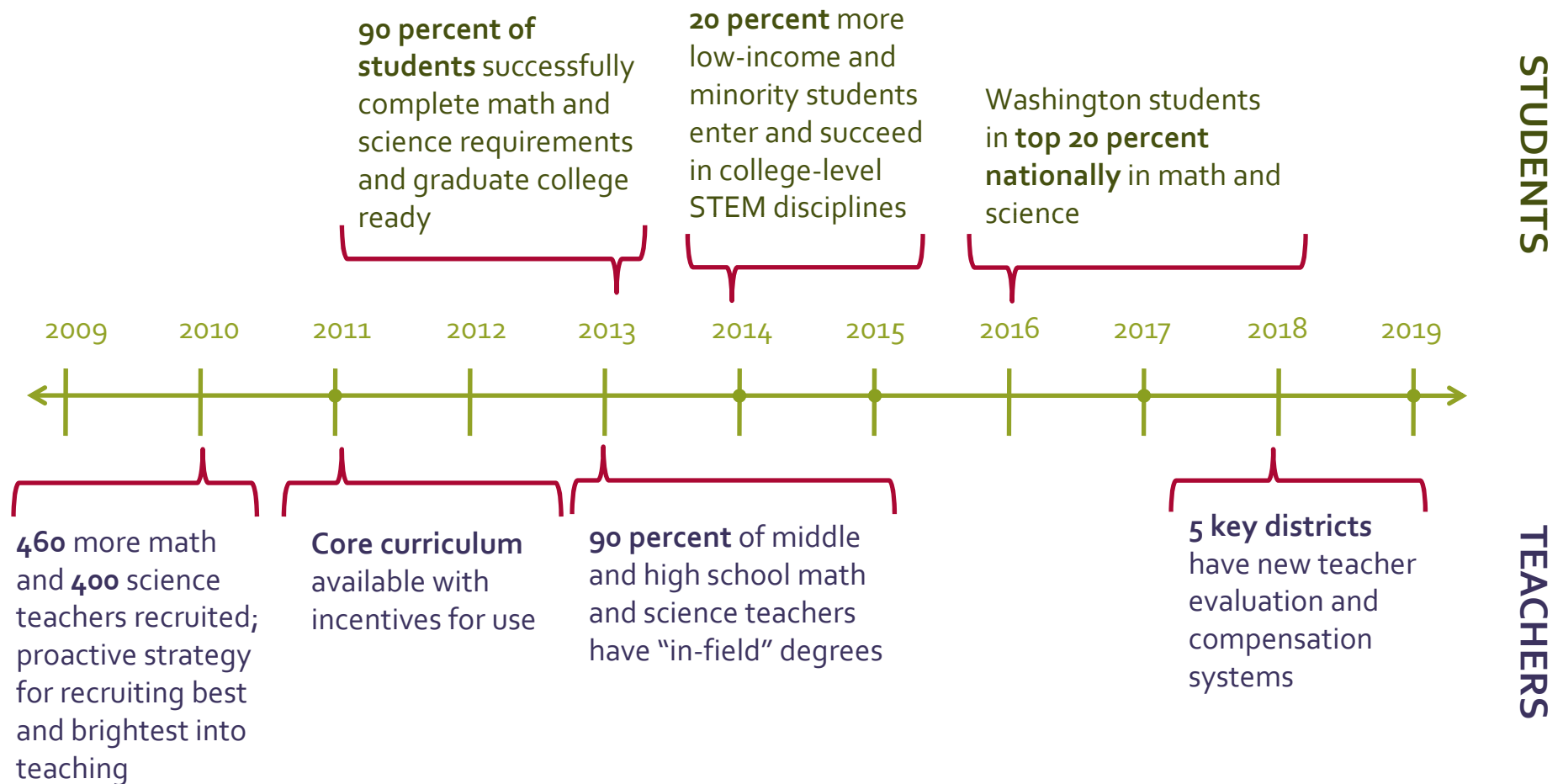
Washington is thriving in the integrated global economy.
Residents enjoy individual success and prosperity.

Washington students have the ability to create, design, innovate and think critically to solve complex challenges. They have outstanding math and science skills and they are excited to use their knowledge in the real world.

Mission

Washington will launch a statewide ***math and science achievement strategy*** fueled by dynamic leadership, effective public and private investments and dramatic change.

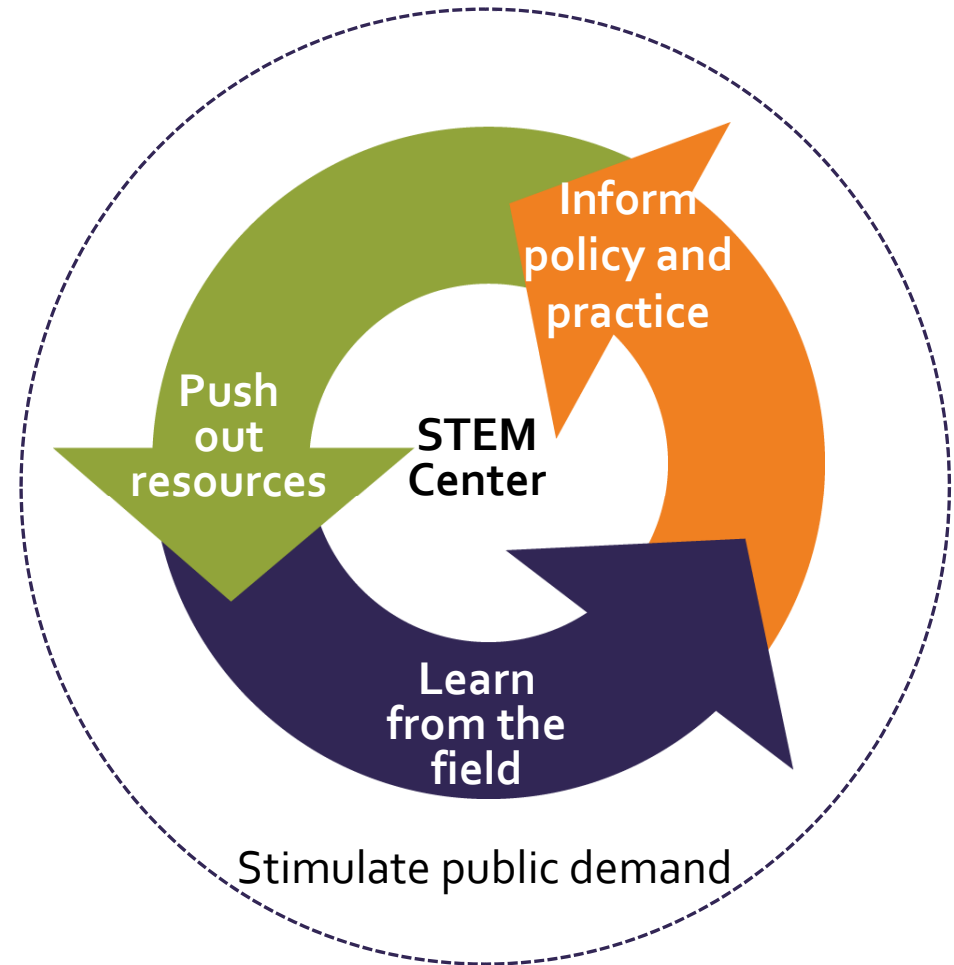
Expected Outcomes



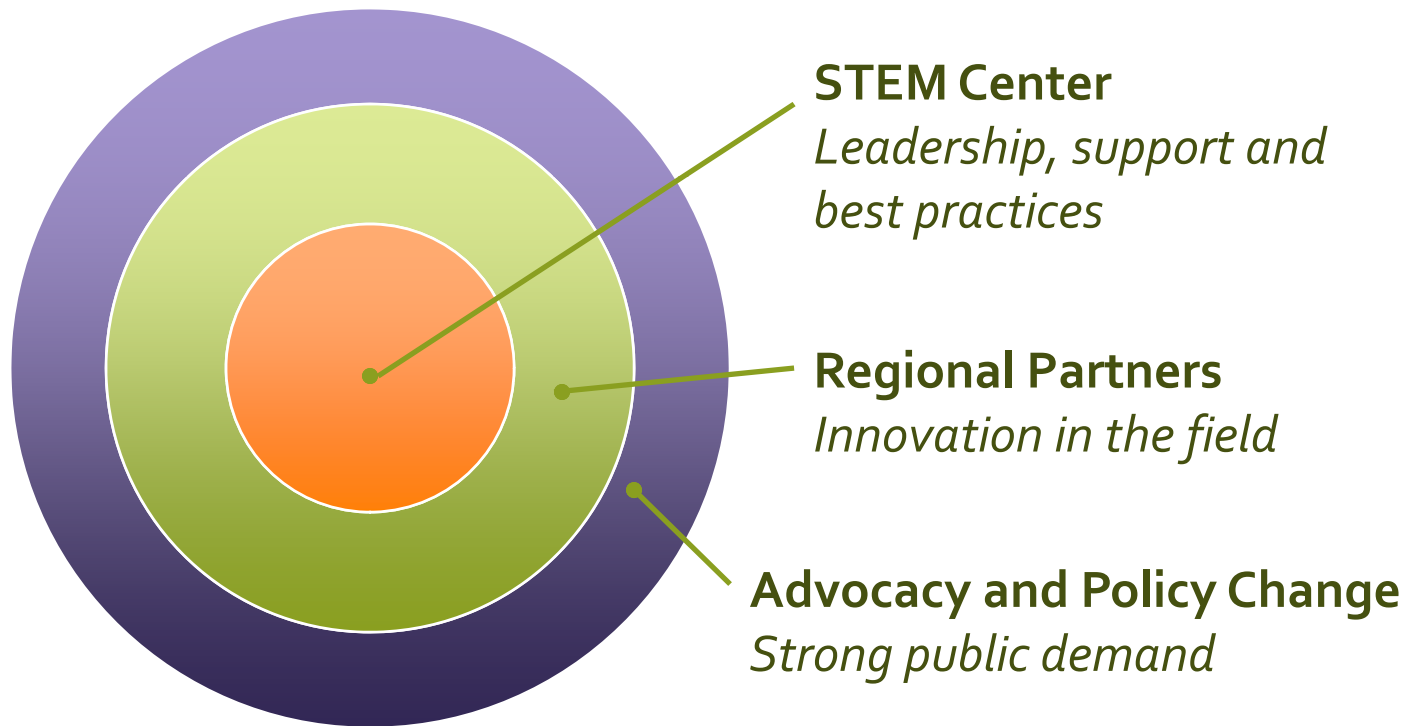
Strategy: Transform Teaching & Learning

Establish a statewide 501c3 STEM Center with world-class talent and resources to:

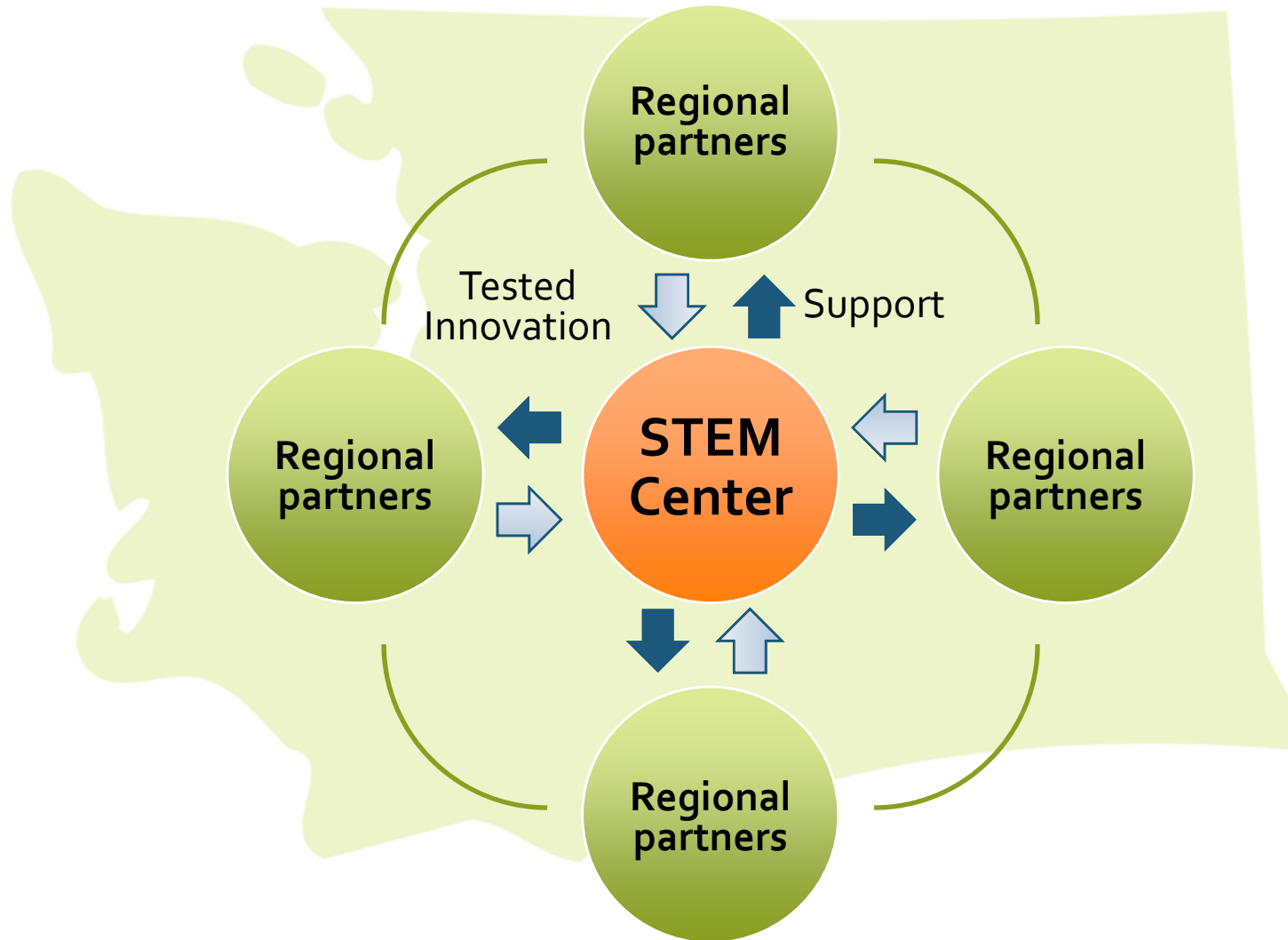
- Sponsor innovations;
- Increase teacher effectiveness;
- Design and deliver enabling resources; and
- Accelerate improvements in math and science achievement.



Transformation to Scale

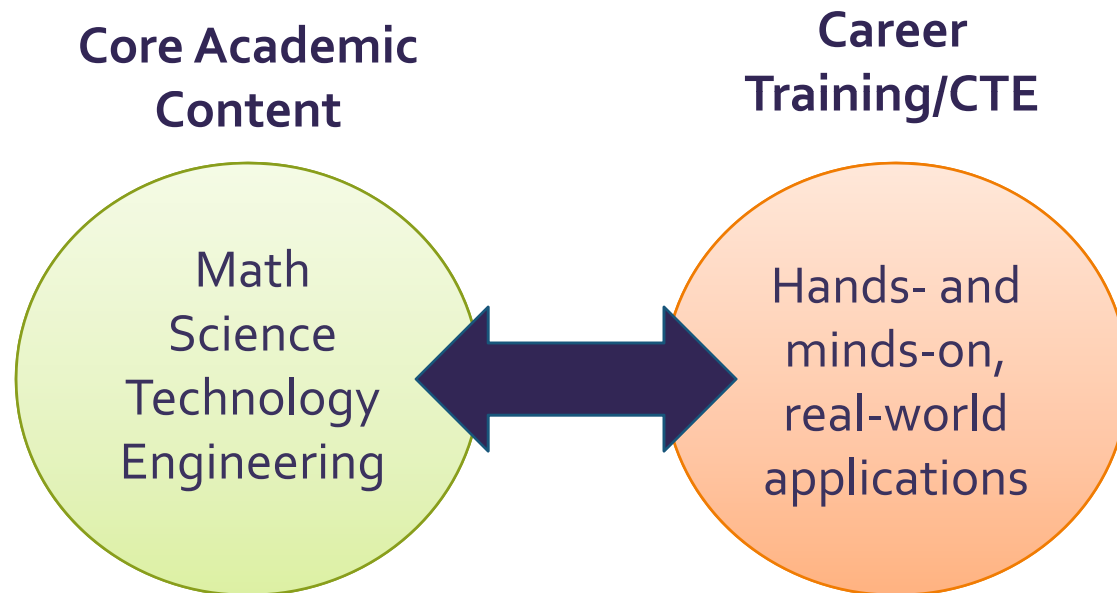


How It Will Work: A Learning Network



CTE and Core Academics

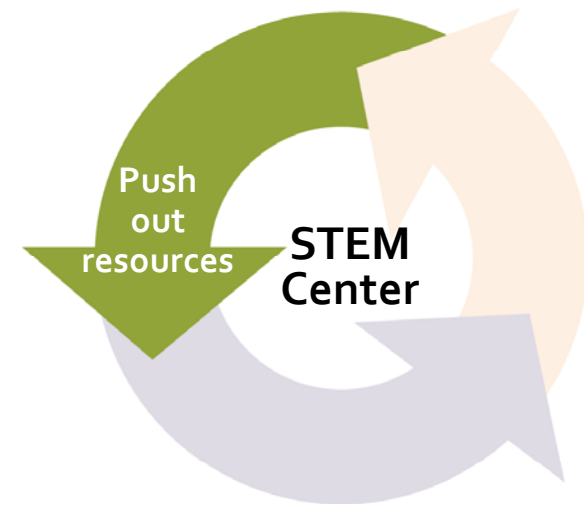
STEM builds on the best of traditional academics and career and technical education.



Both areas are stronger together than apart.

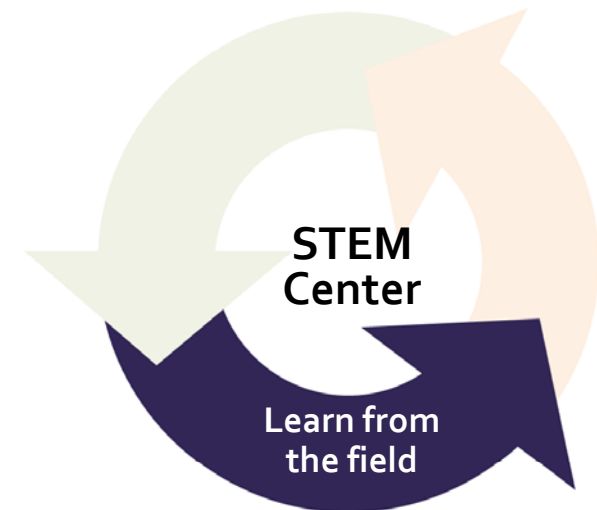
I. Push Out Resources

- Award competitive regional grants
- Create aligned and powerful strategies for teaching and learning at each grade level
- Deliver high-quality technical assistance and materials through a network of affiliated and aligned high-profile providers
- Amplify and accelerate use of promising practices



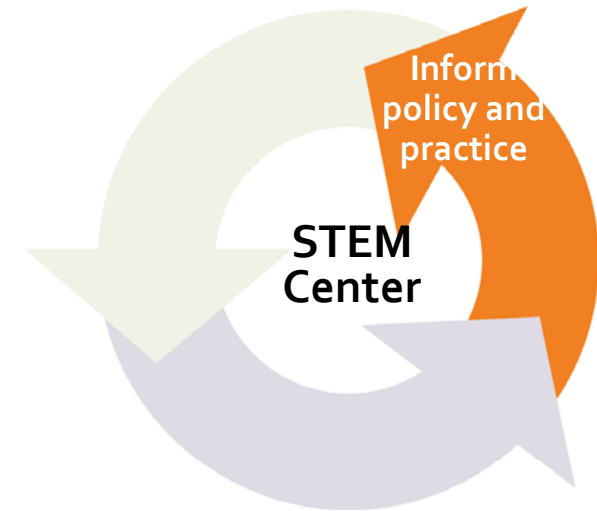
II. Learn from the Field

- Regional STEM initiatives:
 - STEM platform schools
 - Effective, content-rich STEM instruction
 - New teaching practices and ways of hiring, evaluating, retaining and training teachers
 - K-12, higher education and industry partners (e.g., health care in Spokane, renewable energy in Moses Lake)
 - Substantial community engagement and student supports (e.g., internships, R&D capacity at universities)
- Identify gaps in service delivery and inefficiencies



III. Inform Policy and Practice

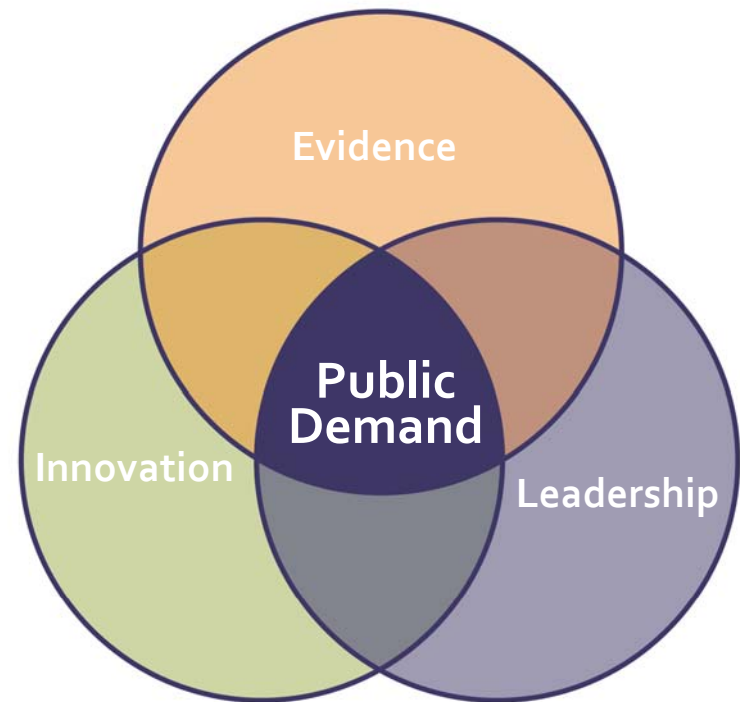
- Make evidence-based decisions
- Allocate federal, state and local funds effectively
- Transform systems to support teacher effectiveness
- Support policies that promote rigor, quality and coherence of learning



Stimulate Public Demand

Collaborate with Partnership for Learning and others to:

- Deepen awareness of the importance of math and science for all students;
- Build political will and leadership; and
- Network and communicate proven innovations.



What Success Looks Like

Every student is:

- Engaged by rigorous, real-world instruction
- Better prepared for success in college, work and life

Every classroom and school has:

- Better prepared and supported teachers
- Rigorous, inquiry-based STEM instruction

Across Washington, there is:

- Sustained focus, coherence and coordination
- Effective use of resources
- Innovation
- Networked best practices





Questions & Discussion