

Transforming Math and Science Teaching and Learning in Washington State



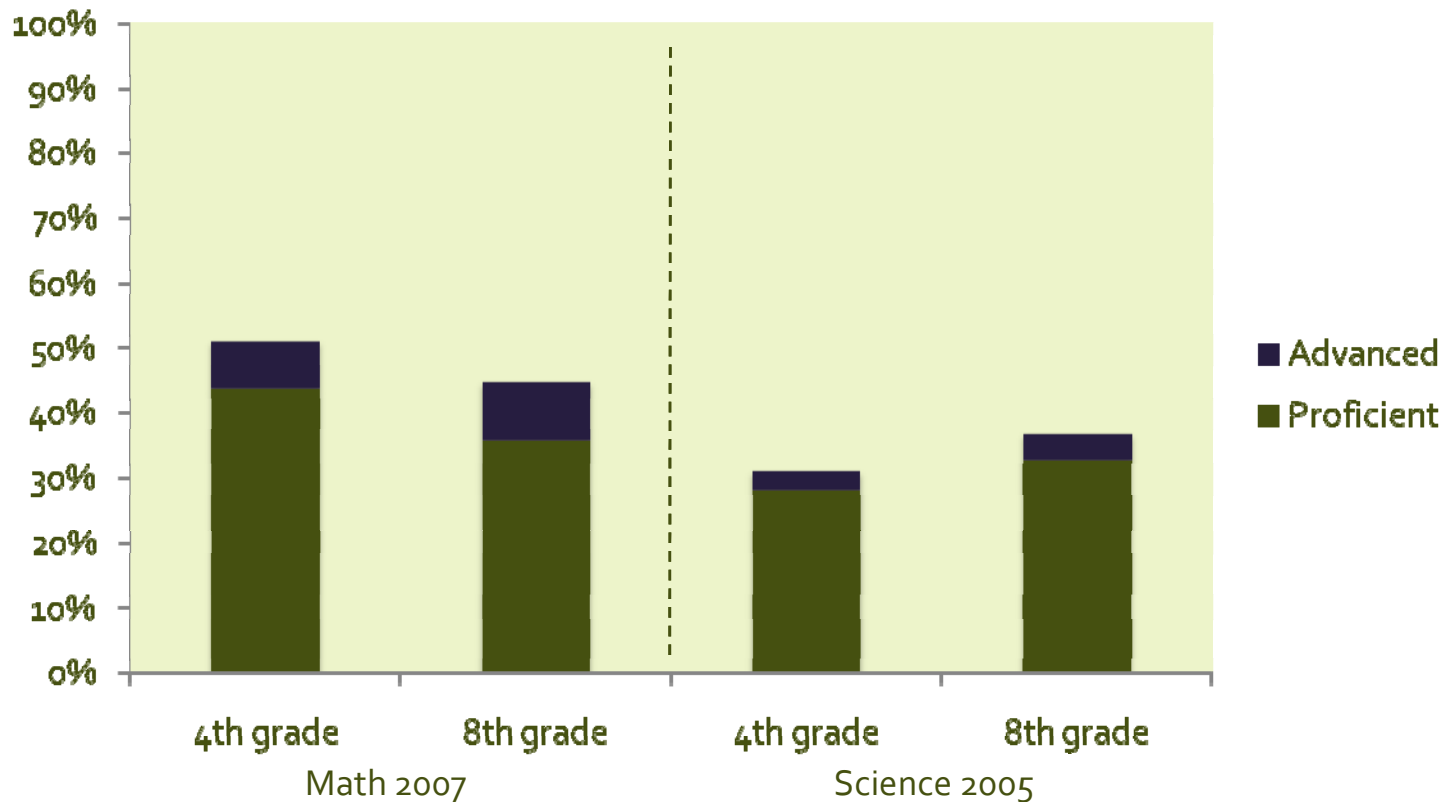
STEM Vital to Success in 21st Century Knowledge Economy

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

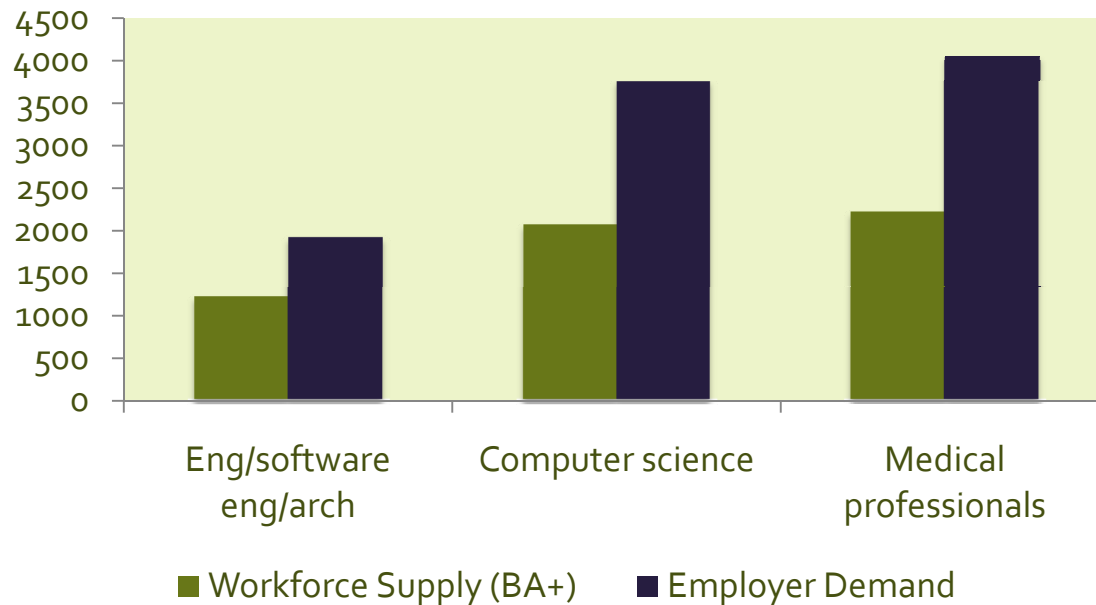
Too Few Washington Students Have the Necessary Math and Science Skills

NAEP Performance on Math and Science in Washington



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

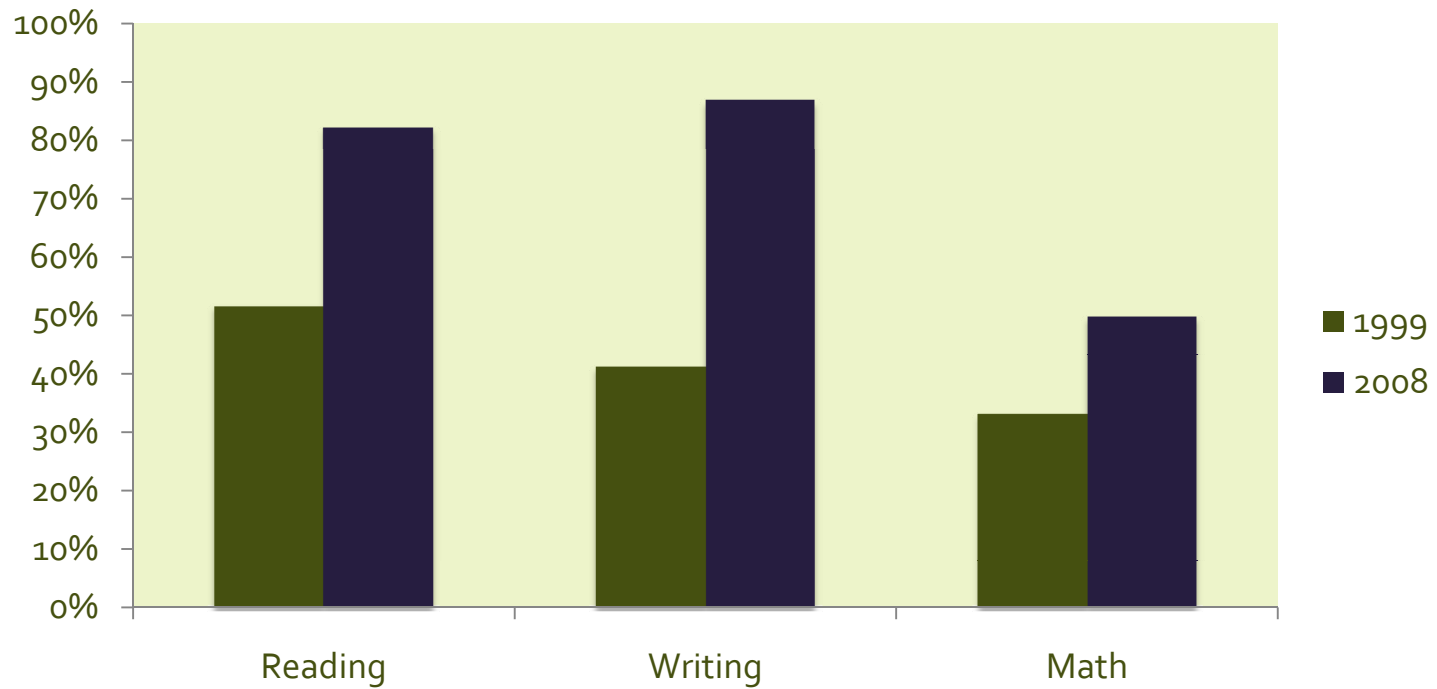
Degrees/Certificates Awarded in Washington in STEM-Related Fields by Race/Ethnicity, 2006–2007

| | 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)

Slower Improvement in Math

High School WASL Performance 1999 to 2008



What Is the Problem?

Developing

The Foundation

Standards

- Rigorous
- Balanced

Assessments

- Statewide
- End of course
- Classroom based

Curriculum

- Content-rich
- Aligned materials

Broken

Delivery System

Recruitment

- Financial incentives
- Traditional routes
- Alt. routes
- Teach for America; New Teacher Project

Induction

- Mentoring
- More swimming, less sinking

School Models

- STEM schools
- Programs of study

Accountability

- Data system
- Tenure
- Evaluation

Training

- Preservice
- Credentialing
- Inservice
- Professional development

Retention

- Pathways
- Professional Learning Communities
- Resources

Time

- Money
- Flexibility
- Creativity

What We Have: Disconnected Efforts



What We Need: Coherence & Alignment



Vision

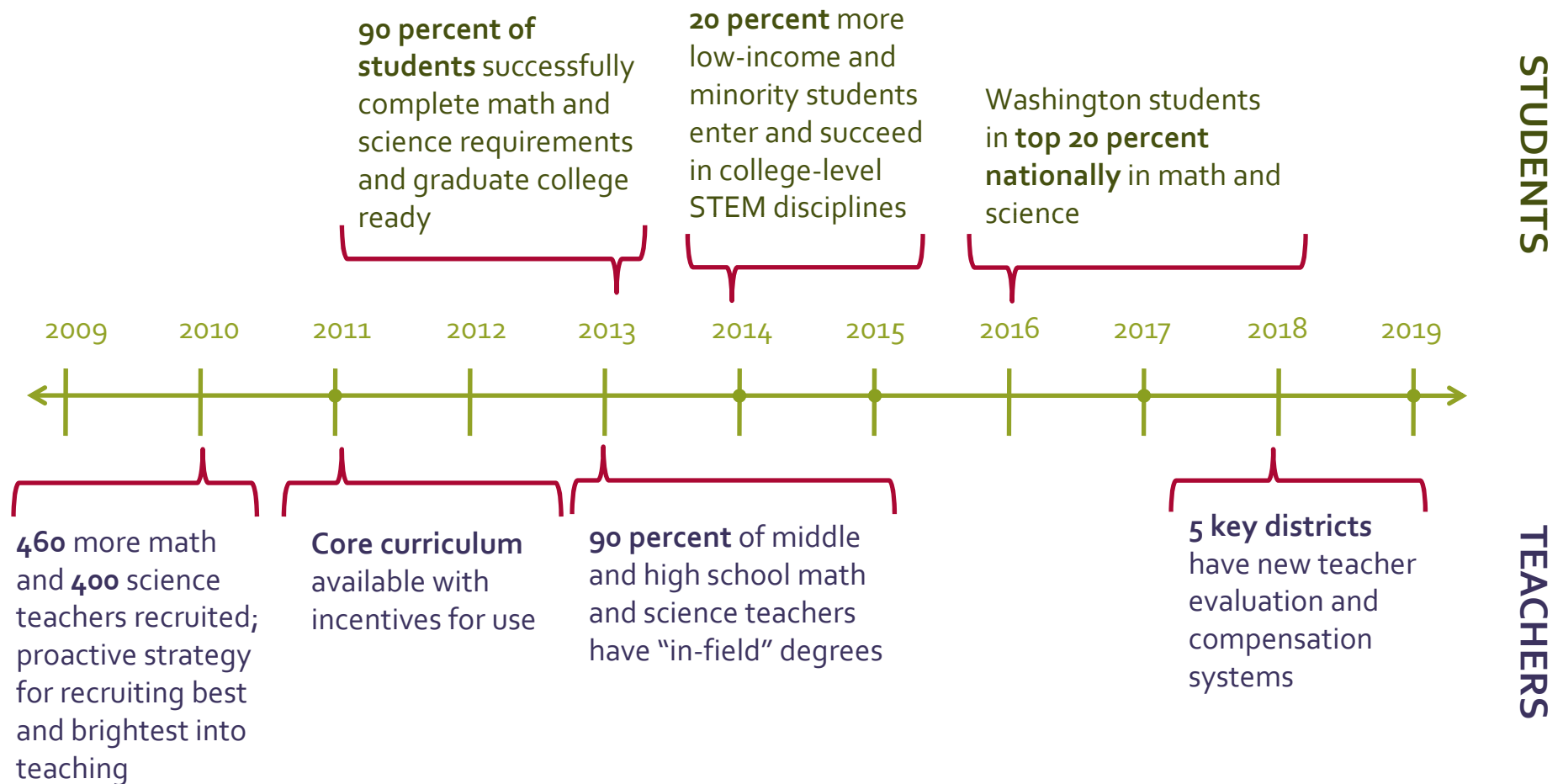
Washington is thriving in the integrated global economy. Residents enjoy individual success and prosperity.

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 investments and dramatic change.

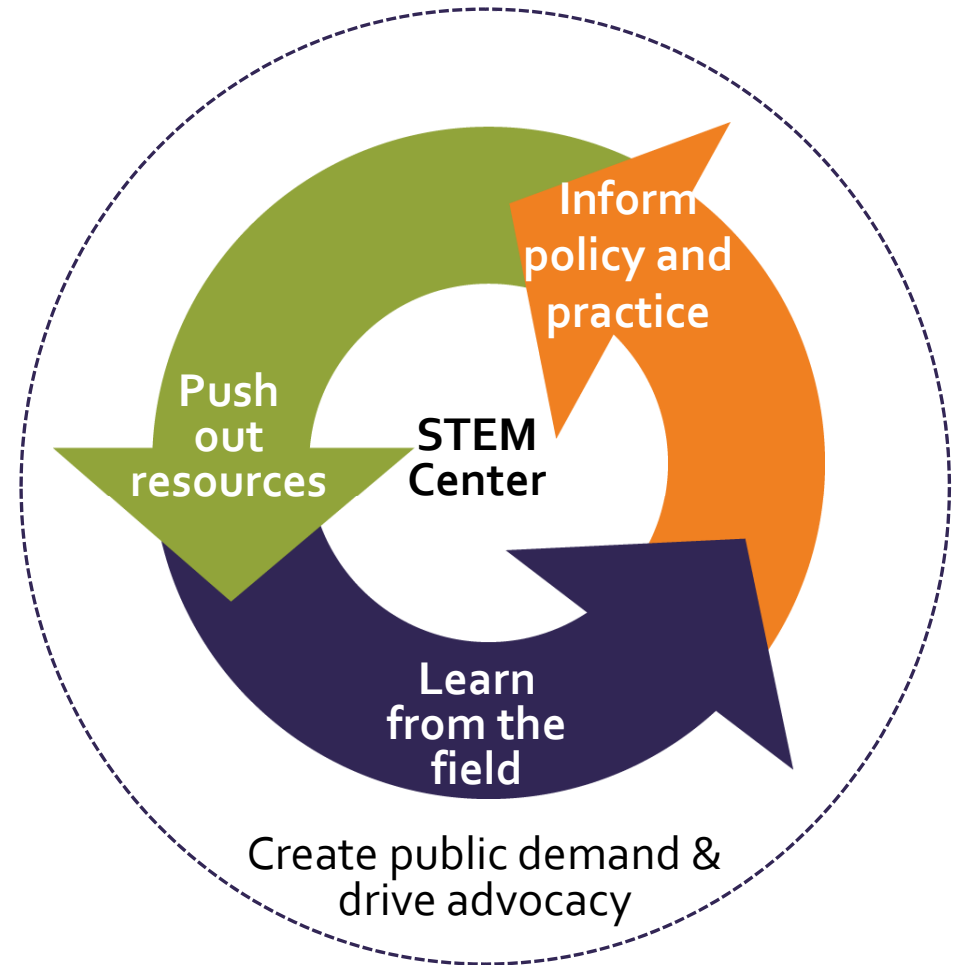
Expected Outcomes



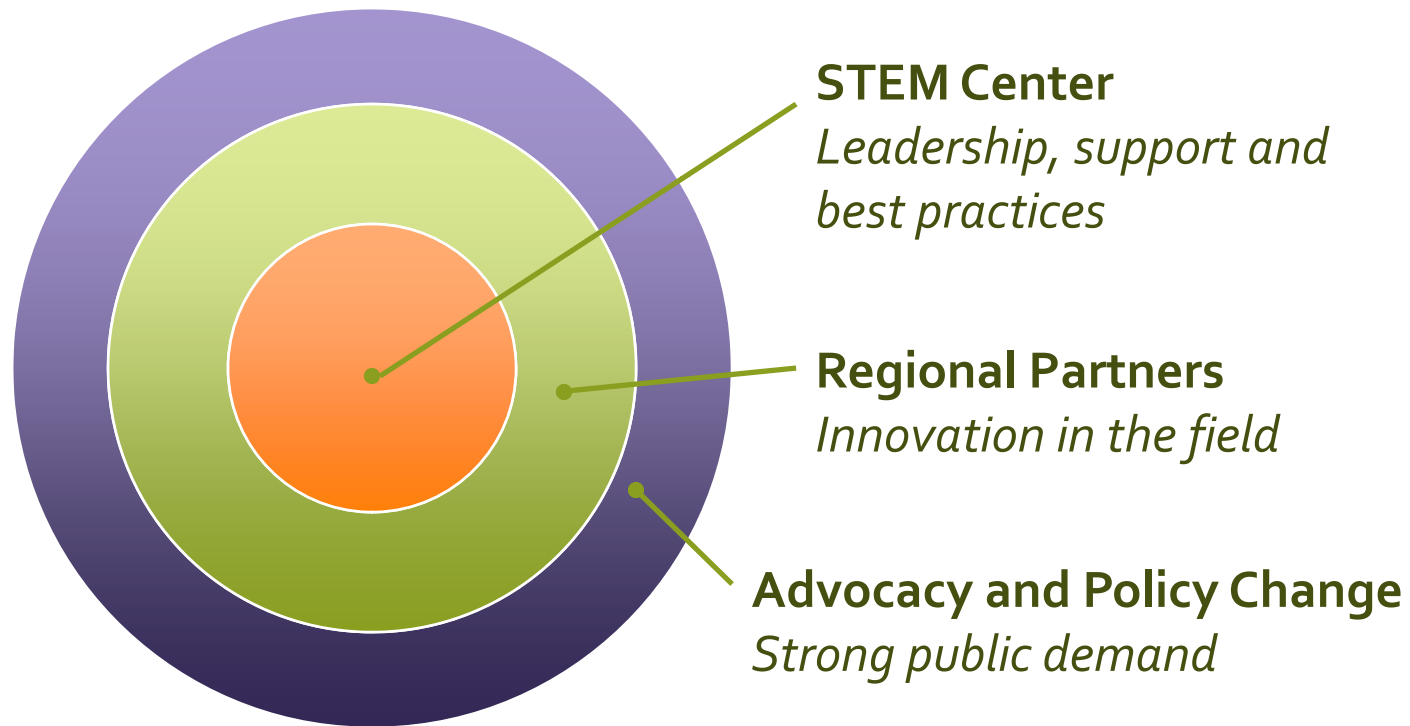
Strategy: Transform Teaching & Learning

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

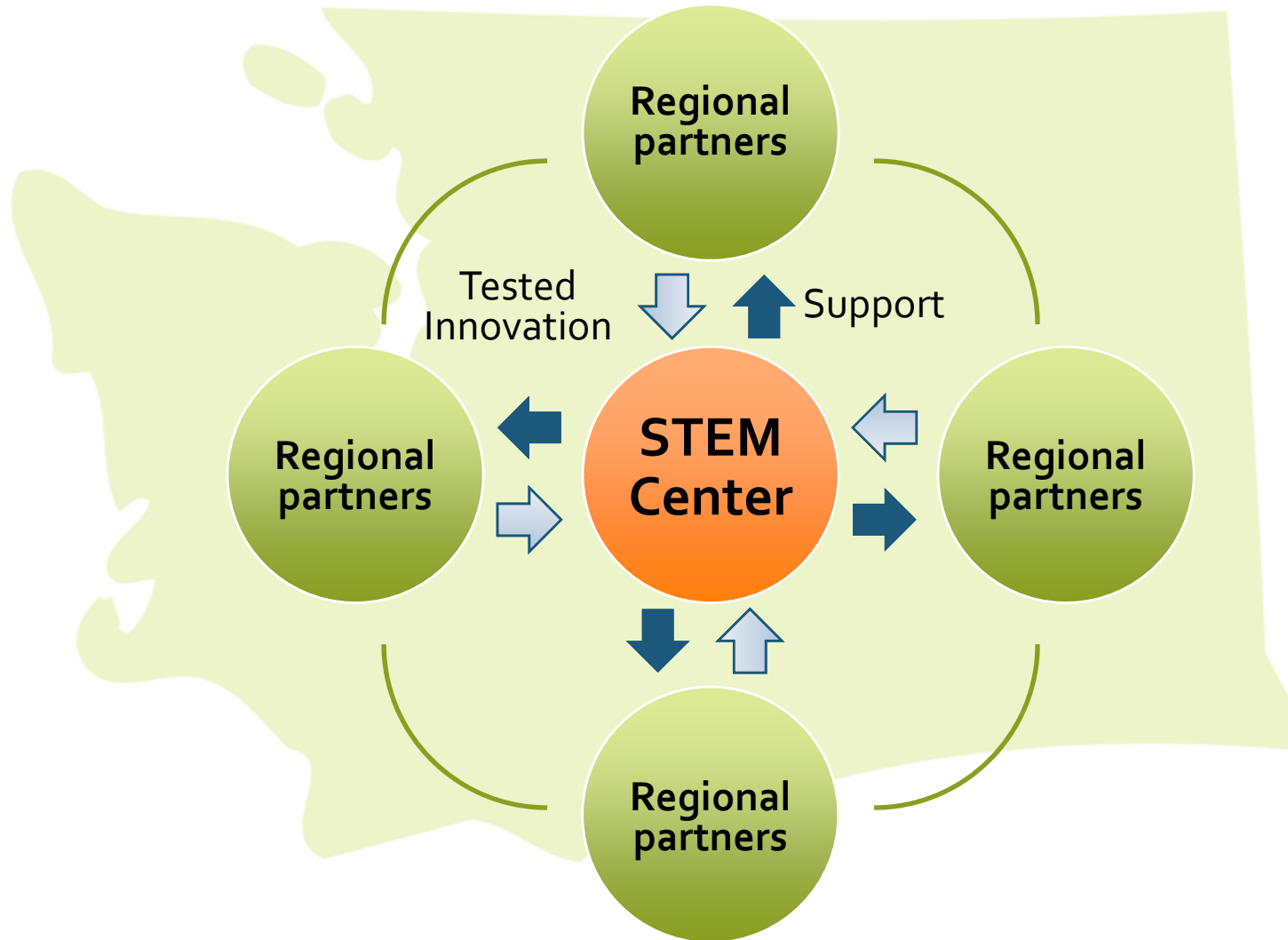
- Sponsor innovations;
- Increase teacher effectiveness;
- Design and deliver enabling resources; and
- Accelerate improvements in math and science achievement.



Transformation to Scale

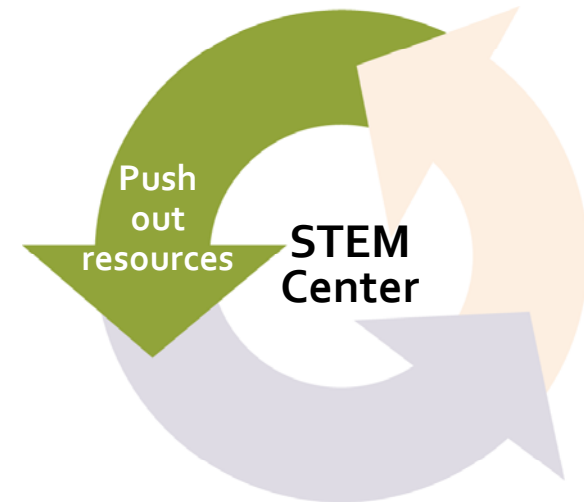


How It Will Work: A Learning Network



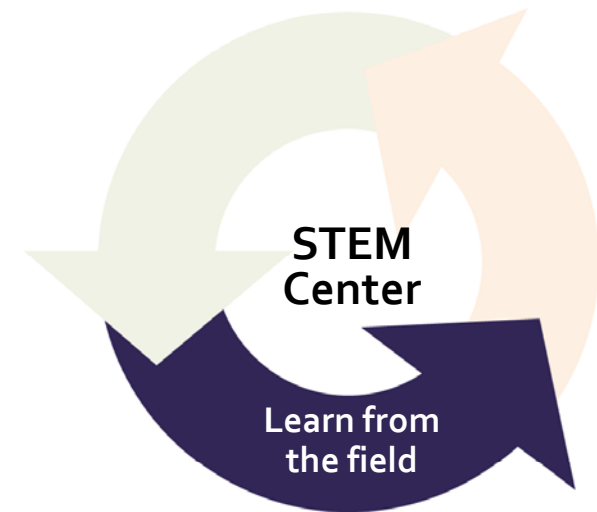
I. Push Out Resources

- 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 high-profile affiliated/aligned providers.
- Amplify and accelerate use of promising practices.



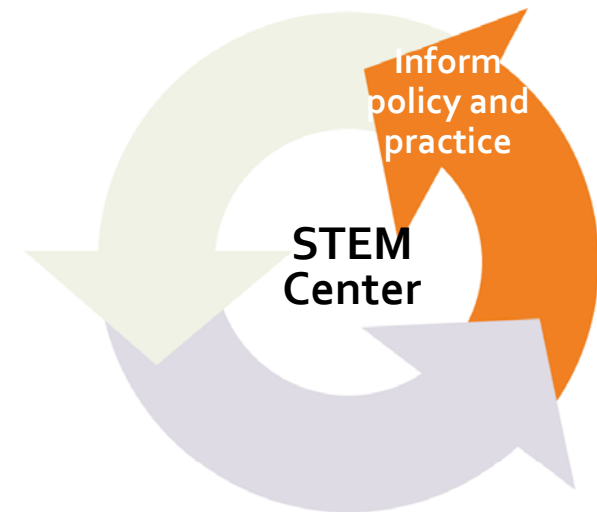
II. Learn from the Field

- 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

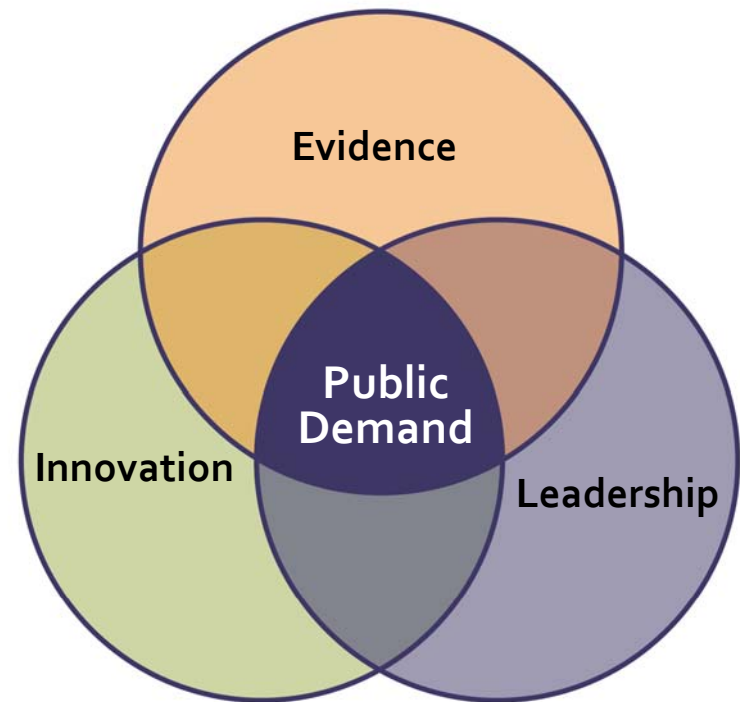
- Make evidence-based decisions.
- Allocate federal, state and local funds effectively.
- Transform systems to support teacher effectiveness.
- Support policies that promote rigor, quality and coherence of learning.



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 about proven innovations.



What Success Will Look Like

Every student will be:

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

Every classroom and school will have:

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

Across Washington, there will be:

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



Planning and Decision-Making Process

Go to Supporting Documents

Washington STEM Center Key Milestones

| MAY | JUNE | JULY/AUG | SEPT/OCT | NOV/DEC | JAN/FEB |
|---|--|--|---|---|---|
| Basic information Website launched | First three board members secured | Strategic planning retreat on Center work plan, staffing, budget, launch and evaluation | STEM Center branding initiated | Approval of three-year strategic plan for STEM Center | Third meeting of National Expert Panel |
| Design team and technical advisors identified | STEM initiative formally announced (anchored around the planning grants) | Approval of strategies for connecting the work of the Center with existing STEM efforts, regional partnerships and STEM platform schools | Regional meetings to build awareness of STEM initiative and draft RFP | Offer made to executive director | Evaluation instruments complete |
| All planning grants submitted | Rough scope of three-year STEM Center budget | By-laws and articles of incorporation filed | Second meeting of National Expert Panel | The New Teacher Project final report published | Commitments secured for 80% of three-year operating costs |
| Board structure approved | Regional "sponsors" identified for fall outreach | Fund development plan complete (private, regional, state, federal/stimulus) | Draft three-year strategic plan complete, including "First 100 days" | | STEM Center opens; executive director starts |
| The New Teacher Project work starts | Evaluation firm hired | | Three more board members secured | | RFPs completed & released (Spring 2010) ⇄⇄ |
| | Executive search firm hired | | Board retreat | | Local technical assistance events to ensure quality response to RFP(s) (Spring 2010) ⇄⇄ |
| | First meeting of National Expert Panel | | STEM tours for select leaders | | Direct technical assistance for responding to the RFPs after the Center launch (Spring 2010) ⇄⇄ |
| | First design team meeting | | STEM learning tour | | |
| | Technical advisors meet | | | | |



Questions & Discussion

Indicators of Effectiveness

