# Science Education in Washington

## State Board of Education Meeting

November 10, 2010

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Teaching and Learning
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Science Teaching and Learning
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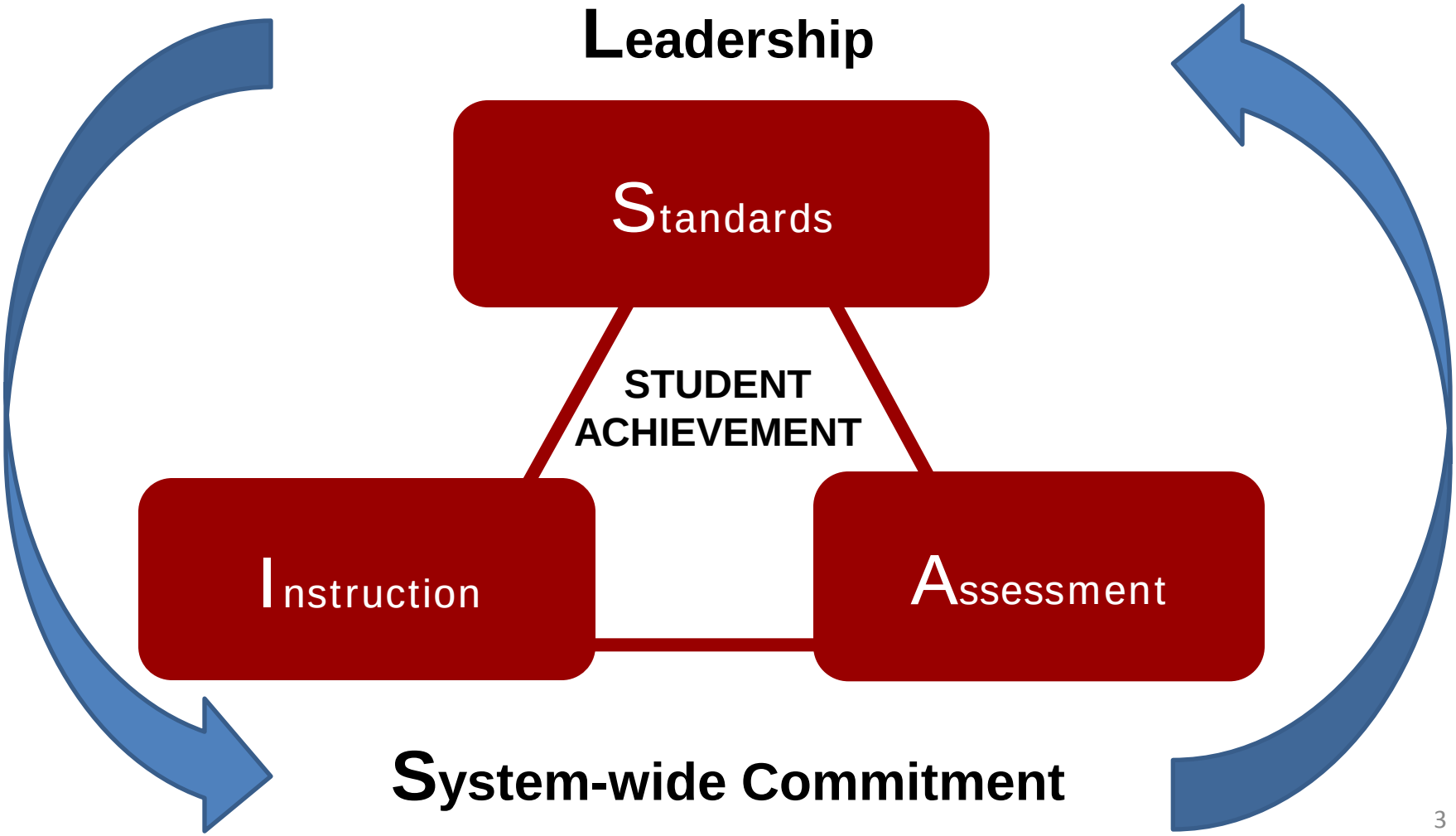
Sustainability and Science

# Science Teaching and Learning

*"You can't wring your hands and roll up your sleeves at the same time."*

Patricia Schroeder

# Systemic Reform

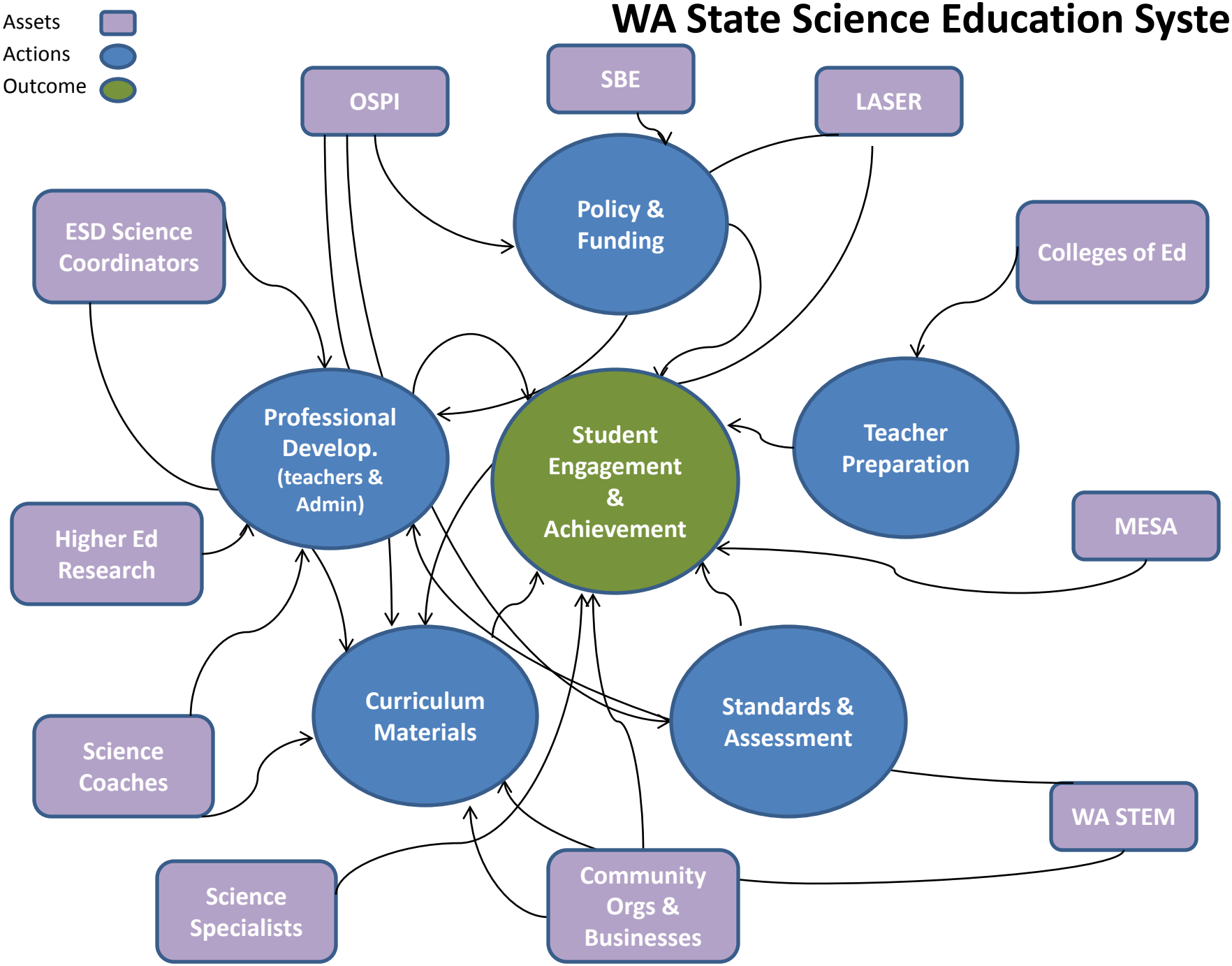


# Our Science Foundation

Washington has an existing robust statewide system (infrastructure) supporting science education

- OSPI –Standards, Material Review, Assessment, STEM
- ESDs – Science Coordinators
- LASER – Alliances and Science Academy
- State Funded Science Coaches
- Education Associations (e.g. WSTA, EEAW)
- Higher Ed – Research, Teacher Prep, Math Science Partnerships, TOTOS
- Business and Community Partnerships (e.g. WA STEM)
- Washington State Education Coordinating Council (WSECC)

# WA State Science Education System

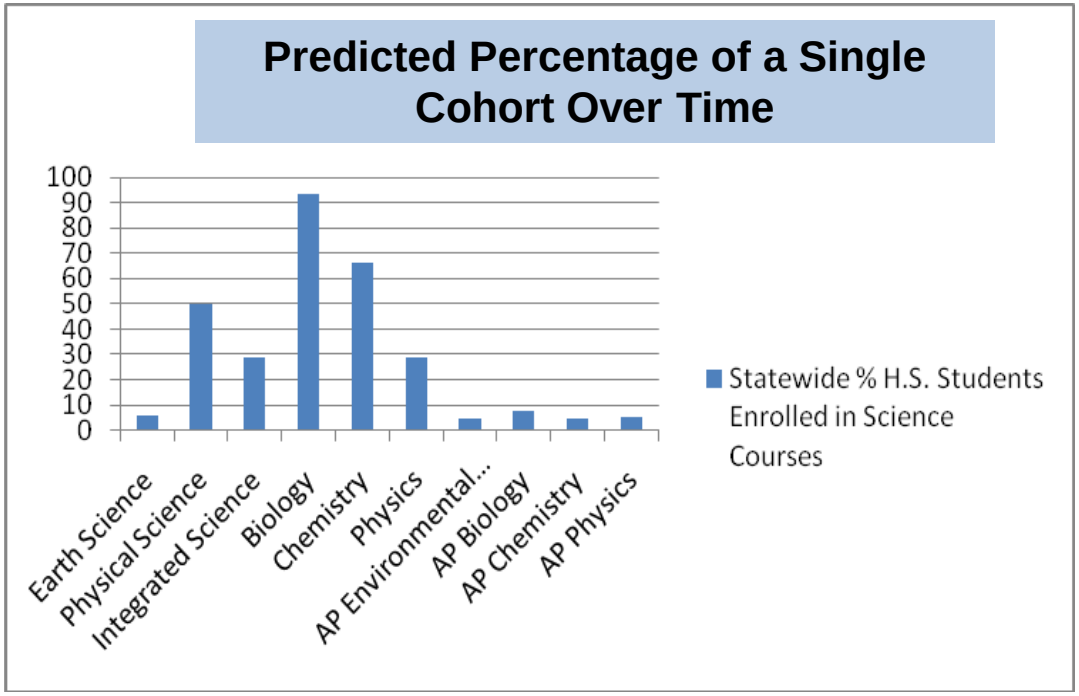


# 2010 Summary of State Science Efforts
# Key Findings - Standards

- Nationally recognized and current
  - K-12 Science Learning Standards
  - Integrated Environmental & Sustainability Standards
- Standards landscape is dynamic
  - Common core in ELA and Mathematics
  - National Research Council
    - Conceptual Framework leading to Next Generation Science Standards

# 2010 Summary of State Science Efforts
# Key Findings: Teaching & Learning

- 21% of Washington 4th grade teachers reported teaching science less than 1 hour per week.
- Most commonly taught science classes include physical science, biology, and chemistry.



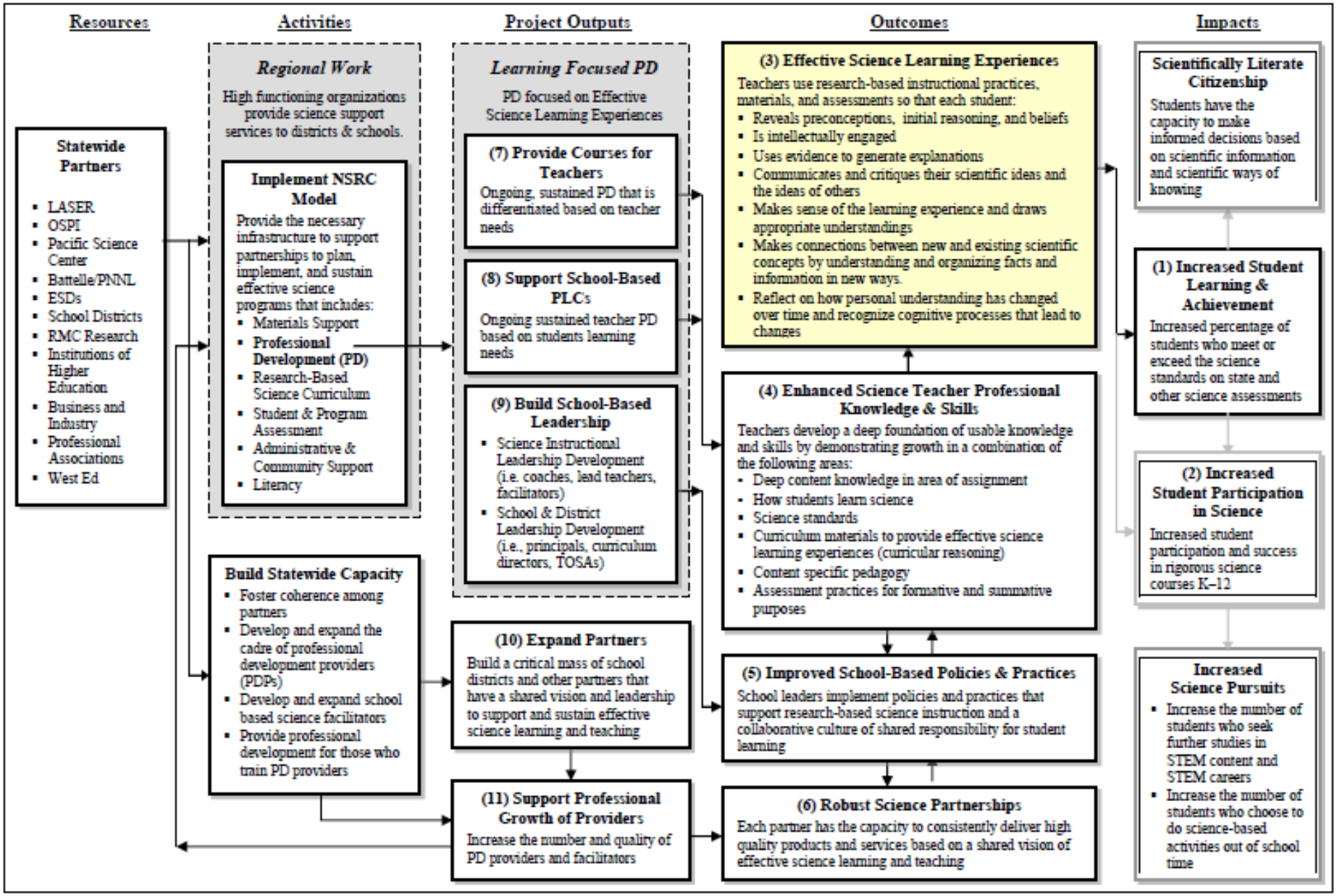
# 2010 Summary of State Science Efforts
# Key Findings - Assessment

- Student performance declined in 2010 on the 5th grade Measure of Student Progress (MSP)
  - 34% met standard
- 8th and 10th grade performance increased slightly
  - 54% of 8th graders met standard
  - 45% of 10th graders met standard
- WA students scored average or above average on national science assessments (NAEP, ACT, SAT, AP)

# What We've Learned from Research

- Effective science learning experiences
- Effective professional development
- Leadership is critical to students' success in science
- Science can be what keeps students in school and engages under-represented students

# WA State Logic Model for Science Professional Development




Revised July, 2010

Adapted by ESD Science Coordinators and LASER Alliance Directors from original work of Kennedy and Weaver

# WA State Logic Model for Science Professional Development (LASER)

| Resources | Activities | Outputs | Outcomes | Impacts |
|---|---|---|---|---|
| Statewide Partners | Implement NSRC Model | Provide Courses for Teachers | Effective Science Learning Experiences | Scientifically Literate Citizenship |
| | Build Statewide Capacity | Support School-Based PLCs | Enhanced Science Teacher Professional Knowledge & Skills | Increased Student Learning & Achievement |
| | | Build School-Based Leadership | Improved School-Based Policies & Practices | Increased Student Participation in Science |
| | | Expand Partners | Robust Science Partnerships | Increased Science Pursuits |
| | | Support Professional Growth of Providers | | |

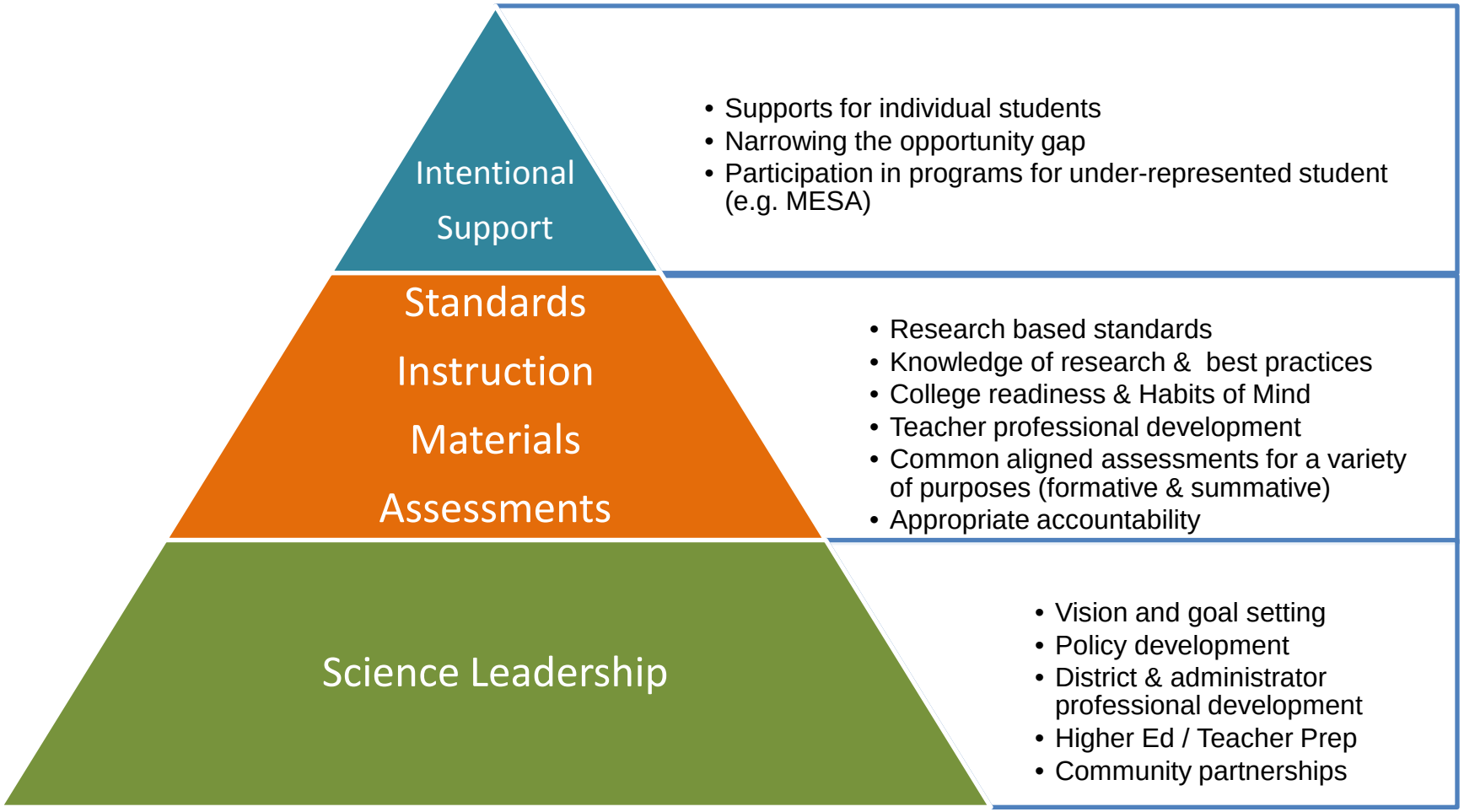
“We must educate our children to compete in an age where knowledge is capital, and the marketplace is global.”

President Obama

# Our next chapter…

- Continue collaborations with the science education community to support statewide science instructional systems based on…
  - NSRC LASER theory of action
  - WA LASER PD Logic model
  - NCOSP PD Model
  - Education Reform Plan
  - STEM Plan
  - Math Improvement Framework/Reading Model
  - And more….

# An opportunity…
# Science System Success Framework*




*Conceptual Draft for Discussion

# For Further Consideration…

- Continued support and funding for the existing robust system
- Expansion of partnerships with business and community

# For Further Consideration…

- Promote opportunities to integrate science and STEM education through relevant learning experiences
- Determine an appropriate high school science assessment system
- Bridging state standards and assessments to anticipated Next Generations Science Standards

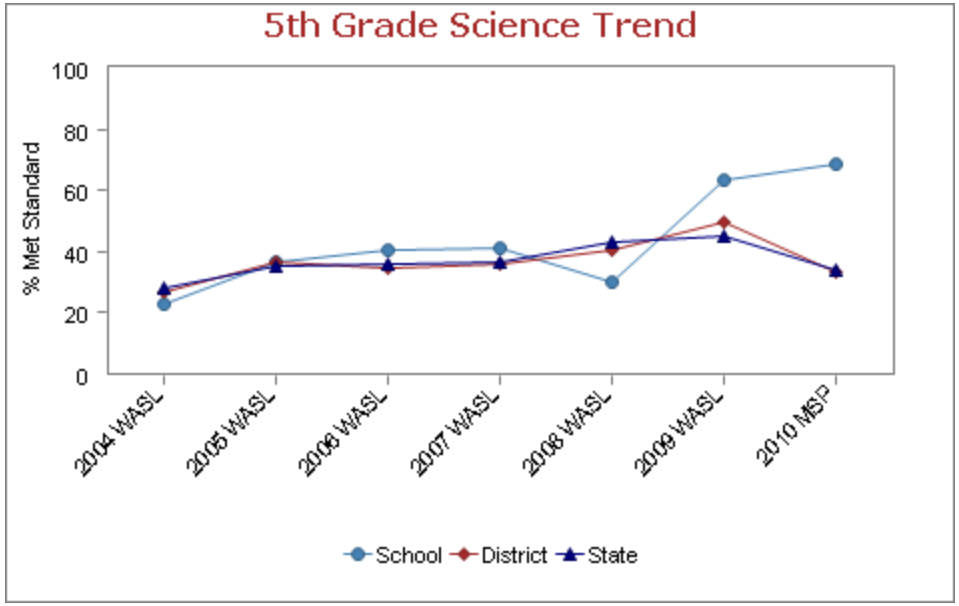
# For Further Consideration…

- Address time for and quality of science instruction in elementary grades for future preparedness and participation in next generation science

# Elementary Success Story Hearthwood

Mr. Scott Munro, Principal; Ms. Kari McArthur, 5th grade teacher

- Teach Exclusively to the Standards
- Dedicate Professional Development to Science
- Realize the Power of Science




Hearthwood Science Scores, OSPI Report Card

# Questions?

## Thank You!

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