State Approaches to Improving STEM Education as Part of High School Redesign

NASSMC Annual Coalition Director's Meeting

Charlie Toulmin

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NGA Center for BEST PRACTICES

Overview

- What is the NGA Center?
- The NGA Honor States Program
- Promising STEM Practices in Honor States and other States
- Recommendations
- Specific NGA Work on STEM

What is the NGA Center for Best Practices?

- The nation's only dedicated consulting firm for governors and their key policy staff
- Develop and implement innovative solutions to public policy challenges
- Provide tailored technical assistance; identify and share best practices

NGA Honor States Program

- NGA Immediate Past Chairman Warner's high school initiative
- $23.6 million governor-led initiative to improve high school and college-ready graduation rates
- Supported by a coalition of national foundations
- Involves 29 states

Action Agenda

- Restore the value of a high school diploma
- Redesign high schools
- Give students the excellent teachers and principals they need
- Set goals, measure progress, and hold high schools and colleges accountable
- Streamline and improve education governance

Honor States Phase One and Two

- Phase One: comprehensive plans to raise graduation and college readiness rates - approximately $2 million each to 10 states
- Phase Two: smaller grants ($50K-$500K) to 17 states for specific strategies linked to the Action Agenda

Non-negotiables in Honor States

- Set 10-year performance goals
- Adopt 4-year cohort graduation measure
- Commit to P-16 governance structure
- Participate in National Educational Data Partnership
- Develop a communications plan

Phase One Themes

- Standards, Curriculum, and Assessment
- Science, Technology, Engineering, and Math (STEM)
- Dual enrollment
- Improvement of data systems
- Support of low-performing schools and students

Promising STEM Practices in Honor States

- **Rhode Island**: Physics First pilot
- **Indiana**: Promote and support STEM curriculum models and increase math teacher capacity
- **Minnesota**: Governor's Roundtable, improved teacher preparation/PD, and new life sciences assessment

Promising STEM Practices in Honor States

- **Massachusetts:** Focus dual enrollment on math/science and disadvantaged youth and develop rigorous Algebra II exam
- **Mississippi, Oklahoma, Pennsylvania**: Pilot program to offer ACT's Model Course Syllabi (in English, math, and science) in the sophomore year

Promising Practices: STEM Course Requirements

- **Twenty-two** states in ADP to increase course requirements for HS graduation, including math through at least Algebra II (as gateway to college/work readiness)
- **Twenty-seven** states require 3-4 years of high school science for the class of 2011, up from 22 states for the class of 2006

Promising Practices: STEM Course Requirements

- **Indiana** Core 40 curriculum (Algebra II, biology, and chemistry/physics) required for HS graduation and college entrance
- **Arkansas** Smart Core requires 4 math units (thru Algebra II) and 3 science units (with one lab) and guarantees admission to most state colleges

Promising Practices: Aligning HS STEM Rigor with College Expectations

- **Arkansas:** By 2008-09, all districts must offer AP math and science; participation has doubled in one year
- **Texas** and **Virginia** support training of AP math/science teachers
- **Kentucky** Early Math Testing Program provides feedback on college readiness

NGA Recommendations

- Increase requirements for math (Algebra II) and science (3 units including lab) and align with college/work readiness
- Increase access to advanced STEM learning opportunities through ACT, AP, and other assessments linked to higher level coursework

Promising Practices: Recruiting and Retaining STEM Teachers

- **Connecticut** and **Massachusetts:** Fast-track alternative certification routes for math/science teachers
- **Florida:** Propose $40 million differentiated pay to teachers in shortage areas
- **California:** Public-private partnership to double the number of UC undergraduates committed to math and science teaching

Promising Practices: Preparation and PD of STEM Teachers

- **Ohio:** Align teacher prep standards with K-12 academic content standards and assessment requirements
- **Alabama** Math, Science, and Technology Initiative (AMSTI) in 250 schools by 2006
- **Texas:** Charles Dana Center (UT-Austin) provides policy help, research, and PD

NGA Recommendations

- Support public-private partnerships for recruitment and professional development of STEM teachers
- Link K-12 to higher education data system and use college-readiness exam data to hold high schools and postsecondary accountable for STEM performance

Promising Practices: Specialized STEM Schools

- **Arkansas, California, North Carolina,** and **South Carolina:** state residential STEM high schools; some target under-represented groups
- **Texas** Science, Technology, Engineering, and Math Initiative (TSTEM) – 35 math and science academies for low-income and minority students in grades 6-12

Promising Practices: STEM Research, Innovation, and Job Creation

- **Oregon**: state created Innovation Council, Nanoscience/Microtechnologies Institute, and university-based venture capital funds
- **New York:** $435 million public-private partnership for Nanolectronics research
- **North Dakota:** $50 million in state funds for Centers for Excellence

NGA Recommendations

- Encourage public-private partnerships to create and support redesigned STEM middle and high schools
- Encourage public-private partnerships for advanced research and venture capital in STEM fields

Promising Practices: Statewide STEM Initiatives

- A number of states have used support from NASSMC for STEM summits
- TSTEM is managed by an independent non-profit with public-private leadership
- P-16 education roundtables in Honor States are creating 10-year benchmarks for STEM improvement

NGA Recommendations

- Ensure that STEM Summits develop an action plan for policy proposals
- Create a permanent P-16 council to allow for integrated STEM policy making
- Manage STEM initiatives via independent non-profit with policy oversight/leadership from the governor

Specific NGA Work on STEM

- Technical Assistance to Honor States working on STEM initiatives
- Technical Assistance to other States
- First issue of electronic newsletter for Governor's staff on STEM – April 2006
- Participation in meetings/conferences
- Future reports

NGA Resources

- The Action Agenda is available at: www.nga.org/files/pdf/0502actionagenda.pdf
- Getting it Done: 10 Steps to an Action Agenda is available at www.nga.org/files/pdf/05warnerguide.pdf

Contact Information

Charlie Toulmin

Senior Policy Analyst

Education Division

NGA Center for Best Practices

ctoulmin@nga.org

www.nga.org