STEM: A National Policy Perspective

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Nevada STEM Advisory Council Meeting
January 25, 2016
Overview of Presentation

• About ECS

• What is STEM?

• Recent STEM policy trends

• State STEM plans: A cautionary tale

• Two approaches to coordinating: MA and UT

• Computer science

Your education policy team.
Who we are

The essential, indispensable member of any team addressing education policy.

Your education policy team.
What we do

We believe in the power of learning from experience and we know informed policymakers create better education policy.
How we do it

REPORT

RESEARCH  CONVENED  COUNSEL

Your education policy team.
What *is* STEM?

- Adding math, science credits to HS graduation requirements?
- Overlap between STEM and CTE?
- Computer science?
- Project-based? Real-world? Hands on?

Before we move on...
STEM Policy Trends

- Organizing/coordinating the work
- Early college opportunities
- Scholarships
- Teacher recruitment scholarships
Organizing the Work

Idaho: STEM Action Center

Michigan: MiSTEM Advisory Council

North Dakota: STEM Advancement Initiative

Your education policy team.
Early College/Work Opportunities

Colorado: P-Tech Model

Iowa: Appropriation to support STEM internships

LOTS of policy action re: CTE with implications for STEM
Scholarships

Montana: Montana STEM Scholarship Program

New York: NYS STEM Incentive Program

Rhode Island: Stay Invested in RI Wavemaker Fellowship
Teacher Recruitment Scholarships

Indiana: STEM Teacher Recruitment

New York: NYS Math & Science Teaching Incentive Scholarships
STEM Plans

• Numerous states have adopted

• Plans to date have not necessarily “solved” STEM challenges in states
Challenges with STEM Plans

• Wanting to take on too much
• Not supported by adequate funding streams

“We have studied countless state and other STEM plans over the past 2 years and found them to be overly complex and largely inactionable as they seek to do too much with too few resources.”

Dr. Tom Peters, Executive Director
South Carolina Coalition for Mathematics & Science
Challenges with STEM Plans

• Inadequate state coordination of efforts

• Unclear to what extent plans are being implemented

• Sometimes hinge on one extraordinary leader
  – And go away when that individual leaves office
How can states develop a cohesive approach that doesn’t attempt to take on too little or too much, and that has adequate and dedicated funding?
Connecting Education to Careers

Shared Outcomes
- Economic prosperity
- Increased graduation rates
- Career and college readiness
- Equity for underserved students
- Student motivation & engagement
- Academic and technical proficiency
- Creativity, critical thinking, problem-solving, communication

Shared Approaches
- Hands-on/minds-on
- Community-based, purpose-driven
- Interdisciplinary learning
- Opportunities for student choice
- Authentic, “messy” problem-solving
- Using data & analytics
- Innovation & entrepreneurship
- Industry partnerships
- Early career experiences

Shared High-demand Careers
- Health Sciences
- Engineering & Construction
- Advanced Manufacturing
- Computer Science & IT
- Precision Agriculture & Food processing

Strategic CTE Investments
- CTE Revitalization Grants
- Regional & Summer Programs
- Sustainable Funding

Strategic STEM Investments
- Regional STEM Hub Network
- Innovation Grants
- High-demand Post-Secondary Programs
Regional STEM Hub Network

State (or state-coordinated regional) networks active in ≥ 14 states

Bring together K-12, PS, business/industry, other partners to address education and workforce needs
Not all have seen equal success

What have been lessons learned?
Massachusetts

Issued “Recommended Functions and Related Performance Criteria for STEM Networks” in July 2015

Establishes

• Eligibility criteria for funding
• Three areas of performance criteria
MA: Three areas of performance criteria

• Informing regional stakeholders about regional STEM initiatives and needs

• Actively collaborating with regional partners to form regional STEM initiatives

• Track changes in regional STEM indicators related to 5 qualitative goals of state STEM plan
Utah STEM Action Center

• Single statewide hub
• Staffed by multiple FTEs
• Coordinate activities from early grades through postsecondary
• Provide research- and experience-based policy recommendations and implement legislative/agency directives
Computer Science

What Can States Do? Pathway Toward Access for All Students

- Make CS Count
- Require All High School Offer At Least One CS Course
- Define High-Quality and Rigorous CS Education
- Fund Professional Learning Opportunities for Teachers
- State and Local Implementation

Source: Code.org
What Can States Do? Policy Reforms

Eight ideas to make computer science fundamental to K-12 education:

1. Define computer science and establish rigorous K-12 computer science standards
2. Allocate funding for rigorous computer science professional development and course support
3. Implement clear certification pathways for computer science teachers
4. Create incentives at institutions of higher education to offer computer science to pre-service teachers
5. Establish dedicated computer science positions in State and Local Education Authorities
6. Require that all secondary schools offer computer science with appropriate implementation timelines
7. Allow computer science to count for a core mathematics or science graduation requirement
8. Allow computer science to count as a mathematics or science admission requirement at institutions of higher education

Source: Code.org
# Computer Science

## What States Are Already Doing

Sampling of State CS Policy Work and Implementation (Teal Boxes Represent Active Policy Efforts)

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*Source: Code.org*
QUESTIONS?
Contact Us

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Your education policy team.