

STEM: A National Policy Perspective

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Your education policy team.

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



Who we are

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





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



COUNSEL



Before we move on...

What is STEM?

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



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

Strategic CTE Investments

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

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, problemsolving, 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 STEM Investments

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

Oregon Department of Education | Oregon Education Investment Board 2015





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



Regional STEM Hub Network

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 experiencebased 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



Computer Science

What Can States Do? Policy Reforms

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

2

Define computer science and establish rigorous K-12 computer science standards

Establish dedicated computer science positions in State and Local Education Authorities

5

Allocate funding for rigorous computer science professional development and course support

Require that all secondary schools offer computer science with appropriate implementation timelines

6

Implement clear certification pathways for computer science teachers

Allow computer science to count for a core mathematics or science graduation requirement

Create incentives at institutions of higher education to offer computer science to preservice teachers

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)

	Standards	Funding	Certification	Higher Ed Incentives	Dedicated Position	All High Schools	Count for Grad	Count for Higher Ed	State-level Implement -ation
AR									
ID									
MA									
UT									
WA									

Source: Code.org



QUESTIONS?



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