

Ideas and Commitments from “Sectors of the Village”

Convocation on Sustaining Effective Science Education Programs for Grades K-8

National Academy of Sciences
National Academy of Engineering
Arnold and Mabel Beckman Center, Irvine, CA
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Big Ideas from 16 Educators!

Elementary, Middle School, High School, Higher Ed, and Teacher Support:

1. Mandated Instructional Time for Science in Grades K-8
(should be required for 4 years for high school students)
 - K-3 minimum of 90 minutes per week
 - 4-5 minimum of 120 minutes per week
 - 6-8 minimum of 225 minutes per week
2. Professional Development
 - Must meet individual needs of teachers
 - Must be funded in professional manner (i.e., in ways that allow teachers to do their jobs effectively)
3. Science Standards
 - Support movement to switch to National Science Standards and Assessment
4. Public Perception of Science and Science Careers
 - Positive PR promotes positive education

Foundations

Foundations should be viewed as catalysts, not as systemic, long-term funders.

- Have a unique convening role
- Seeking proposals with clear outcomes, budgets (including the magnitude of projected costs), and timelines

Foundations can assist the village in many areas of policy.

- Focus on stories of excellent science teachers in effective programs facing lack of organizational support.
- Support of regional science centers because of their ability to take projects to scale and their leverage in local communities.

Foundations that support STEM education are a small subset of foundations that fund K-12 education.

- Foundations represented at the Convocation could convene broader group of foundations to place more of a spotlight on science education and elevate it as a priority.

Business/Industry/Private Sector

Between May, 2009 and January, 2010 (prior to 2010 elections)
participants at the convocation from this sector pledge to:

1. Work with educational communities in California to develop and articulate the *vision* and concrete picture of a California future that is founded in “STEM sophistication.”
2. Facilitate the strategic planning process with other sectors of the “village” by providing its best project management specialists.
 - Starting **3 months** from the close of the convocation, provide foundational materials (e.g., the CSA STEM CAP) as background if other sectors will pledge to produce the vision and strategy for moving forward).
3. Be an integral part of a group (strange attractors) that pushes both the vision and strategies for achieving it as a single, unified voice to political communities
 - Identify 12 people in the state who are most likely to effect changes.
 - Send charismatic CEOs and sales-oriented people to speak on behalf of the village to promote the vision for changing K-8 science education

Research and Evaluation Sector

Directed research and evaluation programs can

1. Make the case that elementary science is important
 - Research evidence can help make the case along various dimensions (e.g., foundations for later learning, cognitive value, importance to society).
2. Help illuminate the current status of K-8 science education and indicate whether quality education at these grade levels is happening or not.
 - Are opportunities to learn science at these grade levels adequate?
3. Make the case that effective K-8 science education *can* happen
 - Documentation of successful programs across the country
 - Videos demonstrating student learning and engagement
 - Provide evidence that successful science education can occur at the levels of individuals, schools, and states

Higher Education Sector

The CSU system, in cooperation with the UC system, commits to developing:

- K-8 STEM Fellows to work with teachers and students.

 - These would include undergraduates, teacher candidates, graduate students, postdoctoral fellows, and STEM professionals.

- STEM Institutes and courses to provide pre-service education and professional development for K-8 teachers and school administrators.

- Masters degree programs focused on K-8 STEM education to prepare STEM education specialists for elementary and middle schools.

Informal Education

Regional Science Centers also incorporate informal science opportunities for teachers and students.

Informal institutions can serve as neutral catalysts for innovation, foment partnerships for increased resources, or as hosts for a regional science resource center

Informal institutions become part of the vital political campaign to leverage a large sphere of influence.