



**CREATING AMERICAN SCIENTISTS:
WHAT SHOULD BE DONE — IN AND OUT OF THE SCHOOLS?**

**Report on the Science Symposium at Fenway High School
Co-sponsored by the Boston Museum of Science
and Dana-Farber Cancer Institute**

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Panelists

Edward J. Benz, Jr. MD, President & CEO
Dana-Farber Cancer Institute

Daren T. Wells, Department Chair, Timilty Middle School
U.S. Presidential Award 2004: Science and Mathematics

Joan Y. Reede, MD, MPS, MS, Dean for Diversity and Community Partnership
Harvard Medical School

Edward M. Augustus, Jr., Massachusetts State Senator
Vice Chair of the Joint Education Committee

Moderator

Lynn R. Baum, Youth Programs Manager
Boston Museum of Science



EXECUTIVE SUMMARY

The objectives of the symposium were to:

- Share diverse views on why too few American students are becoming scientists today.
- Identify the dilemmas in science education and the consequences of not resolving them.
- Generate a report summarizing key points that will be used to inform discussion about the policy-making and practices of science education.

PANELIST RESPONSES: DILEMMAS AND RECOMMENDATIONS

Panelists were asked to address the core question, *Creating American Scientists: What should be done—in and out of the schools?* through the lens of their own educational experience and professional work, and to conclude their remarks with one or two recommendations they felt were key to answering the question. Here are the dilemmas they described.

Ed Benz: the dilemma of the scientific institution, which relies increasingly on the “scientific preparedness” of supporting staff, but has less and less “slack in the system,” i.e., time and personnel, required to train and develop people.

Recommendation: whatever extra funds must be spent, put in the hands of teachers and focus on helping them develop the opportunity and culture [of science] among students.

Darren Wells: the dilemma of the teacher in an urban classroom, who “may be the only adult male in the lives of his African-American male students that is consistent.” How does that teacher fulfill his students’ individual needs, personal and academic, by himself in the classroom? One-on-one is what the students need, but TIME is the obstacle.

Recommendation: mandate that everyone who applies for a science job in the Boston area has to give a certain amount of their time to a K-12 student.

Joan Reede: the lack of parity in health care for minorities and the “leaky pipeline” in the development of minority health care professionals. “We are asking students to go without guides, from early stages of education to medical school.” The very people who are most needed in health care are the ones who most lack career awareness, academic preparation and opportunity.

Recommendation: two-week exposure [of students to science] is not enough. Programs have to involve collaboration and partnership.

Ed Augustus: the dilemma of political priorities. “We want to do the cutting edge teaching and learning, but when the roof leaks, that’s the immediate problem.” Legislators know little about science education and have trouble seeing it as a priority when faced with the possibility of a tax rollback that would lock in the educational deficit.

Recommendation: create a public dialogue about science so that it can be funded by politicians.



PARTICIPANT RESPONSES: KEY POINTS

To help focus table discussions, participants were grouped into seven professional constituencies, e.g., “K-12 teachers,” and asked to respond to the question, *If you had \$20 million dollars to improve science education, how would you spend it?* Each table but one had a group facilitator and a recorder taking notes on a laptop computer.

Afterwards, the notes were entered into a data base that made it possible to categorize them into spending categories, e.g., “equipment and materials for inquiry-based projects.” To further distill the participants’ responses, the spending categories were grouped by target areas, e.g., “in the schools” or “in the community.” The number of recommendations for spending in each category was counted and entered on the attached spreadsheet, entitled Spending Priorities Report.

The narrative part of the report highlights and comments on eight of the 25 spending categories because they were seen as priorities by over 10% of participants.

Of those eight top categories, five were in the Schools target area:

- 39%: Teacher development & support in using inquiry-based approach
- 26%: Equipment & materials for inquiry-based projects
- 22%: Teacher release time for lesson planning, collaboration
- 16%: Class size (adult to student ratio)
- 13%: Teacher/mentor passion for subject

Two of the eight top categories were in the Community target area:

- 53%: Internships, mentoring & pipeline programs (for teachers and students)
- 16%: Increase teacher pay, recruitment efforts

One of the top categories was in the Culture target area:

- 33%: Media messages & public education re: science careers for youth.

The narrative also includes a short section (p. 5) on the low level of priority given, across constituencies, to testing as a means for improving science education.

- 6%: Accountability – need for clear, relevant assessments
- 4%: Accountability – need for high stakes tests

Finally, the narrative mentions some spending categories that might have been higher priorities among a different set of participants. These include K-8 science instruction and activities (there were no K-8 educators at the Fenway science symposium), teacher education in the separate scientific disciplines, and collaboration with museums.