

“Massachusetts Students Need Deeper Science Education, Not Another MCAS Test”

May 26, 2005

To Our Senators and Representatives and the State Board of Education:

As scientists and science educators we understand and deeply value the importance of an excellent education in the basic sciences for all Massachusetts middle and high school students. In “Science for All Americans¹” and other authoritative reports, our national scientific leadership clearly identified the need to replace rote learning methods with inquiry-based instruction. Such teaching places scientific method - experiments, data gathering, observation and interpretation - at the center of instruction. This requires investment in laboratory facilities and supplies, teacher training and professional development, computer access, and resources for projects and field trips.

Tragically, the proposal from the State Department of Education to institute a science MCAS test as a high school graduation requirement will undermine quality science education. It runs counter to the recommendations of the great majority of professional groups with expertise in science teaching and learning. High stakes exams are among the most effective means of alienating students from science. Such tests replace direct experience, observation, and performance with rote learning and drill-and-kill instructional methodologies.

The proposal from the Dept. of Education will not raise the standard for science education; rather it will almost certainly lower the quality of the instruction. The multiple areas of science and technology are too important for our economy and society to be relegated to one-size-fits-all standardized tests. The National Academy of Sciences has stated that high stakes decisions should not be based on standardized test scores.²

We cannot narrow the achievement gap by replacing teaching with test preparation. Rather, narrowing the gap requires a system that enriches the educational experiences of low-income and disadvantaged students and does not penalize them for gaps in their background. Massachusetts school districts vary greatly in science and laboratory resources and accessibility; thus, there is little possibility that a standardized test could provide a fair, accurate or equitable form of student assessment.

The world of the 21st century requires students be able to observe accurately and think critically, and to apply their education in the sciences to pressing social and economic needs. The appropriate assessments for these skills are performance and experience based. They include research projects, study design and conducts, lab reports, poster presentations and model building, with limited and judicious use of standardized exams. Performance-based assessments have a long tradition in vocational education, the arts, and natural sciences.

We urge you our elected officials and the Board of Education to:

- 1) Suspend the premature and unsound proposal for high stakes science MCAS tests;**
- 2) Focus on ensuring that every Massachusetts middle school and high school has the material and staff resources to provide authentic laboratory instruction and field experience;**

3) Implement the intent of the 1993 Education Reform Act calling for multiple assessments of student achievement, through the development of performance-based assessments in the sciences as well as other subject areas.

¹ Science for all Americans, Project 2061, American Association for the Advancement of Science, Washington DC 1989.

² High Stakes: Testing for Tracking, Promotion and Graduation, (Edited by Jay P. Heubert and Robert M. Hauser), National Research Council (1999)

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