

March 5, 2004

Mr. Reed Hastings  
President  
California State Board of Education  
1430 N Street, Room 5111  
Sacramento, CA 95814

Dear Mr. Hastings:

We write on behalf of the leading institutions of higher education and industries in the State of California to convey our deep concern about the January 16, 2004 Draft Criteria for Evaluating K-8 Science Instructional Materials, and the limits and restrictions they would place on local school districts, schools, and teachers as they strive to improve the teaching and learning of science for all of our students.

The California Curriculum Commission's (CCC) Science Subcommittee has developed Draft Criteria for use in grades K-8, subject to approval by the State Board of Education on March 10, 2004. Currently, the only approved materials for science are textbooks. If the Draft Criteria are approved, with their even tighter constraints, the present "textbook only" situation is almost certain to continue for the next adoption cycle: 2006-2012.

US businesses and industry seek from today's high school graduates a high capacity for abstract, conceptual thinking, and the ability to apply that capacity to complex real-world problems. The Draft Criteria would greatly restrict access to nationally produced, widely acclaimed instructional materials for grades K- 8 that promote these skills and habits of mind. While acquisition of knowledge is essential, it is well known that students do not easily acquire scientific knowledge without, at the same time, learning to understand the facts by engaging in active experimentation. Thus, the Draft Criteria are counterproductive to the hope of expanding California's economy, and they will severely limit the opportunities for California's children to learn science and scientific methods.

In addition, all school districts will soon be required to demonstrate increased student achievement, as measured by new high-stakes assessments in science. Despite these new output measures, required by the "No Child Left Behind" federal education act, California would persist in tightly constraining the inputs that each district can purchase with state funds to help students learn. Our poorer districts especially will have no choices other than textbooks, making the present large disparity between them and more affluent districts even greater. Our school districts will be largely forced to use a one-size-fits-all approach to science teaching and learning, known as "direct instruction." This dogmatic approach is reminiscent of the unfortunate State dictate that phonics not be used for the teaching of reading in a previous decade.

The following items in the Draft Criteria are especially problematic, since they would make it impossible to approve any instructional materials other than new textbooks that are custom-written for California.

**Item 2** requires that each set of materials submitted by a particular publisher provide for the "*comprehensive teaching of all California Science Standards [CSS] at the intended grade level(s)*". In addition, "*the only standards that may be referenced are the CSS. There should be no reference to national standards or benchmarks.*"

**Item 4** requires that for this set of materials "*extraneous lessons or topics that are not directly focused on the [CSS] standards are minimal, certainly composing no more than 10 percent of the science instructional time.*"

**Item 5** requires “*evidence...demonstrating that the CSS can be comprehensively taught from the submitted materials with hands-on activities composing no more than 20 to 25 percent of science instructional time.*”

The recognition that the above specifications are completely wrong for California’s future requires two important pieces of background information:

**1) The production of outstanding, research-based curriculum materials requires 2-4 years of testing and revision; much of this has been supported with funds provided by the National Science Foundation, with the results subsequently licensed to commercial publishers.** Because they have been designed for a national market, these instructional materials are likely to mention national standards, and for the same reason, they are likely to contain more than 10 percent of so-called “extraneous lessons or topics.” In addition, as recommended by nearly all of the national science and teaching organizations, hands-on activities will very often compose more than 25 percent of the recommended instructional time. The evidence suggests that students who are able to access such inquiry-based instructional materials as a major component of their science learning demonstrate greater levels of learning and deeper understanding of scientific concepts than students not provided with such opportunities.

**2) Many of the nationally recognized, outstanding curriculum materials for grades K-8 are modular, with each unit intended to cover only 1-3 months of instructional time.** It therefore makes no sense to specify that the instructional materials from *each publisher* must cover all of the CSS at one or more grade levels to be eligible for state adoption. In the previous adoption cycle, the only inquiry based, hands-on elementary science program that was submitted for adoption was not approved, primarily because this publisher did not meet every standard at the specified grade level. Because of the highly restrictive criterion in the new Draft Criteria, none of the outstanding curricula developed nationally could be approved for adoption in California in 2006, either.

There is an approach that would better serve California’s future. If districts were instead permitted to use state funds to purchase curricula from *different* publishers and then combine and integrate them in ways that, collectively, address all standards for a given grade level, our teachers and students would have access to a wide range of excellent choices. This would make possible a state approval process that is much more inclusive – one in which an individual curriculum unit, rather than a publishers entire program, would be evaluated on its merits for meeting one or more of the standards in the CSS at a particular grade level. Different state-based and regional organizations, with different approaches to instruction, could then generate their own recommendations for what schools should use at each grade level. Each school district could carefully consider these alternatives in selecting what it wants to purchase with State funds.

This approach follows the Business Roundtable’s Principles for K-12 Education Legislation:

**Flexibility:** States, localities, and schools should have flexibility for their educational organization, innovation, and instruction while being held accountable for raising student achievement.

**Math and Science Excellence:** Investments must focus on raising student achievement in math and science by encouraging the use of world-class educational materials and instructional practice.

We urge the Board of Education to develop a new set of criteria that would allow each school district a much broader set of options for purchasing materials (both textbooks and hands-on inquiry-based instructional materials), and request an independent evaluation of the Draft Criteria that includes the rationale and research-based evidence upon which they are based.

Sincerely,

Arthur D. Levinson  
CEO, Genentech

Craig R. Barrett  
CEO, Intel

Riley P. Bechtel  
Chairman and CEO, Bechtel Group

Ed Catmull  
President, Pixar

George Lucas  
Chairman and CEO, Lucasfilm  
Chairman, The George Lucas Educational  
Foundation

John E. Warnock  
Co-Founder and Chairman of the Board,  
Adobe Systems Inc.

Robert Dynes  
President, the University of California

Robert Berdahl  
Chancellor, University of California, Berkeley

J. Michael Bishop  
Chancellor, University of California, San Francisco

Albert Carnesale  
Chancellor, University of California, Los Angeles

Marsha Chandler  
Acting Chancellor, University of California,  
San Diego

Ralph Cicerone  
Chancellor, University of California, Irvine

France Cordova  
Chancellor, University of California, Riverside

M.R.C. Greenwood  
Chancellor, University of California, Santa Cruz

Carol Tomlinson Keasey  
Chancellor, University of California, Merced

Larry Vanderhoef  
Chancellor, University of California, Davis

Henry Yang  
Chancellor, University of California, Santa Barbara

David Baltimore  
President, California Institute of Technology

John L. Hennessy  
President, Stanford University

*\* - Titles are given only for purposes of identification and do not imply endorsement of the institution.*

CC: Governor Arnold Schwarzenegger  
Secretary of Education Richard Riordan  
State Superintendent of Public Instruction Jack O'Connell  
Hon. Jackie Goldberg  
Hon. John Vasconcellos