

Direct Instruction[§] Suffers a Setback In California - Or Does It? *

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I. Colorado Themes for the Day

A. “. . . *I will look primarily at our traditions and practices of early schooling through the age of twelve or so. There is little to come after, whether of joys or miseries, that is not prefigured in these years.*”

The late David Hawkins in *The Roots of Literacy* (2000), p. 3, philosophy professor, Univ. of Colorado

§ DI = “non-hands-on,” “teach 'em the ‘facts’” [Metzenberg (1998), leader of the California Curriculum Commission].

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B. *American education has seemed more like a battleground between warring factions than an evolving and cumulative field of increasingly refined concepts and methods.*

Martin Bickman, philosophy professor, Univ. of Colorado, “The Needless War Between Traditionalists and Progressives and How to End It,” [retitled by OpEd editor “Won’t You Come Home John Dewey?”] online at <<http://listserv.nd.edu/cgi-bin/wa?A2=ind0407&L=pod&O=A&P=10696>>.

C. *It seems ironic that the entire national K-8 (and hence K-16) science-education endeavor promises to be undermined by a few diehard extremists on the CCC and the CSBE who unscientifically refuse to consider the overwhelming scientific evidence that “direct instruction” is ineffective for enhancing conceptual understanding of science.*

R.R. Hake, B.S. Univ. of Colorado, ref. #3 below.

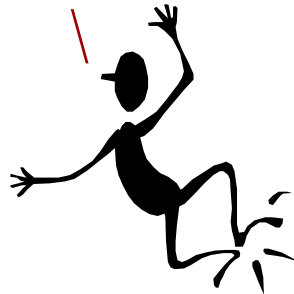
II. Texts For Today

- A. Schultz, T. 1998. “History of the Development of California Science Content Standards,” online at <http://www.sci-ed-ga.org/standards/history.html>.
- B. Schoenfeld, A. 2003. “The Math Wars,” online at <http://www-gse.berkeley.edu/faculty/aschoenfeld/>.
- C. Hake, R.R. 2004. “Direct Instruction Suffers a Setback in California: Or Does It?” 51-page article; 153 references, 169 hot-linked URL’s; online as ref. 33 at <http://www.physics.indiana.edu/~hake>.

III. Abstract of “Direct Instruction Suffers a Setback . . .”

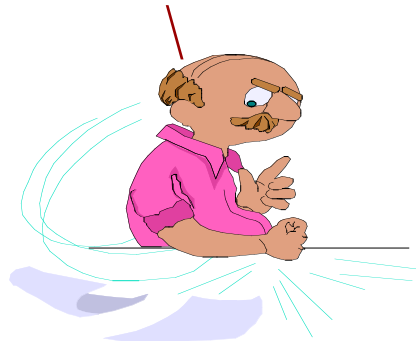
On 10 March 2004, the CA State Board of Education (CSBE), bending to *intense* pressure from teachers, scientists, professional organizations (including AAPT), and *leaders of CA high-tech industries & higher education* [whose letter prompted the TERMINATOR to come down hard on the California Curriculum Commission (CCC)] amended the CCC’s demand that “instructional materials adopted in CA must comprise NO MORE than 20/25 % hands-on activities” to read “instructional materials must comprise AT LEAST 20/25 % hands-on activities.

We’ve Won !!



Although widely heralded as a setback for direct instruction (DI) in CA, I shall argue that DI may continue to predominate in K-8 science Classrooms : – (because instructional material adoptions will be heavily influenced by the DI-dominated CCC and CSBE.

Understanding is
built on facts !!



I shall list 8 objections to the CCC's adoption *Criteria* that remain in force despite the amendment, and make 3 suggestions for loosening the stifling stranglehold of the CCC on K-8 science education.

IV. Will the 10 March apparent setback For DI have any substantive effect on the CA adoptions process for K-8 science materials?

In my opinion, probably *not* because there will probably will be no adoption of:

- A. Textbooks containing more than 20% hands-on material.
- B. Exemplary nationally-developed, research-based, hands-on instructional materials.

V. With the above reasonable assumption, all previous objections [e.g., Woolf & Hake (2004), Woolf (2004a-e), Hake (2003a,b; 2004a-q), remain in place. I enumerate my own 8 primary objections below:

1. The *Criteria*, even as amended on 3/10/04, will seriously limit hands-on pedagogical methods in the average K-8 science classroom.

2. The *Criteria*, since they will allow adoption of science materials in K-8 that contain only 20% hands-on material,
 - (a) ignore scientific evidence demonstrating that hands-on guided inquiry methods are far more effective than direct instruction in K-8 science education,
 - (b) are strongly biased in favor of the relatively ineffective “direct instruction.”

3. The common argument that direct instruction methods must dominate science materials because some teachers do not have the requisite understanding of science or the facilities to utilize hands-on guided inquiry methods is, in my opinion, spurious.

It seems to me vastly superior to put into the hands of our students competent material which might at first be incompetently handled by some teachers, than to hold tightly to incompetent material, incompetently handled.

Arnold Arons' (1960) response to "PSSC too tough for teachers."

4. The *Criteria* are focussed only on the CA Science Standards and thus isolate CA public education from the recommendations of most U.S. scientists and science educators.

5. The *Criteria*, since they will allow adoption of science materials in K-8 that contain only 20% hands-on material, dictate a one-size fits all pedagogy, thus foreclosing teachers' options in favor of edicts from the Sacramento bureaucracy.

6. Considering “5” above., the *Criteria* run counter to the announced intentions of Governor Schwarznegger and Secretary of Education Riordan [see Helfand (2004)] *to move control of teaching practices from Sacramento to local teachers, principals, and parents* - in direct opposition to the apparent intentions of the CCC and the CSBE.

7. The *Criteria* fail to meaningfully define “direct instruction” and “hands-on” activities. The undefined nature of the those terms [Hake (2004m, p)] means that:the CCC, in making decisions as to what instructional materials do or do not satisfy the *Criteria*, will be able to exercise their prejudices with no accountability to the CSBE, science teachers, principals, or parents.

8. The *Criteria*, since they will allow adoption of science materials in K-8 that contain only 20% hands-on material:
- (a) may mandate pedagogical restrictions that conflict with *Standards of Quality and Effectiveness for Professional Teacher Induction Programs* (CA State Bill 2042) ,
 - (b) are antithetical to outstanding educational programs backed by the nation's leading scientists and science educators,
 - (c) undermine the general welfare of California and the Nation.

VI. Recommendations

I urge the *California State Board of Education*, Governor Schwarznegger, Secretary of Education Riordan, State Superintendent of Public Instruction Jack O'Connell, and members of the California legislature to place the educational, social, technological, and business interests of California and the U.S. above a blind and unscientific faith in the efficacy of “direct instruction,” and take immediate action to:

1. *Replace* the diehard direct instructionists appointed to the CCC by the CSBE. In my judgement, these few extremists are undermining the K-8 education of California and the Nation.

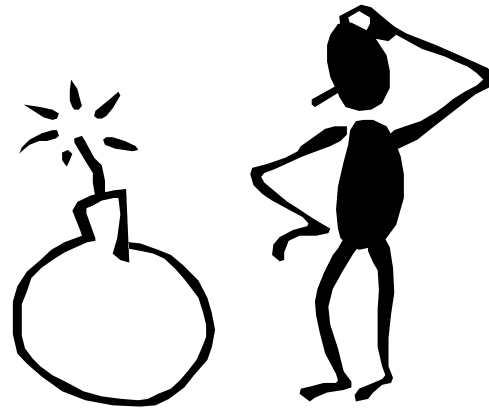
2. “*Develop a new set of criteria* that would allow each school district a much broader set of options for purchasing materials (both textbooks and hands-on inquiry-based instructional materials), and request an independent evaluation of the *Criteria* that includes the rationale and research-based evidence upon which they are justified.”

[From Levinson et al. (2004)]

3. Attract outstanding teachers into California's classrooms by treating them as the valued professionals they are. This means giving them control of their own teaching materials & practices (rather than top-down dictation through adoption of only direct-instruction-oriented texts and materials), and drastically upgrading their salaries and working conditions.

VII. Why bother with K-8 science instruction?

We must raise the appallingly low level of science/math literacy among the general population, so to increase our chances of solving the monumental science-intensive problems (economic, social, political, and environmental) that beset us.



VIII. The road to science/math literacy for all.

