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>Date: Sat, 04 Sep 1999 11:50:09
>To: Maxine Singer <msinger@pst.ciw.edu>, balberts@nas.edu, HLin@nas.edu
>From: "Eugenie C. Scott" <scott@natcensci.ed.org>
>Subject: Re: An idea
>Mime-Version: 1.0
>
>Dear Maxine,
>
>I heard a follow-up to the interview you did with Richard Harris on NPR
>recently: the caller said it was the "most cogent and understandable
>explanation of what science was all about that she had ever heard." I also
>thought you did a great job. Always good to get an attaboy!
>
>You are right about universities having the option of accepting AP courses:
>Caltech requires freshmen to take calculus regardless of the number of high
>school AP calculus courses students have had. But I think this is a less
>productive approach, it would not be fair to many schools and their
>students, and politically, it is likely to backfire.
>
>It is a rare AP biology course that skips evolution because the textbooks
>used are college level ones, which routinely include evolution. It isn't
>the AP courses we have to worry about, it's the regular courses which are
>not as demanding. And actually, because what a student learns depends on
>what the teacher teaches, and no one is looking over a teacher's shoulder,
>a student may not be taught evolution even in a district that *requires*
>it. Conversely, a teacher in a district not requiring evolution may indeed
>be teaching it. So there is an unfairness to both the responsible teacher
>and the student to make a blanket (and draconian) decision based on
>district or state standards. Refusing to let students claim AP biology
>credit at the college level because their *schools* don't require evolution
>would penalize many students who learned evolution and reward students who
>didn't!
>
>There is also a "belling the cat" problem: how do you KNOW which districts
>require the teaching of evolution and which ones don't? (Aside from the
>problem of whether teachers actually taught or not). Would a department
>want to write to every school district of each student who applies for AP
>bio credit? Sounds like a nightmare for staff!
>

>The political repercussions also need to be considered. Already the
>academic community is portrayed as (in Phil Johnson's terms) "cognitive
>elites", who hold themselves above the hoi polloi, are arrogant
>know-it-alls who are close-minded towards any suggestion that challenges
>their accepted wisdom. Balderdash, of course, but why encourage it with a
>gesture that the nonacademic public are likely to interpret as unfair (and
>defensive)? Already a substantial part of the general public thinks that
>"some scientists are brave enough to challenge evolution" and if the
>"establishment" makes a pronouncement about denying AP credit from schools
>not teaching evolution, this will merely reinforce the idea that we're
>trying to stifle a legitimate academic dissention.

>
>(And you KNOW how Americans love underdogs! Waving one's degree around
>tends to get you nowhere with the American public. They want to know what
>you SAY, not whether you have a degree from Harvard. In the past, pointing
>out that particular creationists lacked legitimate degrees was not
>especially effective in reducing their credibility. It was more like, "but
>you haven't answered his argument!" And actually, the public is right about
>this, but I digress.)

>
>There *is* something that professional associations and science leaders can
>do, but unfortunately it is much more difficult and time-consuming than
>your suggestion. NAS, AAAS, and other organizations have to realize that if
>they are going to make any difference in K-12, they have to be in it for
>the long haul. As you said, there's a lot of talk, but we're not sure it's
>getting us anywhere.

>
>What needs to be done is to improve science teachers knowledge of science
>content information, and their understanding (in John Moore's phrase)
>science as a way of knowing (SAAWOK). I appreciate what Leon Lederman is
>doing in Chicago, but that it trying to curry the horse after it's already
>run out of the barn. We have to get teachers *in training*, before they go
>out to take their jobs, because in-service teacher education is mop-up at
>best (though I spend a fair amount of time on it.) What needs to be done is:

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>1) Work with science educators (the people who teach teachers) at teaching
>colleges and other universities with education programs to "inspire" them
>to beef up science content and stress the importance of evolution. There
>are associations of science educators the members of which are not all dim
>bulbs (though God knows a lot of them are, alas [not for attribution,
>please...]) and some of them may be willing to take leadership roles in
>beefing up graduation requirements for teachers. How many schools don't
>require that teachers have majors in science to teach science? How many
>education schools teach their own science classes, rather than requiring
>students to get classes or majors in "real" science departments? Mr.
>Rodney LeVake, currently suing his school district in Faribault, MN, over
>his right to teach evolution and "evidence against evolution" has a degree
>in "biology education", not biology. Can education schools be brought more

>into the mainstream of scholarship?

>

>2) Work with the state agencies that govern the educational requirements
>for teacher certification so that teachers are REQUIRED to have sufficient
>science and SAAWOK instruction that they are prepared to do a decent job.
>In many states, one can teach high school science without a major in the
>field. That's ridiculous. (A publishers representative in Texas once told
>me proudly that he knew all of his biology teachers by their first names.
>"Coach".)

>

>There are other ways to get more science and SAAWOK (and evolution) into
>the system. Improve the tests.

>

>3) Work with the people who write the SAT, ACT and any other "gateway"
>exams to be sure that evolution is a prominent theme in the exams, across
>the board from astronomy and geology to biology. Use the e-word prominently.

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>4) Work with the people around the country who write state "exit" exams for
>graduating seniors so that knowledge of evolution is required. Teachers
>teach to the test, and they are evaluated on how well their students do.
>It would be a foolish teacher who omitted evolution if she knew that
>students were going to have to know it to get a good grade on their exit
>exams. In Florida a few years ago they did it backward: the committee
>deciding the exit exam questions decided to drop evolution "because it
>wasn't fair to test students on something they weren't being taught." If
>that committee had been informed of how important evolution really is in
>science, they might have been less likely to make that decision.

>

>5) Work with the people who prepare the tests that teachers have to take to
>insure that they know enough to teach science. The Education Trust
>recently issued a document analyzing these three kinds of tests. They did
>a good job, I think. The science content required for teacher
>certification, college admission, and high school exit is pretty dismal --
>and evolution is not systematically included (though it is present in some.)

>

>Improving science ed and the understanding of evolution this way I admit
>will be an exhausting task, full of potential disappointments (science
>educators are often a touchy lot who don't like "real" scientists telling
>them what to do, plus the politics between science educators and other
>educators in schools of education are just as bad as those among A&S
>departments) and one that will take years.

>

>But this approach is the only one I can think of that is guaranteed to make
>a difference in science education. Teachers just flat don't know enough
>science or enough about SAAWOK. Evolution is just a piece of this bigger pie.

>

>So that's my two cents worth. I'm off to Kansas for a lecture tour (should
>be a lot of fun -- part of my job is to encourage the discouraged faithful,

>after all) and I won't be getting back to e-mail for a week. I'm more than
>happy further to discuss these and other ideas with you in the weeks to
>come. Might the NRC appoint a committee to investigate my five ideas and
>others for long-term improvement of science education? Needless to say, I
>greatly appreciate the "Teaching About Evolution and the Nature of Science"
>and "Science and Creationism" efforts, but they will not produce systemic
>changes, which is what is needed.

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>I'll be seeing Rodger Bybee this weekend (my last BSCS board meeting!) He
>knows a LOT more about science educators and the requirements for teacher
>certification and testing than I do.

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>Best,

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>Eugenie

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>(ps: while in Iowa this spring, I saw Stan Weinberg. It was sad: he has had
>a stroke and his mind is a far cry from the Stan we knew of old. But he
>knew me and took pride in NCSE, though he tended to repeat himself a lot.
>He seemed happy.)

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>pps: I am taking the liberty of copying this to Herb Lin, who wrote me with
>a similar proposal the other day.

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>At 09:00 PM 9/3/99 -0500, Maxine Singer wrote:

>>Greetings. As you may know, I have become peripherally involved in the mess
>>in Kansas. This came about partly because of the meeting I attended in DC
>>in July with three members of the Kansas State School Board, organized by
>>Jay Labov at the NRC. Then, I had an op-ed piece in the Wash Post on Aug
>>18. Nothing new in that that you could not, or would not have written
>>yourselves. I had an invitation to do it from Steve Rosenfeld, the person
>>who is acting head of the page since Meg Greenfield's death. Then, I
>>responded to a letter asking for nominations for a faculty position at
>>Kansas State that ironically arrived the day after the op-ed piece. I told
>>Professor Conrad that I would not consider nominating anyone because of the
>>situation etc. The op-ed and letter are being circulated in Kansas.
>>Anyway, all this put the situation to the front of my mind and I started
>>thinking what might be done besides talk, which seems to get no where. I
>>came up with the following idea.

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>>University departments generally have full authority over their courses and
>>grading. The same seems to be true regarding acceptance of Advance
>>Placement status on the basis of AP biology exams given after completion of
>>high school AP courses. My idea is to try to put in place, in as many
>>universities as possible, nationwide, a policy that denies AP credits to
>>students whose high school biology curricula did not include a meaningful
>>treatment of evolution, regardless of AP scores. A student might actually

>>do pretty well in an AP exam even if she or he were unable to respond
>>correctly to questions about evolution. But lacking a good background in
>>evolution, one could make the case that the student is not adequately
>>prepared for advanced work in biology. Because Biology Departments should
>>be in a position to make such determinations independent of any
>>all-university committees, it might be politically feasible. I believe
>>that in other fields, some faculties have denied AP credit even given
>>decent exam scores, for example in mathematics.
>>Such a plan would probably have to be supported by the various societies,
>>who could then publicize the idea to members.
>>Universities that tried to prohibit such a plan would have to deal with the
>>issues around faculty governance of academic programs.
>>Thus, I think it could catch on and be effective. It would surely attract
>>attention, but being rather obscure, perhaps not too much. The point is to
>>get high schools to worry about their biology curricula by the inherent
>>pressure in such a University Biology Department policy.
>>I would very much like to know your reaction to this idea. The problems you
>>see in it. Whether you think it is feasible or worthwhile. I have suggested
>>it to Professor Conrad at Kanasa State and he said he would try it out on
>>his colleagues.

>>thanks, Maxine

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