

I tend to take (presently, at least) a more moderate approach than Settlage (2007), providing for the notion that open inquiry might be able to play a useful role at perhaps the primary and middle school levels where the equipment that students require to investigate their questions is typically more readily available, but doubting its value at higher levels, a position that also appears to be in accord with Abell's claim that open inquiry at the college level is "absolutely unobtainable" (Friedrichsen, 2008, p. 75). I make these comments in the context of open inquiry being used in standard science classes, as opposed to special opportunities that might be made available to students in the form of a science club or purposely-designed course (e.g., Schwebach, 2008).

At the same time, though, I'm seeking to clearly identify the benefits that might be associated with students doing open inquiry during the compulsory years of education, say. If open inquiry is not necessary for the development of cognitive outcomes, perhaps its impact can be in the affective domain, as suggested by Yager ("Inquiry [Continued]," 2008). Perhaps Yager (1998), a passionate advocate of "science for all" and science/technology/society approaches, had it right some years ago when he likened science to sport:

Unfortunately, however, our students rarely get to play—rarely get to do real Science. ... Instead, school science means 13 years of learning the rules of the game. ... If potential athletes had to wait 13 years before playing a single scrimmage, playing a single set, a single quarter, how many would be clamoring to be involved (p. 77).

If open inquiry, then, is indeed more appropriate at some stages of education than at others, we can readily see why some teachers might be experiencing unnecessary frustration. Being pressured to implement

a learning approach that neither they nor anyone else can justify for the particular stage of education at which they are working must surely be confusing and stressful. Perhaps we should indeed be satisfied, and even congratulating ourselves, if our classroom practices are such that Level 2 and especially Level 3 inquiry are prominent features.

I continue to deliberate on these issues, using as many means as possible to collect evidence, including seeking responses to this piece. For example, during the past couple of years I've been conducting Inquiry Learning workshops for practicing teachers across Australia. During these workshops I have shared thinking along the lines being presented here and am yet to find anyone who has seen reason to disagree.

I also recently shared my concern with MacKenzie, whose recent editorials (MacKenzie, 2008a, 2008b) appeared to be advocating the use of open learning in an unqualified way. I asked if she uses open inquiry in college/university science courses, if she is aware of colleagues or others who are doing so, and if she can point me to examples in the literature of open inquiry being used in university science proper courses, preferably with evidence supporting the practice. Interestingly, I have not received a reply, which appears to leave open the possibility that such writing is indeed promoting the rhetoric that Settlage (2007) warns us about. •

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Response

I appreciate Eastwell's perspective regarding apparent confusion surrounding inquiry in science classrooms; however, I want to address each of the points Eastwell sets forth in his letter. Eastwell claims there is no clear definition of inquiry amongst science educators. Second, he joins Settlage (2007) in questioning the value of open

Correction

How Many Years Is Five Billion? (ABT, 71[4], p. 199) incorrectly stated that "The Earth is approximately 13 billion years old" Thirteen billion years is the estimated age of our universe, not the Earth. The most frequently-reported age of our solar system (and Earth) is about 4.5 billion years and it is estimated that the first life forms on Earth appeared between 3.5 and 3.9 billion years ago.

—Editor

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