A position paper on the role of education

When I was a senior in high school, I would often hear the claim that the mathematics we were learning would be important later on in life.

While I doubted that fairly ludicrous claim, I was strongly opposed to the implication behind it, the implication that mathematics education should be about imparting "life skills". I argued that people will learn whatever skills they need to do what they need to do in life; they will be motivated by that need. Mathematics education should be about mathematics qua mathematics.

Now, years later, I realize how general this observation is. The role of education being very important to me, I decided to write this position paper.

* * *

My education consisted of "learning" a lot of "facts". I will permit dropping the quotes around 'learning', provided we replace it with what it really means in this case, ie 'memorizing'.

So my education consisted of memorizing a lot of "facts". "Facts" about the history of various countries, "facts" about mathematics, "facts" about art and literature, "facts" about various sciences like biology, chemistry, and physics. That's a lot of quotes around 'facts', but I am not going to drop them for free: I will only drop them if we admit that "facts" are at best facts relative to our knowledge. And what does our knowledge consist of? Our perceptions, and conclusions drawn from them.

But we know what these are, as discussed in JAW30: they are no more and no less than models of the world. They are not "factual" in any sense; that name is a gross misnomer. (I reject the mystical belief that our perceptions somehow give us insights into universal truths. I also tend to reject the mystical —or at the very least unnecessary— belief that there are such things as universal truths.)

So my education consisted of memorizing a lot of models about the world. And indirectly, it consisted of silently establishing and reinforcing the belief that these were not just models, but facts. And even more indirectly, it consisted of silently reinforcing the belief that there are such things as facts. (It was probably not responsible for establishing that belief; I blame that on the nature of the human brain.)

We also know from JAW30 when we should use models: precisely when they are helpful. And people will seek out such help, when they need it, which is why any sort of general education need not focus on such models, or even deal with them. Rather, they can and should focus on the tools that will help people to use these models effectively: for instance, the ability to read and write, but more importantly, the ability to engage in efficient and effective disciplined thought.

These observations have shaped the way I want to teach: My first goal is to make us aware, as a class, of the faculty of thought, and aware of the way we are already using it implicitly. For only then can we make the decision to harness and exploit it. Once we have

begun to exercise our faculty of conscious thought, we can begin to discuss ways of doing this more efficiently and effectively. One of these techniques being abstraction, eventually we will uncover the notions of science and mathematics: that is, reasoning about formal, completely precise concepts. We will not deal with specific models of the world —aside from the model which explains why disciplined thought is so nice— , except as playgrounds for our ever-growing abilities to reason and solve problems. So that we can communicate our ideas well, we will also cover disciplined methods of reading, writing, speaking, and working in a group.

And this, to me, is the role of education. With such a powerful set of tools, any "graduate" of my school will easily be able to acquire whatever "facts" (or models) he needs by opening a book, or contacting an expert in that field. And similarly, he can even develop an interest in a field in the same way.

Closing Thought

It is rather sobering that, seen in this light, the notion of a liberal arts education has been obsolete since the introduction of the printed word.

Eindhoven, 7 February 2006

Jeremy Weissmann
11260 Overland Ave. #21A
Culver City, CA 90230
USA
jeremy@mathmeth.com