

STEM Sell: Do Math and Science Matter More Than Other Subjects? (##)

February 16, 2011

STEM Sell

Are Math and Science Really More Important Than Other Subjects?

By Alfie Kohn

What's the single most alarming educational crisis today? That's easy. It's our failure to pay more attention to the academic field of whichever educator happens to be speaking at the moment.

Just listen, then, and learn that while there may be other problems, too, the truly urgent issue these days is that we're just not investing in math and science instruction the way we should be – with predictably dismaying results. No, it's that kids are outrageously ignorant about history, a subject that ought to be, but never is, a priority. No, it's that even in high school students still can't write a coherent paragraph. No, the real emergency is that reading skills are far from what they should be. No, it's that music and the arts are shamefully neglected in our schools. And so on.

Now there may be some truth to all of these assertions and

the overarching tragedy is our failure to commit to – and adequately fund – education itself. How unsettling, then, to be overwhelmed by a cacophony of claims by educators from different departments forced to compete for attention.

(Let it also be noted that, if we look carefully, not all of these statements are actually comparable: Saying that a specific subject is underfunded or ignored is different from saying that students are doing poorly in that subject, and vice versa. And saying that either of those things is true with respect to an ideal standard is different from saying that it's true relative to what happens in other subjects.)

What interests me at the moment, though, are not empirical claims about who's getting what – or the competence that students do or don't possess in a given discipline – but value-based beliefs about what matters most. Does one subject merit special attention, deserve more dollars, constitute the core of what we expect our schools to offer?

*To listen to those who shape our society's conversation about education – not educators but public officials, corporate executives and journalists – the answer is yes. At the top of the heap sits the compound discipline of science, technology, engineering and math (STEM). Thus, for example, President Obama announced an expensive new public-private initiative last November called “**Educate to Innovate**” that will focus on improving student performance exclusively in STEM subjects. Then, in early January, he was back with a new education project. Was its intent to spread the wealth to other kinds of learning that he had overlooked before? Nope. It was to commit another quarter-billion dollars to improve the teaching of STEM subjects. And a few weeks later, in his State of the Union address, the only academic disciplines he mentioned were, yet again, math and science.*

Thought experiment: Try to imagine this, or any other, president giving a speech that calls for a major new

commitment to the teaching of literature, backed by generous funding (even during a period of draconian budget cuts). Close your eyes and hear our Chief Executive's stirring words:

"Few experiences can compare to savoring truly wonderful fiction, and our obligation is to make sure that all children are invited to do just that. Moreover, we must help them to appreciate what they're reading and encourage them to continue reading for pleasure throughout their lives. At its best, literature enriches our understanding of the human condition and the natural world, while thrilling us with words arranged in combinations that are unexpected and yet perfectly right. The appreciation of the literary imagination is a hallmark of a truly civilized society, yet we have fallen woefully short of making this a priority in our schools. That is why I am announcing today a commitment of \$3 billion to establish..."

Yeah, right.

The point of my example is not to argue in favor of studying literature, per se, or, for that matter, to argue against studying math and science. It's to ask a question rarely posed except by educators in other fields – namely, why STEM subjects consistently attract so much money and attention.

Among decision leaders and the general public, I suspect that STEM enjoys an immediate advantage simply because it tends to involve numbers. Our society is inclined to regard any topic as more compelling if it can be expressed in numerical terms. Notice how rarely we evaluate schools by their impact on students' interest in learning; we focus on precisely specified achievement effects. Issues that inherently seem qualitative in nature – intrinsic motivation, say, or the meaning of life – we consign to the ivory tower. And when

questions that don't lend themselves to quantification aren't simply brushed aside, they're reduced to numbers anyway. Witness, for example, how English teachers have been told that they not only can, but must, use rubrics to quantify their responses to students' writings.

As compared with other "softer" disciplines, STEM usually provides us with the reassurance of knowing exactly how much, how many, how far, how fast, which means that these subjects are viewed (often incorrectly) as being inherently objective, therefore more reliable (another questionable leap), and therefore more valuable (yet another one).

Closely related to our comfort with numbers, then, is our preference for practicality. But STEM seems practical with respect to a specific kind of number – namely, dollars. Putting aside for the moment the fact that reading and writing skills, too, have obvious implications for real-world success – and, conversely, that theoretical physics and "pure" mathematics do not – it's easy to see how politicians and corporate leaders would favor the fields that appear to be more directly linked to economic productivity and profit.

Moreover, anyone whose sensibility is shaped by a zero-sum mindset, such that the goal is not success but victory, is far more likely to be drawn to STEM subjects than to the humanities. "The nation that out-educates us today," said President Obama last month, "is going to out-compete us tomorrow." That is a sentence that could have been spoken by the most reactionary Republican you can name. But it's not a sentence likely to be followed by a discussion of the humanities. Those who confuse excellence with competitiveness are most likely to privilege STEM subjects over others – and vice versa.

Every educator, in fact every citizen, needs to know how profoundly mistaken are the specific empirical claims that we keep hearing on C-SPAN regarding the relationship between

school achievement and jobs, and regarding the relative status of U.S. students. Yong Zhao recently did a fine job of rebutting the specific contentions enunciated in the State of the Union address. As Harold Salzman and B. Lindsay Lowell have reported, very few jobs require advanced proficiency in STEM subjects and there is actually “an ample supply of [science and engineering] students whose preparation and performance has been increasing over the past decades.” In fact, “each year there are more than three times as many [science and engineering] four-year college graduates as S&E job openings.”

But my point here is more basic. The real question we should be asking when we hear yet another speech arguing, explicitly or implicitly, for the unique importance of STEM disciplines is: What does this say about the speaker’s – or our society’s – beliefs about the point of education itself? You don’t have to be a music or history teacher to say, “Now, hold on a minute!” In fact, even algebra teachers should be frowning because the reasons for a politician’s (or the Chamber of Commerce’s) STEM-centricity carry implications for what’s taught within a STEM course, how it’s taught, and whether K-12 education is conceived as nothing more than an elaborate, extended exercise in vocational preparation.

Building on a discussion by the educational historian David Labaree, I once created a simple table – which you can see [here](#) – to capture four possible purposes for schooling our children. I’m troubled by both the private and public versions of an economic focus, and I’m drawn to what, for lack of a better word, might be called the humanistic purposes – again, in both their private and public expressions.

Yet another respected thinker who recoiled from the educational priorities reflected in President Obama’s State of the Union message was Berkeley linguist **Robin Lakoff**, who called on us to recognize education’s “less practical (but

equally vital) functions.” She added that “education is invaluable not only in its ability to help people and societies get ahead, but equally in helping them develop the perspectives that make them fully human.”

Anyone who agrees with that sentiment – and who worries at least as much about the state of our democracy as about the state of the Dow Jones Industrial Average – should think not only about education in general but about which subjects are seen as priorities within the field of education. And why.

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