

The Fallacy of Raising the Bar, Part 1

Mike Collins, Author, Saving American Manufacturing

There is a new education reform coming and it is getting a lot of attention by the media. No, it is not making sure that no child is left behind, or reducing high school drop out rates, or even getting student grades up to international standards.

The newest educational emergency is known by the acronym STEM, which stands for science, technology, engineering and math. Manufacturing and the high-technology industries desperately need students who have been educated in STEM classes. A national organization called Change the Equation, which is comprised of 111 CEOs, has done a state-by-state investigation of kindergarten through 12th grade (K-12) education. The group has found that students in all grades are doing poorly in STEM education.

According to Craig Barrett, the chairman of the organization, what the report reveals should alarm elected officials, policymakers, students and parents across the country. He makes his point by saying “even though Intel employs 9,700 people in its semiconductor manufacturing and research facilities in Arizona, the condition of K-12 education in the state, particularly STEM, makes me believe that it would be foolish to invest another dime in the state.” The answer the organization proposes is to raise the bar again and create new standards based on STEM learning.

The new standards for science, technology, engineering and math are not yet finalized, [but you can get a peek at them here](#) [1]. It is obvious by looking at the spreadsheets on this website that there are going to be many more classes in STEM subjects and the subject matter will be taught in greater depth.

Yes, it is another attempt to raise the bar. What bothers me about raising the bar by creating higher proficiency standards is that nobody really spends a lot of time defining the special problems of the students, much less what they will do with the students who fail the new standards. People tend to rush to follow the latest education movement, but they never go back and really examine the socio-economic and other student problems holding the kids and teachers back.

I think the idea of getting kids more proficient in science, technology and math is a splendid idea. Having spent 35 years in manufacturing, I know first-hand why the future workers in manufacturing need to have a better education with more science and math classes to compete in the 21st Century. But I am also a realist, and have a lot of questions and doubts about education reform.

I assume from the comments made by the government, the Department of Education and the partnership of CEOs that they would like to raise the bar and emphasize STEM in all public schools in grades K-12. There are 18,435 high schools in the U.S. with approximately 16.3 million students. To see how another new reform like STEM learning would work for all of these students and schools, it is

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helpful to examine the problems and needs in terms of student groups. California uses the STAR Standardization tests to categorize students into three groups based on historical outcomes of high school students. These categories are useful in trying to make some sense of all 16.3 million high school students in the U.S.:

1. **Below basic or dropouts.** These are students who drop out of school, did not get enough credits or pass enough tests to graduate
2. **Basic or general track.** These are students who do graduate from high school, but do not qualify to go to a public university.
3. **Above basic or university track.** These are the students who graduate and have the credits, grade and test scores to qualify for a four-year university.

These are not homogeneous groups of students. Each group has its share of drop-out, disengaged and bright students. I use these general groups to make the point that the groups are composed of different students with very different needs and problems.

The history of implementing education reforms has been, at best, a mixed bag of success and failure. The reason is that education reformers decide that current education results are not acceptable, then they decide on a solution based on what they would like to see happen, and then they try to implement the reform without adequately researching the problems of the three groups. It appears that STEM learning is destined to become a reform for all students. Here are some examples which lead me to this assumption:

Craig Barrett, in the article *It's Time to Stop Lying to Students and Parents and Raise Our Education Standards*, wants to raise the bar for all schools. He says, "The solution starts with establishing realistic and challenging proficiency standards. We need our leaders, particularly governors, to stiffen their backs, fight against complacency, and raise and create uniform standards.

"U.S. Senator Mark Warner appeared in a video to say schools must train students in STEM to remain competitive with other nations. The challenge is to involve children in their middle schools years, especially girls and minorities."

Dr. Gloria Bonilla-Santiago is the founder of the LEAP University Academy Charter School in Camden, NJ, and she thinks STEM learning can be used to help students in urban schools escape the cycle of poverty.

Arkansas Congressman Tim Griffin announced that he will introduce a bill to use STEM learning to help highly skilled immigrants stay in the country.

Representative Mike Honda from Silicone Valley introduced a STEM Education Innovation Act of 2011 (H.R. 3373) to forge a national mission on STEM education. His STEM Education Act "ensures that American classrooms are squarely on the cutting edge."

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The Texas Instruments Foundation has partnered with the North Texas Lancaster Independent School District to systematically change science, technology, engineering and mathematics (STEM) education at all levels in the district over four years.”

Senator Tom Harkin, a democrat from Iowa, has been working on the new ESEA authorization bill, which will modify or replace the No Child Left Behind legislation to both tackle the problems of literacy and to introduce STEM education to replace the existing math and science programs in the nation’s schools.

I could go on with examples, but I think you see the message. This new STEM educational reform is not only expected to make all students better at math and science, it is expected to do everything from solving literacy problems to lifting students out of poverty. The premise of this article is that none of these well-intentioned reformers have explained how all of these new reforms will work for all students and groups.

Prescription Before Diagnosis

In examining the research that led to STEM reform, it appears that it was mostly quantitative based on historical performance and test scores for each grade. I could not find any quantitative research defining the specific problems and barriers of the students This mistake is what I call deciding on the prescription (STEM) before doing a good diagnosis (research on the student groups).

If you were taken into the hospital emergency room with terrible pain in your stomach, you wouldn’t want the doctor to simply give you a pill and send you home. This would be deciding on the answer without a real diagnosis, which is what I fear is happening with STEM. The reformers have decided the answer to our education problems is a big helping of science, technology, engineering and math because that is what employers want and we need in this country — but not necessarily what all students can accomplish.

Raising the bar assumes that all students can somehow rise to the occasion, but the approach never seems to address the question of what if some students can’t or won’t respond.

What’s your take? Please feel free to leave a comment below! Tune into the IMPO Insider for part two of this two-part series tomorrow. Michael P. Collins is the author of the book Saving American Manufacturing. You can find more related articles on his website via www.mpcmgt.com [2].

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[1] http://www.glpbooks.com/download_files/%E2%80%8Bstem.pdf

[2] <http://www.mpcmgt.com/>