

STEM Education Is Vital—But Not at the Expense of the Humanities¹

Politicians trying to dump humanities education will hobble our economy

By [THE EDITORS](#) | *Scientific American*, October 2016 Issue



Credit: Nicolas Ogonosky

Kentucky governor Matt Bevin wants students majoring in electrical engineering to receive state subsidies for their education but doesn't want to support those who study subjects such as French literature. Bevin is not alone in trying to nudge higher education toward course work that promotes better future job prospects. Senator Marco Rubio of Florida, a former presidential candidate, put it bluntly last year by calling for more welders and fewer philosophers.

Promoting science and technology education to the exclusion of the humanities may seem like a good idea, but it is deeply misguided. *Scientific American* has always been an ardent supporter of teaching STEM: science, technology, engineering and mathematics. But studying the interaction of genes or engaging in a graduate-level project to develop software for self-driving cars should not edge out majoring in the classics or art history.

The need to teach both music theory and string theory is a necessity for the U.S. economy to continue as the preeminent leader in technological innovation. The unparalleled dynamism of Silicon Valley and Hollywood requires intimate ties that unite what scientist and novelist C. P. Snow called the “two cultures” of the arts and sciences.

Steve Jobs, who reigned for decades as a tech hero, was neither a coder nor a hardware engineer. He stood out among the tech elite because he brought an artistic sensibility to the redesign of clunky mobile phones and desktop computers. Jobs once declared: “It's in Apple's DNA that technology alone is not enough — that it's technology married with liberal arts, married with the humanities, that yields us the result that makes our hearts sing.”

¹ This article was originally published with the title “Science Is Not Enough”

A seeming link between innovation and the liberal arts now intrigues countries where broad-based education is less prevalent. In most of the world, university curricula still emphasize learning skills oriented toward a specific profession or trade. The ebullience of the U.S. economy — which boasted in 2014 the highest percentage of high-tech outfits among all its public companies — has spurred countries such as Singapore to create schools fashioned after the U.S. liberal arts model.

If Bevin and other advocates of a STEM-only curriculum look more closely, they will find that the student who graduates after four years of pursuing physics *plus* poetry may, in fact, be just the kind of job candidate sought out by employers. In 2013 the Association of American Colleges & Universities issued the results of a survey of 318 employers with 25 or more employees showing that nearly all of them thought that the ability to “think critically, communicate clearly, and solve complex problems” — the precise objectives of any liberal arts education — was more important than a job candidate's specific major.

Those same skills, moreover, are precisely the ones required for marrying artistic design with the engineering refinements needed to differentiate high-end cars, clothes or cell phones from legions of marketplace competitors — the type of expertise, in fact, that is least likely to be threatened by computers, robots and other job usurpers. “Consider America's vast entertainment industry, built around stories, songs, design and creativity,” wrote commentator Fareed Zakaria, author of the book *In Defense of a Liberal Education*, in a *Washington Post* column. “All of this requires skills far beyond the offerings of a narrow STEM curriculum.”

The undergraduate able to cobble together a course schedule integrating STEM and the humanities may be able to reap rich rewards. Facebook co-founder Mark Zuckerberg became an avid student of Greek and Latin when he was only in high school, in addition to setting about learning programming languages. And the same government officials who call for a shift in educational priorities should know better than to trash the liberal arts. Take Bevin's call to eschew French literature: Bevin is someone with his own debt to the humanities. He graduated from college with a bachelor's degree in East Asian studies.

The way to encourage high-tech industry to move to Kentucky — or any other state — is not to disparage Voltaire and Camus. Rather the goal should be to build a topflight state educational system and ease the way financially for students from even the most humble backgrounds to attend. The jobs will follow — whether they be in state government or in social media start-ups.