

The Creativity Crisis: Why American Schools Need Design

Laura Seargeant Richardson | Mar 25, 2011

Science and math are only part of the solution. To stay competitive in a changing world, we need to think with our hands.



Education is under attack in the U.S., but cutting teacher benefits won't correct the ongoing downward trend in our schools. According to President Obama, American 15-year-olds rank 21st in science and 25th in math compared to their peers around the world. STEM education (Science, Technology, Engineering, and Math) may be fundamentally flawed. STEM proponents should start focusing on creativity, originality, and design thinking. Here's why.

The crisis in our schools isn't just one-dimensional. The July 2010 issue of *Newsweek* pointed out that we are in a creativity crisis—not simply an engineering one. The European Union declared 2009 as the Year of Creativity, and Chinese faculty actually laughed when they found out the U.S. education trends were in "standardized curriculum, rote memorization, and nationalized testing."

Some organizations already sense this deficiency. NASA and Boeing are finding that recent graduates can technically render in two dimensions but can no longer think in three. Also, STEM doesn't necessarily help create the "New Work" workers that are so highly valued in the evolving global economy. In a report on "New Work," the Pew Charitable Trust wrote, "The creative jobs that drive innovation are now the highest 'value added' jobs in the world—the real creators of wealth. If states are going to stay competitive, they have to ... develop a workforce capable of doing creative work."

The Pew report acknowledges that creativity doesn't just come from artists. In fact, there are approximately 170 occupational classifications that make up "New Work," which can be grouped into five major categories based on the types of knowledge, skills, and aptitudes needed. They are Creative, Education, Social, Technical, and Strategic. Based on these classifications, STEM appears to account for only one fifth of the training we'll need to compete in the coming decades.

Some organizations already sense this deficiency in creativity. NASA and Boeing are finding that recent graduates can technically render in two dimensions but can no longer think in three. Ideal job candidates at these companies must now show they can "think with their hands" by having expertise or a second major in a musical instrument, auto repair, or sculpture. At Stanford, the rediscovery of hands-on learning arose partly from the frustration of engineering, architecture, and design professors who realized that their best students had never taken apart a bicycle or built a model airplane.

And yet, STEM isn't keeping up. The official roster of possible careers one can attain through a STEM-heavy education, as approved by the US National Research Council and the National Science Foundation, include typical math, chemistry, engineering, and some computer science fields. There is no inclusion of, say, architecture, communication, visual and interaction design, and product design. As a matter of fact, design isn't mentioned at all.

STEM's biggest flaw is that it continues to shine a bright light on all things engineering while relegating art and design to a dusty corner. I still remember my mother's suggestion when I was a schoolchild to avoid art (not my natural inclination), and instead take something more practical—like typing. Her suggestion was excellent for 1988—before the Internet, before "user interface design" was a career, and before touchscreen computers. The truth is that our biggest innovations come from the combination of art and science, and there are many

who agree. John Maeda, president of the Rhode Island School of Design, just hosted a two-day workshop funded by the National Science Foundation to explore ways of turning STEM into STEAM (which adds an A for "Arts").

In the end, it is not so much that our focus on science and math may fail like previous education reforms. Rather, we might be missing our biggest opportunity. Fifty years ago, math professor Ralph Raimi suggested that the first purpose of educational reform is to change the climate in the hierarchy of education so that our descendants will be able to advance a "true cause." Each generation will have its own true cause that will no doubt be heavily debated. I'm hoping we can all agree that the future is unknown, the rate of change is increasing, and that we need to train our brains for a flexibility that can be achieved only by engaging our creative potential. The right way is never one way, and our challenges are not one-dimensional.