Two Presidents, Two Parties, Two Times, One Challenge

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Dwight Eisenhower and Barack Obama are from two different generations. President Eisenhower had to deal with the challenge of school integration. One of these presidents presided over a world with a clearly defined enemy with whom we were engaged in a "cold war," where any move toward actual conflict could have wiped out the population of the planet. The other inherited a "war on terror" whose participants are harder to define, making the challenge of resolving this conflict at least as hard as what confronted President Eisenhower.

Against this backdrop of huge national concerns, another challenge took the stage and forced each of these presidents to call for a transformation of our educational system in support of science, technology, engineering and mathematics (STEM). While Eisenhower did not refer to the challenge with this acronym, he fully grasped the complexity of the challenge and its spread across these four disciplines.

The trigger for President Eisenhower was pressed on October 4, 1957 with the surprise launch of Sputnik, the first man-made satellite to orbit the Earth. With the launch of this small object, the Soviets asserted their capacity to do something the United States was not (at that time) able to do. The impact on our collective psyche, coupled with the responses we enacted, created a new phrase for a transformational event – the Sputnik moment.

Fifty years later, the United States was experiencing challenges of another kind. An economy in free-fall, global climate change, energy dependence, and other challenges that might be addressed if our educational system was performing better than it was, especially in the STEM areas. And, yet, for the previous eight years, science, technology and engineering were downplayed in US schools, and math was largely focussed on so-called "basic skills." In other words, we had once again found ourselves in the position we held prior to the launch of Sputnik.

On November 13, 1957, President Eisenhower gave his second speech on the topic of science education in two weeks. The urgency of the task was clear from his words:

> The Soviet Union now has – in the combined category of scientists and engineers – a greater number than the United States. And it is producing graduates in these fields at a much faster rate.
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> Recent studies of the educational standards of the Soviet Union show that this gain in quantity can no longer be considered offset by lack of quality.
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> This trend is disturbing. Indeed, according to my scientific advisers, this is for the American people the most critical problem of all.
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> My scientific advisers place this problem above all other immediate tasks of producing missiles, of developing new techniques in the Armed Services. We need scientists in the ten years ahead. They say we need them by thousands more than we are now presently planning to have.
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> The Federal government can deal with only part of this difficulty, but it must and will do its part. The task is a cooperative one. Federal, state and local governments, and our entire citizenry must all do their share.
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> We should, among other things, have a system of nation-wide testing of high school students; a system of incentives for high aptitude students to pursue scientific or professional studies; a program to stimulate good-quality teaching of mathematics and science; provision of more laboratory facilities; and measures, including fellowships, to increase the output of qualified teachers.

The nation responded, and the "children of the October sky" (a group to which your author belongs) went on to invent the tools and make the discoveries that have shaped the modern world.

But the educational transformation of the early 60's ran out of steam, putting our nation at risk once again.

And so, on April 27, 2009, President Obama gave a speech that renewed our commitment to transforming education in a way that could generate more interest in the STEM fields. As he said in his speech:

> We know that our country is better than this. A half century ago, this nation made a commitment to lead

the world in scientific and technological innovation; to invest in education, in research, in engineering; to set a goal of reaching space and engaging every citizen in that historic mission. That was the high water mark of America's investment in research and development. And since then our investments have steadily declined as a share of our national income. As a result, other countries are now beginning to pull ahead in the pursuit of this generation's great discoveries.

I believe it is not in our character, the American character, to follow. It's our character to lead. And it is time for us to lead once again. So I'm here today to set this goal: We will devote more than 3 percent of our GDP to research and development. We will not just meet, but we will exceed the level achieved at the height of the space race, through policies that invest in basic and applied research, create new incentives for private innovation, promote breakthroughs in energy and medicine, and improve education in math and science.

These speeches, separated by five decades, given by presidents from different parties, both called for deep transformations. To see how amazingly related these speeches are, I generated word clouds of the two. Eisenhower's is first, Obama's is second:

Language of the Cold War played a strong role in Eisenhower's comments, but it is clear that the response to our respective national challenges was the same: improve education in the STEM fields while increasing funding for basic scientific research.

This last point is important. Some argue that government funded basic research is a waste of money. Nothing could be further from the truth.

Consider the Internet. When Eisenhower created that Advanced Research Projects Agency (ARPA) for the Department of Defense, one of their small projects revolved around communication between computers. The original funding for this project was probably in the range of a million dollars. *This is less money than the $2.6 million a company spent on a single 30-second advertisement broadcast during the last Superbowl.*

And yet, ARPANET evolved and morphed into the Internet, which led to the Web, Google, Amazon, eBay, Wikipedia, Facebook, and the myriad other services most of us take for granted today. Even in tough economic times, one would be hard-pressed to state with certainty how many billions of dollars are generated as a result of the Internet each year.

Imagine what other benefits could come from large projects in the area of alternative energy, health care, environmental science, etc.

We have reached one of those turning points in history that will be talked about for generations to come. Just as we had a leader who understood the connection between education and our country's success fifty years ago, so we have again today. Two Presidents, two different times, one challenge – and one success in the making.

About the author

David is the Founder and Director of Global Operations for the Thornburg Center. He is an award-winning futurist, author and consultant whose clients range across the public and private sector throughout the planet. His razor-sharp focus on the fast-paced world of modern computing and communication media, project-based learning, 21st century skills, and open source software has placed him in constant demand as a keynote speaker and workshop leader for schools, foundations, and governments.

As a child of the October Sky, David was strongly influenced by the early work in space exploration, and was the beneficiary of changes in the US educational system that promoted and developed interest in STEM (science, technology, engineering, and math) skills. He now is engaged in helping a new generation of students and their teachers infuse these skills through the mechanism of inquiry-driven project-based learning. (For details, visit www.tcse-k12.org.)

His educational philosophy is based on the idea that students learn best when they are constructors of their own knowledge. He also believes that students who are taught in ways that honor their learning styles and dominant intelligences retain the native engagement with learning with which they entered school. A central theme of his work is that we must prepare students for their future, not for our past.

David splits his time between the United States and Brazil. His work in Brazil also is focused on education, and he is currently part of a team redesigning curricular practice for some schools in and near Recife, his home city.