
Regional

U.S. needs to increase its scientific literacy

After the Soviets shocked the world by launching Sputnik in 1957 there was a widespread sentiment in this country that we were behind in the space race. It was thought that if something wasn't done – and with great determination – communism would soon dominate the world. The result was not only a reorganization of the scientific establishment in the United States, but also a lot of resources were poured into improving scientific literacy. The final result was that we beat the Soviets in the race to the moon, but just as importantly we developed the best and largest system of higher education in the world.

The history of this country is replete with examples of when the federal government took the lead in improving postsecondary education, like when the great land-grant universities were created during the Civil War era. Today these schools constitute the backbone of the nation's public system of higher education.

Now that the political season has begun, we are starting to hear discussions not only about higher education but also about scientific matters that will test in one way or another the scientific literacy of our political leaders and of the public in general. So, how well does the U.S. stand when it comes to scientific literacy?

On a regular basis the National Science Foundation (NSF), the main federal branch that deals with policies and funding of science, conducts studies to determine the level of scientific literacy in the U.S. The last time they published the results of their study was last year and what follows are some of the highlights.

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For example, nearly two-thirds of Americans said that astrology is “not at all scientific.” While that sounds reassuring, it is still a matter of concern that something that is so demonstrably false as checking one's horoscope to determine one's behavior is still believed by a third of Americans.

When it comes to evolution (an issue that came up in previous presidential debates) only 48 percent of Americans believe in this natural process, while 70 percent of European respondents and 76 percent of Japanese ones accept it as scientific fact. According to studies carried out since 1985, the U.S. is at the bottom of 34 countries that were also surveyed about their belief in evolution. Only respondents in Turkey had a lower level of acceptance of evolution as fact than those in the United States.

Climate change is another issue that has become a matter of hot political debate, particularly after the announcement by the Obama Administration that they were taking stronger measures to reduce the emission of greenhouse gases that provoke an increase in the global temperature of the planet. Yet, it seems that the American public is not particularly concerned about it. According to a Gallup poll in 1989, 63 percent of the public saw “global warming” as an issue of which they “worry a great deal.” But by 2013 that percentage

decreased to 58, despite the fact that there is an almost unanimous consensus among scientists that it is the major environmental problem facing humanity – and that human activity is the main cause. But in other countries the concern is much higher. In Canada, 71 percent of people consider climate change a major problem. In Latin America the number is 73 percent and 74 percent in the developed parts of Asia.

But the lack of scientific literacy not only has to do with controversial issues. It also deals with some of the most basic tenants of science. For example, only 74 percent of Americans know that the earth orbits the sun (instead of the other way around), 84 percent that the center of the earth is very hot and 53 percent know that electrons are smaller than atoms. All of these facts are usually taught in primary school.

Even worse, according to a Gallup poll about three quarters of Americans believe in some sort of paranormal phenomena (ghosts, witches, telepathy, extrasensory perception, etc.) for which, of course, there is not a single shred of scientific evidence.

Are all the results from these studies that bad? Not necessarily. According to the NSF study, 80 percent of Americans say that they are interested in learning about new scientific discoveries. When it comes to federal funding for science, about 4 in 10 Americans believe that we are spending “too little in research,” 5 in 10 that the spending is about right and only 1 in 10 that we are spending too much. Therefore, the vast majority of Americans believe that funding to science should not

only be maintained, but also increased. The same study shows that people believe that the government spends too little on education.

These are words of caution to those demagogues who proclaim that there should be less federal investment in science and technology. And since most scientific knowledge is developed in colleges and universities, we should be very critical of those who propose further cuts in higher education. The weaker our postsecondary education system, the weaker is our country.

If Sputnik and the land-grant universities are not good enough examples of what we should be doing these days, think about World War II. The Germans were the ones who developed the concept of nuclear fission in 1938. Because of the threat that they could produce an atomic bomb, the U.S. put a lot of resources and efforts in developing its own before the Nazis did. Whatever your opinion about its use in Japan in 1945, that was another example of how this country has based its success on scientific progress and not suspicion of or plain disbelief in science.

As the astrophysicist Neil deGrasse Tyson said recently, he had no problem with people believing what they wanted. “But if that belief is not based on scientific truths, you should not be creating legislation based on it.”

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