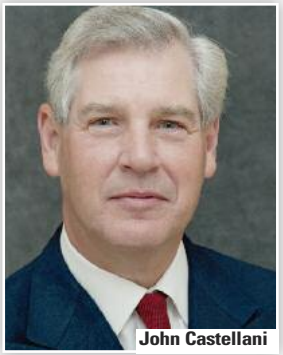
Educating The Next Generation

John Castellani, president and CEO of Pharmaceutical Research and Manufacturers of America (PhRMA), talks about the imperative for improved science, technology, engineering, and math (STEM) education.


John Castellani

PV: *Why is STEM education so important?*

CASTELLANI: The STEM workforce is absolutely vital to the U.S. economy and to our ability to be competitive globally. It is the lifeblood of the pharmaceutical industry.

In the biopharmaceutical sector, we employ directly about 800,000 people in the United States, and we support an additional 3.4 million jobs across the economy from our vendors and suppliers. As an industry, we rely on highly trained, highly skilled people. In order to sustain those numbers just in the biopharmaceutical sector, we have to bridge both the current and projected talent gap for the STEM disciplines if we are going to be able to prosper.

The President's Science and Technology and Advisory Committee tells us that we are going to need about 1 million additional STEM graduates over the next 10 years just to sustain the position that the United States now has as a leader in innovation. We are now producing 100,000 graduates a year.

Additionally, we have difficulty keeping students who are not U.S. citizens here. There are limits on the H1B visas. While everyone agrees those limits need to be expanded, they are tied up in the issue of immigration. This is the noncontroversial part of a very controversial issue. The rest of the world also recognizes that it is valuable to them to keep their talent, so young engineers and young scientists now have an opportunity to stay in their own countries where they are being encouraged to go into those disciplines.

PV: *What gaps exist in our educational system in terms of STEM?*

CASTELLANI: First, we have to teach STEM in the K-12 environment, particularly in junior high school to get young people interested in and excited about pursuing careers in the STEM disciplines. We are very short of qualified mathematics and science teachers at the high school level. Our companies are focusing on provding support both monetarily and through mentoring and access to facilities and research labs for the teachers who are necessary to encourage STEM students.

The financial support is absolutely essential. Training for teachers is important so that they are capable of teaching the STEM disciplines at all levels. Also necessary, but often not emphasized, is getting kids excited. Our member companies do a lot to engage students and get them into the labs to show them what research looks like and why it's cool.

Second, we don't have enough diversity. We are not recruiting women and minorities to the levels that we need to meet this need. Women now make up 60% of the college population, but only about 6% go into STEM disciplines. There are a lot of reasons why. Some are cultural. Some are institutional. We design a lot of "weeding out" courses that are very difficult and if you don't do well in them, you can't continue to pursue that degree even though those courses may not be a determinant of whether someone would be capable as a scientist or engineer.

Third, we need to do a better job of showing underrepresented populations that there are great opportunities for them in the STEM areas. We need women and minorities who are leaders of corporations and leaders of research and engineering pursuits to be role models.

PV: *Is the industry doing enough?*

CASTELLANI: No. We have done a lot in this area: $100 million invested over the last five years, contributions reaching out to almost 2 million students and 17,500 teachers, and the 4,500 industry employees who are volunteering in schools. But we still have gaps. We need to do more, both as an industry and as a nation. We have to find a better way to get young men and women excited and interested in these fields if we are going to be a vibrant economy in the future. PV

Industry Efforts in STEM Education

- In total, 24 PhRMA member companies and their foundations have invested more than $100 million in STEM education-related initiatives since 2008, including awarding almost 600 individual STEM education related grants.
- Over the last five years, PhRMA member company STEM programs have impacted more than 1.6 million students and 17,500 teachers across the United States.
- PhRMA member company programs are impacting students and teachers through 14 national-level programs that range from funding third-party STEM education initiatives to supporting scholarships in STEM-related fields to sponsoring STEM-related competitions.
- Companies are making in-kind contributions by leveraging the talents of almost 4,500 -industry employee volunteers. Other in-kind contributions include equipment donations and the use of company laboratory facilities, particularly at the K-12 levels.
- A majority (85%) of industry-supported STEM education programs focus on the K-12 levels and are aimed at improving the preparation of both students and teachers.

Source: Battelle Technology Partnership Practice and PhRMA

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