

Students' learning and employment: Stories from the field

In a letter in the July 2010 issue of *PHYSICS TODAY* (page 9), Chuck Gallo wrote, "Many low-income students do not see any correlation between success in school and success in life. . . . [They] relate more enthusiastically to money-making concepts than to academic subjects like spelling, history, or languages. But they are very interested in arithmetic—if money is involved."

I think it is important not to make assumptions about a broad group of people, because students each have many variables in their personal lives. Is their home life safe? Do they have food on the table? Are they home alone or responsible for a younger sibling? I can speak on these issues from personal experience.

My mother and grandmother raised me. I borrowed male role models from my favorite TV shows, *The Brady Bunch*, *Little House on the Prairie*, and *The Waltons*. My mother and grandmother taught me right from wrong, and they encouraged me to follow my interests.

I lived in the public housing projects from the time I was 9 years old until I was 22. Some of the kids there were bullies, and I was often their target. I was very interested in academic subjects, especially anything to do with astronomy, but I was afraid to go outside to look at the stars.

My seventh-grade science teacher suggested that I enter the school science fair. So I created a project about astronomy and won first place for my grade. In the ninth grade, I won best science fair project for the entire junior high. The prize was a family membership to

the Boston Museum of Science—a perfect gift because I thought the museum's Charles Hayden Planetarium was the most wonderful place in the world. Every time I sat under the stars in a planetarium show, I was whisked away into a universe of possibilities.

I always knew I wanted to go to college. Guidance counselors advised me which classes to take but didn't seem to know about available enrichment programs. When I arrived at Boston University as a freshman, I was in awe of the speed with which my classmates learned math and physics; I was often scrambling to catch up. And I still lived in the housing projects, so I had concerns about studying in the physics labs in the evenings after the local bus stopped running. I would have to first catch the train, then ride the bus that stopped closest to my neighborhood, and finally sprint through a darkened parking lot to get home safely. But I knew that an education was my ticket out.

I earned a BA from Boston University and an MS from San Diego State University; both were in astronomy. I ended up working for 26 years in my beloved Charles Hayden Planetarium. While I was there, an experience with a group of blind students started me on a mission to make astronomy and space science accessible and to write several Braille-and-print astronomy books with touchable pictures.

Since leaving the museum, I have focused on developing strategies and resources and on writing books to make astronomy more accessible to people regardless of their abilities. Whenever I meet students who use my resources, I see myself—someone who wanted to move forward and have a career but needed a little extra help. And I do all I can to provide such help for others.

Looking back at my own story, I know that vocational training as Gallo suggests, "to get jobs as early as possible," would have discouraged me because it would have reinforced the feeling that others did not believe in me. Short-term vocational programs are not uncommon, but they usually lack any long-term follow-up. I think the most

valuable support to students would be a mentorship program in which an adult college graduate provides a long-term relationship with a student. Believing in yourself and having others believe in you can make all the difference in the world.

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Chuck Gallo's letter, "Students Need to See Education's Job Relevance," commented on an earlier story (*PHYSICS TODAY*, December 2009, page 28) on what determines how well kids do in school. Gallo focuses on low-income students and the importance of integrating education and real job experience; he notes that young people should "be encouraged to get jobs as early as possible." I think that is good advice for all income levels; I greatly value my own experience of having worked long summer hours at ages 15 and 16.

The current dearth of summer jobs for teenagers can be partially attributed to the economic recession. But another factor is perhaps the most important contributor to teen unemployment. In a study released in May 2010, the Washington, DC-based Center for Immigration Studies concluded that states with high numbers of immigrants have low levels of teenage labor-force participation.¹ The center's report states that in 1994 nearly two-thirds of US-born teenagers ages 16 to 19 were in the summer labor force; by 2007 less than half of that age group had summer employment. Note that the drop occurred before the current recession.

The report notes that during the same period the overall number of immigrants, legal and illegal, holding a job doubled. In particular, sectors that saw the biggest drop in teenage workforce participation saw the biggest increase in immigrant workers. According to the report, the severity of the decline is similar for teenagers coming from both high- and low-income households and for US-born Hispanics, blacks, and whites. The report contains many additional details, and its authors note that those who do not hold jobs as teenagers

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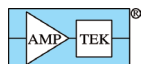
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often find themselves at a disadvantage later in life.

Reference

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Remembering Stoicheff and his rule

It was sad to read about the death of Boris Stoicheff (PHYSICS TODAY, October 2010, page 68). In the obituary, Richard Brewer describes Stoicheff as an excellent physicist. I add that his name is also well known in the chemistry community. In 1962 Stoicheff introduced a principle for carbon-carbon bonds that later became known as Stoicheff's rule; it states that the C-C and C=C bond lengths "increase linearly with an increase in the number of adjacent bonds."¹

In 1972 Kozo Kuchitsu suggested a revision² to Stoicheff's rule. In 1975 my colleagues and I showed that the rule goes beyond its original purpose—organic chemistry—and is applicable to a higher carbon coordination number, namely 6, which is found in carbon-boron compounds known as carboranes.³ Stoicheff himself was surprised by that fact when he visited the University of Moscow in the 1970s.

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On Iran-Israel relations

I was shocked to read the unsubstantiated statements and demonstrably false assertions William Katz made in his letter (PHYSICS TODAY, December 2010, page 8). PHYSICS TODAY should not be in the warmongering business.

Iran has no "stated goal of annihilating Israel," as Katz says, or of wiping it off the map. That is a fiction. Ayatollah Ruhollah Khomeini's words, translated from Farsi, were that "the Zionist regime will pass from the pages of time," like the Soviet regime passed from the pages of time. The *New York Times* was the first to use the word "map," but later back-tracked, and in the 11 June 2006 edition, in the newspaper's Week in Review section, Ethan Bronner subsequently stated that Iran "has never specifically threatened war against Israel."

I am not aware of "thousands of American deaths for which Iran is directly responsible," but I do know that Iran successfully resisted both the Taliban and al Qaeda long before most Americans had ever heard of them. Iran offered sanctuary to US pilots in the first attacks on the Taliban in Afghanistan and gave the US both intelligence and material support against al Qaeda. In my judgment, Iranians generally consider the Taliban religious crazies and al Qaeda godless terrorists.

It is not true that the Iranian government "clamors for war," nor does it "threaten nuclear war." On the contrary, the latest report from the International Atomic Energy Agency shows zero evidence of an Iranian nuclear weapons program, but the US remains suspicious and demands proof of the negative. The exact opposite is more likely the case: I believe that Iran is prepared for a nuclear attack from Israel. One Israeli Knesset member brazenly said that "conventional weapons will not be enough" for an attack on Iran. At the time, the Israeli government made a public threat by sending bombers on a round trip across the Mediterranean that exactly matched the round trip distance to Tehran.

Last January a physics professor was murdered as he left home in the morning on his way to the University of Tehran. Masoud Alimohammadi was a theoretical particle physicist whose last paper, on generalized Gauss-Bonnet dark energy, was published in *Physical Review D*. He had friends around the world, and he collaborated on SESAME (the Synchrotron-light for Experimental Science and Applications in the Middle East) with physicists in the region, including some from Israel.

With surprising ease, I found a hitlist from Iran Watch (<http://www.iranwatch.org>), which is part of the Wisconsin Project on Nuclear Arms Control; it contained Alimohammadi's name, home address, details on his wife