Comprehensive School Counseling Programs and STEM Careers

BY RICH FELLER

Even well established comprehensive school counseling programs can leave students with limited opportunities unless school counselors provide students with a bridge—career assistance leading to a job that will support a sustainable lifestyle in an expanding economy.

In many ways the best career assistance is an expanding economy that creates jobs to support families, and expands tax revenue to support financial aid to postsecondary education. Without economic expansion even well established comprehensive school counseling programs can leave students with limited opportunities. Simple sustainability requires growth in advanced manufacturing, education attainment, infrastructure repair, health care cost containment, green and new energy technology, and information technology.

With the demand for skilled workers in science, technology, engineering, and math (STEM) closely linked to global competitiveness and wealth creation, career assistance is gaining national attention. President Obama has said "I think everybody needs enough post-high-school training that they are competent in fields that require technical expertise, because it's very hard to imagine getting a job that pays a living wage without that — or it's very hard at least to envision a steady job in the absence of that." (Obama 2009, p.3)

Comprehensive School Counseling Programs

Proponents of the career domain within the ASCA Comprehensive School Counseling Model and the National Standards for School Counseling Programs are encouraged by the elevated value placed on career assistance. Beyond helping students (1) acquire the skills to investigate the world of work in relation to knowledge of self and to make informed career decisions, (2) employ strategies to achieve future career goals with success and satisfaction and, (3) understand the relationship between qualities, education, training, and the world of work (Dahir, 2001, p.324), becoming a STEM advocate is gaining traction among school counselors.

School counselors helping those who seek and promote STEM options find implications beyond daily practice. By inspiring students to solve problems in the frontiers of alternative energy, climate change, nanotechnology and space exploration, school counselors are "gate openers" to opportunities often overlooked and misunderstood. "Unconscious incompetence" or ignorance about STEM reduces excitement and curiosity about informal STEM learning opportunities, role models, and career resources which stimulate interest and create student motivation.

Why STEM and Why School Counselors?

Friedman (2008) suggests that energy technologies (ET) can solve worldwide environmental issues and create the economic stimulus needed to rebuild America. Yet, the lack of gender and ethnic diversity of students entering STEM educational programs and career fields greatly reduces the talent pool. As gate openers, school counselors play a crucial role as STEM advocates.

The National Academies of Science noted the rapid erosion in the U.S's competitiveness in science and technology—and thus in the U. S. as a global economic leader. They cautioned that the U.S. position as a global leader may be abruptly lost without a greatly expanded commitment to achieving success in advanced education in science, technology, math, and engineering.

Too few young people are being educated or inspired about interest in advanced math, science, and engineering. "The education in American junior high schools, in particular, seems to be a black hole that is sapping the interest of young people, particularly young women, when it comes to the sciences". (Friedman, 2005, p.351)

Technology is pervasive in almost every aspect of daily life, and as the workplace changes, STEM knowledge and skills are important for a variety of workers (not just for mathematicians and scientists). In addition to STEM knowledge, the ways in which problems are approached and solved in these subjects are increasingly necessary for engaged citizenship.

Rising Above the Gathering Storm (2007), the seminal report about STEM, is of great value to school

counselors. It recommends the need to (1) increase America's talent pool by vastly improving K-12 mathematics and science education; (2) sustain and strengthen the nation's commitment to long-term basic research; (3) develop, recruit, and retain top students, scientists, and engineers from both the U.S. and abroad; and (4) ensure that the U.S. is the premier place in the world for innovation. Historically, the U.S. has been a leader in these areas.

Now only 15% of U.S. graduates are attaining degrees in the natural sciences and engineering, compared to 50% in China. Large numbers of doctoral degrees in the natural sciences and engineering in the U.S. are being awarded to international students (Freeman, 2006). It is estimated that the U.S. will need 1.75 million more engineers, a 20% increase, by the year 2010 and demand for engineers is increasing at three times the rate of other professions (Gasbarra & Johnson, 2008).

Diversity and STEM Issues

As social justice advocates, progress is made when school counselors see the relationship among diversity issues, STEM opportunities and economic rewards. Stereotypes about women's abilities and caretaking roles often keep women from pursuing high demand math and science careers. The atmosphere within some STEM fields can be as challenging as classrooms, college majors and training programs lacking a "culture of care" or an uneven gender, racial, class or sexual orientation mix.

Hispanics, the largest and fastest growing minority group in the United States are largely under-represented in STEM fields and face academic achievement hurdles. Hispanic students are disproportionately represented in poor, urban schools with lower quality of education and poor bilingual programs (Gasbarra & Johnson, 2008). Poverty, language barriers, and family commitments are often obstacles to access and success. Because fewer Hispanic parents have attended college, their children may have little familial support for college attendance, much less for studying science or engineering. With the growing need for more engineers, businesses and Hispanic communities could both benefit from more Hispanic students being encouraged and supported in pursuing STEM careers (Gasbarra & Johnson, 2008).

The reasons for limited diversity in the STEM fields are broad and cannot be addressed overnight. However, school counselors can better encourage and provide career assistance to those in under-represented populations to enter high-demand STEM fields.

When connections are made about how the economy, career assistance and STEM issues run parallel, the importance of school counselors as STEM advocates within comprehensive school counseling programs will expand options for all.

Recommendations

- Connect students with role models in STEM fields, especially women and ethnic minorities in non-traditional programs and careers
- Encourage student participation in career and technical education (CTE), museum and robotic programs to enhance real world STEM applications
- Accelerate STEM interests through Space Camp (http://www.kennedyspacecenter.com/educatorsParents/camp.asp), NASA's Kid's Club http://www.nasa.gov/audience/forkids/kidsclub/flash/index.html
- STEM career fairs and summer enrichment programs
- Connect teachers to materials and opportunities such as http://www.nasa.gov/audience/foreducators/index.html or http://www.nasa.gov/audience/foreducators/current-opps-index.html and http://education.nasa.gov/edprograms/core/home/index.html
- Explore http://itestlrc.edc.org projects, the Gender Clip Project http://www.genderchip.org the Sloan Career Cornerstone Center http://www.careercornerstone.org/diversity.htm and the Real Game 2.0 at http://www.realgameonline.ca (tutorials and 14 day free trial)
- Access www.stemcareer.com to find resources for individual planning, classroom guidance, financial aid and professional development
- Explore www.cdminternet.com to match interests with STEM careers.

REFERENCES

Dahir, C. (2001). The national standards for school counseling programs: Development and implementation. Professional School Counseling, 4, 320-333.

Freeman, C.W. (2008). China's real three challenges to the U.S. Retrieved December 7, 2009 from http://www.theglobalist.com/StoryId.aspx?StoryId=5770

Friedman, T. (2005). *The world is flat.* New York: Picador.

Friedman, T. (2008). *Hot, flat, and crowed.* New York: Farrar, Straus and Giroux.

Gasbarra, P. & Johnson, J. (2008). *Out before the game begins: Hispanic leaders talk about what's needed to bring more Hispanic youngsters into science, technology, and math professions.* Retrieved September 25, 2008 from http://www.publicagenda.org/files/pdf/outbefore.PDF

Obama, B. (2009, April 14). After the great recession. Retrieved December 7, 2009 from http://www.nytimes.com/2009/05/03/magazine/03Obama-t.html?pagewanted=1&_r=1

Rich Feller is Professor of Counseling and Career Development at Colorado State University in Fort Collins, CO. Previously, he was a school, career, and admissions counselor. feller@cahs.colostate.edu