Idea to Innovation:
STEM education takes hold on college campuses

Q&A WITH ADAM BROWN
Director of the Memory and Emotion Laboratory at Sarah Lawrence College

DON’T “WING IT”
Tips to help prepare for your next interview

AROUND THE CAMPUS: NEW & NOTEWORTHY FROM AREA COLLEGES
Hardly a week passes where another technological advancement isn't introduced touting faster communication, more application versatility and better product design. These innovations are an undeclared mandate for colleges to prepare our next generation in four basic areas in order to successfully compete globally. Science + Technology + Engineering + Mathematics equal STEM, the equation of our future. While STEM is not new to academia, the newer approach of colleges is to integrate these disciplines rather than treating them as unrelated subjects.

The importance of interdisciplinary cooperation is viewed as one of our country's education priorities from grade school to grad school. In President Obama's 2009 State of the Union Address, he emphasized that STEM is one of the biggest challenges for the U.S. economy. Seventy-eight percent of U.S. high school graduates did not meet the readiness benchmark for entry level college courses in math, science, reading, and English. The World Economic Forum ranks the U.S. 48th in quality of mathematics and science education. With statistics like these, it was important to ask area colleges what steps they are taking toward better STEM education.

Dr. John Collins, Curriculum Chair of Engineering Technology at Westchester Community College (WCC) said, "Our College has been active with STEM since 1943. We offer technology degrees, an associate's degree in applied technology, and the courses offered are the same as the first two years of any engineering school. We produce students with associate's degrees who are ready to go into technical fields."

WCC's Associate Dean of the Division for Mathematics, Computer, Engineering & Physical Sciences & Technologies, Dr. Ted Nygreen added, "Our associate's degree in science is a great program that focuses on the competencies a student will need for local employees. We have an advisory committee; for our energy system degree program, Con Edison and Entergy are very involved partners because they recognize the fact they need local qualified technicians."

Dr. Nygreen continued, "For K-12 the critical issues are math, as well as written and oral English. Texting on the phone is causing children to lose the ability to
communicate intelligently. A public survey done five years ago reported that most Americans don’t see the relevance of math and science, or the need to know how to read graphs and interpret Internet information. There is an anti-science climate among the youth. I worry about this attitude and the T-shirt that reads I’m too pretty to do math. This is not a recent phenomenon. The reality is young girls between the ages of 12 -17 experience plummeting self-esteem and interest in science and math.

Professor Jacqueline Washington, Chair and Professor for the Dept. of Biology and Chemistry at Nyack College, spoke openly on how more women and minorities need to be factored into the STEM equation. “Young girls need to understand that they can be both a scientist and a woman. The two are not mutually exclusive,” she stated. “You can’t hate math and want to be a nurse. The curriculum needs to be integrated with all subjects. We need to encourage K-12 educators to attend STEM workshops and conferences; and all educators at every level need to be fully engaged in not only their field, but in other disciplines.”

Dr. Washington’s initiatives to raise self-awareness and actualization include Nyack College science students who are partnered with Yale University’s “Small World Initiative Projects,” specifically antibiotic resistance.

“When students see the relevance of science in their own life, it propels motivation and involvement,” she added.

Mercy College is acutely aware of the lack of women and other minorities not pursuing STEM careers. Ms. Carolina Hernandez, STEM Project Coordinator at Mercy College, explained, “There’s this mindset among women and minorities that they can’t do this. Yet they have been exposed to math and science since their lower grades. Our goal is to reacquaint students to science and increase their comfort level in a lab setting. New York has so many opportunities, and technology has changed medicine.”

Mercy College is fortunate to be funded by Grant from the United States Department of Education’s Title III, STEM & Articulation Program, which is multidisciplinary and has recently incorporated psychology. The College is holding four summer course activities to target the needs of women and minorities: Step-up to STEM, for undergraduates and high school students with hands-on experience so they can begin to feel comfortable in these fields; Research Camp, a six-week course giving students specific experience they will need for jobs; Peer Mentoring, structured learning in biology and chemistry where successful students instruct underclassman; and IBM Speakers, who visit the campus and describe their employment at IBM, and inspire students to succeed.

Rockland Community College continues to stay in-step to meet the demands of STEM. Dr. Kristopher Baker, Division Chair for STEM & Health Professions, shared that they recently hired several PH.D biology, computer, math and chemistry professors. Their Organic Chemistry 10-week courses are completely full. “Generally in the 1970’s and 80’s the U.S. fell behind,” Dr. Baker said. “But through the efforts of the SUNY system we are stepping-up to the demands. SUNY’s commitment is to have 150,000 new graduates each year to help fulfill the need for skilled workers that Obama’s Council of Advisors on Science and Technology (PCAST) has set forth.”

Dr. Baker explained that the 2010 PCAST showed there aren’t enough K-12 educators who embrace their subject matter to inspire students or who know how to teach math and the sciences effectively. “These teachers need support and professional development to be able to teach creatively.”

The next steps are clear: ongoing support for K-12 teachers to generate enthusiasm among youth for math and science; tap into the pool of qualified women and minorities who want to pursue STEM careers; and foster a climate where life sciences are valued. “We have to become more involved. Science is a study of life and that’s what we are; science is not something alien,” Dr. Jacqueline Washington concluded.