A look at San Diego's growing demand for a STEM educated workforce and what local schools are doing to fill the need.
“STEM-ing” the Tide: Preparing a New Generation for a Technology-Dominated World

What is STEM?

STEM is the increasingly popular term associated with the combination of industry fields of Science, Technology, Engineering and Mathematics. These fields, while distinctly different, share similar requirements of critical thinking, creativity and problem solving. According to the National Research Council, the National Science Foundation, the California STEM Learning Network and others, STEM fields are collectively considered core technological underpinnings of an advanced society. STEM skills are increasingly necessary for those engaged in our knowledge-based economies and evidence suggests that the fastest-growing and highest-wage jobs in the future will be in STEM fields where all employees will need to utilize STEM skills to be successful.

Why Does STEM Matter in San Diego?

The San Diego region is home to a plethora of STEM industry leaders. Large bio-tech firms and innovative telecommunication companies employ literally thousands of professionals serving as technical engineers, number crunching mathematicians and scientists leading the way for new products and services. In 2012, Forbes ranked the San Diego region as third best city in the nation for STEM jobs. This is based on the nearly 30 percent growth in tech employment and 13 percent growth in STEM jobs. The region is experiencing growth in tech employment that is taking place not just in software or electronics firms, but in any industry that needs science and technology workers, from manufacturing to business services to finance.

One Noteworthy STEM Effort:

The Balboa Park Cultural Partnership was awarded a $2.6 million grant from the National Science Foundation to administer the Art of Learning – a national initiative that uses the arts to spark creativity in science learning and to develop a skilled 21st century workforce in STEM. Incubators for Innovation will be set up in Balboa Park, Chicago and Worcester, Massachusetts, bringing together community members forming cross-disciplinary teams, each comprised of STEM professionals, artists, educators, community leaders, students, and more. With expert faculty, incubator participants will practice arts-based techniques for generating, transforming, prototyping, and communicating creative ideas.

Success in STEM Starts with Educators: University of Phoenix Programs Designed to Prepare Educators to Teach 21st Century Learners

San Diego is faced with a challenge. We have a pool of unemployed workers who do not have the skills required to fill local employers’ open positions. U.S. unemployment statistics demonstrate the same harsh but true reality. The San Diego metropolitan area’s unemployment rate is currently 7.7 percent, despite an increasing number of unfilled jobs in San Diego County. Few workers have the skills and training needed to qualify for many growing and in-demand occupations.

This skills gap is even more apparent for STEM careers that require an education in science, technology, engineering or mathematics. Nationally, STEM occupations are projected to grow by 17 percent from 2008 to 2018, compared to 9.8 percent growth for non-STEM occupations. STEM skills are key to many career options including those found in computer and information technology, nursing, health care and business.

Structured to respond nimbly to industry demands, University of Phoenix® focuses its curriculum and teaching approach to mirror the environment and skills teachers themselves learned in school. University of Phoenix College of Education models professional organizations around the United States. Meade holds a Bachelor of Arts in Elementary Education and a Master of Science in Curriculum Development and Instruction. She has CLAD, GSE, and administrative credentials as well. She also is a National Board Certified Teacher. Meade serves as lead faculty on a team at University of Phoenix San Diego Campus College of Education. She also teaches math and science, using the STEM methodology, in seventh grade at Joan MacQueen Middle School in Alpine, California.

By Aly Evans

Evans serves as national project manager for the Art of Science Learning and is a member of the Balboa Park Learning Institute, housed at the Balboa Park Cultural Partnership.

To learn more about this project, contact San Diego Incubator for Innovation Director, Nan Renner (nan.renner@bpcp.org) and to learn more about the Art of Science Learning by email incubator@bpcp.org or log onto www.bpcp.org/incubator.

continued on page 26
“Quality science education is a vital imperative for our local colleges and universities,” says Mike Schroder, Dean of Extended Learning at California State University San Marcos. “Successful science education gives students the practical and theoretical knowledge they need to compete for regional jobs and even start businesses of their own.”

Schroder has worked closely with a broad cross-section of faculty, staff and administrators on campus to expand science opportunities. Dr. Al Kern, a highly respected scientist and businessman was the person who connected the university with industry leaders to successfully launch and expand biotechnology programs.

CSUSM Extended Learning currently offers a Professional Science Master’s in Biotechnology (PSMBt) as well as a Biotechnology Laboratory Technician Certificate. The Professional Science Master’s curriculum incorporates a strong blend of business and science courses, attracting both domestic and international students. The two-semester Biotechnology Laboratory Technician Certificate program trains students for entry-level positions in biotech companies. Graduates of these programs are being scooped up by area biotech firms; both programs consistently report an employment rate at more than 90 percent at time of program completion.

Employers tell us they are looking for students who not only are well-trained in terms of biotechnology lab skills and information, but also students who have project-oriented work experience, business skills and industry insight. We’re fine-tuning our programs to ensure we’re delivering on every count,” says Schroder.

Recent CSUSM graduate Laine Arenas started out seeking a Biotechnology Lab certificate and quickly realized that the Professional Science Master’s would help her secure the type of work she wanted to do. “As soon as I finished the two-semester certificate program I was hired on at Illumina. I still feared that a lack of experience in the biotech field would prevent me from holding onto my job. And once I was in the workplace for a while, I realized that the only way to move up quickly was to have the MS degree so I thought: why not?”

Arenas went on to enroll in the PSMBt program and graduated this month.

Her PSMBt colleague Rita Pitts adds, “I love this field. It’s ever-changing and the training at CSUSM has helped me stay on top of it. It’s the best course I could have imagined for my life and my career.”

A key selling point for the biotechnology programs offered through Extended Learning at CSUSM is that they qualify for federal funding from numerous sources such as the San Diego Workforce Partnership. It’s an advantage that motivates students like Laine Arenas and Rita Pitts and keeps them in the high-growth industry of sustainable agriculture. The Veteran’s Sustainable Agriculture Training program (VSAT) trains students in the high-growth industry of sustainable agriculture and is available to both veterans and civilian students who are interested in cost-effectively producing high quality, nutritious organic food. The VSAT program is TVA-funded and full tuition coverage is available for those who qualify.

With a focus on critical science and related programs such as biotechnology, environmental leadership and sustainable agriculture training, CSUSM Extended Learning is well-poised to continue to train innovative students who will be prepared to assume positions of influence and leadership in our rapidly evolving regional economy.

The Veteran’s Sustainable Agriculture Training program (VSAT) trains students in the high-growth industry of sustainable agriculture and is available to both veterans and civilian students who are interested in cost-effectively producing high quality, nutritious organic food. The VSAT program is TVA-funded and full tuition coverage is available for those who qualify.

With a focus on critical science and related programs such as biotechnology, environmental leadership and sustainable agriculture training, CSUSM Extended Learning is well-poised to continue to train innovative students who will be prepared to assume positions of influence and leadership in our rapidly evolving regional economy.
A lesson in sustainability.

STEM Picks Up Steam

STEM (Science, Technology, Engineering and Math) is quickly acquiring another major field of interest – Art. Educators are realizing that technical expertise must also involve intuitive and creative thinking, so STEM has evolved into STE’A’M. New programs are being implemented at a rapid pace that stress multi-faceted learning, balancing analytical skills with imaginative expression.

Local and national STEM/STEAM programs continue to grow, each year attracting larger numbers of students to events such as the San Diego Mayor’s Cyber Cup competition and SPAWAR’s “Girls’ Day Out”.

The San Diego Business Journal will continue to track these exciting new endeavors and showcase the local schools and organizations involved in the effort in an upcoming supplement slated for late summer 2013.

A sampling of locally-based organizations dedicating resources to continue the expansion of STEM initiatives includes:

- BAE Systems, Inc.
- BIOCOM
- California State University San Marcos
- California Western School of Law
- Cox Communications
- ESET North America
- Genentech
- National Defense Industrial Association
- SDG&E
- San Diego Science Alliance
- San Diego Workforce Partnership
- San Diego Jewish Academy
- UC San Diego
- University of Phoenix

connected to renewable energy

They give us so many reasons to be proud.

By allowing SDG&E® to install a rooftop solar array, these eco-friendly schools are helping us put clean energy back into our region, and reduce the impact on the environment. Thanks for teaching future generations the importance of going green.

We salute our Sustainable Communities Champions:

- California State University San Marcos
- Del Lago Academy
- Del Sur Elementary School
- High Tech High
- Pacific Ridge School
- San Diego Community College District
- The Suites on Paseo
- Thomas Jefferson School of Law
- UC San Diego

Learn more about participating in our Sustainable Communities Program. Connect at sdge.com/sustainable.
The STEM Program at San Diego Jewish Academy

The goal of the science department at San Diego Jewish Academy (SDJA) is to create lifelong learners of science who are inspired to question and understand the world in which we live. Students are encouraged to recognize science itself as an activity – one in which humans have a direct role. Students are guided on an adventure through hands-on laboratory activities, group interactions, and on-campus visitsations by specialists in their fields. Students are exposed to a variety of current topics – each bringing with it the connection between science and society with the hope that students will gain information, think critically about the various science disciplines, and foster a love for the world, its inhabitants, and the interactions between them.

Beginning in middle school, students are exposed to our E2K program – an educationally-enriching experience that prepares students for greater independent study. E2K helps them understand how to approach scientific subjects through an emphasis on logic, and mathematical and scientific thinking. Students continue with a laboratory-rich environment followed by chemistry, physics, and more. Current scientific topics are continually included to provide the students with exposure to new discoveries, innovations, and up-to-date issues in science and society.

At the high school level, SDJA offers a rigorous elective – the STEM Program, a two-year course within the math and science department – for exceptionally motivated and talented science students. The purpose of this program is to engage students in high-level science, math, and engineering opportunities beyond the traditional high school science course curriculum.

STEM (Science, Technology, Engineering and Math) offers students numerous opportunities to showcase their research, including science fair competitions. SDJA students continuing their domination at the Greater San Diego Science and Engineering Fair, have, in the past three years, won six Sweepstakes awards! This remarkable achievement is unmatched by any school in San Diego County.

SDJA students continue their award-winning work through valuable internships at local and national institutions, including Grossmont Hospital, UC San Diego, the Scripps Institute of Oceanography, and the Scripps Institute. San Diego Jewish Academy is proud of its ongoing contribution to STEM learning in San Diego County.

Submitted by San Diego Jewish Academy

Microsoft and Cisco’s Largest Training Provider

CALL TODAY! 888-825-6684 www.nhsocal.com

Cisco  Red Hat
Citrix  Six Sigma
CompTIA  VMware
Microsoft  And More!

The plaguristic community day school

The pluralistic community day school

Executive Profile: Kevin Landry

Kevin Landry is the CEO and President of New Horizons CLC of Southern California, an authorized training provider for many industry-recognized software organizations, including Microsoft, Cisco, Citrix, CompTIA, Adobe, Project Management Institute and more. Under Mr. Landry’s leadership, New Horizons of CLC Southern California has grown to five locations in San Diego, Anaheim, Burbank, Culver City and San Bernardino, and the organization has been named a Best Place to Work in 2010, 2011 and 2012. Kevin Landry was named one of San Diego’s Most Admired CEO’s in 2012.

BUSINESS PHILOSOPHY

• Essential business philosophy: Outwork the other guy.
• Best way to keep a competitive edge: Reinvent yourself and how you do business constantly — think six months forward at all times.
• Guiding principles: Offer a superior service at a fair price. Ensure that clients are better off after buying than they were before.
• Yardsticks of success: Am I satisfied in my personal life as well as my professional life?
• Goals yet to be achieved: Retirement.

JUDGMENT CALLS

• Best business decision: To purchase my first New Horizons franchise in 2007.
• Worst business decision: To not purchase the Phoenix New Horizons franchise in 2011.
• Toughest business decision: To fire my best friend.
• Biggest missed opportunity: I was six months too late in reacting to the 2008 recession.
• Mentor: Public figure: Jack Welch. Private individual: Ken Needham, my former boss.
• Word that describes you: Driven.
• Most important lesson learned: Don’t be afraid to make the difficult decisions. People want you to, even if those decisions are unfavorable.

Submit by New Horizons CLC of Southern California
Science Alliance leads STEM Transformation in K-16

The San Diego Science Alliance (SDSA) has an 18 year history in the region as the catalyst for improving K-12 Science, Technology, Engineering, and Math (STEM) education in San Diego County. Delivering quality experiential programs, SDSA bridges between the region’s diverse business, education and STEM research communities, and fosters public/private partnerships to increase STEM literacy (www.sdsusa.org). Recently SDSA launched San Diego STEM Collaboratory as a designated lead in the statewide California STEM Learning Network (www.cslnet.org).

San Diego STEM Collaboratory helps San Diego County prepare California’s most STEM-capable graduates. The Collaboratory brings together leaders in STEM fields from education, business and industry, policy, research, nonprofit organizations, and governmental agencies to develop new partnerships that bring full-scale change to how STEM is taught and learned. These changes will set in motion new learning models that ensure all students have access to high-quality STEM learning opportunities. These begin in pre-kindergarten through college and university, and incorporate Next Generation Science Standards and build on the Common Core implementation.


The sold-out crowd at the STEM Summit shared existing partnerships/programs, championed STEM education, and promoted the framework of the day: Engage/Motivate, Disseminate/Equip and Teach/Learn.

Submitted by San Diego Science Alliance

San Diego Science Alliance

The San Diego Science Alliance (SDSA) has an 18 year history in the region as the catalyst for improving K-12 Science, Technology, Engineering, and Math (STEM) education in San Diego County. Delivering quality experiential programs, SDSA bridges between the region’s diverse business, education and STEM research communities, and fosters public/private partnerships to increase STEM literacy (www.sdsusa.org). Recently SDSA launched San Diego STEM Collaboratory as a designated lead in the statewide California STEM Learning Network (www.cslnet.org).

San Diego STEM Collaboratory helps San Diego County prepare California’s most STEM-capable graduates. The Collaboratory brings together leaders in STEM fields from education, business and industry, policy, research, nonprofit organizations, and governmental agencies to develop new partnerships that bring full-scale change to how STEM is taught and learned. These changes will set in motion new learning models that ensure all students have access to high-quality STEM learning opportunities. These begin in pre-kindergarten through college and university, and incorporate Next Generation Science Standards and build on the Common Core implementation.


The sold-out crowd at the STEM Summit shared existing partnerships/programs, championed STEM education, and promoted the framework of the day: Engage/Motivate, Disseminate/Equip and Teach/Learn.

Submitted by San Diego Science Alliance
California Western Students Selected for Distinguished Summer Fellowships

The Peggy Browning Fund recently awarded 10-week summer fellowships to California Western School of Law students Alexis A. Olbrei and Tania G. Fonseca, who will work to advocate for teachers and migrant laborers during their respective fellowships.

Olbrei and Fonseca were selected from more than 500 applicants vying for 60 fellowship positions across the country. In addition to their summer work, fellows participate with their mentor organizations in a conference sponsored by the Peggy Browning Fund, a national organization dedicated to educating and supporting advocates for workplace justice.

Olbrei, a second-year student, will spend her summer working with New York State United Teachers in New York, N.Y. As the daughter of Communications Workers of America and Transport Workers Union members, Olbrei developed an appreciation for the power of workers as a collective early on in life. Prior to attending law school, she taught at New York City public schools and was a member of the United Federation of Teachers. During law school, she has interned at AFSCME Local 127 and the Employee Rights Center, a San Diego nonprofit focused on workplace and immigration rights.

Fonseca, who is in her first year of law school, will work at the National Day Laborer Organizing Network in Los Angeles. After immigrating to the United States from Mexico when Fonseca was three years old, her parents worked in the strawberry fields and restaurant kitchens of California. Motivated by her parents’ hard work and aspirations for a better life, Fonseca decided to attend law school after graduating from the University of California, San Diego with a degree in Political Science. While in college, she researched the migration trends of immigrants in close-knit Mexican communities in California.

This year, the Peggy Browning Fund will support 70 public interest labor law fellowships nationwide. With more than 500 applicants from 139 participating law schools, the application process for Peggy Browning Fellowships is highly competitive.

Peggy Browning Fellows are distinguished students who have excelled in law school and demonstrated their commitment to workers’ rights through their previous educational, work, volunteer, and personal experiences.

The Peggy Browning Fund is a not-for-profit organization established in memory of Margaret A. Browning, a prominent union-side attorney who was a member of the National Labor Relations Board from 1994 until 1997. Peggy Browning Fellowships provide law students with unique, diverse, and challenging work experiences fighting for social and economic justice.

The public interest focus of the Peggy Browning Fund aligns with California Western’s focus on community engagement and public service. The law school recently inducted 100 students into its Pro Bono and Public Service Honors Program, in recognition of their more than 15,000 hours of service to nonprofit organizations and public agencies. This year, California Western was again recognized for its commitment to community by the President’s Higher Education Community Service Honor Roll, the fourth consecutive year in which the law school was named to this national list.

Submitted by California Western School of Law