Program-Title	Life Sciences Summer Institute (LSSI)	STEM Inventory	Entry# 154
Org-Type	Non-Profit-based		
Lead	San Diego Workforce Partnership Inc.	PoC	Ashley Wildrick
PoC-Phone	619.228.2965	PoC-Email	Ashley@workforce.org
Address	3910 University Ave., Suite 400 San Diego, CA 92105		
URL	http://www.sandiegoatwork.com/generate/html/Youth/life_sciences_summer.html		
Service-Region	San Diego County		
Type	Professional Development for Teachers|Student Program		
Subjects	General Science|Biology|Chemistry		
Level	High School (9-12th grade)|Undergraduate|Teacher Certification|Professional Development		
Other-Objectives	Industry Exposure: The LSSI program provides students with hands-on laboratory and soft skills training prior to entering into a summe internship with the local industry or academic research institute; and provides teachers with hands-on laboratory training and exposur to industry techniques and practices as well as career opportunities for their students.		
Served-per-Year	Direct Numbers Served: 80-100	Demographics	
Content	In an effort to strengthen science and math education and to prepare a world-class scientific workforce for San Diego, the San Diego Workforce Partnership, in collaboration with BIOCOM, the US Department of Labor, and local industry and education partners developed the Life Sciences Summer Institute (LSSI), a program that exposes students and teachers to the life science industry. Create in 2005, LSSI connects upper-level high school, university and community college students, as well as high school and community college teachers, with leading companies within San Diego's life sciences community. The LSSI student internship programs have been developed to elevate interest in the life science industry and related fields of research in order to increase the number of students and graduates pursing degrees and careers in math, science, and engineering disciplines. Students gain exposure to career options, hands-on laboratory experience, work readiness skills, and mentoring by a company or research scientists. The program begins with a one-week introduction to the biotechnology lab, known as the Biotech "Boot Camp", providing students with hands-on laboratory training using industry techniques and soft skills development presented by industry volunteers. The boot camp is held at the Southern California Biotechnology Center at Miramar College where college credit is offered to those who successfully complete the training course. Following the boot camp, students begin a 7-10 week employer-paid internship within the life sciences industry and complete their summer experience with the development of a scientific poster at the conclusion of their internship. The LSSI teacher externship program was developed to increase awareness of the local life sciences industries to those individuals who are most influential in the development of our future workforce. Teachers strengthen their skills through hands-on laboratory curriculum training, industry externship experiences and curriculum integration, along with sharing and networking. The 12-day paid program is hosted in Biogen Idec's state-of-the-art Community Lab, taking teachers out of the classroom and bringing them into a working environment where science is applied every day. The program provides teachers with industry driven curriculum training, using the Amgen-Bruce Wallace Biotechnology Laboratory Program Curriculum, exposure to industry careers through extensive site visits, and ongoing curriculum implementation support throughout the school year.		
Outcomes	To date, the LSSI student internship program has placed a total of 118 students into hand-on industry internship experiences, while the LSSI teacher externship program has trained a total of 54 teachers with the potential to expose over 16,000 students to new biotechnology curriculum and career information by the end of the 2007-2008 school year. Twenty percent of the interns placed in these life science internships have continued to work either part or full time for the company in which they interned. In addition, it is estimated that each teacher reaches an average of 189 students per year, as this program expands the number of students reached wi grow exponentially. Of the over 50 teachers trained, through the LSSI program, 35 schools and every school district within the San Diego region has been reached. With continued support from various foundations and corporate donations our goal is to provide hands-on training and learning opportunities, through the LSSI programs, to an additional 50 students and 25 teachers during the 2008 summer. The LSSI programs benefit the entire community through the education and training of students and teachers in order to enhance science literacy throughout the region and by creating a well-prepared workforce to remain ahead of national and global competition. The program addresses the needs of our society that requires a pipeline of informed and educated citizens who understand the current scientific developments as applied to their lives. As MIT President Susan Hockfield told a National Mathematics Advisory Panel on Sept. 14, 2006, "It could not be more clear that we are now in an era where technical and scientific literacy are as critical as language literacy, …We need to fix the K-12 pipeline that feeds higher education, …To succeed in the workplace and to participate as citizens in society, high school graduates need the ability to think analytically and solve problems creatively… Science an math education are prerequisites for innovation."		
Started	2005	Funded-Through	This project was initially funded through the San Diego Workforce Partnership, Inc. by a grant awarded under the President's High Growth Job Training Initiative, as implemented by the U.S. Department of Labor's Employment and Training Administration. Howe
Length	Ongoing	Cost	$250,000
Primary-Funding	Foundation|Industry|Donations	Primary-$	To date the largest amount recieved from any one donor is $245,291 from the Amgen Foundation to support the LSSI teacher externship program and ongoing classroom support components of the LSSI programs.
Materials	The Amgen-Bruce Wallace Biotechnology Laboratory Curriculum, used in both the student and teacher trainings, represents some of the best labs currently available to high school students. Designed to parallel some of the most important steps the biotechnol		
Other-Funding	As mentioned above, the program is currently being funded through leveraged resources, while program partners continue to seek corporate donations, foundation support, and alternate grant resources to sustain the program. To date, we have leveraged the resources of the Southern California Biotechnology Center at Miramar College to sustain the ongoing support of the teachers implementing program curriculum in their classrooms, as well as leveraged support for ongoing program development and implementation. In addition to the support from the Amgen Foundation, we have received funding through corporate donations and foundations from the following: Biogen Idec Foundation, Genentech, Gen-Probe, Invitrogen Corporation, and Pfizer Foundation, totaling $104,500.		
How-Assessed	The LSSI has grown considerably as it enters into its fourth summer of operation with record–breaking applicant numbers and		

significant increases in industry interests. Performance outcomes have been measured not only by the number of student and teacher

Best-Practice-Why

The Life Sciences Summer Institute (LSSI) program model has proven to be successful and supportive for students, teachers and industry. Students are more confident and comfortable entering into internship experiences having hands-on pre-internship industry training. Teachers are more willing to participate in professional development that provides a broad, yet in-depth, overview of the industry, hands-on laboratory training, curriculum implementation, opportunity for peer-to-peer exchange and most important ongoing support services throughout the school year. Industry partners experience the benefit of having qualified, pre-trained student interns working in their labs, while also having the opportunity to connect and interact with those individuals who are most influential in the development of our future workforce, teachers. Additionally, the program is founded on the concept that students obtain bette science literacy through hands-on experience and through teachers with practical experience that allows them to provide the context for the concepts presented. The LSSI program has been published in a book compiling best practices in biotechnology education from around the world.The book, edited by Yali Friedman, Ph.D. of thinkBiotech LLC, pulls together 22 international best practices in K-12, college, certificate, master's, doctoral, MBA, distance education programs and student groups. The LSSI program is featured in its own chapter titled: A Model for Connecting Students and Teachers to the Biotechnology Industry Cluster in San Diego County. To view the chapter please access the following link: (http://www.logos-press.com/books/biotechnology_education.php) In addition, the LSSI program was recently honored as the Grand Prize Winner of the Theodore E. Small Workforce Partnership Award by the National Association of Workforce Boards (NAWB) on February 25th, 2008 in Washington, D.C. The award represents the highest recognition of workforce investment boards around the nation that advance innovative partnerships with their business communities.

Promising-Practice

The comprehensive LSSI model can be easily replicated for life sciences and could potentially be utilized across other industries. Severa organizations have requested and received information and resources regarding the LSSI programs through speaking engagements and panel presentations during conferences and seminars. We have been able to share program outlines and strategies in an effort to help create replication of this model in other regions throughout the state and country. Although the program has not been replicated in any other discipline to date, the San Diego Workforce partnership has been approached by the telecommunications and energy industries to research the potential for a "high-tech" summer institute. In addition, discussions have begun with our local healthcare industry that also recognizes the potential in this model.

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Other-Orgs

Partners San Diego Workforce Partnership, BIOCOM, Amgen Foundation, Biogen Idec/Biogen Idec Foundation, Genentech, Gen-Probe, Invitrogen Corporation, Pfizer Foundation, Southern California Biotechnology Center (SCBC) at Miramar College, California State University San Marcos, San Diego County Office of Education and the San Diego Science Alliance. Participating Companies Accumetrics, Alexion Antibody Technologies, Anadys Pharmaceuticals, Arena Pharmaceuticals, Assure Controls Inc., Biogen Idec, BioServ Corporation, Burnham Institute for Medical Research, Conatus Pharmaceuticals, Conservation and Research for Endangered Species (CRES), The Dow Chemical Company, eStudySite, Genentech, Genomatica, Genoptix, Gen-Probe, Invitrogen Corporation, Isis Pharmaceuticals, Karl Strauss Brewing Company, Mo BIO Laboratories, Nanogen, Pfizer, Salk Institute for Biological Studies, San Diego State University Labs, Santarus, Inc., Sharp Chula Vista Medical Center, SkinMedica, SGX Pharmaceuticals, SCBC Miramar, Sunrise Science Products, The Scripps Research Institute.