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APPLIED MATERIALS HOSTS END OF SUMMER CELEBRATION

How quickly has the technology world changed in less than two decades? Applied Materials CEO, Mike Splinter hosted nearly 300 IISME Fellows, Mentors, Sponsors, board members and other supporters at IISME's August, 2011 End of Summer celebration complete with a final exam! Mike engaged the audience with a pop quiz on the combined number of transistors in a 1993 desktop computer and frighteningly large cell phone (4,000,000) compared with the total transistors in a 2011 iPad, laptop and iPhone (1,200,000,000,000). Mike reminded the audience of the speed of change in technology and thus how critical it is for our teachers to understand the current workplace so that they can adequately prepare students for success in 21st century careers.



Applied Materials' generous hosting of the 2011 IISME End of Summer Celebration provided a perfect venue for IISME Fellows to share their summer accomplishments and lessons learned. This year, 155 teachers worked with 43 organizations not only in San Francisco Bay Area but also in San Diego and Los Angeles. Steve Post, high school biology Teacher at Mission Vista High School in San Diego represented this expansion by speaking of his experience at Life Technologies Corporation. "I once heard that the term 'experience' is the name that people give to their mistakes," Steve told attendees, "So I know I gained a lot of *experience* this summer at Life Technologies."



This reminder that making mistakes is critical to learning and innovation was a theme for many teachers. Stacy French, an elementary teacher and vice principal at St. Nicholas School in Los Altos Hills spoke of how she was reminded of what it is like to be a learner. Stacy shared, "During my time [at Coherent, Inc.] my mentor often used the words 'fresh eyes.' She felt I was able to look at things with a different perspective. At the end of these eight weeks, I am returning to school, the classroom and teaching with 'fresh eyes.' I am energized, excited and inspired. I cannot wait to share all I have learned with my students, parents, peers and administration."

(Top) Applied Materials CEO, Mike Splinter quizzes the audience. *Photo courtesy of Applied Materials.*

(Middle) End of Summer Celebration attendees at Applied Materials.

(Bottom) Fellow Stacy French speaks about her Summer Fellowship.

SUMMER 2011 FELLOWSHIP ADVENTURES: BRINGING THE WORLD TO THE CLASSROOM



Valery Lynn (right) and Mentor Jessica Lee collect San Francisco Bay samples.

Stanford University Fellow - Valery Lynn

How many teachers can say that they spent their summer on a boat and in a lab doing “real” biology research with Stanford scientists? Valery Lynn, 10th grade biology teacher at Irvington High School in Fremont Unified School District, was one of 24 Fellows who conducted research at Stanford University this summer. Her experience is helping Stanford scientists and impacting 150 of her 10th grade biology students who will analyze nearby stream samples in much the same way Valery analyzed San Francisco Bay samples this summer.

This summer, Valery helped scientists in Stanford University’s Environmental Earth System Science Department by collecting and analyzing microbial water and sediment samples from the San Francisco Bay. She spent a day on a United States Geological Survey (USGS) boat traveling the Sacramento River into the San Francisco Bay where she collected water and sediment samples along the way. But the real work was back in the lab, where Valery extracted DNA from the samples and looked for particular genes found in bacteria and archaea that are involved with different reactions in the nitrogen cycle. Valery’s work is being used as baseline information on how different levels of salinity affect the diversity and abundance of these microbes.

“I’ve never worked with DNA sequences before,” Valery said as she described the many new experiences she had this summer. She was excited to work with bacteria in the lab and to learn how microbiologists do their work. “One thing that really struck me since I’ve left school is that there are a lot more women working in microbiology than I remember. I feel excited about the face of science these days.”

Valery’s experience will help her to attract more young women into the Information Technology Academy, a small STEM school within a school at Irvington High School to which interested students must apply. Students in this program explore careers in the technology industry, visit engineering businesses and schools, compete in regional technology competitions and earn industry-recognized certifications. Valery is developing a biotechnology curriculum for students involved in this academy that will draw upon her summer experience. She is also excited to help all her students see themselves in science, by engaging them in the same processes she used at Stanford University.



Nathan Bowen (right) with IISME Fellow Gregg Witkin.

Silicon Valley Leadership Group Fellow - Nathan Bowen

As school is starting, 85 unsuspecting Apollo High School students in East Side Union High School District (ESUHSD) are about to embark on an empowering adventure to form their own public policy-making groups and to learn how they can influence major issues facing their community. Their teacher, Nathan (Nate) Bowen, spent his summer working with the Silicon Valley Leadership Group where he conducted a 20-year job trend study comparing technology employment in Silicon Valley with other technology clusters around the country. Nate’s experience inspired him to share his increased understanding of policy-making processes with his students, by engaging them in a six-week unit in which they will form their own policy-making groups.

Apollo High School is one of four Small But Necessary Schools in ESUHSD and serves 160 students, many of whom are educationally disadvantaged. Students who have slipped behind in completing their high school units in traditional school settings benefit from Apollo’s individual attention, small structured classes and frequent communication with families.

Nate’s policy-making unit is aligned with the school’s use of authentic problems, teamwork and community service strategies they have found to be particularly effective in engaging and motivating students.

During his Summer Fellowship, Nate not only had the opportunity to conduct a significant research project for the Leadership Group, but they also engaged him in the day-to-day operations of public policy making, which he plans to share with his students. He sat in on policy discussions, committee meetings, Working Council meetings and he even had the opportunity to rub shoulders with Lieutenant Governor Gavin Newsom, and Silicon Valley CEOs at the media launch of the Lieutenant Governor’s *Economic Growth and Competitiveness Agenda for California*. “Normally, I wouldn’t be involved with corporations,” Nate reflected, “and doing so helped broaden my perspective and the advice I can give my students about what is happening on the business side in our community.” Nate’s work will not only impact his students, his Mentor Monica Crouch commented, “Nathan did a fantastic job for us on a research project that would normally take six months.” Nate’s work will provide data the Leadership Group can share with the media about the current technology employment situation in Silicon Valley.

And perhaps Nate’s students will help shape future Silicon Valley policies. “My big goal,” Nate said of his hopes for his planned unit, “is that my students have a greater sense of empowerment. I hope they have a better understanding of how the local and state government functions, who their elected representatives are and what change looks like in action. I want them to have a sense of ownership and a sense that they can be involved, and can do things that can lead to a better future.” By drawing upon the lessons learned during his IISME Fellowship and his enthusiasm, Nate is sure to turn these hopes into a reality.

NEW ADDITIONS TO IISME: IISME CONTINUES TO GROW IN SOUTHERN CALIFORNIA



Vernita Sutton and Jaime Raymundo, 2011 IISME Fellows at Aerospace Corporation.

In 2011 IISME continued to expand in Southern California, serving the first IISME Teachers in Los Angeles County. The Aerospace Corporation, located in El Segundo, performs research and development on launch vehicles, satellite systems, ground control systems, and space technology, and provided two meaningful IISME Fellowships for teachers from the Los Angeles Unified School District this summer.

Vernita Sutton, a math teacher from Crenshaw High School, worked with Aerospace's Corporate Communications and the STEM Outreach Program as a Technology to Teacher Program Developer. Vernita was responsible for developing an educational outreach program to connect employee volunteers with local schools. With the goal of increasing student interest in Science, Technology, Engineering and Mathematics (STEM) subjects, Vernita organized, and systematically maximized, the volunteer efforts of the company's engineers. Vernita will transfer her experience back to her classroom via her Education Transfer Plan that will make math more relevant to her students. Crenshaw High School students and teachers will have access to, and input from professional engineers. Experts from Aerospace Corporation will work with teachers to create hands-on activities that deepen understanding and are fun!

Carson High School Physics teacher Jaime Raymundo spent his summer working as a Satellite Visualization & Analysis Tool Tester in Aerospace Corporation's Engineering Applications Department. As a result of his Fellowship that involved analyzing 3D graphic animations to simulate relative motion of satellites, he will inspire his science students with real world examples of common physics lessons in motion, velocity and force. What better way for students to learn about the basics of flight and satellite motion than for their teacher to have experienced it firsthand at Aerospace Corporation?

The three San Diego companies that helped launch the Southern California expansion in 2010 again hosted local teachers in IISME Fellowships in 2011. These include Life Technologies and Nordson ASYMTEK in Carlsbad, and Lockheed Martin Information Systems and Global Services in San Diego. Four science and math teachers from Carlsbad High School, Oceanside High School and Mission Vista High School worked side-by-side with scientists and engineers in San Diego County IISME Fellowships this summer.

IISME plans to serve additional teachers in Southern California next summer, and looks forward to providing additional information about the benefits of hosting IISME Teacher Fellows to companies and research labs in San Diego, Orange and Los Angeles Counties.



Vernita Sutton presents her Fellowship at the L.A. End of Summer Celebration.

MEET IISME'S NEW EDUCATION MANAGER

IISME welcomed new Education Manager, Christina O'Guinn to the IISME family in June, 2011. Christina is a long-time IISME supporter, having mentored numerous IISME Fellows while she was at NASA as the Lead for the NASA Ames Educational Technology Team and Informal Education. Christina is so excited to be on the inside of IISME working to directly support all IISME Teachers in her passion to prepare students for 21st Century careers!

Christina comes to IISME with over ten years of experience managing educational programs, providing professional development and curriculum development for NASA Ames Research Center, The Tech Museum of Innovation and Stanford University's John W. Gardner Center. She also has over six years of teaching and administrative experience in Evergreen School District in San Jose and in Redwood City School District, a Master's Degree in Instructional Technology from San Jose State University, and she serves on advisory committees for California Academy of Science's Teacher Institute on Sustainability in Science and Wizbots' robotics after-school program. Christina particularly enjoys working with middle school students and like many of our IISME Fellows has found that sharing her NASA experiences with middle school students as a volunteer with Citizen Schools after-school apprenticeship program is extremely inspirational to educationally disadvantaged students who otherwise might not consider a STEM career. Christina looks forward to working with the entire IISME community to effectively inspire and prepare many more students for today's workforce.



QUOTES FROM 2010 IISME FELLOWS AFTER A YEAR BACK IN THE CLASSROOM

The skills and knowledge I acquired this summer have made their way into my curricula, lesson plans and classroom interactions. Additionally, the fellowship truly rejuvenated me as a teacher.

Even the manner in which the company CEO interacted with his employees [during my fellowship] helped me to mature as a professional. I find that my interactions with my students are more heartfelt and genuine.

My IISME Fellowship experience has brought me more respect from students and in my school. My lesson plans have global vision with emphasis on the application of mathematics in engineering, science and technology.

My students love hearing about my experiences working in the lab and learning what it is like to be a scientist.

My students appreciate the stories I tell them about what I was able to do with my summer.

I was able to update my knowledge in the field and gain some experience with how my subject can be applied to potential careers my students may enter.

IISME Fellowship experiences make me teach more confidently. I am willing to take more risks and explore new topics for my students.

My IISME Fellowship experience has inspired me to keep my teaching challenging and relevant to real environmental issues. It has helped me make my lessons authentic while teaching to the required standards.

My summer with IISME rejuvenated my love for my profession in a way no training has ever done.

I really enjoyed IISME. Of all my professional development experiences, it was the best.

IISME has been a wonderful experience for me all around. I bring back activities and experiences that I share with colleagues and students.

It has made me a better curriculum developer and has allowed me to bring resources (both material and personal) to my school.

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ABOUT IISME

Industry Initiatives for Science and Math Education (IISME) exists to address the critical need for a strong, highly skilled workforce in mathematics, science, and technological fields. This industry-education partnership focuses on teachers as the primary agents for effecting meaningful change in mathematics and science education.

IISME leverages the resources of California's high performance corporate workplaces and research institutions – especially the expertise of their scientists, engineers and technologists – and involves them in the process of improving education, one teacher at a time.

IISME's Summer Fellowship Program provides paid, challenging summer work opportunities for teachers in California corporations, universities, and research labs. These Fellowships remove teachers for an extended period from the culture of education to immerse them in the culture of industry and research and to allow them to become contributors in these new environments. IISME Fellowships revitalize and equip teachers with new knowledge and strategies for preparing tomorrow's employees. This is key to the transformational nature of IISME's unique type of professional development.