Priming Future Engineering Leaders

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Andrea Siedsma

From L to R, Frieder Seible, Dean of the UCSD Jacobs School of Engineering; UCSD alum Bob Akins, co-founder and CEO of Cymer, Inc.; UCSD Chancellor Marye Anne Fox; and Rear Adm. Russell S. Penniman, Deputy Commander, U.S. 3rd Fleet were among 125 academic and industry leaders and students who attended the Bernard and Sophia Gordon Engineering Leadership Center Inaugural Forum.

Effective leaders will help American tech companies remain competitive, however industry and academia must work together to ensure these top decision-makers are cultivated. This was the topic of discussion during the Bernard and Sophia Gordon Engineering Leadership Center Inaugural Forum at UC San Diego. The forum, held on May 28, 2009, attracted 125 students and engineering leaders who talked about how programs like the Gordon Center can effectively train future leaders in this field. The forum included a keynote address by Bob Akins, a UCSD alum and co-founder and CEO of San Diego-based semiconductor giant Cymer, Inc.

The new Gordon Center, which is part of the UCSD Jacobs School of Engineering, was established this year to educate and train effective engineering leaders who create new products and jobs that benefit society. The Center plans to offer leadership courses, as well as forums by engineering leaders in industry, government, military and academia. The program will focus on ethics, end-to-end project planning and execution to meet societal needs, team development and leadership, and assessing the potential impact of new technologies.

"The Jacobs School of Engineering has been consistently ranked among the top engineering schools in the world; this engineering leadership center will build on this success,' said UCSD Chancellor Marye Anne Fox during the May 28 forum. "It's this type of educational experience that creates leaders."

One of the Gordon Center's goals is to bring established engineering leaders to campus for Engineering Leadership Forums. Each forum consists of a keynote presentation followed by an interactive panel discussion on contemporary leadership topics relevant to engineering careers in industry and academia.

"Our partners in industry, academia and the military have a wealth of experience and insight to share with our engineering students," said Frieder Seible, Dean of the Jacobs School. "The Gordon Center Leadership Forum provides a venue for engineering leaders to share the lessons they have learned throughout their careers and an opportunity for students to ask questions about the next steps in their own careers."

During the May 28 forum, Bob Akins stressed the importance of programs like the Gordon Center.

"Engineering leadership is proportional to the number of engineers we're educating," said Akins, who, along with UCSD alum, Richard Sandstrom, spun Cymer's deep ultraviolet (DUV) photolithography technology out of the university's labs and into the commercial world in 1986. "Unfortunately over the last decade or two this country has lost focus on educating engineers. That's been amplified more recently because we've clamped down on the number of foreign students who can stay in this country due to national security. Meanwhile, the competition is turning out good engineers in record numbers. ...I think if we're not careful we're going to find this country lagging behind any other countries in the areas of engineering leadership."

During the Gordon Center forum, Akins pointed out that engineering students must be taught that being an effective leader takes a lot more than just knowing the technology.

"There's raising money; running engineering programs on time and on budget, which is always difficulty; there's the building of the supply chain infrastructure and gaining the trust of the customer," he told the audience. "At Cymer we had the challenge with large corporations like Intel and Toshiba, who had to bank on this tiny company for their next generation of multibillion- dollar factories. In a high tech industrial world it's all about managing risks."

Akins shared how Cymer has managed to identify and retain engineering leaders in a competitive and changing landscape.

" Getting together in (forums) like this one allows us to zero in on the attributes of engineering leadership," he said. "When it comes time for retaining leaders, we try to stay one step ahead of them by fostering a sense of engineering community within the company. Your best people come to work because they like to work with others like them in a very creative environment."

Akins also fielded questions from the audience during the panel discussion, "America's Engineering Leaders of Tomorrow: How To Find The Leader In You." Other panelists included Ramesh Rao Director, UCSD Division California Institute for Telecommunications and Information Technology; and Kenneth S. Vecchio, Chair of the Jacobs School of Engineering's NanoEngineering Department.

During the panel discussion, Vecchio said the ability to articulate enthusiasm for what you do is an important early trait of an engineering leader.

" When I was interviewing for faculty positions, these people were incredibly creative, but only a small group of them knew how to explain to others their excitement for what they do ," Vecchio said. "You need to be able to excite other people and inspire other people to get behind you to do something."

Meanwhile, Rao pointed out that taking an interdisciplinary approach to engineering is not only the current and future trend in the industry but also a necessity for leaders of companies to understand and embrace.

"You have to learn to listen and understand other people's concerns and look at things in different ways, and you have to be comfortable talking different vocabularies, Rao said. "You have to work closely with the people who do the design. That's one of the reasons the iPhone is so enormously successful. You have to understand the central role of design and engage with a much broader group of people in order to know what (consumers) want. ...We marvel at things that are happening in cyber space. For example, what's the real success behind Facebook? What's the success behind many of these online dating sites?"

Vecchio added that learning how to work in teams is key for future engineering leaders. He pointed to the Jacobs School's Teams in Engineering Service program, in which multi-disciplinary teams of UCSD students design, build and deploy projects that solve technology-based problems for community partners.

"Another thing our department is starting to do is offer our students real world engineering experience through internships," Vecchio said. "These are critical opportunities for students to really learn how to separate themselves from the groups to be leaders."

Akins said technology companies will continue to rely on research institutions like UCSD to graduate not only top-notch engineers but those with leadership skills. "A lot of UCSD students have the experience of coming up with new ideas, writing proposals and defending them in front of sponsors, and performing the research and presenting it at conferences, which translates nicely into the real world. Not all institutions can provide students with that kind of background.

"As our company has grown, we've hired more and more fresh graduates, both undergrad and graduate," Akins added. "We found it to be a very rewarding experience for them and for us. We found that really good students can come up to speed quickly and become extremely valuable to the company. Its' their first working experience, and they are anxious to adopt the success philosophy of their employer. Our super stars today are mostly new graduates."

Despite a depressed economy, Akins said there are still plenty of opportunities for young talented engineers to even start their own companies. But, he said, they must have the right strategy.

"There are other business opportunities that require less capital investment where progress can be made more quickly," he said. "If you're clever enough to come up with a new search algorithm you can do so with a small number of really smart people in a small room full of smart work stations, with a relatively small upfront investment. If you have a strategy on how you're going to do that for 24-36 months and then sell yourself to Google, that can be a lot more attractive in today's penny pinching environment."

Media Contact: Andrea Siedsma, 858-822-0899 or asiedsma@soe.ucsd.edu