

## **AC 2007-1326: ENABLING AND CHARACTERIZING ENTREPRENEURIAL SUCCESSES IN NEW PRODUCT DEVELOPMENT TEAMS**

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Alice M. Agogino is the Roscoe and Elizabeth Hughes Professor of Mechanical Engineering and is affiliated faculty at the Haas School of Business in their Operations and Information Technology Management Group. She has served in a number of administrative positions at UC Berkeley, including Associate Dean of Engineering and Faculty Assistant to the Executive Vice Chancellor and Provost in Educational Development and Technology. Prof. Agogino also served as Director for Synthesis, an NSF-sponsored coalition of eight universities with the goal of reforming undergraduate engineering education, and continues as PI for the NEEDS ([www.needs.org](http://www.needs.org)) and SMETE.ORG digital libraries of courseware in science, mathematics, engineering and technology. Prof. Agogino received a B.S. in Mechanical Engineering from the University of New Mexico (1975), M.S. degree in Mechanical Engineering (1978) from the University of California at Berkeley and Ph.D. from the Department of Engineering-Economic Systems at Stanford University (1984). Prior to joining the faculty at UC Berkeley, she worked in industry for Dow Chemical, General Electric and SRI International. She has authored over 150 scholarly publications; has won numerous teaching, best paper and research awards; and is a member of the National Academy of Engineering (NAE). At NAE she served on the Committee on Engineering Education, working on the Technologically Speaking and the Engineer 2020 projects. She is currently a member of the National Research Council's Board on Education and the Committee on Maximizing the Potential of Women in Academic Science and Engineering, which recently released the report *Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering*. She has supervised 67 MS projects/theses, 27 doctoral dissertations and numerous undergraduate researchers.

### **Sara Beckman, University of California at Berkeley**

Sara Beckman teaches new product development and operations management at the University of California's Haas School of Business. Since joining the Haas School faculty in 1987, she developed, institutionalized and directed the school's Management of Technology Program, initiated new courses on design, entrepreneurship in biotechnology, new product development, and work and workspace design, won four awards from MBA students for excellence in teaching and received the Berkeley campus Distinguished Teaching Award. Her present research interests lie in the general area of innovation management with specific explorations of the role of design in business, environmental supply chain management and development of operations strategy. She has also worked for the Hewlett-Packard Company, and in the Operations Management Services practice at Booz, Allen and Hamilton. She has B.S., M.S. and Ph.D. degrees from the Department of Industrial Engineering and Engineering Management at Stanford University and an M.S. in Statistics from the same institution. She serves on the boards of the Building Materials Holding Corporation and the Corporate Design Foundation.

### **Leslie Speer, San Jose State University**

Leslie Speer has held positions as creative director in a large east-bay printing company and as a business development director at numerous product design consulting firms in the Bay Area and Europe. For the past 12 years, she has done work in Mexico, primarily in small villages, with artisans and home-based manufacturing cooperatives on the development of utilitarian products for the global market. She has taught at California College of the Arts in San Francisco from 1995-2006 and held the position of Associate Chair of the program from 1997 to May 2004. She has taught many courses at the college, including studio courses from the sophomore through senior years, collaborative courses with business and engineering students from UC Berkeley and design students from CCA, and collaborative cultural immersion studios in Mexico. She has also introduced industry sponsored projects to the studios including Ford, Bell Sports, Tupperware, Timbuk2, and Samsung. She is now an Assistant Professor at San Jose State University and is the

business development and strategy director for Bolton Associates, a global design firm with offices in London, Shanghai, and soon in San Francisco. She received her Bachelor of Science in Industrial Design from California State University at Long Beach, did graduate studies at Les Ateliers in Paris, and is currently pursuing her Masters in Product Design, Innovation and Management from Middlesex University in London.

# **Enabling and Characterizing Entrepreneurial Successes in New Product Development Teams**

## **ABSTRACT**

This paper describes the methods we use to promote entrepreneurship and characterize successful student teams in two undergraduate courses and one graduate course on New Product Development. These courses aim to develop the age-appropriate skills required for successful product development in today's competitive marketplace. To accomplish a truly multidisciplinary dimension, the graduate course is cross-listed in three UC Berkeley Colleges as ME290P (Architecture and Engineering), BUS290N (Business), and IS290P (School of Information) and at the California College of the Arts as CCA INDU0432. Students from all of these Colleges join forces on small product development teams to step through the new product development process in detail, learning about the available tools and techniques to execute each process step along the way. Each student brings his or her own disciplinary perspective to the team effort, and must learn to synthesize that perspective with those of the other students in the group to develop a sound, marketable product. Students depart the semester understanding new product development processes as well as useful tools, techniques and organizational structures that support new product development practice. Our graduate course is relatively unique at UC Berkeley in the extent to which it accommodates a balanced representation of both faculty and students from across the disciplines. We have refined the course over the years with updated curricular material, the introduction of design coaches from industry, speakers from industry, and participation of faculty and students from the California College of the Arts. The undergraduate courses follow a similar philosophy but are aimed at the skill set and needs of freshmen and seniors.

In our classes we use a range of instruments and methods to promote and evaluate the effectiveness of the teamwork and success of the final products. In this paper, we summarize our methods for team skills, management, feedback and evaluation. We provide case studies of teams that have taken the next step in developing products after course completion. We analyzed factors that are associated with these successful entrepreneurial teams using: questionnaires, ranking by industry judges, personality profiles and instructor observations. Factors considered include personality type, creativity climate, discipline mix, participation in other entrepreneurial classes, participation in business plan/technology competitions and success in obtaining outside funding.

**Keywords:** new product development, multifunctional teams, entrepreneurship, entrepreneurship assessment, entrepreneurial skills