Ross Lee of Villanova University (left) pictured with Rasheed Mohammad, Senior Program Manager at Campbell Soup Company

ENGINEERING WITH A Can-Do ATTITUDE

THE KEY TO A SOUPER INTERNSHIP

When you hear the name Campbell, you likely envision the iconic red and white labeled soup can. But divisions within Campbell are responsible for a wide variety of foods and many brands, including Pepperidge Farms, Pace, Bolthouse Farms, and V8, which are delivered to more than 100 countries around the world.

Founded in 1869 by fruit merchant and entrepreneur Joseph A. Campbell, the company is a world leader in the food industry. Much of its success stems from gathering employee-generated ideas and consumer insights as part of new business development. Therefore, Campbell depends on intrapreneurs from within the company to identify business opportunities and create value.

With more than a century of innovation, intrapreneurs keep Campbell on the leading edge. The average consumer is generally not aware of the level of innovation required to produce, package, and deliver products that are tasty, safe, and available to large markets.

Campbell's desire to foster intrapreneurship among engineering students led them to partner with Dr. Ross Lee, a professor at Villanova University, to create a new type of internship. Innovative companies like Campbell want interns to be "T-shaped" — with depth in engineering skills (the stem of the "T") along with the breadth needed to articulate the business value of the assignments completed (the crossbar of the "T").

However, an innovative company needs employees with more than deep and broad skillsets. Lee and other members of Villanova's engineering faculty recognize the power of pairing the T-shaped skillset with an entrepreneurial mindset. An intern equipped in this way can demonstrate true intrapreneurship by identifying and exploring contrarian views, integrating information and feedback, and identifying unexpected opportunities to create value. They think differently than most.

Over the span of three years, more than 100 corporate leaders were surveyed in order to identify key skills necessary for successful intrapreneurship. This study originated from previous work within KEEN. Lee and Dr. Leo Hanifin, retired engineering dean from the University of Detroit Mercy, compiled the results and identified collaborative learning approaches between industry and academics. Faculty from the universities of Baylor, Dayton, Detroit Mercy, and Villanova aided in the study and made extensive visits to multiple companies.

The most valuable part of the study is the corporate leaders' responses to the question, "What behaviors and competencies do you want in your new engineers that would make them more effective innovators and intrapreneurs?" Lee's summary of combined responses indicates that corporate leaders are looking for "... confident, competent, opened-minded engineers who work effectively on teams that employ experimentation, analysis, and innovation to create and promote solutions that are truly responsive to customers around the globe."

Nick Fonzo, junior chemical engineering student at Villanova University

With more than 35 years in industry himself, Lee agrees. "Generally, interns utilize their engineering depth by working on rigorous technical problems. However, by failing to expose them to the full picture, we limit their ability to recognize business opportunities and create value for their employers and customers."

Following the research study, Campbell and Lee created a prototype for a new set of internship objectives (see side panel). They announced the internship opportunity to a class of junior chemical engineering students. After narrowing the candidates, Campbell selected Nick Fonzo as its intern. A naturally entrepreneurial student, Fonzo describes himself as "having ideas spinning in my head just waiting to come out."

When Fonzo began his internship, he was immediately immersed in the innovative projects. "Villanova prepared me for what I was seeing at Campbell," he says. "I saw ideas brought to life in discussions and meetings, later developed into drawings and initial prototypes, and eventually tested."

Though he arrived with minimal experience in the food industry, Fonzo used this to his advantage by contributing fresh ideas. "We were working on a brand new product line," he explains. "I looked at this development from the consumer standpoint. Because I was unfamiliar with traditional solutions, I was thinking of new ideas that could be more impactful and beneficial for the consumer."

To discover new opportunities, Fonzo did something that most engineering interns don't — he looked at patents. The work was connected to Villanova internship objectives B and G (see side panel). An understanding of protected intellectual property can reveal new opportunities that have not been investigated. In the same way that artists are trained to see "negative space," engineers can see opportunities among the claims within a patent. Fonzo said, "I spent a lot of time in patent white space — looking into opportunities where patents weren't followed before. I then made certain that solutions were economically feasible."

For instance, Fonzo's team saw how they might use a patented 10-year-old technology in a new way. Fonzo says, "My manager and team had a novel way of approaching the challenge; I helped by making sure that this was possible from a legal standpoint."

Fonzo was first introduced to patents in Villanova's opportunity identification course. "Understanding proprietary positions is important. It is a major factor in driving business opportunities," Lee says. "It helps companies avoid duplicating the work of others."

Villanova's curriculum and the internship gave Fonzo a valuable takeaway. "The number one concern of industry is client satisfaction. With all of the different factors involved such as prototyping, teamwork, and research, you need to know that a customer will purchase your product before you consider pursuing the business opportunity."

Similar internship opportunities will be increasingly valuable for students before they enter the workforce. As Lee puts it, "Having been responsible for hiring and staffing in my former industry roles, I would have loved to have candidates who were exposed to this type of experience. It clearly gives KEEN students an advantage."

INTERNSHIP OBJECTIVES

A. APPLIES ENGINEERING EXPERTISE TO SITUATION ANALYSIS AND SOLUTION DEVELOPMENT

B. DEVELOPS AND APPLIES INSIGHTS FROM DATA COLLECTION TO BUSINESS OPPORTUNITIES

C. ORGANIZES AND PRESENTS INFORMATION IN A CLEAR, EFFECTIVE, AND PROFESSIONAL MANNER

D. UNDERSTANDS THE SCIENCE AND ENGINEERING BASIS FOR THE PROBLEM

E. DEMONSTRATES DATA-BASED PROBLEM ANALYSIS AND PROBLEM SOLUTION SKILLS

F. ENGAGES WITH AND COMMUNICATES IN CROSS-FUNCTIONAL TEAMS

G. UNDERSTANDS CONSUMER VALUE AND BUSINESS OPPORTUNITY ASSOCIATED WITH TECHNOLOGY SOLUTIONS