

# CASE STUDY



# CASE STUDY: Developing Innovation Skills and “Cross Training” the Brain to Accelerate Careers

**How UMaine is taking on the “creativity crisis”  
by developing the innovative thinkers and  
industry pioneers of tomorrow.**



## OBJECTIVE:

*To prepare students for career success, community involvement and personal fulfillment in a rapidly changing world.*

The flagship campus of the University of Maine system, UMaine is one of New England's premier universities. Its mission is to lead, to create, to build and to move the state—and, in some cases, the world—forward. The University continues to look for new ways to prepare students for their careers while giving them tools and skills to make a positive impact on the community. One area where this has been most apparent in recent years is in the school's groundbreaking “universal minor” in Innovation Engineering®.

Recognizing that regardless of a student's primary field of study, innovation skills will be critical not only to their own success but to the future of business and communities, the University set out to develop an approach to innovation that any student can learn and apply to solve problems faster and reach pioneering new ideas.

The minor's objectives are to give students the tools and confidence to create their own opportunities, and to realize a prosperous and sustaining future within or outside organizations, businesses or institutions.

In addition, the University has established the following outcomes for the minor:

*Students will be able to lead change within their education, their careers, their affiliations, their communities and their personal lives.*



## CHALLENGES:

*To find a framework for the innovation curriculum that would be powerful but easy-to-use and applicable to all students, regardless of major field or career goals.*

As a universal minor, the Innovation Engineering® program would need to be applicable to the challenges and problems students across the university would be dealing with, from the School of Liberal Arts to the Business School to the Natural Sciences, Forestry and Agriculture School and every discipline in between. More than just helping people come up with ideas, the program was also expected to give students skills that would prepare them for the business and broader worlds.



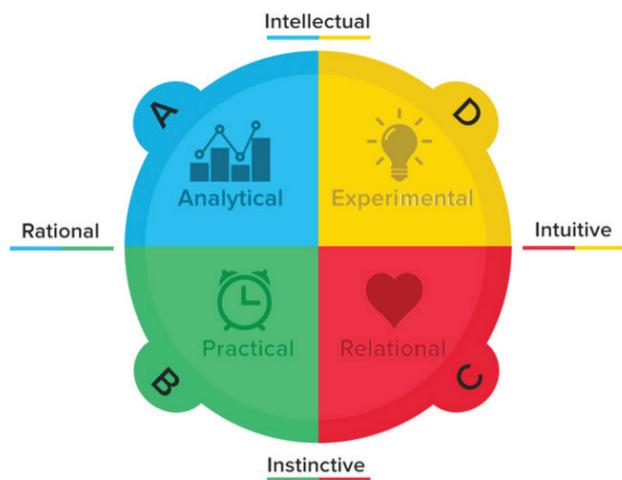
## SOLUTIONS:

*“Cross training” the brain using Whole Brain® Thinking as the framework for the program, giving students the tools, confidence and innovative thinking skills to create their own opportunities.*

*“The Whole Brain® Model is fundamental to the curriculum. In fact, one of the tenets of the program is that thinking preferences matter.” – Margaret (Margo) Lukens, Associate Professor of English, University of Maine, Orono*

The Innovation Engineering® program’s roots can be traced back to Doug Hall, a UMaine alumnus and, as CEO of Eureka! Ranch, a real-life example how innovation skills can fuel success. An inventor, entrepreneur and one of the country’s top speakers on innovation, Hall views innovation as a skill that can be developed and universally applied as long as people have the tools to harness the best thinking and the process to funnel that thinking towards workable solutions.

His approach draws on research from Herrmann International’s Herrmann Brain Dominance Instrument® (HBDI®), the assessment tool at the core of the company’s Whole Brain® Thinking approach. The HBDI® Profile defines and describes an individual’s preferences for thinking across the four quadrants of the Whole Brain® Model.



The four-color, four-quadrant graphic and Whole Brain® are registered trademarks of Herrmann Global, LLC. © 2015 Herrmann Global, LLC

*Figure 1: The Herrmann Whole Brain Model*

Because individual's approach to innovation and problem solving will reflect their HBDI® Profile results to some extent, for the purpose of teaching the habits of innovation, Hall has sorted tools and methods into sets that bear relationships to the four quadrants of the Whole Brain® Model; this structure is fundamental to a systematic approach to innovation.

For instance, tools and methods associated with the A quadrant emphasize facts, research, critical analysis and a technical perspective. An A-dominant individual might find these activities reassuring, natural and even easy; however, a more powerful application might be for a person with a different dominance (D, for instance, which tends to emphasize holistic, big-picture solutions) to mine for research and technology, and equip her- or himself with facts as a basis for innovation.

Likewise, the tools in the C quadrant tend to involve stimuli unrelated to the problem, group activities, respect for intuition and even playfulness. A B-dominant person, whose preferred mode would be an organized, step-by-step approach that minimizes risk, could "cross-train" by engaging in tools and methods from the C quadrant.

Herrmann International's research and Hall's work have shown that each of these types of thinking not only play important roles in the innovation process but, as a whole, are critical to achieving the best, most inventive ideas.

"I believe the visionary right brain can't do it. The logical left brain can't do it," Hall explains. "Great success only comes from collaboration – from Whole Brain® Thinking – from working together for the common good."

Hall presented several innovation workshops at the University that would become the basis for the first innovation course offered at UMaine. Associate Professor of English Margaret (Margo) Lukens, who attended one of those sessions, says she came away with a deeper understanding of how innovation skills, and in particular, the Whole Brain® approach to innovation, would give students a significant advantage wherever their future career paths led.

"Within half an hour, I was hooked," she says. "I realized this could apply to all students, and it would provide them with ways to enter the world of work that they would have had no previous notions about."



Working with Herrmann International's CEO Ann Herrmann-Nehdi, Hall began to develop the framework for what would become UMaine's universal minor in Innovation Engineering®, an 18-credit-hour minor open to all students at the undergraduate level, regardless of their primary field of study, as well as a graduate certificate program that can be obtained with any graduate degree.

Hall has describes the program as bringing an engineering discipline to innovation, giving students the knowledge, tools and confidence to create, communicate and commercialize “meaningfully unique” ideas. The classes are designed to explore methods of communication, business planning, working with groups, and creative thinking, all with a foundation in Whole Brain® methodology.

In keeping with the Whole Brain® approach to learning, courses offered in the minor include hands-on Fundamentals classes (Create, Communicate, Commercialize), a case-study-based course (Experience), and several special project, proposal development and internship offerings.

### **“Cross Training” the Brain**

“One of the most common forms of diversity someone encounters when working with others is diversity of thinking. We focus on giving students a way to get the full power of that diversity by helping them tap into the thinking preferences of others and extend their own.” – Margaret (Margo) Lukens, Associate Professor of English, University of Maine, Orono

Lukens, who completed the HBDI® Certified Practitioner process, serves as Director of the Academic Program and Co-Director of the Student Innovation Center with Renee Kelly, the University’s Director of Economic Development Initiatives.

“The Whole Brain® Model is fundamental to the curriculum,” Lukens says. “In fact, one of the tenets of the program is that thinking preferences matter.”

As part of the introductory class, students complete the HBDI® assessment and online HDBlinteractive® program to learn about their thinking preferences. Through exploration of the Whole Brain® Model, they learn how thinking preferences affect their approach to the innovation process and where their blind spots may be. They then learn skills to not only think outside their preferences but to identify perspectives that may be missing and proactively include those styles.



This process of becoming “whole brained” provides a framework that Lukens says students will apply to idea generation, problem solving, communication and other activities, both in their work and in their individual lives.

A suite of Whole Brain® tools give students hands-on practice performing tasks and solving problems, with opportunities to use tools that fit into their areas of preference as well as those that require them to work outside their comfort zones. Students are encouraged to “decide to stretch” and reach for tools outside their preferences in order to develop their Whole Brain® Thinking skills.

"It's really a way to 'cross train' the brain,' as Doug calls it," says Herrmann-Nehdi. "Students learn to choose the right tool for the task rather than just relying on those they naturally gravitate towards."

Lukens says that thinking styles also play a part in one of the most important factors in a team's ability to innovate and solve problems—its diversity. Because diversity is critical to successful idea generation in teams, the greater the diversity, the exponentially greater the number of ideas a team can generate in response to a problem or opportunity.

"One of the most common forms of diversity someone encounters when working with others is diversity of thinking," she notes. "We focus on giving students a way to get the full power of that diversity by helping them tap into the thinking preferences of others and extend their own."

Along with the tools, whole-brained teams—groups designed with all thinking preferences represented—are organized to perform specific tasks and projects. Students get practice working with a full spectrum of thinking styles and discovering the benefits of all types of thinking to the innovation process.

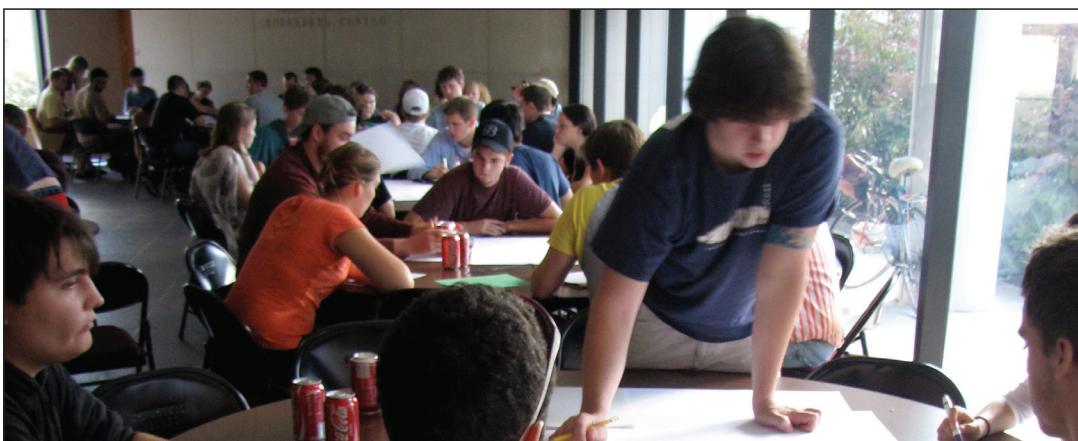
## **RESULTS:**

*Innovative solutions leading to job offers and startup funding, along with improved communication skills and better general business readiness.*

*"The great thing about this program is that you can apply it however you want to apply it. You can use these same skills to write a better poem, to design a better product or to develop new software." – Margaret (Margo) Lukens, Associate Professor of English, University of Maine, Orono*

True to its designation as a universal minor, Innovation Engineering® has attracted students from every college within the University. While students in the Engineering School have seen immediate utility in the program, it is also drawing interest from the School of Liberal Arts as well as Management and Marketing students in the Business School. In the Natural Sciences, Forestry and Agriculture School, students studying such issues as sustainable agriculture are sharpening their innovation, creativity and problem-solving skills through the Innovation Engineering® curriculum.

According to Lukens, "The great thing about this program is that you can apply it however you want to apply it. You can use these same skills to write a better poem, to design a better product or to develop new software."



The first students to graduate from UMaine with a Minor in Innovation Engineering® are living proof that, in whatever way one applies them, innovation skills are a career accelerator.

A Mechanical Engineering student, who was working on the design for a robotic hand for prosthetic and industrial applications, used his final project to develop innovative ways to prototype and test the hand. Now with a potential patent on the robotic hand, the student was hired directly out of school for an engineering job.

Another student, from the New Media department, developed a new way to film and record concerts, creating an interactive, immersive DVD experience. From this final project, he has already received substantial funding for the start-up of his video production company.

The benefits extend beyond the obvious breakthrough products or ideas, Lukens adds. In sync with the University's mission, Innovation Engineering® is also teaching students skills that will prepare them for the business world and their adult lives. They are learning how to communicate more effectively, write more concisely and challenge their beliefs.

"Students have been surprised at how 'simple' it is," says Lukens. "It's not polishing one idea; they have to go out and crank out a hundred ideas before the next class, but the tools make it possible. That's one of the reasons students have been so open to this approach."

With the program running successfully at the Orono campus, the University of Maine system has taken notice. UMaine, Orono, received a grant to bring the Innovation Engineering® curriculum to other institutions in the system. Lukens and her colleagues began training University of Maine faculty throughout the state.

"They say we're in the midst of a creativity crisis," Lukens notes. "Well, that's what we're trying to address. And when you refine the process, you find that innovation is easier and faster."

Hall sums it up aptly: "Innovation is no longer an option; it's a necessity if we're going to have University of Maine graduates and Maine residents win in today's global economy."

## UNLEASH THINKING POTENTIAL

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