

New ways to learn about innovation emerge during pandemic

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In March 2020, the 2019-20 Mayo Innovation Scholars Program (MISP) was coming to a close. Student teams had presented recommendations on innovations that Mayo Clinic was considering. A longitudinal MISP outcomes study had been completed just months earlier, demonstrating the value of the program to its past participants as well as to Mayo Clinic. MISP was approaching its 15th anniversary, and the future looked bright.

Then Mayo Clinic called. Due to the pandemic, they needed to put the program on hiatus.

The Mayo Innovation Scholars Program staff was faced with a dilemma: Should they pause their successful program, or should they search for a way to move forward?

Hands-on learning with real projects

MISP was founded in 2006 by John Meslow, a graduate of St. Olaf College and retired Medtronic executive who served on the board of the Minnesota Private College Council.

In search of a way to provide additional educational opportunities to students, he reached out to the chair of Mayo Clinic Ventures and asked, "What is your biggest challenge?"

The chair responded that his department had more ideas to evaluate than people to do the work. Meslow suggested using teams of undergraduate students to help. This was a new idea for Mayo, which typically relied on doctoral-level students, but they were willing to give it a try.

Meslow invited a few private colleges in Minnesota to select juniors and seniors for a three-month pilot program with Mayo Clinic Ventures. At the end of the pilot, the students had impressed Mayo's staff with their intelligence and maturity. Meslow tweaked and expanded the program, and by 2019, more than 700 undergraduate and graduate students from private colleges and universities across Minnesota had participated in the program.

MISP runs from October until early March. Participating institutions select teams of four undergraduates from different disciplines, such as biology, business, psychology, and engineering. Under the leadership of a graduate student team leader, each team explores the feasibility of a medical device or therapy in development at Mayo Clinic and makes final recommendations to an audience of physicians, scientists, inventors, faculty, and other teams. In the MISP 2019 outcomes study, alumni of the program reported that they developed skills in teamwork, leadership, interdisciplinary learning, professional presentation and the ability to deal with ambiguity.

The birth of Innovation Partners

This outcomes study played an important role in the decision that the program staff had to make at the start of the pandemic, when Mayo itself had to put its partnership on hold. "For the first time, we were able to identify the long-term outcomes of the program, so we had a very strong endorsement of our experiential learning model," said program director Rebecca Hawthorne. "We could take what we learned and identify new ways to deliver experiential learning to students."

They decided to continue their work with new partners in the medtech industry: early-stage medical companies. They named their new program Innovation Partners.

Innovation Partners launched a pilot program in early 2021, utilizing the MISP experience over a matter of weeks rather than months in a virtual format. Largely a success, it was revised and expanded to run from October 2021 to early March 2022 along with MISP, which resumed last fall. The two programs are now run concurrently under the umbrella of Innovation Scholars Programs, both operating in a hybrid format.

While the new Innovation Partners (IP) program is similar to MISP, working with an early-stage medical company is different from working with Mayo Clinic. "Start-ups are the Wild West," said Seth Paradis, a professor of applied health science at Bethel University who has been an Innovation Scholars undergraduate campus mentor for seven years. "You work with your team to come alongside the company to define and refine specific deliverables for the IP project."

Steve Vuolo, clinical faculty member in marketing at the University of St. Thomas Opus College of Business, agrees. An experienced faculty mentor who has helped guide graduate team leaders for about 10 years, Vuolo said, "Innovation Partners has another level of uncertainty. Each client is there for the first time, and the tasks at hand may be even more variable than the projects."

Lessons you don't learn in the classroom



Top to bottom, left to right: Burk Substad, Katharine Knott, Isaac Howell, Signe Harris and Andrew Rolley

Four undergraduate students from Bethel University were members of one of the 11 teams that tackled Innovation Scholars projects this year. Led by Katharine Knott, an M.B.A. student at University of St. Thomas, the team, consisting of students Signe Harris, Isaac Howell, Andrew Rolley, and Burk Substad, provided guidance to InterShunt, a medical device company.

The ambiguity referred to by their team's mentors, Paradis and Vuolo, required the students to be able to determine on their own what they needed to do to meet InterShunt's objectives. "It's not just the professor telling you the assignment," said Rolley, a junior majoring in business. "A 10-minute conversation with [the company contact] should be able to fuel a large portion of your work."

"There is no one right way to do one of these projects and having to go through that process of figuring it out is a huge

learning opportunity for students,” Hawthorne said.

Knott found that the project helped her become a more confident leader. “I’ve been in leadership positions in the past,” she said, “but this was my first career leadership, where your reputation is out there, you’re managing your students’ stress, and you’re managing outside factors. The benefit that came from dealing with that whole load was confidence in my future leadership abilities.”

It’s not just the graduate student who walks away with better leadership skills. The multidisciplinary nature of the team means that each student has the opportunity to be a subject matter expert at different points during the project. And this interdisciplinary dialogue gives the students the opportunity to learn from each other. “I was definitely expecting to learn a lot through research, and I thought most of my research was going to be geared toward the medical side of things, being a biokinetics major,” said Howell, a junior at Bethel. “But I actually learned a lot about the business side of things in the medical device industry, even up to doing a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis for our final presentation.”

Liz Jansen, the academic program director at Innovation Scholars, noted the importance of the multidisciplinary teams. “The most creative ideas come from the most diverse teams,” she said. “Students are equipped to step across disciplinary boundaries and be in a space where they’re uncomfortable.”

The projects don’t just benefit the students; they benefit the companies that participate. There’s no clearer indicator of this than, except for the pandemic-related pause, Mayo Clinic’s continued participation. Now early-stage medical companies are beginning to report seeing value as well. Maggie Wallner, vice president, clinical development at InterShunt, reported how impressed she was with how the team embraced the project. “You could tell by some of the questions that they thought beyond what was on the paper. They opened it up a little bit, and we were hoping that they would do something like that to see if there were other things we hadn’t thought about that we should consider.”

“It’s incredible to watch these 20- to 22-year-olds plus a graduate student stand up in front of an audience and speak knowledgeably about an innovation,” Jansen said. “Oftentimes they come up with new applications for the technology. The students don’t have the expertise and the trained eyes of the other intellectual property experts or entrepreneurs, but that gives them fresh eyes to see things in a different way.”

By Kate Norlander