A dairy innovation challenge for students and industry mentors

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DAIRY INNOVATION HUB

Program Structure

Students were asked to consider solutions in **<u>Three Focus Areas</u>**:

1. Develop storage, distribution or other tools to enhance the shelf life of Wisconsin dairy products, thereby opening more export markets
2. Develop services, products or enabling technologies to encourage dairy product consumption by Wisconsin students
3. Develop cost-effective, efficient network technologies to ensure that Wisconsin dairy farms underserved by broadband have the ability to utilize internet-of-things technologies despite poor quality connectivity

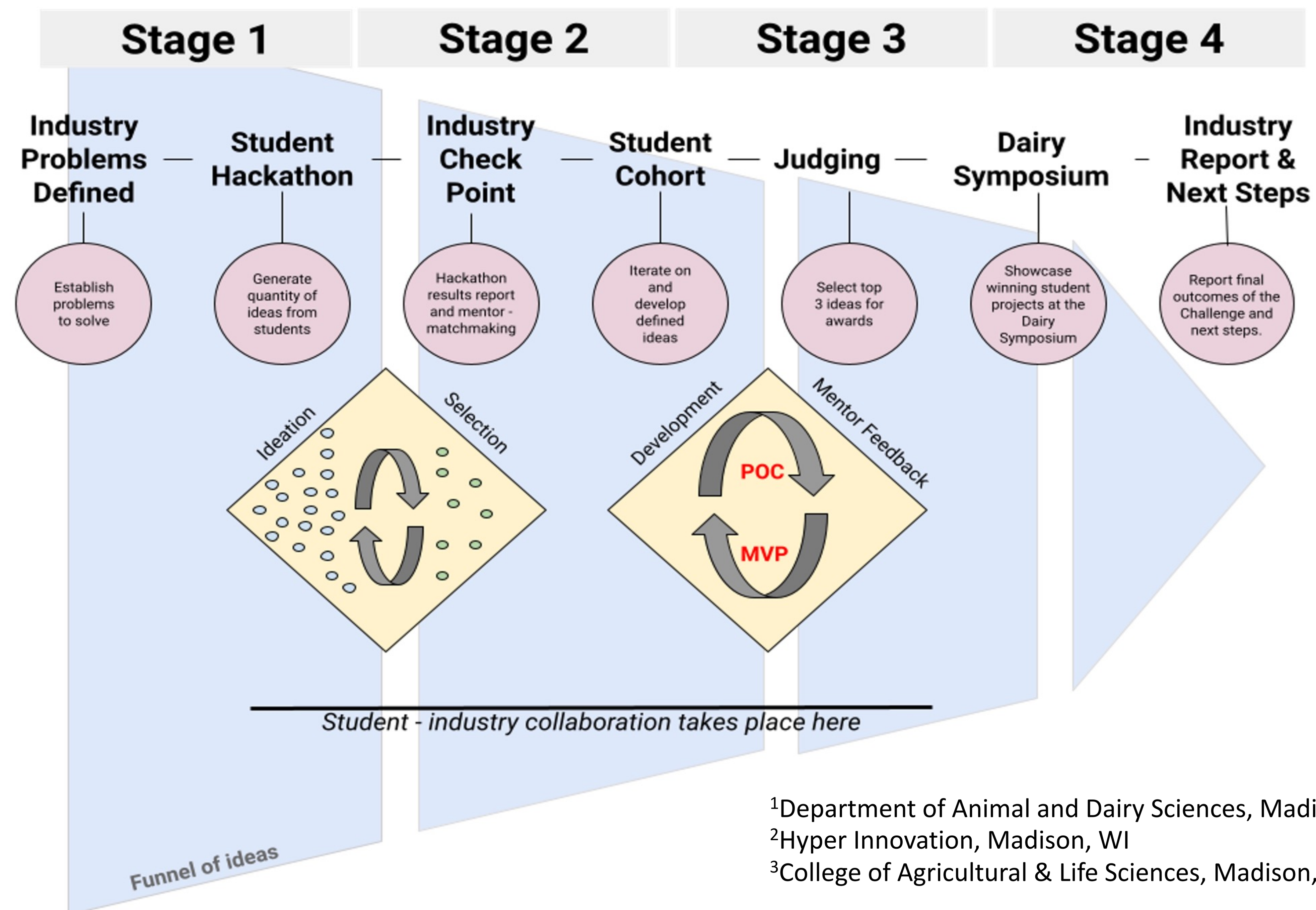
Overview

In fall 2020, the Dairy Innovation Hub and Hyper Innovation hosted a 14-week Dairy Innovation Student Challenge for multidisciplinary students at the UW–Madison and UW–River Falls campuses focused on addressing opportunities for innovation in the dairy industry.

Survey and Methods

Students and mentors anonymously evaluated the program in separate surveys. Surveys were supplemented with qualitative explanatory prompts (Creswell, 2015) and were administered via Qualtrics (Provo, UT) two weeks after the program-end.
Results were summarized in Excel 2017.
Quant. scale from 1 (low) to 5 (high)
Researcher M.G.E. used the "RADaR" technique to derive themes from open-ended prompts (Watkins, 2017).

Challenge Framework



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Program Evaluation Results

<u>Student Quantitative Results</u>: ***Overall satisfaction with program:*** (M = 4.3, SD = 1.0); ***Self-efficacy in:*** Working in interdisciplinary teams (M = 4.1, SD = 0.6), Working with industry professionals (M = 4.4, SD = 0.7), Working with dairy topics/in the dairy industry (M = 4.1, SD = 0.3); ***Likelihood to:*** Keep in touch with at least 1 industry mentor (M = 3.9, SD = 1.0), Keep in touch with at least 1 teammate (M = 4.7, SD = 0.7), Apply creativity/innovation skills learned in the challenge to coursework, work or other activities (M = 4.3, SD = 1.4).
<u>Student Qualitative Themes</u>: ***Most valued aspects:*** Connected with industry professionals (n = 5), Experienced creative process (n = 2); ***Suggested changes:*** More structure in weekly meetings and project assignments (n = 4), Longer timeframe (start earlier in the semester; n = 2), More "realistic" target outcome (n = 1), Addition of in-person meetings (n = 1).
<u>Mentor Quantitative Results</u>: ***Self-efficacy in:*** Mentoring undergraduate students (M = 2.6, SD = 0.7); ***Likelihood to:*** Keep in touch with at least 1 student team member (M = 3.0, SD = 1.3), Keep in touch with at least 1 fellow mentor (M = 3.6, SD = 1.2), Seek out other mentor opportunities (M = 4.0, SD = 0.9), Recommend serving as a mentor in the program to a colleague (M = 3.9, SD = 1.3).
<u>Mentor Qualitative Themes</u>: ***Program strengths:*** Created interdisciplinary, cross-campus, diverse teams (n = 3), Engaged non-agricultural audiences with agricultural topics effectively (n = 2); ***Most valued aspects:*** Interactions with people across universities, disciplines and ages (n = 4); ***Suggested changes:*** More structure in weekly meetings and support materials (n = 2), Separate contests for graduates and undergraduates (n = 1).

Conclusions & Recommendations

The inaugural student challenge built on prior research illustrating the benefits of integrating scientific and technical topics with design thinking and innovation (Li et al., 2019). There are opportunities to scale or duplicate the program in the future using similar interdisciplinary, cross-university student teams in close collaboration with industry mentors. Research suggests that heterogenous groups such as those in the challenge increase achievement of learners with low initial skills without hindering their high-initial-skill team members (Jensen & Lawson, 2011). Future iterations can offer more structured weekly meetings and support materials to assist teams in setting realistic goals and facilitate student-mentor progress throughout the design challenge. For example, separate mentor training or meetings may improve mentor self-efficacy (Riggs, 2000), and team creativity and generativity may be (counterintuitively) improved by a constrained cognitive environment (Bonnardel, 2000).