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CONTRIBUTED ARTICLE:

Author Biography

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Jennifer Farmer is an Associate Professor in the Teaching Stream in the Department of Chemical Engineering and Applied Chemistry (CHE) at the University of Toronto (UofT), where she has served for nearly a decade. She currently holds two leadership roles: Associate Chair, Undergraduate Student Experience and Director of the Nanoengineering Minor. Her teaching is grounded in a student-centered approach, with a focus on creating cohesive, real-world learning experiences across the undergraduate curriculum. Her work includes Students as Partners (SaP), project-based and inquiry-based learning, integrated learning, and the design of modern laboratories focused on sustainability, some of which have been published in peer-reviewed journals and conference papers. These contributions have also been recognized through teaching awards, including the CHE Diran Basmadjian Teacher of the Year (2018, 2023), the Wighton Fellowship (2024), and the FASE Faculty Teaching Award (2025).

Modernizing Curriculum Through Student Partnership

While learners are often at the heart of curriculum design, they are rarely invited to participate in shaping it. Engaging students in curriculum development is a powerful approach that gives them a voice and allows them to be active partners in shaping course content and structure, leading to more meaningful and relevant learning experiences.



Figure 1: Model for engaging Students as Partners (SaP) in Higher Education (HE). *Source: From Engagement Through Partnership: Students as Partners in Learning and Teaching in Higher Education, by M. Healey, A. Flint, and K. Harrington, 2014, The Higher Education Academy, p. 24. Copyright 2014 by the Higher Education Academy.*

Partnership is a reciprocal process where all participants contribute meaningfully to curriculum design, though not always in the same ways (Cook-Sather et al., 2014, pp. 6-7). The "Students as Partners" (SaP) framework builds on this definition, emphasizing collaboration as an ongoing process, rather than focusing solely on outcomes or products. SaP highlights the value of faculty, staff, and students working together on curriculum-related projects, strengthening relationships and enriching teaching and learning experiences. Healey et al. (2014 and 2016) developed a model (Figure 1) to illustrate how students, staff, and faculty can collaborate on pedagogical projects across four overlapping areas: research and inquiry, scholarship of teaching and learning (SoTL), curriculum design, and learning and assessment.

Recognizing the value of student involvement in curriculum development, I created a summer research program in 2017 in the Department of Chemical Engineering and Applied Chemistry at the University of Toronto, aimed at engaging undergraduate students in curriculum-related projects. Since launching the program, I have supervised over 20 students through this initiative, supporting their contributions to course design and pedagogical innovation. I used the Healey et al. (2014, 2016) model to guide the development of these projects, ensuring that student work spanned key areas such as subject-based inquiry, curriculum design, and learning and assessment.

One of the most impactful outcomes of the summer research program has been the creation of a new, interactive, and flexible learning model for a first-year Physical Chemistry course, taken by chemical, civil, and mineral engineering students. Launched in Winter 2024 as part of the U of T Flexible Learning Initiative, the course introduces hybrid learning and reflects a collaborative redesign effort (Figure 2).

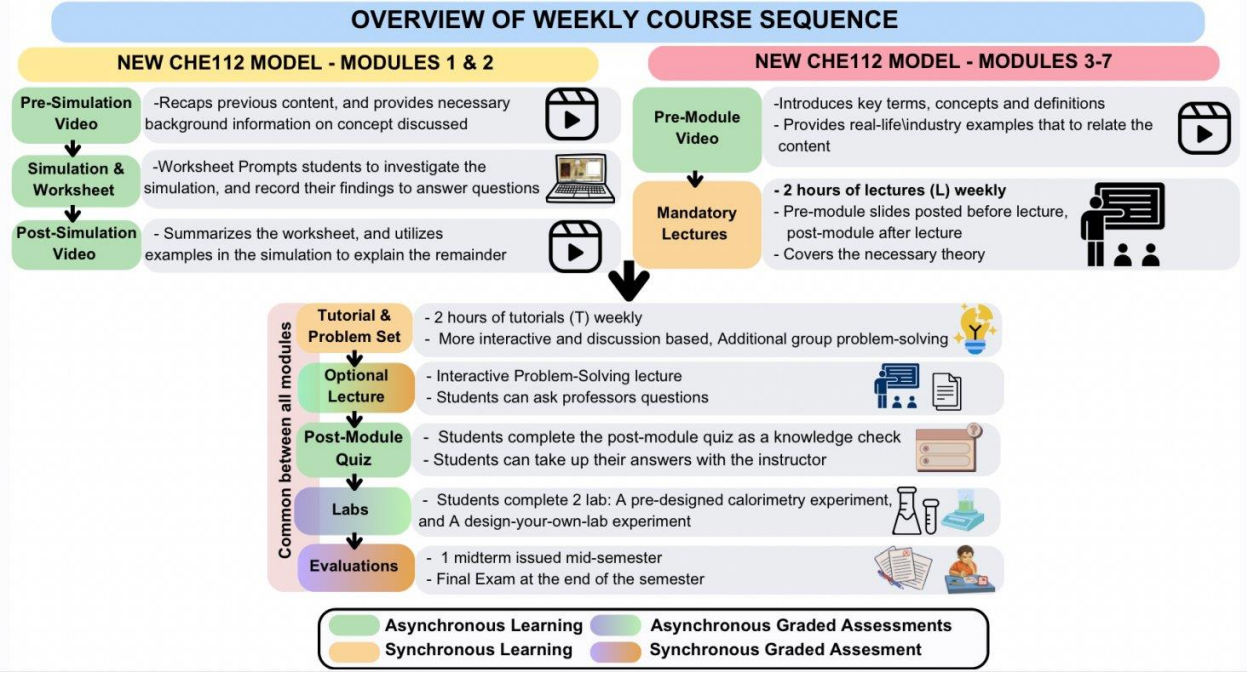


Figure 2: Overview of weekly course sequence in CHE112 – Physical Chemistry, outlining newly developed course modules (i.e., modules 1-7) and course content (e.g., pre-module videos, simulations, etc.) co-developed by first-year undergraduate students.

In Summer 2023, I worked with a first-year student to redesign CHE112, a Physical Chemistry course taken by engineering students. They developed annotated mini lecture videos, simulation-based activities, and a group project using the Universal Design for Learning framework (Centre for Teaching Support & Innovation, n.d.). Since its launch in Winter 2024, other students have continued to enhance the course through contributions to online materials, hands-on activities, and alternative assessments. A particularly meaningful moment came when the original student's sibling enrolled in the course for Winter 2026 - an example of how student-created content can have lasting impact and reach across cohorts.

Building on the success of the summer research program, I have begun collaborating with colleagues to develop experiential learning projects within their courses. In our third-year laboratory course, students complete a specialization lab tailored to their interests. One group conducted a feasibility study on biodiesel production for campus buses using equipment available in our unit operations laboratory and presented their work at the 2024 Canadian Chemical Engineering Conference in Toronto, Ontario. I also supported a new experiment on battery construction and scale-up co-developed by our design team and faculty member.

From my experience, several key practices have helped ensure success:

1. **Secure Funding**: Compensating students for their contributions is essential. These roles should be treated with the same respect as traditional research positions. I have accessed various internal funding sources, including work-study programs and university-level educational initiatives.

2. **Involve Past Students**: Students who have previously taken the course bring valuable insights. They understand the content, can reflect on their own learning experiences, and often have awareness of broader program requirements and student needs.
3. **Clarify Roles with Colleagues**: When collaborating outside my own courses, I clearly outline time commitments and responsibilities. Typically, I take the lead on curriculum design while colleagues contribute their subject expertise, creating a balanced and effective partnership.
4. **Seek Ongoing Feedback**: Annual student feedback helps identify areas for improvement. This continuous input ensures curriculum changes remain responsive and relevant.

I recognize that access to resources varies across institutions, and that engaging SaP in curriculum development can be both challenging and deeply rewarding. By sharing my approach and experiences, I hope to inspire others to explore this work and provide practical support for those looking to adopt student partnerships. When thoughtfully implemented, these collaborations can modernize curriculum and enrich the educational experience for everyone involved.

If you are interested in accessing any of the resources developed through these projects, would like to share your own ideas or experiences, or are interested in collaborating, please don't hesitate to contact me.

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52nd College Chemistry Canada Conference

Chemistry for All

Nunavut Arctic College
Nunatta Campus

Iqaluit, NU
29 May – 01 June 2026



Details for the 2026 College Chemistry Canada Conference can be found at the conference website.
Information will be continuously updated as planning progresses.

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