

JOINING STUDENTS ON THEIR SLICCS JOURNEY

Mary Robinson, Katherine Lithgow, Carolyn MacGregor

University of Waterloo

mary.robinson@uwaterloo.ca; klithgow@uwaterloo.ca; carolyn.macgregor@uwaterloo.ca;

Abstract –*At Waterloo Engineering, we have great student leaders who go far beyond the average of 120 hours needed for a course credit in leadership roles, but currently receive no academic credit for this work. The SLICC (Student-Led, Individually-Created Course) model, developed by professors at the University of Edinburgh, is a great way to help the student leaders reflect on their own leadership experiences in a personalized format, producing a product that is of value to them. That is the motivation for a new course, offered in the winter 2022 term for the first time, GENE 415: Practical Analysis of Student Leadership Experience.*

As instructors, we were completely new to the SLICC model. After some basic training in the mechanics of the SLICC process with folks at Waterloo who are implementing it in their courses and support from folks at the University of Edinburgh, we put ourselves through a SLICC project with our students. This was done with lots of support from a senior educational developer from the Centre for Teaching Excellence.

This is the story of SLICCs being implemented by two seasoned instructors and their educational journey to guide ten senior engineering student leaders through a new course designed to acknowledge, through course credit, their substantial leadership experiences throughout their undergraduate studies in engineering. This SLICC experience was completed at the height of the Omicron wave of COVID-19 in Ontario, revealing both the benefits and challenges of this self-directed learning model being implemented in an online environment and then shifting to in-person.

Keywords: SLICC, instructional framework, self-directed learning, life-long learning, reflection, student leadership

1. INTRODUCTION

This is a cautionary tale for educators with some twists and turns, and journals worth of reflective learning. In the spirit of Henry Petroski’s instruction for engineering design that “we build success from failure” [1], so too, as engineering educators we should be brave enough to share when pedagogical implementation does not always go as planned. Having students co-create their learning experience, by designing and assessing that

learning experience through reflective practice is quite a new concept in engineering – new to instructors and new to students. It pushes students and instructors out of their comfort zone – which can be uncomfortable for all stakeholders. Arguably it is through our discomfort and failures that we learn the most.

Through this paper, join us as we reflect on the learning adventure we undertook with our students as we navigated the Student-Led Individually Create Course (SLICC) framework. We focus on our learnings as we adopted an instructional framework new to us at the same time as delivering a new course for engineering student leadership, during the height of the Omicron wave of COVID-19 in Ontario, in an academic term that started remote and went back to the classroom after the first month. Could the course design and implementation have been better? Yes. Was adopting the SLICC approach worth the course design stumbles? Yes, and therein lies the power of the SLICC framework.

With SLICCs, student success is associated with reflecting on their personal experience, awareness of growth in mindset, and self-assessment of skills developed through trying with plans for future iterations. In theory, SLICC is a good framework for educating engineers to be more comfortable working with volatile, uncertain, complex, and ambiguous (VUCA) situations. In practice, we had some “oops” and some “ah ha” learning moments that we want to share with others considering a similar path.

1.1. SLICC: An Instructional Framework

Developed at the University of Edinburgh (UofE), a SLICC (Student-Led Independently Created Course) is a student-centred course-design approach for experiential learning providing a reflective framework that promotes student ownership of their learning. [2] The SLICC framework allows students to co-create and participate in an independent learning experience, leading to deeper engagement in the learning process. [3] [4]

The framework helps students identify and articulate their growth and development of transferable or employable and lifelong learning skills resulting from the experience, advances their learning and improves their ability to self-assess. [5] As such, it addresses one of the more challenging graduate attributes identified by the

Canadian Engineering Accreditation Board (CEAB) to assess, i.e., life-long learning, which requires the graduate to have the “ability to identify and to address their own educational needs in a changing world in ways sufficient to maintain their competence and to allow them to contribute to the advancement of knowledge.” [6]

As per the UofE SLICC framework, the students and instructors co-create the “course” (i.e., the vehicle for academic credit). The student selects the experience of focus (e.g., a design project or summer work placement) and reflects upon their experiences and skills developed in an online workbook. [2] The main deliverables to earn course credit are a proposal, an interim reflective report and a final reflective report. The proposal and reflective reports prompt students to plan for and discuss their personal progress made on the five main SLICC Learning Outcomes (LOs):

- a. **Learning Outcome 1 (Analysis):** I am able to demonstrate how I have actively developed my understanding of the topic I have chosen for my SLICC.
- b. **Learning Outcome 2 (Application):** I am able to draw on and apply a range of relevant skills and attributes (academic, professional and/or personal) in order to engage effectively with my SLICC, identifying where I need to improve these and/or develop new ones.
- c. **Learning Outcome 3 (Recognizing and Developing Skills):** I am able to demonstrate how I have used experiences during my SLICC to actively develop my skills in the focused area
- d. **Learning Outcome 4 (Recognizing and Developing Mindsets):** I am able to demonstrate how I have used experiences during my SLICC to actively explore my mindset.
- e. **Learning Outcome 5 (Evaluation):** I am able to evaluate and critically reflect upon my approach, my learning, and my development throughout my SLICC. Showing how you will actively reflect on your learning throughout the experience is essential.

In its original form, the UofE model included three formal opportunities for students to receive feedback from a tutor during the SLICC process, those being the initial proposal stage, the interim report, and the final report. The student begins by creating a SLICC project proposal. They personalize course learning outcomes to their project context by including an audit of the skills they currently have and the skills they would need to develop, how they will go about developing those skills, and how they would assess themselves upon completion of their proposed learning opportunity. They also comment on the impact this learning experience will have on their future studies, and for themselves, personally and professionally. Students are required to submit a mid-term reflective report and a final reflective report, both of which closely

follow the prompts and structure of the SLICC proposal. Because students are responsible for designing, planning, implementing, and self-assessing their project, it is inevitable that all will not go as planned and pivots will have to be made as necessary. As such, the experience and context mirror the environment students will encounter outside the classroom, an environment that is often referred to as VUCA (volatile, uncertain, complex and ambiguous). Providing students with the opportunity to immerse themselves in a VUCA world experience, with a few guard rails and supports in place, has the potential to be transformative in nature and helps them develop skills that will serve them well after they graduate.

Throughout the SLICC project, each student is expected to complete weekly blogs/reflections on the process of their learning and provide evidence of how they are progressing on their learning outcomes. Reflection on learning is critical to the SLICC model. As stated in the SLICC Resource Pack for Instructors and Students “Simply stating or showing that they had an experience without offering any reflection, does not count as evidence for a SLICC.” [7]

Students do not receive feedback on the weekly reflections; however, they are encouraged to include links to blog entries within their reports as evidence of personal progress. Students receive feedback on the proposal and both reports. Feedback is directed at encouraging the student to think more deeply about their experiences to better articulate their personal learning and skill development progress. Feedback may be in the form of a supportive, non-judgmental comment (e.g., *Thank you for sharing how challenging you found x and your plans for next time*) or a question to prompt further reflection (e.g., *Good to describe what you did last week. Which of your skills are improving and how do you know?*).

Tutors at UofE participating in the original SLICC model were instructors from faculty/departments other than the student’s home department or research area [8]. This ensured that the focus was on the process undertaken rather than on discipline specific knowledge. Furthermore, interactions between the student and the tutor were quite limited by design (it is, after all, a focus on Student-Led Individually Created Courses) and mainly occurred through feedback given to the proposal and interim report. Notice the focus of a SLICC is on the student’s personal learning journey – their personal development of skills, mindsets and development of reflective practice. It is not a focus on the attainment of discipline specific knowledge. In addition, the UofE SLICCs took place outside the boundaries of a course often over the summer term when students were not taking other academic courses. In our adapted model at the University of Waterloo, we integrated SLICC into the confines of an academic course, meaning that a single instructor or co-instructors would play the role

of “tutor” and recognized that students are taking four and possibly five other academic courses in the same term.

2. ADOPTING SLICCS IN WATERLOO ENGINEERING

At Waterloo Engineering, we have student leaders overseeing large student societies or competition teams who are developing their CEAB attribute Life-Long Learning skills in a ‘learning-by-doing’ format and going far beyond the average of 120 hours needed for a course credit but currently receive no formal recognition for this. After learning about the SLICC process and philosophy as participants in a SLICC learning community in fall 2021, the authors were motivated to adapt the SLICC framework to their winter 2022 offering of GENE 415: Practical Analysis of Student Leadership Experience so that students’ leadership experience could be formally recognized through a course credit. With support from the SLICC learning community, and a senior educational developer who had been involved in a University of Waterloo Learning Innovation and Teaching Enhancement (LITE) grant-funded project undertaken to better understand SLICCs from the University of Waterloo perspective, the authors offered the course in the winter 2022 term with ten engineering student leaders.

The LITE grant funded project included three instructors teaching entrepreneurial courses in the fall of 2020 and winter of 2021. The courses ranged in size from a first-year class of 100 students, to three third-year courses with class sizes four, 16, and 27 students. Preliminary findings from the LITE grant funded project revealed that many students in the pilot were unsure how to respond to the reflective prompts for their weekly reflections. Given that critical reflection is a skill that is learned through practice and feedback [9], this finding is not surprising. Critical reflection is both a meaning-making process and an emotional exercise that needs to happen in community [10].

To provide more structure to the SLICC framework, one that was new to both instructors and students, the authors made the following adaptations to the SLICC framework for their GENE 415 offering. The main adaptation being the intentional integration of peer support and peer feedback. For their part, students were responsible for:

- **designing their learning experience** around a leadership topic about which they were passionate, or one that has sparked their curiosity based on their leadership experiences
- **re-stating and personalizing the LOs** around their chosen leadership learning experience and outlining in a proposal how they will achieve the LOs and
- **articulating how they will assess themselves,**

During the first four weeks of the course, the instructors addressed topics identified as relevant by the students and the instructors through seminar discussions, introduced the SLICC model and reflective frameworks, facilitated community building, and created opportunities for providing feedback to and seeking feedback from peers. The course became a co-created learning community.

Students were provided with a SLICC workbook, created using PebblePad (www.pebblepad.co.uk), and adapted from the workbook created by UofE. The workbook included exemplars of proposals and prompts that guided students through the proposal writing process. Students were responsible for presenting their proposal to their peers and seeking specific feedback on their proposal (undertaking ‘feedback asks’).

Throughout the GENE 415 SLICC experience, students create an e-portfolio composed of the weekly reflections, evidence of learning, midpoint, and final reports. The SLICCs summative assessment rewards students for clearly articulating their learning, for providing evidence documenting their learning, how they dealt with problems, challenges and mistakes associated with the SLICC topic, and for reflecting on how they will transfer their learning to new and different situations [11].

3. LEARNING THROUGH OUR SLICC JOURNEY

Using one of the recommended SLICC reflection models, as described by Borton, using the prompts “What”, “So What”, and “Now What” [12], the authors reflected on their SLICC journey. These are the top few “oops” and “aha ha” moments that we would like to share with you.

3.1. Community

The importance of investing class time to build a trusting learning community cannot be overstated, especially when working with a group of high-achieving student leaders who may very likely be suffering from imposter syndrome. Considerable effort was spent in the first week to establish an “ethics of engagement” for the community, which included things like what is said in class stays with those in the class. A virtual privilege walk was also part of the early sessions and went a long way to build a very strong, trusting relationship between all participants in the course.

The ten students who signed up for this trial offering of GENE 415 did so with only a preliminary understanding of the SLICC model and trusted the instructors to guide them through this completely new experience. Similarly, the instructors were able to tag off to each other depending on work, life and other duties. This ability to trust and rely on others, especially in the middle of a pandemic, was critical for the success of this course.

A component of trust-building came through reciprocal sharing of student leadership experiences on a general theme. For example, in one session we discussed the

relationship between leadership and management of student teams. Rather than asking students to give examples of when they had performed well, we asked “when do you feel most comfortable leading and where would you like to feel more comfortable?” Encouraging students to connect to their emotional selves around their leadership experiences helped them to see commonalities across their experiences rather than looking for how they compared on skills. Sharing on such personal levels and acknowledging vulnerabilities for both students and instructors helped with bonding even though the first weeks were done via MS Teams® calls. Within an 80-minute class session, we made sure that moderated discussions and sharing allowed time for each instructor and each student to share personal insights on the topic. It was important for group cohesion that the instructors were engaged as participants sharing with the students on the SLICC journey rather than viewed primarily as evaluators.

In the context of GENE 415 and the nature of student leadership experiences, we feel that keeping the group small is important for the trust-building and sense of community desired. It is important that all members feel included and welcomed to share and be heard. With only 80-minutes or less per class session, a group of 10-12 would be limited to 6-10 minutes each. Practical time constraints do need to guide some of the pedagogical and assessment decisions if class enrollment cannot be restricted.

3.2. Structure

The course was structured to have the first 3-4 weeks being a bi-weekly meet for approximately 80-minutes of course-related content. Shortly thereafter project proposals were presented, then nearly all scheduled class time was turned over to the students to allow time to work on their SLICC projects. The classroom continued to be available during class time for students to gather or work, with at least one of the instructors available for questions or support.

Unfortunately, as the formal lectures wrapped up, student attendance in the classroom rapidly dropped off and so did engagement with few questions being asked of the instructors. Knowing that many student leaders live deadline to deadline, a future offering of this course may keep the two 80-minute meets per week but be structured to force more regular contact and connection points through a scheduled weekly class and only one lecture timeslot per week being available for self-directed work. As instructors, we also know about the mistakes that get made every year by students underestimating the time demands of the capstone project. If SLICCs are to be largely student-driven, how much should we help students avoid these known pitfalls of time and resource management? In a future course iteration, co-creating a class schedule of deliverables may be one way to address engagement issues and more in-line with life-long learning.

3.3. Reflection

As was highlighted during the LITE grant pilot phase, students need help learning how to reflect and why it’s important. The instructors know it is important but building the habit and setting aside the time for regular, structured reflection takes effort. A common lament from the students at the beginning of the term was that they felt that they needed a more “assignment deadline” structure to force themselves to take time to reflect and write on a pre-defined schedule. Over time, the students came to realize that reflection deadlines would reinforce writing for someone else, such as a grader, as opposed to the goal of reflecting for their own benefit and learning. A hallmark of life-long learning is to do the learning for ourselves.

The structure of the reflection needs to be flexible for the person doing the reflection. Some may want to write to a computer screen, others want pen and paper, others may want to walk & talk to their phones and voice record, while still others reflect in community with peers, either informally or video-recorded. Student insights caution against the in-the-moment efficiency of doing voice recordings or video to capture reflection versus the time required to try to isolate specific reflections to use as evidence within their final reflective report. As instructors, we concur that the flexibility of audio format seemed like a good idea at the start of the term until we found ourselves wading through hours of audio-recorded reflections to be able to put a student’s personal learning into context in order to assign a final course grade.

3.4. Learning Outcomes

We shouldn’t assume that Learning Outcomes (LOs) are understood and can be operationalized by students just because they read them and can make some minor wording edits. As instructors, are we thinking deeply about the wording and intention of LOs? LOs are tools for instructors; we are encouraged to put them in our course syllabi and to talk to students about them – but have you tried deploying them at the student level?

The SLICC model LOs are to force the student to focus on the process, not the product of the SLICC. It is the reflective process that helps develop lifelong learning and transferable skills, rather than the generation of discipline specific knowledge/content. Engineering students tend to be good at generating content knowledge and find reflecting on process challenging.

Adding to our cautionary insights we provide comments on assessing SLICCs for course credit. Waterloo Engineering courses are typically assigned numerical grades as percent. Even though each student’s SLICC was focused on student leadership, their individual experiences and interests had them pursue a variety of project formats. Student projects ranged from running a strategic planning session for a multi-faculty competition team to creating an online video channel for leadership discussions to creative

performance of leadership skills to writing advice for future leaders to writing advice for future selves, to help with surviving and thriving post-graduation. With such a range of leadership expressions the use of traditional grading schemes that essentially rate student performance relative to one another was not appropriate. Instead, we used categorical grading to consider each student's progression in demonstrating their ILOs over the term (e.g., Minimal, Good, Well Done, Excellent, Outstanding).

As is often done with categorical grading, at the end of the term the categories were converted to a numerical grade to be posted to the student's transcript. In theory, the SLICC emphasis on student-centered learning and reflection should nicely couple with the approach of "ungrading" whereby instructors provide feedback rather than grades throughout the term to promote lifelong learning skills over course credit gaming. [13]. Through happenstance we used a quasi-ungraded approach with GENE 415 as we were inclined to provide students with qualitative feedback and overlooked regularly updating the gradebook in the learning management system. Our impression was that as the students embraced reflecting and sharing their leadership experiences, the less concerned they were as to whether grades were posted. The next iteration of GENE 415 will consider more purposeful adoption of ungrading approaches coupled with assessment collaboration with each student.

3.5. Software

PebblePad was used as the software for implementing the SLICC workbooks and reflection blogs, based on the templates generously shared by UofE. One of the instructors was quite familiar with the PebblePad package while the other was very new to the software package. The majority of the students taking the course had never used PebblePad but were familiar with many other software packages after having completed nearly two years of remote learning due to the COVID-19 pandemic.

The time up front to consider the set-up details (e.g., reflections done in blog format makes periodic feedback nearly impossible) and training to ensure that everyone is comfortable with new tools are a good use of everyone's time.

4. CONCLUSIONS

While the SLICC experience was not executed flawlessly, both students and instructors benefited from the learning journey together. Each student finished up the term with deeper insights into their skills and personal development gained through their leadership experiences, and a better appreciation of the value of reflective practice. As co-instructors, we gained insights into the SLICC framework as a positive approach for allowing students to gain course credit through leveraging their lived student

leadership experiences, and we better appreciated conversation as a team to openly discuss how our SLICC learning journey was going. As a community of learners, we valued the importance of trust and creation of safe space for sharing deeply personal reflections on self-growth. Doing or teaching SLICC solo would be a lonelier journey compared to our community effort.

Acknowledgements

The authors wish to thank the University of Waterloo LITE grant and the participants in the pilot offering of this GENE 415 course.

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