THE PROVOST AWARDS FOR EXCELLENCE IN TEACHING DESIGN AND PRACTICE

Nomination Package for Jessica Gemella

Faculty: Trades and Applied Technology

Dean: Glynis Steen

Associate Dean: Jessie Magee-Chalmers

Nominator: Sally Vinden

Supporters: Jessie Magee-Chalmers, Kathleen Bortolin, Victoria Lake, Bianca van der Stoel, and Madeline Clarke

Award: #4 Teaching and Design Practice that Employs Experiential Learning

Nomination Package submitted via email to teachingawards@viu.ca

JESSICA GEMELLA

STATEMENT OF TEACHING PHILOSOPHY

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STATEMENT OF TEACHING PHILOSOPHY

The value that guides my teaching philosophy is a belief that a teacher's key role is to support students to meet their goals. I believe that good teaching prepares students with the skills and knowledge for employment and lifelong learning. Good teachers are; collaborative, inclusive, responsive, open to continuous learning, innovative, good listeners and question askers, and bring passion and creativity to motivate students.

I teach in the Horticulture Program at Vancouver Island University (VIU). In general, horticulture students seek hands-on, real-world learning to earn a credential and employment. A common student goal is to live holistically; to nurture themselves, their community, and the natural environment. These student goals, along with my background as a landscape architect (environmental design consultant), inform my teaching practice. I aim to connect students with nature and reveal the vital role horticulturalists can play in conservation ecology. My assignments and class activities are designed to observe and experience landscapes. For example, I created Project Gnome to encourage students to go outdoors and experience plants in their environment. In the horticulture program, students are required to identify over a hundred plants. Project Gnome starts by students crafting their own unique garden gnome, and then they hunt for plants in the community. The gnome is used to authenticate the experience with photos. Students place their gnome next to the plants they are describing to show they have found that plant themselves. Learning through doing is a common theme in my teaching.

Environmental sustainability is also a central value in my teaching practice. I think a team approach is essential in solving environmental challenges because of the complexities. As expressed by Dr Temple Grandin, professor of animal science at Colorado State University, "we maximize innovation and success by embracing diversity of thought and approach" (Grandin, 2018). I employ a wide variety of teaching strategies to encourage learners to collaborate, share ideas and learn from each other. Pass-the-problem is one strategy that encourages small group discussions to solve scenarios and case studies. Other examples of team strategies I use are poster sessions, peer teaching, and mind mapping. Groups solve problems and evaluate solutions developed by their class colleagues.

More recently, I sought out team-based learning (TBL) to expand my teaching toolkit and enhance teamwork. I selected a soil science class to redesign with TBL. The approach prepared students to practice problem-solving, then make and defend their decisions. In-class activities included nutrient deficiency experiments so that students could observe how plants display deficiencies. Students transferred and applied the experience gained in soils to other horticulture initiatives, for example growing poinsettias in the greenhouse. They diagnosed deficiencies and adapted greenhouse growing strategies to grow a healthy crop.

I am continually looking for experiential ways for students to learn. Team and project-based teaching approaches provide memorable experiences and prepare students for lifelong learning and growth after graduation.

National Aeronautics and Space Administration Page (2018, Aug. 24). *Temple Grandin – Helping Different Kinds of Minds Solve Problems.* Retrieved from https://www.nasa.gov/ames/ocs/2015-summer-series/temple-grandin

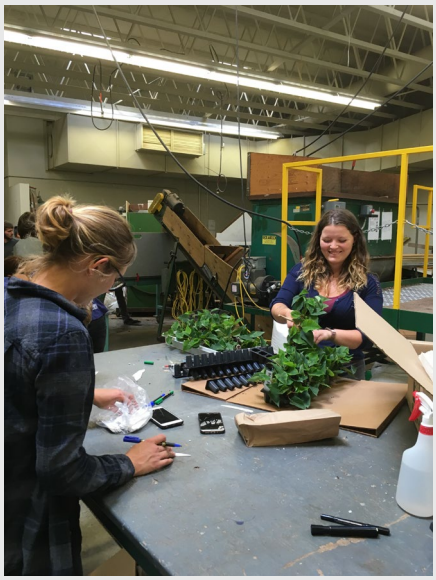
JESSICA GEMELLA

TEACHING AND PRACTICE NARRATIVE

JESSICA GEMELLA

POINSETTIA PROJECT

Crop planning.



Receiving rooted poinsettia cuttings in August.

TEACHING CONTEXT

The Centre for Innovation and Excellent in Learning (CIEL) partnered with the Faculty of Trades and Applied Technology on a project to enhance teaching and learning in VIU's trades programs. Horticulture embarked on the enhancement project in the fall of 2017 under the guidance of Kathleen Bortolin, Curriculum, Teaching and Learning Specialist, Marilyn Funk, Educator Developer, and Sally Vinden, Trades faculty member. The enhancement project was a remarkable opportunity to work collaboratively to revitalize curriculum, refresh teaching strategies, and create conditions for growth.

The Poinsettia Project evolved as a program enhancement initiative. The project was designed to extend over the entire eighteen-week semester as a student-centred authentic learning experience. Essentially, student teams would apply knowledge and practices from the first semester, to manage the production of a greenhouse poinsettia crop.

PROJECT BASED LEARNING

"Project-Based Learning is a student-driven, teacher-facilitated approach to learning" (Mills and Treagust, 2003). According to Bell (2010), student projects have many benefits.

- Student choice is a vital element of this approach.
- The project is the basis for the curriculum.
- Students solve real-world problems.
- Learners gain self-reliance through planning and organizing.
- Social learning enhances collaboration skills.
- Differentiation provides intrinsic motivation.
- Assignment design enhances creativity.

Mills, J. & Treagust, D. (2003). *Engineering Education Is Problem-Based or Project-Base Learning the Answer, Australian* Journal of Engineering Education.

Bell, S. (2010). *Project-Based Learning for the 21st Century: Skills for the Future.* The Clearing House, 83:2, 39-43.

POINSETTIA PROJECT

Planting rooted cuttings.

Crop monitoring.

Weekly coordination meeting.

BEFORE

Poinsettias have been grown by the VIU Horticulture program for more than twenty years. I began working in the department in 2014, teaching one course per semester, building to a fulltime role as Instructor and Chair by 2017. During my three beginning years, I observed limited student involvement in greenhouse growing.

Students wrote a poinsettia crops productions plan in the first semester without connection to the actual crop growing in the following semester. Instructors and support staff lectured, demonstrated, and planned all aspects of greenhouse activities. Students played a supporting role by repeating assigned tasks. Students expressed curiosity and a desire to be more involved in the greenhouses. Some staff felt that student involvement would negatively impact crop revenue, and that reduced crop quality would reflect poorly on the department.

It was time to re-assess program outcomes and teaching approaches. What was the purpose of greenhouse growing? What strategies support student learning and growth?

PROJECT DESIGN

The poinsettia project description is as follows.

> Students learn how to design and execute a crop growing program, and all that is involved in seeing that crop from an early stage until sales. Students will work in small groups, beginning the project when poinsettias are rooted but haven't developed fully. Students will follow the crop until sales.

POINSETTIA PROJECT

Installing irrigation system.

Pinching growing tips to control growth.

LEARNING OUTCOMES

By the end of this project, students will be able to:

- Plan, monitor, and support a greenhouse crop from the beginning (from rooted cuttings) until the end (selling).
- Recognize the possible effects of a variety of negative and positive variables on the cycles and the growth of plants in a greenhouse setting.
- Create a detailed crop schedule and utilize it throughout the growing cycles of poinsettias.
- Recognize the markers that exist between various cycles and apply various skills and techniques at key moments in those cycles.
- Reflect on significant moments of learning within this project.
- Analyze a variety of marketing and selling techniques and contribute to a class-wide sales strategy.

ASSESSMENT

There are five components of this project for assessment:

- Production schedule and a crop growers record (40%)
- Sales Strategy (10%)
- Integrated pest-management program (20%)
- Self-assessment (10%): co-created with students
- Group-assessment (10%): co-created with students
- Capstone presentation (reflection) (10%)

POINSETTIA PROJECT

Managing the greenhouse environment with Argus computer system controls.

Student created poster.

ASSESSMENT (continued)

Capstone Presentation

Each group gives an informal, five to ten-minute presentation to the class. Groups reflect on the most significant part of the project for them. Groups may pick one or more significant learning moment to discuss. Over the course of the project, what surprised you? What was your biggest challenge? What did you enjoy the most? What would you change or have done differently if you had the chance? Groups reflect on what was most interesting or challenging or significant during this project.

RESULTS

The Poinsettia Project design provides choice, simulates industry practices, enhances collaboration, fosters self-reliance and problem-solving skills. Essential skills such as document use, communications and digital skills are also embedded. Students researched poinsettia varieties and market trends to select types, colours, and sizes before growing. Students initiated the greenhouse sanitation before summer break so that the greenhouse would be ready for their fall crop. These early activities establish buy-in and motivation from the start. Many students chose to return to school early to receive the shipment of poinsettia cuttings in August. This voluntary work is evidence of engagement; students want to be involved in all aspects of the growing experience.

The first year (2018), I felt that the teaching and learning space had doubled. The greenhouse became an extension of our classrooms. The learning experiences were student-led and personalized — the questions and experimentation energizing for everyone involved. There were a few problems along the way which provided the opportunity for students to practice collaborative problem-solving. For example, the poinsettia cuttings arrived more than a week late, meaning students had to negotiate how they would manipulate the greenhouse environment to speed plant growth to meet the sale deadline. This type of problem-solving experience is transferable to future work in all aspects of the horticulture industry.

POINSETTIA PROJECT

Social media.

Sales day at the VIU Welcome Centre.

RESULTS (continued)

Another challenge was creating the conditions for red bract develop. This process requires many weeks of long nights of uninterrupted darkness using black curtains in the greenhouse. The curtains were left open a few nights, so this further delayed crop development. As a result, poinsettias were not ready for some pre-ordered sales. Poinsettias were ordered-in from a local grower to fill the first orders. In the end, we had an excess of plants. Students opted to donate, adding community giving to the project. Teams donated to the Nanaimo Hospital Palliative Care and Nanaimo Seniors Village.

In the subsequent year (2019), community giving was incorporated into the project. By the second-year student, creativity bloomed. There was increased interest in marketing, including a social media campaign, poster design, display design for sales, and the design of team T-shirts. In the first two years, crop revenue, quality, and student experience have all improved. In sum, here is what students said about the project.

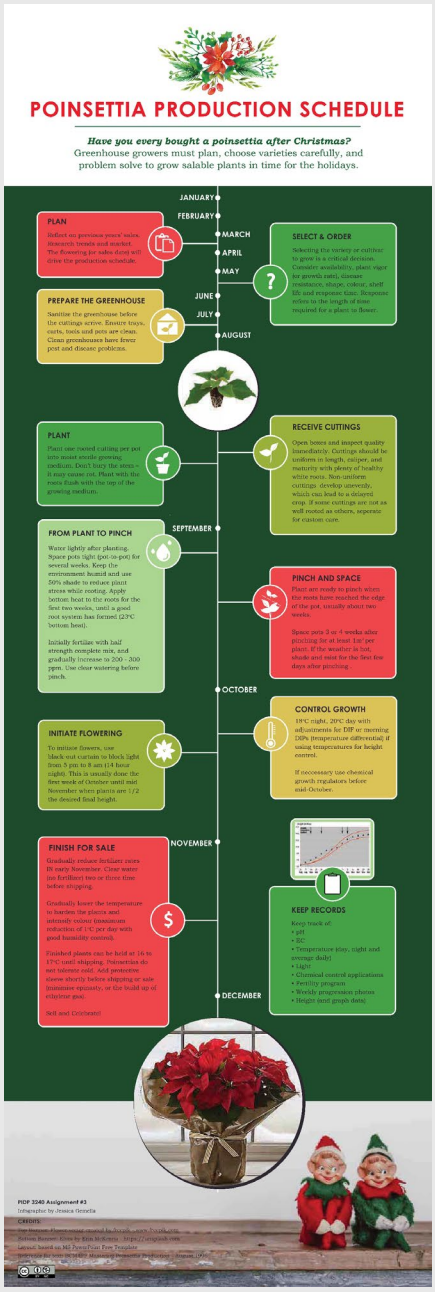
> "Students know that faculty are working on changing assignments/assessments/teaching strategies and appreciate their willingness to make things better".

> "Nice to apply all of the skills learned in one project".

> "I've never seen such clear evaluation; you basically can't fail unless you don't complete".

> "Learned supervision, planning, communications, compromise, collaborate, realistic – everything we learned in class was in the project".

POINSETTIA PROJECT



This infographic was created to keep the project on track. I made this poster as part of a Vancouver Community College Media Course (Provincial Instructor Diploma Program).

PODCAST

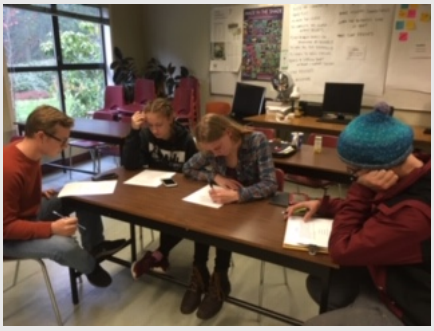
To learn more about the Poinsettia Project, I invite you to listen to the podcast **Pedagogy of the Poinsettia: Teaching and Learning in VIU's Horticulture Program.** The podcast is hosted on The Share Drive: A Teaching and Learning Podcast for Vancouver Island University by the Centre for Innovation and Excellence in Learning. **See https://wordpress.viu.ca/ciel/.**

> "In this third episode of the Share Drive, I talk to Jessica Gemella from VIU's Horticulture Program. Jessica and I (along with Marilyn Funk and Sally Vinden) have been working on a curriculum enhancement project over the last two years, resulting in a number of changes to the Horticulture program. I talk with Jessica about her reflections on some of these changes, paying particular attention to assessment, professionalism, teamwork, and something I'm calling *Pedagogy of the Poinsettia*. We also talk a little bit about garden gnomes and something her students are calling *proplifting*" (Bortolin, 2020).

Bortolin, K. (2020). *Learning Design for Deep Learning.* https://wordpress.viu.ca/ciel/

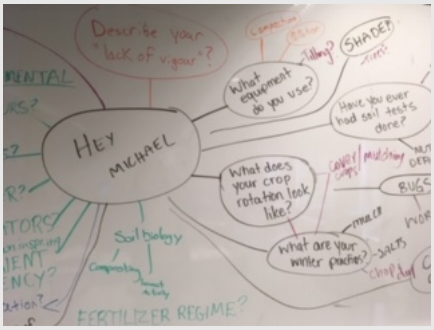
JESSICA GEMELLA

EXPERIENCING SOIL SCIENCE



Students take an individual readiness test followed by a team test.

Application activity example, diagnosing nutrient deficiencies.



Activity wrap-up with mini lecture and student summary activity.

TEACHING CONTEXT

I teach in VIU's one-year certificate Horticulture program. Classes are relatively small with a maximum of twenty-two students. The BC Industry Training Authority provides program outlines for horticulture programs as part of an apprenticeship path. In August of 2019, I participated in the Vancouver Island Team Based (TBL) Learning Institute workshop, and immediately implemented the approach by re-designing a Soil Science course.

TEAM BASED LEARNING (TBL)

TBL combines small group learning with a flipped classroom approach. Students are assigned preparatory materials (chapters, articles, videos, etc.) to learn basic content on their own. The course is chunked into modules, with a readiness assurance test completed by individuals at the start of each module. Then the same test is completed by the team using a scratch card to reveal answers and provide immediate feedback. With prepared students, class time is freed-up for problem solving and hands-on application. Most of the class time is spent on team application activities where students learn how to apply course concepts through questions and discussion. This process uses a framework called 4**S**; teams work on a **S**ignificant problem, all teams have the **S**ame problem, questions impose **S**pecific choice, and all teams then **S**imultaneously report conclusions (Sibley and Ostafichuk, 2014). "During these application activities, you get to see the true power of TBL and the flipped classroom when teams are making decisions, publicly committing to them, and then deeply discussing their decisions" (Sibley and Ostafichuk, 2014).

Sibley, J. & Ostafichuk, P. (2014). *Getting Started with Team-Based Learning* Sterling, VA: Stylus.

EXPERIENCING SOIL SCIENCE

Nutrient deficiency experiment on poinsettias.

Nutrient deficiency experiment, comparing growth rates.

Nutrient deficiency experiment, analyzing root development.

APPROACH BEFORE TBL

Before I tried team-based learning strategies, I was using a variety of teaching engagement techniques such as:

- Carrying out student questionnaires (background knowledge probes) to assess prior knowledge and estimate a starting point for instruction.
- Providing artefacts such as plants, soil samples, and images, for students to discuss, respond to questions, and report findings back to the class.
- Setting up stations with objects, short readings and or images, where students complete worksheets and discuss options and problems.
- Using games, for example, Jeopardy, Quizlet and Kahoot, primarily for review sessions.
- Presenting classifying activities using grids or charts to facilitate understanding of classification systems.
- Using cognitive maps or mind maps for students to represent course concepts and associations graphically.
- Planning poster sessions for students to engage in a project, summarize and share their learning.
- Facilitating debates about topics that are relevant to the course topics. The class prepares through lecture, reading, and discussion. Following the talks, students summarize essential issues with the whole group.
- Developing scenarios and case studies for group discussion (pass-the-problem or send-the –problem). Groups solve problems and evaluate solutions developed by other class groups.
- Providing opportunities for students to learn by teaching their peers using a ‘Jigsaw’ strategy.
- Creating team projects and coordinating field trips to provide students with hands-on experiences.

EXPERIENCING SOIL SCIENCE

Varied soil texture testing techniques for analysis.

APPROACH BEFORE TBL (continued)

The teaching strategies I found most successful were using artefacts, classifying grids, games, cognitive maps, stations and poster sessions, with mini-lectures to introduce activities and summarize critical points with the whole class. The main challenges I faced were related to pre-class reading and team accountability. Many students appeared to be unmotivated to read and came to class unprepared, making it difficult to move to related activities. I observed a lack of connection between class activities and course readings. For example, reading about soils testing did not lead to readiness to do and interpret soil tests. Also, I observed challenging team dynamics. During group work, some students had passive roles, while others led conversations and completed tasks – some feeling excluded and others resentful.

My general desire to improve my teaching skills and diversify my strategies brought me to TBL. More specifically, I am interested in enhancing team behaviour and performance because I have introduced more team projects to the horticulture program in recent years. I felt there was more potential to create inspirational class experiences and transferable skills for application after graduation. I was looking for strategies to motivate students to prepare, to read, and to apply concepts to hands-on activities and problem solving. And, I intend to better prepare students for the Industry Training Authority (ITA) tests (taken at the end of the one-year program). In sum, my aim in adopting TBL was to develop student confidence, content relevance, problem-solving skills and improved teamwork.

JESSICA GEMELLA

EXPERIENCING SOIL SCIENCE

Nutrient deficiency experiment with vegetable seedlings.

RATIONALE

I selected a Soil Science course for TBL because of the timing and content.

1) Timing

The class occurs in the second half of the program, so students have some experience being post-secondary students and are likely more ready for the challenge. Because the horticulture program has a small cohort of students, there can be some collaborative fatigue, particularly by the second semester (students have all classes together, Monday to Friday from 9 am to 4 pm for two eighteen-week semesters). I thought TBL was an opportunity to review how we were working together. I designed for more motivation, collaboration and accountability.

2) Content

Soils are foundational to the study of horticulture, and there are many opportunities for applied activities involving predictions, processes, interpretations, and to make recommendations. There is significant technical content to cover, making reading relevant to this class. Soil is also fundamental in environmental health, so TBL activities could provide opportunities to connect horticulture with far-reaching significant global issues.

COURSE REDESIGN

The course redesigned chunked course content into modules. Each module followed the TBL approach with the addition of experiential, hands-on activities (or labs) after concept application discussion activities. For example, after readiness tests and learning activities to diagnose plant nutrient deficiencies, we experience the diagnosis process through nutrient deficiency experiments in the greenhouse.

EXPERIENCING SOIL SCIENCE

Students actively involved in constructing experiments, analyzing data, and applying concepts.

REFLECTIONS AND FEEDBACK

It was challenging to assemble suitable readings within the time frame I had to prepare for the course. As a trade program, there is an Industry Training Authority program outline and associated student manual. The manual introduces basic theory but is not well suited to discussions and making the connection to broader environmental context. I sought out more thought-provoking readings to connect with environmentally sustainability themes and ecological principles related to the study and practices of soil conservation.

In the beginning, a few students were disappointed to hear the class was going to be a team-based approach, exclaiming "not more group work". Early on, some competitive attitudes were revealed with a lengthy discussion about how teamwork might affect their grades. High performing students anticipated others will drag down their grade. One student wanted to scrutinize the first readiness test, and another requested to change teams after just a few classes. Overall, the group was curious, supportive and appreciative that I shared my intentions to improve teaching and learning.

My confidence as a facilitator was a challenge. I felt awkward during the first couple of application activities. It took awareness not to involve myself in class questions and discussions. I adapted by taking notes which gave me focus on facilitating wrap-up discussions. Following the advice of the TBL leaders, I remained calm and carried on.

By the second class, students were gently encouraging team members to prepare, be on time and participate. By the third module, the tone of the class was transformed. Students arrived with anticipation about what the class activities would be. A student that had expressed many concerns at the start announced: "I can't believe I'm saying this, but we really are better together "(referring to higher team scores than individual test scores).

Symptoms of over-fertilizing.

Students practice observation skills as an essential part of identifying problems.

REFLECTIONS AND FEEDBACK (continued)

I observed more initiative during hands-on lab time following TBL discussions. Students had a better idea of what to do after reading, practising how to apply concepts through team discussions, and then implementing the practice or new skill. For example, students could discern appropriate soil collection methods for specific soil tests.

The CIEL (VIU's Centre for Innovation and Excellence in Learning) gathered course feedback partway through the semester. Student responses were positively affirming. Following are a few excerpts from the feedback report.

- 100% strongly agree or agree – Teamwork contributes to my learning in this course.
- 100% strongly agree or agree – I am gaining a good understanding of key concepts and principles.
- 100% strongly agree or agree – I am learning to apply concepts and principles from this course to new situations.
- 100% strongly agree or agree – Instructor inspires interest in the course material.
- 100% strongly agree or agree – Instructor develops an atmosphere of respect and trust in the classroom.

Some student responses to the question
What is the most important thing you learned in the course?

"The group discussion let me listen to other people's interpretation of the subject material and gain new insight on it."

"How to apply what we've learned to real experiences and to ask questions."

"All things soil! How to diagnose and think about solutions for a soil problem."

JESSICA GEMELLA

EXPERIENCING SOIL SCIENCE

Selecting testing equipment in the soil lab.

Applying soil science concepts to other class including poinsettia crop production and landscape design.

SUMMARY

Top teaching takeaways for me are:

- Providing context for class readings, motivates students and fosters readiness.
- Use teams properly. That is teamwork is best done during class time as a foundation for respectful communications and setting realistic expectations. As well, assignments must be suited to team learning activities requiring input from all. It is not logical to provide tasks, like report writing, that could be done alone.
- Making the accountability structure known is important with systematic feedback. Students and teachers likely have all had lousy team experiences.
- Structuring activities to advance students in deciding within a given time has changed my classroom experiences. The application activities are structured to take the conversation to a deeper level because teams must reach a decision, then substantiate their decisions.

Students were able to apply the experiences to other program projects (such as landscape design and poinsettia crop production). And the course was fun. The session wrapped up with a vigorous debate; Can potatoes be grown on Mars? The question provided students with the opportunity to reflect on all the course concepts and apply to another context. One debate team reached out to the Canadian Space Station to prepare – their level of initiative was out of this world.

Moving forward, I will continue to use team-based learning practices in all my classes to create opportunities to practice teamwork, learn problem-solving and gain confidence through substantiated decision making.

JESSICA GEMELLA

EDUCATIONAL LEADERSHIP

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The Centre for Innovation and Excellent in Learning (CIEL) partnered with the Faculty of Trades and Applied Technology on a project to enhance teaching and learning in VIU's trades programs. Horticulture embarked on the enhancement project in the fall of 2017 under the guidance of Kathleen Bortolin, Curriculum, Teaching and Learning Specialist, Marilyn Funk, Educator Developer, and Sally Vinden, Trades faculty member. The enhancement project initiated change as I took a new role as the Chair of Horticulture.

As chair, I led the implementation of the following enhancements. I improved the use of educational technologies. For example, I supported the transition of department-wide use of VIULearn (VIU's online learning management system). Previously, I was the only instructor using VIULearn in the department. I led by example and made time to show instructors how to start, and then connected them with more learning resources. I also worked with IT to set up a department shared drive so that the faculty can share resources. I role modelled sharing and added lesson plans, course outlines, manuals, etc. for department-wide use. All course outlines, assignment rubrics and more are now available on the shared drive and have led to better coordination and efficiencies.

I motivated the instructional team to co-design and re-design courses by meeting regularly to facilitate department goal setting and reflection. Together we developed a routine of check-ins to share ideas, support each other, celebrate successes, and adapt our strategies when needed. In addition to team consultations, I supported instructors with one-on-one sessions to nurture openness and trust. To alleviate fear about program changes, I sought the support of the department Dean, Glynis Steen, and Associate Dean, Jessie Magee Chalmers. I also led discussions to identify risks, brainstorm strategies to mitigate risks and encouraged the instructional team to become part of the change process. I demonstrated a positive open attitude and advocated for improved student experience.

My educational leadership extends beyond the Horticulture department. I shared my program enhancement experience by presenting at the 2019 Trades and Applied Technology Faculty meeting, and at the 2019 National Council of Deans of Apprenticeship, Trades and Technology (NCDATT) with the CIEL Enhancement Project team. Since 2018 I have been a member of VIU's Council on Learning and Teaching Excellence. The role of the Council is to expand the culture of teaching and learning. In 2018 I was part of a team working to raise awareness of graduate attributes. Currently, I am working with a council team on workshops to promote open learning and resources. Most recently, I participated in a podcast hosted by Kathleen Bortolin (CIEL) to talk about my reflections on curriculum enhancement and changes to the Horticulture program. The podcast is available on The Share Drive: A Teaching and Learning Podcast for Vancouver Island University at https://wordpress.viu.ca/ciel/.

EDUCATIONAL LEADERSHIP

ADDITIONAL INITIATIVES

Ongoing VIU Committee Involvement

- 2017 – 2020 Trades and Applied Technology Deans and Chairs Faculty Council
  Supporting students with a positive learning environment, hands-on training, job-ready skills, and career success.

- 2017 – 2020 Milner Gardens Education Committee
  Providing learning opportunities for students and the public.

- 2019 – 2020 Trades and Applied Technology Marketing Committee (ad hoc)
  Providing resources for the TAT Faculty and Department Chairs to assist in creating ongoing demand for programs.

- 2019 Trades and Applied Technology Practicum Placement Committee (ad hoc)
  Improving student work placement experiences, processes, and documents.

Community Work

- 2019 – 2020 Create Conference
  Supporting several horticulture students to participate in conference poster sessions.

- 2017 – 2020 BC Horticulture Articulation Committee
  Developing program objectives, entry requirements, evaluation, textbooks, resources, transfer guidelines, and cooperation among teachers.

- 2016 Friends of the Mine Historic Society
  Facilitating a student landscape design project for a monument to miners.

- 2015 Habitat for Humanity
  Supporting a student landscape design project for multi-housing.