Lakehead UNIVERSITY Teaching Commons

EXPERIENCE | ACTION | TRANSFORMATION

INTRODUCTION

Since this is the last issue of the Teaching Commons's newsletter for the academic year, we wanted to end with a YOCA-related topic. March 22 is World Water Day, its theme being "Ground Water – Making the Invisible Visible." As "Groundwater is invisible, but its impact is visible everywhere" (UN website), so too, is teaching; while the hard work of teaching is largely invisible, its impact is very visible in our students' lives, learning, experiences, and transformative effects in the world.

YOCA YEAR OF CLIMATE ACTION
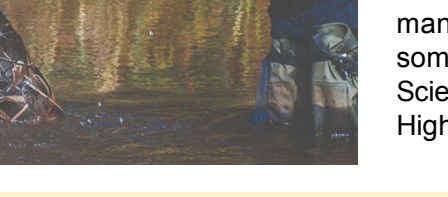
Groundwater:
making the
invisible visible
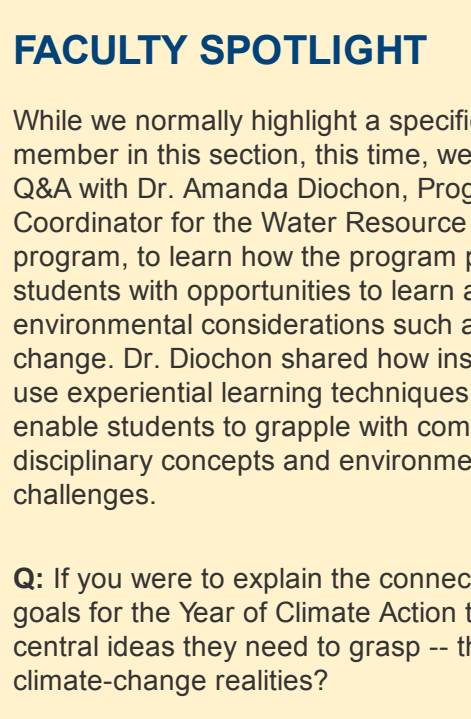
STRATEGIC SPOTLIGHT

In 2019, Lakehead launched its Academic Plan with four of the eleven strategies centring actions that focus on experiential learning. The goal is to have 100% of all senior students have an experiential learning opportunity by the end of the academic plan in 2024 — a completely achievable goal given the commitment of our instructors to student learning at Lakehead University. Experiential learning embraces many approaches, and in this issue we showcase the strategies used in the Water Resource Science program, which are further discussed in our High Impact Practices section.

FACULTY SPOTLIGHT

While we normally highlight a specific faculty member in this section, this time, we chose a Q&A with Dr. Amanda Diochon, Program Coordinator for the Water Resource Science program, to learn how the program provides students with opportunities to learn about environmental considerations such as climate change. Dr. Diochon shared how instructors use experiential learning techniques to enable students to grapple with complex disciplinary concepts and environmental challenges.
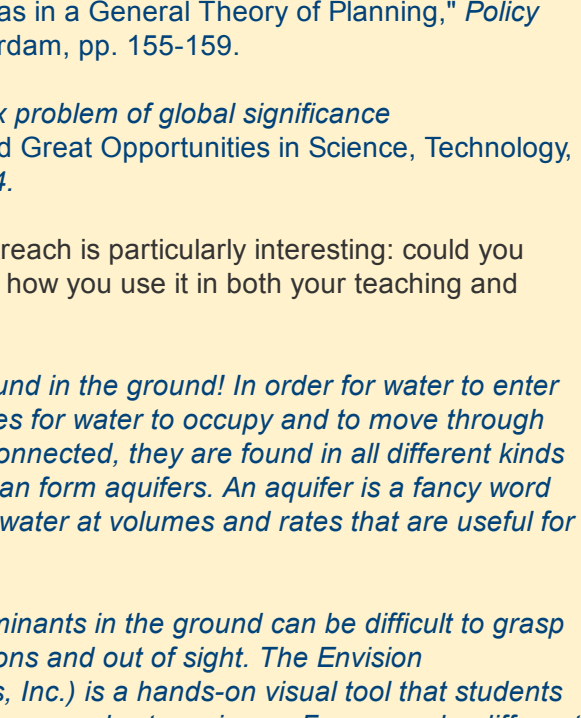
Q: If you were to explain the connection between Water Resource Science and Lakehead's goals for the Year of Climate Action to a "non-science" person, what would you say are the central ideas they need to grasp, in what s(re is this should they understand about climate change realities?

A: Climate change is a "wicked problem," and climate action is a "grand challenge."[1] It can be overwhelming for developing an action plan with specific, measurable, relevant, and time-bound (SMART) goals, like what Lakehead's Climate Action Working Group has done this past year and that a first step is focusing on increasing awareness amongst an interdisciplinary weather events and changing precipitation patterns are impacting the structure and function of all systems, natural and constructed, in my research and teaching practice, I've been focusing on adaptation strategies and building resilience in the context of climate change.

[1] complex problem with an unknown number of potential solutions (Ritter and Webber 1973)

Ritter, Horst and Marvin Webber (1973) "Dilemmas in a General Theory of Planning," Policy Sciences 4, Elsevier Scientific Publishing, Amsterdam, pp. 155-159.

[2] opportunity to develop solutions for a complex problem of global significance

Omann, Gilbert S. (2009) "Grand Challenges and Great Opportunities in Science, Technology, and Public Policy," Science 314:2806: 1696–1704.

Q: Your groundwater model for teaching and outreach is particularly interesting; could you describe this model, how it was constructed, and how you use it in both your teaching and outreach?

A: Groundwater is, quite literally, water that is found in the ground! In order for water to enter the ground, there needs to be openings or spaces for water to occupy and to move through the ground. These spaces or voids need to be connected, they are found in all different kinds of materials (soils, sediments, rocks), and they can form aquifers. An aquifer is a fancy word for a unit of material that can store and transmit water at volumes and rates that are useful for us.

Concepts related to the flow of water and contaminants in the ground can be difficult to grasp because they are happening in multiple dimensions and out of sight. The Envision Groundwater Flow Simulator (Creative Labworks, Inc.) is a hands-on visual tool that students can interact with to better understand concepts in groundwater science. For example, different materials and aquifers. There is water with "drilled" into different materials, and there is even an underground storage tank and septic tank to visualize contamination of ground and surface waters. Using the model, students can see how water moves through the ground (usually upwards) to areas of discharge (usually rivers or lakes) and what happens when we disrupt the gradient of flow. It's a fantastic tool to try on a hot day!

Q: You sampled the groundwater wells at Confederation College as part of the field school. This seems to be a perfect example of experiential education, one of the areas of emphasis that Lakehead strives to provide. What other hands-on, water-focused learning opportunities are provided for students through their Water Resource Science studies?

A: Water Resource Science is an interdisciplinary program that exposes students to a broad range of concepts and issues ranging from the impact development to visualizing and interpreting ancient groundwater environments to looking at sequences of sedimentary rocks.

Students in the program take most of their courses in Geology, Biology, and Geography, but there is quite a bit of choice in the course selection. Most of these courses have a lab component, which allows students to deepen their practical understanding and apply what they are learning in the course. The labs may be completed in the field, in an actual lab on campus, or virtual field trips. For instance, one of our second-year field courses enables students to learn through the lecture by working with fish specimens in the lab. Identifying fish in the field is a unique skill that can only be honed through experience. In the field school, students also go hand-to-complete modules in the Ontario Stream Assessment Protocol and gain the fundamental knowledge for becoming certified in the Ontario Benthos Biomonitoring Network (OBBN), both important tools for assessing stream health.

There is also no shortage of projects that students can get involved in through the Remedial Action Program, headed by Dr Rob Stewart. As well, students have the opportunity to get involved in a co-op or internship placement. We also offer a program in collaboration with Confederation College as part of their undergraduate thesis projects. We also offer a program in collaboration with Confederation College where students complete the second year at the Environmental Technician program. During their year at the College, they run our tests in a state-of-the-art pilot water treatment plant and sample the water in nearby rivers and lakes for contaminants. Upon returning to Lakehead, students pick up where they left off in the WRS curriculum. It's a fantastic way to spend a few years and experience different types of opportunities without even leaving campus.

Q: Could you describe the "soil comprehensive real-life laboratory" that the Water Resource Science students have access to for hands-on learning on campus? How does this space provide valuable and practical knowledge about environmental factors?

A: Lake Tamblyn and the MacIntyre River are literally right outside the door of the Centennial Building and are natural laboratories that faculty take advantage of to provide students with hands-on, engaging, learning activities. There is also a rain garden outside of the Braun Building, which is an excellent example of what we can do to slow the flow of water and improve its quality in urban areas.
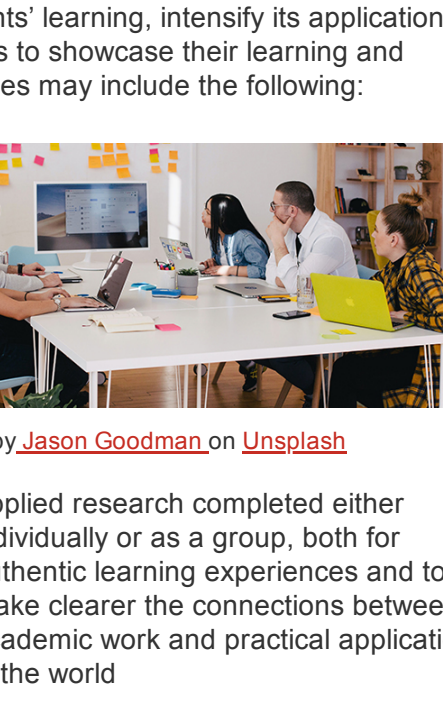
Precipitation that falls in urban environments usually makes its way to rivers more quickly than in undeveloped areas because water just runs off the hard surfaces like pavement and buildings. There are also lots of contaminants in urban areas that are transported to rivers too. Rain gardens and low-impact developments are helping to slow the flow and naturally filter out contaminants. Just down the road, the groundwater monitoring wells at Confederation College can be used to look at how different geologic materials affect water flow and water quality.

There really are an unlimited number of questions that we can ask and students can answer about these water systems, all within walking distance of our facilities. We have the capacity to identify the organisms that live in these systems, ranging from microscopic ones right up to fishes, turtles, and mammals. We can measure and monitor water flow and chemistry among other factors, and are able to explore connections between different types of opportunities without even leaving campus.

INDIGENOUS SPOTLIGHT

"We know where we came from, the waters of our mother. The sacred life-giving force continues along our roots, right at the shores of the Great Lakes and announces the birth of our future ancestors."

WATER IS LIFE
PROTECT THE SACRED

World Water Day has been held each year on March 22 since 1993 with a focus on fresh water. According to the United Nations, the "commemoration is about taking action to help achievement of Sustainable Development Goal 6: water and sanitation for all by 2030."* This year we recall many worldwide Indigenous Water protectors that do not have safe drinking water, and the federal government estimates that, at any point in the past two years, up to 20% of First Nations water advisories in place since 1995 in Neskantaga First Nation. The Semiahmoo First Nation recently had a 16-year boil water advisory lifted in January 2022, and several incremental steps have been taken, more than 100 long-term drinking water advisories are still in place at various First Nations communities across Canada. This land is a reminder of this inequities by learning about, and telling others why this is still happening in 2022 in this country we call Canada. Everyone has the right to access clean drinking water. Learn more about the water crisis affecting Anishinaabeg and Oshkegwiig Ziibii Anishinabemowin and Learning First Nation as she shares her story called Nibi Water Advisory.

*"Optimum Usada (2017, August 7) Nibi 6 the Ground/Worldview

TECH-ENABLED FOCUS

myReadings: Use the New D2L Extension to Easily Create a Student-centered Reading List

There is no one size that fits all when it comes to reading lists. Some reading lists may contain one central text, while others are a combination of articles, books, and other forms of electronic content (such as videos, and websites). No matter the content for reading list, a student's level and engagement with readings can be challenging!

myReadings is a dynamic new tool that aims to decrease barriers to access and drive engagement with materials in your reading list. Embedded directly into D2L, myReadings offers you the ability to curate and modify reading lists to fit your pedagogy and learning objectives.

Easily Control to Your List
myReadings provides a number of options for uploading content to your list. Features such as the Library Hub Search to find and upload content out information and a stable link quickly into your list, whether your citation is a YouTube video or a textbook chapter and presented in a consistent way.

Full Citation Information
Students will often cite course readings in assignments or assessments, but they require full bibliometric information to do so properly. myReadings ensures that this information is captured and presented in a consistent way.
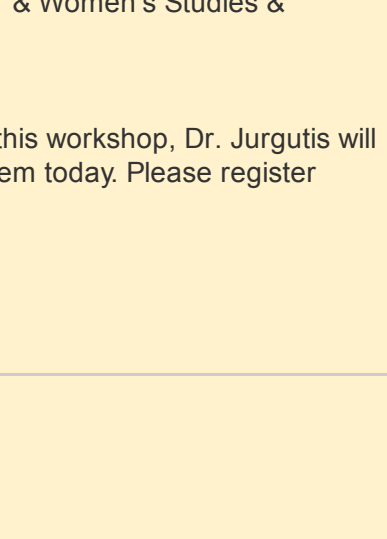
Student Engagement Features
Discussions, comments, and other student engagement features allow you to engage with students for each reading. Students can also "check" when they have completed a reading or easily report a broken link to instructors for quick repair. Consistent User Experience The courses that use myReadings, the more this consistent user experience will be true. With a user-centered interface, myReadings can provide a consistent reading list experience for students across their courses.

Ready to get started, or have more questions about myReadings? Check out our Library Guide or contact us!

FACULTY DEVELOPMENT SPOTLIGHT

Using Google for Collaboration, Presentation, Communication, and Organization

Kelly Brennan, Teaching Commons
March 29, 2022, 10:00 am - 11:30 am

Description: In this workshop, we will discuss some of the ways that we may use Google for our teaching and learning contexts. We will explore how we can use Google applications for teaching and how we might ask our students to use them for learning. By the end of this session, participants will be able to:

- Discuss the justification for a collaborative learning/teaching approach
- Re-introduce the "tried and true" applications of Google
- Demonstrate a variety of examples for use in class, online, or via a hybrid/blended case model

Please register through Lib.cal

Register Here

SoTL SPOTLIGHT

Dehkat, AM. (2020). Design Thinking Based Learning: A Teaching Guide. Mount Royal University, Bissett School of Business. Calgary: Alberta.

Overview: Creative commons licensed for use and publication, this guide supports the application of design thinking as an approach to experiential learning. The guide is based on a study that examined how design thinking practices might affect the development and resilience of a growth mindset and of future behaviours within an undergraduate learning community.

SoTL SPOTLIGHT

Liakos KG, Busato P, Moshou D, Pearson S, Bochtis D. Machine Learning in Agriculture: A Review. Sensors. 2018; 18(8):2674.
https://doi.org/10.3390/s18082674

Overview: "By applying machine learning to sensor data, farm management systems are evolving into real-time artificial intelligence enabled programs that provide rich recommendations and insights for farmer decision support and action." This paper outlines how machine learning (ML), when connected with big data technologies and high-performance computing, can create new opportunities to unravel, quantify, and understand data-intensive processes in agricultural operational environments. The overviewed algorithms take the Bibliography, with a featured section lists the advantages derived from the implementation of ML in agriculture, as well as the future expectations in the field.

HIGH IMPACT PRACTICE

High-impact practices (HIPs) embrace teaching strategies that effectively embed experiential learning opportunities within courses (e.g., see the newsletter's Faculty Spotlight on Dr. Amanda Diochon's WRS program insights). They key ways in which HIPs foster experiential learning are multiple, and there is no one "right" way to do it. Instructors may serve as experiential opportunities to deepen students' learning, intensify its application to real-world experiences, and/or provide a way for students to showcase their learning and commitment to future employers. Specific HIP opportunities may include the following:

- Individual or collaborative case study assignments as opportunities for students to apply their learning by working through complex, enacted real-world problems
- Interactive simulations or role-play activities to engage students with academic content designed to imitate real-world situations or workplace demands
- Individual or collaborative performances, exhibits, or demonstrations prepared for an audience
- Community or industry partnership projects designed to identify and analyze issues or opportunities and develop solutions within the community or with a particular company

- Applied research completed either individually or as a group, both for authentic learning purposes and to make clearer the connections between academic work and practical, real-world applications
- Portfolios to document and demonstrate students' acquired knowledge and accomplishments over the course of their degrees – evidence that students may leverage in their post-graduation job searches

For more information on how you might embed experiential learning opportunities in your classes, connect with the Teaching Commons or visit our website.

EVENTS CALENDAR

Challenging Conversations in the Classroom
Jonathan Enns, Administrative and Intake Officer, Human Rights & Equity
March 22, 2022, 10:30 am - 11:30 am or March 25, 1:00 pm - 2:30 pm

How to have difficult conversations with students on topics related to Racism, Sexism, Ableism, Homophobia/Transphobia.

Please register through Lib.cal

Register Here
Register for March 25, 2022

Respect, Relevance, Reciprocity, Responsibility: Lakehead University's Indigenous Content Requirement
Jarvi-Lynn Orr, Teaching Commons
March 24, 2022, 1:00 pm - 2:00 pm

This workshop will provide an opportunity for relationship building while hearing a short overview of the Indigenous Content Requirement at Lakehead University. A framework for interweaving Indigenous approaches into your curriculum and how the Indigenous Curriculum Specialist can support you in your work will be shared. There will also be time for a rich discussion and questions.

Please register through Lib.cal

Register Here

Using Google for Collaboration, Presentation, Communication, and Organization
Kelly Brennan, Teaching Commons
March 29, 2022, 10:00 am - 11:30 am

In this workshop, we will discuss some of the ways that we may use Google for our teaching and learning contexts. We will explore how we can use Google applications for teaching and how we might ask our students to use them for learning. By the end of this session, participants will be able to:

- Discuss the justification for a collaborative learning/teaching approach
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- Demonstrate a variety of examples for use in class, online, or via a hybrid/blended case model

Please register through Lib.cal

Register Here

Collaborative Learning during COVID: Lessons Learned
Wendy Fleres, Teaching Commons
Tuesday, March 29, 2022, 12:00 - 1:00 pm

The switch to online learning during COVID required adopting innovative ways to keep students engaged and learning. This workshop reviews the opportunities and challenges of collaborative learning, including peer editing and team exercises. Different tools and how they were used to accomplish learning objectives will be shared. We will explore how we carried forward into the post-COVID world.

Please register through Lib.cal

Register Here

Assessments of, for, and as Learning
Kelly Brennan, Teaching Commons
April 6, 2022, 10:00 am - 11:30 am

Course assessments are the means to measure and ascertain if students are achieving or able to demonstrate the desired learning outcomes. During this session, we will examine the different types of assessments and what types of teaching help to demonstrate. By the end of this session, participants will be able to:

- Differentiate between the different types of assessment
- Discuss the benefits and application of formative assessment and consider if/how these different tools might be leveraged for your context
- Discuss additional assessment strategies and considerations

Please register through Lib.cal

Register Here

Designing Quality Tech-Enabled Learning Experiences Course
Dr. Lisa O'Neill, Dr. Angela van Barneveld
April 8, 2022 - May 18, 2022

The overarching objective of this 4-module course will enable instructors to support design and develop quality, tech-enabled learning experiences for their students. Upon successful completion of this course, instructors will have a deeper understanding of the scaffolded and evidence-based approaches to designing learning experiences and supporting student learning through technology.

Please register through Lib.cal

Register Here

Land Acknowledgements
Dr. Jessica Jungalwalla, Postdoctoral Fellow, Department of Gender & Women's Studies & Indigenous Learning
April 7, 2022, 1:00 pm - 2:00 pm

What are land acknowledgements, and what do they mean? In this workshop, Dr. Jungula will explore the significance of land acknowledgements, why we give them, and how we craft them today. Please register through Lib.cal.

Register Here

Creating Graphic Media Using Canva
Wuhu Creuss, Teaching Commons
April 19, 2022, 10:00 am - 11:30 am

Simple design principles can be effective when creating graphic media assets. The presentation will cover:

- Basic Introduction to Canva tools
- Canva accessibility considerations
- Image-based examples
- University branding
- Interactive learning

Please register through Lib.cal

Register Here

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