## Poster Session, Round A: 12:30 – 1:15 pm

| # | Poster Title | Author(s) | Description |
|---|---|---|---|
| 1A | A game to share the story of LGBTQ+ pioneers and influential computer scientists | Karina Mochetti | The lack of diversity in STEM (especially Computer Science) is an important issue to be addressed. Although a lot has been done regarding the gender gap, the same cannot be said for LGBTQ+ representation in the field. This work aims to handle this problem by creating a game that will help to share the story of influential computer scientists who are role models for this minority community within the Computer Science field. |
| 2A | Revolutionizing Autograding in Cloud Computing: A GenAI Approach for Comprehensive Assessment and Constructive Feedback | Maryam R.Aliabadi, Harshinee Sriram, Arman Moztarzadeh | In this research, we delve into the limitations of current autograder systems and the critical gap they face in assessing open-ended questions, particularly within cloud computing courses. Learn how traditional tools fall short in evaluating essential factors such as performance, cost, response time, and throughput, vital for deploying applications effectively in the cloud. Our proposal introduces a game-changing solution—integrating generative AI into the widely-used Prairielearn platform. Explore how this innovation enhances autograding capabilities, enabling the adept assessment of complex, open-ended assignments while providing constructive feedback to students. Gain insights into the tangible benefits of leveraging genAI within Prairielearn, addressing the challenges of manual grading and contributing to the evolution of educational practices. Join us as we navigate the intricate landscape of autograding, offering a vision for the future that enriches the learning experience for students in the dynamic field of cloud computing. |
| 3A | Fostering Postsecondary Students' Feelings of Connection to Place without a Site Visit in a Large Introductory Geoscience Course | Laura Lukes, Brett Gilley | This intervention study aimed to test whether or not students' sense of place could be enriched without a course-led site visit through a place-centered independent research project in an introductory geoscience course for majors and non-majors at a research-intensive institution in Canada. |
| 4A | UBC Science Teaching and Learning Publications Collection | Alec Currie, Nathan Chan, Ivan Cheung | This is a collection of teaching and learning publications written by UBC Faculty since 2000. This collection has been manually tagged to show department and relevant teaching/learning concepts. A network graph and data visualizations were created from the publication authors. |
| 5A | Opportunities and Considerations for Conducting Earth and Space Education Research Involving Human Subjects in a Landscape of Open Science | Laura Lukes | Guidelines for researchers often cite the opportunity for flexibility in human subjects data management plans, referring researchers to the "standards and best practices developed by the communities of practice in the area of research being proposed," (National Science Foundation, 2017). What does this mean in the context of Discipline Based Education Research (DBER)? |
| 6A | How Students Report Using ChatGPT Tools to Support Their Independent Research Project Work in an Introductory Geoscience Course: Results and Implications for Instructors | Laura Lukes, Brett Gilley | Here we present the preliminary results from a descriptive case study involving a 4 part independent written research project assignment in an introductory geoscience course at a research intensive institution in Canada. Open-ended responses to a reflection question about why they did not use ChatGPT/how they did use it were qualitatively coded by the authors. |
| 7A | Earth Science Experiential and Indigenous Learning Initiative: Year 2 | Laura Lukes, Silvia Mazabel, Shandin Pete, Bean Sherman, Brett Gilley | Here we provide an overview of a 3 year curriculum and faculty development initiative centred on reimagining how we teach science and engineering courses on the Land. The initiative broadly aims to provide students with more accessible and inclusive experiential field-based learning opportunities that incorporate community-engaged approaches and Indigenous perspectives, histories, and ways of knowing, and/or Knowledges. |
| 8A | What I want instructors to know: Students sharing experiences and perspectives on learning science in field settings and beyond | Sarah Bean Sherman, Laura Lukes, Silvia Mazabel, Sophie Dupuis, Shandin Pete and EaSEIL Student Partners | The Earth Science Experiential and Indigenous Learning (EaSEIL) project is a three-year initiative at the University of British Columbia (Vancouver, Canada) that creates space for instructors, students, staff, and community members to develop and transform field-based experiential learning. Informed by conversations with EaSEIL instructors (n=20), we identified four topics of discussion on which to partner with students: (1) feelings of belonging, (2) accessibility, (3) group work, and (4) Indigenous content in Science courses. This poster shares preliminary highlights from discussions with student partners where they shared their learning experiences and offered recommendations to enhance learning. |
| 9A | Preliminary Results from an Observational Visitor Study of a Digital Geologic Time Exhibit in a Science Museum | Nigar Sultana, Laura Lukes, Mara Solen, Tamara Munzner | To effectively choose and design digital exhibits to engage visitors and develop visitor interest in science, more research on digital exhibits in museums is needed. This study seeks to advance our understanding about visitor experiences with digital science museum exhibits. |
| 10A | Assessing Student Knowledge of Earth's Past: A Deeper Look at Student Responses to Common Geologic Timeline Questions | Nigar Sultana, Laura Lukes | How geologic time is perceived by students has been a challenging riddle to solve by researchers. Having a combined sense of the concept, numbers, and scales is essential to completely grasp the idea (Cheek 2012). Since the sense of scale and number are essential to understanding how the concept of geologic time is illustrated in students' minds, it seems important to ask students to associate a numerical age with significant geological and biological events in Earth's history. |
| 11A | Neuroeducation Intervention in Introductory Chemistry | Achol Jones, Jaclyn Stewart | This poster will outline a study that aimed to grasp the landscape of student attitudes towards chemistry during their introduction to the subject in university. Additionally, to promote positive attitudes, the efficacy of a supplementary neuroeducation intervention which teaches CHEM 123 students about how the brain learns, was assessed. |
| 12A | Sharing Sociodemographic and Experiential Data with Instructors to Promote Equity-minded Teaching | Alexis A. Bahl, Analise Hofmann, Joss Ives, Trisha Mahtani, Elizabeth M. Saville, Karen Smith, Jared Stang, Jaclyn Stewart | To effectively promote and foster equity within postsecondary STEM courses, it's crucial to first gain a comprehensive understanding of students' backgrounds, current situations, and their educational and social requirements. The Canadian Consortium of Science Equity Scholars (CCSES), a national coalition of researchers and educators, set out to gather such information through anonymized surveys conducted throughout the school term. The collected data is then compiled and visualized in course reports, which are shared with the instructors. An overview of this work and an example report is featured in this poster. |
| 13A | Enhancing Equity in Science Education | Alexis A. Bahl, Analise Hofmann, Joss Ives, Trisha Mahtani, Elizabeth M. Saville, Karen Smith, Jared Stang, Jaclyn Stewart | The Canadian Consortium of Science Equity Scholars (CCSES) comprises researchers and educators committed to understanding drivers of post-secondary STEM course equity in Canada and addressing inequities. In 2023-2024, CCSES collected data at 10 institutions, in 60 courses, and from 16,163 unique students. |
| 14A | Whose Voice Counts? Gender Dynamics & Decision-Making in Collaborative Test Decisions | Megan K Barker, Joss Ives, Analise Hoffman, Connie Leung, Patrick Dubois | In a large-scale dataset from physics and biology, we pinpointed our analysis to examine the decisions that groups make on two-phase test questions. When there is dissent in the group, not all groups make the same group choices, correlated with student prior knowledge and gender. |
| 15A | Geological Mapping at Field School in the Virtual Environment | James Scoates, Ken Hickey, Nichole Moerhuis, Dylan Spence, Andrew Steiner, Joel Saylor | Geological mapping provides undergraduate students with an immersive experiential learning experience where being outdoors and making real-time decisions to test and refine multiple working hypotheses is the primary pedagogical learning goal. What happens when this training is brought into the virtual environment? |
| 16A | Example of a Participatory Approach in Developing Analytics Work at Skylight | Zohreh Moradi, Noureddine Elouazizi, Warren Code, Gülnur Birol | This poster outlines the process of employing a participatory approach to develop learning analytics goals and processes within the Faculty of Science at UBC. Through collaborative efforts with faculty members and departments, three successive needs analyses, in the period from 2015 to 2022, were conducted to identify opportunities for making use of learning and academic analytics to foster student success. Interacting with our departments and programs through meetings, consultations and a workshop we facilitated a participatory approach that fostered engagement. |

## Poster Session, Round B: 1:15 – 2:00 pm

| # | Poster Title | Author(s) | Description |
|---|---|---|---|
| 1B | Highlights from the 2023 UBC Teaching Practice Survey – Faculty of Science responses | Andrea Han, Trish Varao-Sousa, Zohreh Moradi, Adriana Briseño-Garzón, Warren Code, Barbara Komlos, Gülnur Birol | This poster highlights Faculty of Science responses to the 2023 UBC Teaching Practice Survey. |
| 2B | Enhancing equity in the first-year chemistry laboratory through a targeted pre-term laboratory foundations event (LFE) | Anna Zeleny, Anne Thomas, Emma Davy, Anka Lekhi | High school chemistry lab experiences are variable, leading some students to lack confidence in the laboratory environment. To increase equity and decrease student stress, we are piloting the laboratory foundations event (LFE), an unassessed pre-semester introduction to the lab. |
| 3B | Crafting a Sustainable Editorial Process for the Future of the UBC Student Journal of Cell and Molecular Biology | Tyler Thomson, Maryam Moussavi | The UBC Student Journal of Cell and Molecular Biology (SJCMB) aims to foster scientific identity and career longevity by providing undergraduates with a platform to publish their research. In this study, supported by a Skylight Development Grant, we explored AI tools like ChatGPT to streamline the editorial process, ultimately promoting the sustainability of this journal within UBC's biology community. |
| 4B | Engaging Computing Labs for CPSC 210 | Steven Wolfman, Mazen Kotb, Stephan Koenig | CPSC 210 is a course where students learn to build complex software. While the term project is considered the most exciting part of the course because students select their use case, the labs have been less engaging because use cases are pre-defined. To address this, we are revamping labs by: identifying use cases relevant to students, aligning these with learning objectives, and ensuring students' contributions are both meaningful to solving the problems and produce results meaningful to both Computer Scientists and end-users. We have so far created two redesigned labs and a framework for successfully creating engaging labs. Work this summer is funded by a Small TLEF Innovation Project Grant. |
| 5B | Exploring Teacher Discourse Moves in a First Year Multi-Section Biology Course | Hannah Chipps-Smith, Jackie DaSilva, and Blaire Steinwand | Here we present an exploration of Teaching Discourse Moves (TDMs) in a first-year biology course. We characterized TDMs across multiple sections a single course taught by a diverse team of instructors that is designed to actively engage students in the learning process. |
| 6B | Designing Accessible Life Cycle Illustrations | Bridgette Clarkston, Nola Morey and Hannah Levit | Seaweeds and their life cycles are rarely taught outside of specialty courses, for many reasons. This OER Rapid Innovation project worked with undergraduate students to Illustrate life cycles for important B.C. seaweeds and published them under a Creative Commons BY-NC-SA license on the Beaty Biodiversity Museum's new Explore Algae website. |
| 7B | Burns Bog: Connecting students to the natural world. | Ginger Boehme-Vertefeuille, Jazmine Cabaluna, Katherine Hsu, Emily Lau, Emma Savu, Aoniya Colynn, Mika Neuvonen, Evelyn O'Neil, Zoey Qiu, Chantelle Westgate, Ashleigh Wood, Anik Xiong, Pamela Kalas | Science One went to Burns Bog. Come find out how we got to go to an area that is closed to the public (hint: a partnership with Metro Vancouver Regional Parks thanks to UBC's CCEL), what we did there, what we learned, and why it was a memorable experience! |
| 8B | Extended Learning in the Laboratory: Discussion of Experiment Development in an Enriched First-year Course | Trista Yu, Delaney Webber, José Rodríguez Núñez, Emma Davy | CHEM 141(Chemical Bonding, Molecular Structure and Properties for Lab Sciences) was launched in September 2023 as a first-year, enriched chemistry course. I will share the motivations, learning outcomes and procedures for the laboratory activities developed to expand students' understanding of chemistry beyond its theory. |
| 9B | Climate Math | Jose Reyeros, Oliver Lane, Sven Bachmann, Peter Harrington | The Climate Math project has the goal to increase student interest in math by connecting math to real-world examples while also increasing students' climate science literacy. A team from the Department of Math, with support from the Sustainability Hub and the Department of Earth Ocean and Atmospheric Sciences, is developing and implementing climate change-related assignments and resources for several math courses offered at UBC. |
| 10B | Impact of an advisory role students as partners model in a field-based science learning curriculum development initiative | ROCHA, Larissa, LUKES, Laura A., MAZABEL, Silvia and SHERMAN, Sarah Bean | The EaSEIL project presents findings from a case study on Students-as-Partners (SaP) models in science curriculum development. We explore student perceptions of their advisory role within the SaP framework, revealing insights into their experiences and contributions to curriculum design. |
| 11B | How do students reason through a complex, realistic pedigree activity? | Ria Goel, Pam Kalas | I (RG) developed a pedigree-based case study on albinism emphasizing real-life complexities and conducted think-aloud interviews to understand students' conceptions of genetics. Through thematic analysis, I found that the students recognized the complexities of genetics but did not apply them when working through the problem-solving tasks, looking instead for clear-cut criteria, which suggests the persistence of a deterministic bias. |
| 12B | Workload distribution for assessments across courses in Undergraduate Programs: Is it feasible? Is it desirable? | Eden Fussner-Dupas, Cinda Heeren, Evgeniy Panzhinskiy and Joshua Liu, Trish Varao-Sousa | If you consider all the courses that a student in your class is taking, and then think of all the courses that those classmates would share, at a University the size of UBC it may appear that a way to schedule assessments to maximize workload distribution, would be not feasible. But, it turns out there may be a solution to this problem; and students are keen to see it implemented. |
| 13B | Are you a bottom-up processor? | Erica Jeffery | Bottom-up processing is inductive: collect data first, make sense of it second; top-down processing is deductive: decide what to focus on first (based on your goals, beliefs, and expectations), and then collect data within that limited scope. Your brain's processing style is an innate trait that affects the way you process all types of information — sensory stimuli, social stimuli, emotional stimuli, change in your environment, information about uncertainty — and is with you throughout your life. |
| 14B | Getting rid of midterms is hard: A retrospective | Matt Coles | We present a high level retrospective on the shift towards (and subsequently away from) removing midterms from a large (~4000 student) first year calculus course. We consider grade data, quantitative and qualitative info from students, and the opinions of instructors. |
| 15B | Navigating The Use of Large Language Models (LLMs) In Science Education Through Delimiting Their (In)-abilities | Noureddine Elouazizi | The integration of Large Language Models (LLMs) into science education holds significant promise for enhancing learning experiences and supporting instructional practices. However, amidst the enthusiasm surrounding their potential, it is imperative to adopt a careful and principled approach that guards against unwarranted hype and unmitigated negative impacts and risks. The hype surrounding LLMs in science education must be tempered with an acknowledgment of their limitations and potential risks. Overreliance on LLMs may lead to a reductionist view of learning, neglecting the multifaceted nature of scientific inquiry and problem-solving skills. This project/work is focused on critically assessing the (in)-abilities of LLMs, mapping out the negative implications of such limitations on Science Education in general and assessment in/for Science Education in particular, and then formulate mitigation strategies. |
| 16B | An exploration of Hidden Markov Models to Analyze Eye Tracking Data and Understand How Answer Key Features Influence Students' Strategic Learning in Organic Chemistry | Tarannum Puri, Noureddine Elouazizi, Jaclyn J Stewart | Understanding and incorporating feedback while studying is essential in solving organic chemistry synthesis problems. Framed within the context of using novel learning analytics methods, this work/project is an exploration of Hidden Markov Models to analyze eye tracking data and understand how Answer key features influence students' strategic learning in Organic Chemistry. |