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APRIL 28-29, 2021
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Wednesday, April 28, 2021

Keynote: 12:15 – 1:15 PM

Energising Assessment and Feedback Processes in Higher Education

Dr. Kay Sambell, University of Sunderland

Dr. Sally Brown, Leeds Beckett University

Assessment really matters to students (Brown and Knight, 1994; Boud and Falchicov, 2007; Sambell, Brown & McDowell, 1997). Pragmatically, if students want to gain an academic qualification, they are unequivocally compelled to participate in the assessment processes we design and implement. More importantly, assessment exerts a powerful influence on how students spend their time, what they study and how they approach their learning, and this has been more evident than ever in this pandemic year. As far as possible, our assessment designs need to be carefully thought-through to ensure that they exert a positive impact on students' approaches to learning, rather than a counter-productive one, especially when face-to-face contact is restricted. This is an area in which we have been very active in our thinking in 2020-2021 and our keynote will focus on the ways in which we can now seek to energise our approaches and change higher education for good in the longer term.

Our ideal scenario is that assessment and feedback practices enhance students' engagement in valued ways of thinking and practising (Sambell, 2013), rather than resulting in alienated and perfunctory responses in a relentless chase for marks (Wass et al., 2015). Clouder et al. (2012, p2) claim that assessment has the potential '… to enable students to engage with peers and tutors, to gain personal insight, to feel valued and supported and above all feel that they "fit in" as part of a learning community, and, as such, can succeed in higher education'. How can we design assessments that involve and empower our students as well as promote their learning (Brown, 2019; Sambell & Sambell, 2019)?

This keynote will provide participants with opportunities to energise assessment and feedback in their own higher education contexts by exploring, discussing and sharing pragmatic approaches to the following inter-related issues:

- How can assessment become more **authentic**, encouraging students to consider how thoughtful and productive approaches can foster confidence, competences and skills helpful to their careers and future lives?
- How might we encourage students to engage effectively in **feedback processes**, and use information on their performance more productively?
- How might we involve students proactively in approaches, such as peer and self-review, which explicitly support the development of students' skills in making **evaluative judgments** of their own work?

Conference delegates might wish in advance of our keynote to peruse our outputs from this period, which are freely available for download in our Covid Assessment Collection at https://sally-brown.net/kay-sambell-and-sally-brown-covid-19-assessment-collection/.

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Further resources

Kay Sambell and Sally Brown Covid-19 Assessment Collection – all guidance notes freely available to download from https://sally-brown.net/kay-sambell-and-sally-brown-covid-19-assessment-collection/, including:

- Sambell, K. & Brown, S. (23 March 2020). Contingency-planning: exploring rapid alternatives to face-to-face assessment.
- Sambell, K. & Brown, S. (2 April 2020). Fifty tips for replacements for time-constrained, invigilated on-site exams.
- Sambell, K. & Brown, S. (1 June 2020). The changing landscape of assessment: Some possible replacements for unseen time-constrained face-to-face invigilated exams.
- Brown, S. & Sambell, K. (17 August 2020). Writing better assignments in the post-Covid era: Approaches to good task design.
- Brown, S. & Sambell, K. (21 August 2020). Changing assessment for good: A major opportunity for educational developers.

Concurrent Sessions (100): 1:30 – 2:30 PM

Session 101: Panel Discussion - Integrating Indigenous Ways of Knowing in the Curriculum with Respect and Responsibility to the Local Indigenous Community

Sherry Fukuzawa, University of Toronto Mississauga

Nicole Laliberte, University of Toronto Mississauga

Panelists:

Veronica King-Jamieson, Mississaugas of the Credit First Nation

Jonathan Ferrier, Mississaugas of the Credit First Nation, Dalhousie University

Andrew Judge, Algoma University

Shantel Watson, University of Toronto

Erica deSouza, University of Toronto

This panel will discuss the challenges of integrating Indigenous ways of knowing into post-secondary education under the institutional pressure to meet Euro-Western standards of "academic rigor". We will begin the discussion by giving an overview of a Community-engaged learning course developed and implemented by the Indigenous Action Group (IAG), made up of Indigenous scholars and community members from the Mississaugas of the Credit First Nation (MCFN) with faculty from the University of Toronto Mississauga. This second-year undergraduate course entitled "Anthropology and Indigenous Peoples of Turtle Island (in Canada)" invites Indigenous guest lecturers to share their knowledge with students each week. Student assessments are based on self-reflections, participation, and group presentations. There are no tests in the course and students choose their own areas of learning from a range of course resources (e.g., readings, podcasts, films, videos by Indigenous authors). This course is funded by a three-year Connaught Community Partnerships Grant. The IAG is conducting a three-year longitudinal study to examine the effect of community-engaged learning with a local Indigenous community on the students' understanding and behavior toward Indigenous issues. This panel will engage all attendees in an open forum to discuss:

- How do we value Indigenous knowledge in a Euro-western educational institution?
- What institutional policies act as barriers for an equal partnership with Indigenous communities?

Takeaways:

- Challenges of having a true partnership with a local Indigenous community in the Academy that is directed by their initiatives.

Session 102: Panel Discussion - PebblePad: Promoting Learner Engagement with the Assessment Process

Katherine Lithgow, Centre for Teaching Excellence, University of Waterloo

Panelists:

Keely Cook, English Language Institute, Renison University College

Jane Karanassiou, English Language Institute, Renison University College

Chris Rennick, Engineering Ideas Clinic, University of Waterloo

Alice Schmidt Hanbidge, School of Social Work, Renison University College

Victoria Feth, Centre for Teaching Excellence, University of Waterloo

This past year marked the first full year of PebblePad, a learning journey platform, at the University of Waterloo. PebblePad includes components to support reflection, self-assessment, peer and external assessor review and more – all features that help us engage students more fully in their learning journey.

In this panel, instructors from Engineering, the School of Social Work, the English Language Institute, and a student in the Peer Coaches program offered through the Student Success Office will highlight the different ways in which PebblePad has been used to support thoughtful, well-designed, student-centred assessment practices across campus. A CTE liaison will join the panel to discuss support provided to instructors to not only help integrate the platform, but also design and implement these student-centred assessments.

The panelists will share practices that extend beyond grade-based assessment to those that focus on providing feedback to advance and enhance student learning, i.e., practices that align with assessment for learning. PebblePad facilitates such practices to promote intentional goal-setting, reflection and feedback, and guide students through the process of identifying, documenting, evidencing, and articulating skill development and achievement of competencies. As students progress through these stages, they enter into both online and face-to-face feedback dialogues with peers and professional practitioners, thereby developing a sense of ownership of their individual learning journey.

The panelists will engage with the audience to discuss how PebblePad might be integrated into other courses and teaching practices to promote assessment for learning. We hope you'll join us for what promises to be a great discussion on ways that PebblePad can facilitate student engagement and student satisfaction through student-centred assessments.

Takeaways:

- PebblePad components can facilitate learner engagement in the assessment process.
- Combined with good course design, PebblePad can facilitate reflection, self-assessment, peer and external assessor review in ways that help us engage students more fully in their learning journey leading.
- Engaging students in the assessment process leads to deeper learning and greater student satisfaction.

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Session 103: Workshop - Using Assessment to Teach Writing Across a Degree Program

David Stone, University of Toronto

Andrea Williams, University of Toronto

Andrew Dicks, University of Toronto

Cassandra Phillips, University of Toronto

Writing is a key skill across the undergraduate curriculum. A major challenge facing science programs is integrating discipline-specific writing instruction into an already full curriculum. The authors—two from a chemistry department and one the director of a writing in the disciplines program—have developed strategies to address this. These interventions – spread across multiple program courses – include using scaffolded writing assignments with formative feedback, providing detailed rubrics to improve the quality and consistency of feedback. For example, students write draft reports, receive detailed feedback on their draft, and then revise and resubmit. These pedagogical interventions have been assessed through student surveys and learning gain analyses for a decade, the results suggesting that these strategies are successful both in supporting student writing and improving the quality of TA feedback.

More recently, annotated exemplars of student lab reports have been developed. These are shared with students so that they can see writing done by their peers and understand the differences between middling and improved work. Simultaneously, graduate TAs have been given the same exemplars along with additional training to calibrate expectations and illustrate effective feedback to students as they grade reports.

The above strategies can be adopted and adapted to other disciplinary and institutional contexts. This workshop will guide participants through the process of using formative feedback and exemplars to improve disciplinary writing instruction for students and training for TAs.

Participants will: identify key learning outcomes related to writing in their own courses and programs; Identify course components (assignments, labs, etc) within which to embed writing instruction; Brainstorm the kinds of exemplars that would be most appropriate and beneficial for their program students; Draft a plan of how they will collect and annotate exemplars and integrate into courses; and discuss ways to implement and assess these activities for effectiveness.

Takeaways:

- Strategize ways to use exemplars and related pedagogical strategies to improve the quality and consistency of writing instruction and assessment.
- Brainstorm ways to integrate exemplars to provide formative feedback to support student writing development.
- Identify methods for assessing effectiveness of the exemplars and feedback provided.

References:

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Session 104: Presentations

104a: "Choose your own Adventure": Assessment, Integrity, and Effectiveness in Calculus for an Online World

Amenda Chow, York University

Iain Moyles, York University

We focus on the various styles of final assessments used in a multi-variable calculus course. Between both presenters, we have taught this course several times since 2016. For the first pandemic influenced semester (Winter 2020), students had to complete a subset of carefully crafted word problems that required students to recognize the concept in the course that would solve it. For the semester following (Summer 2020), the final assessment was a group project, which required groups to come up with one practical real-world problem and solve this using the mathematical concepts taught in the course. We will present samples of these assessments and discuss student reactions to these more creative styles of final assessments compared to traditional questions found in an in-person proctored written final exam. We also discuss how we used these styles of assessments to gauge the depth of student learning and student dishonesty, and whether our time spent implementing them was worth it.

Takeaways:

- Both projects and creative word problems in a calculus course can be used to support student learning and uphold academic integrity; however, instructor workload may increase significantly under these more creative forms of assessments.

104b: Evaluating Comics as Pedagogical Tools in an Undergraduate Mathematics Course*

*This is a University of Waterloo Learning Innovation and Teaching Enhancement (LITE) Grant-funded project

Amanda Garcia, Mathematics, University of Waterloo

Giuseppe Sellaroli, Applied Mathematics, University of Waterloo

Joslin Goh, Statistical Consulting Centre, University of Waterloo

Dan Wolczuk, Mathematics, University of Waterloo

Previous empirical research has demonstrated that comics can have positive effects as pedagogical tools in many academic fields. This LITE Seed Grant study set out to examine these effects in the context of a mathematics course. More specifically, the goals of this project were to study the ways in which students perceive and report the effects of comics on their learning, motivation, attitude, engagement, and understanding in a first-year Linear Algebra course.

During the Winter 2019 term, students in MATH 136 were given access (via the learning management system) to a total of eight comics complimenting the course material. Each comic was accompanied by a short pre/post-comic survey to assess pre/post-comic understanding of the material. At the end of the term, a long-form survey gathered more detailed data on student perceptions of the effect that the comics had on their engagement, motivation, interest, attitude, and understanding during the term. Additional feedback was solicited through small focus group sessions.

During the first part of the presentation, the authors will share and discuss the findings from the study. The students' responses were generally positive, with the majority reporting that at least half of the comics helped them feel engaged and made the course more interesting; and that the comics improved their attitude toward some course concepts and helped with their understanding. The latter portion of the presentation will be dedicated to sharing lessons learned during the course of the LITE grant: what went well, what went wrong, and what's next.

Takeaways:

- Integrating comics in the curriculum was generally well-received by students; the majority reported a positive effect on engagement, motivation, interest, attitude, and understanding during the term.
- The authors plan to continue with this line of research in other undergraduate mathematics courses.

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104c: Coding Strip: A New Pedagogical Tool for Learning and Teaching Programming Concepts through Comics*

*This is a University of Waterloo Learning Innovation and Teaching Enhancement (LITE) Grant-funded project

Sangho Suh, Computer Science, University of Waterloo

Martinet Lee, Quantstamp

Gracie Xia, Engineering, University of Waterloo

Edith Law, Computer Science, University of Waterloo

With societies increasingly dependent on computing, computing literacy has become a pressing issue around the world. Countries around the world are rushing to make coding a mandatory part of education and to make it more approachable and fun. Despite such needs, coding remains a difficult skill to learn due to its abstract nature: coding requires novice learners to master arbitrary conventions, syntax, and procedures that are often abstracted and thus difficult to follow. To tackle this problem, my colleagues and I have studied the potential of the medium of comics to make computing more concrete and engaging, and present coding strip, a form of comics that has corresponding code for supporting the learning transfer from the concrete (comics) to abstract (coding). We introduce the design process and tools for creating coding strips and report how the generated coding strips have been used in the introduction to computer science course at the Univ. of Waterloo. Also, we discuss how the comic creation activity can serve as a tool for learning and assessing students' conceptual understanding.

Takeaways:

- We find that our design process and tools are effective at supporting the design of coding strips and that both students and teachers are excited about using coding strip as a tool for learning and teaching programming concepts.

Session 105: Presentations

105a: Out of the Classroom with Writing Assignments for a General Audience

Molly Metz, University of Toronto

Recent concerns about "fake news" and the public's familiarity (or lack thereof) with scientific findings have led to efforts to both increase scientific literacy and increase the efficacy with which academics can better communicate with the general public, not least of which was the Society for the Teaching of Psychology 2016 Presidential Taskforce on Taking Psychology into the Community. Academic researchers continually struggle with communicating our findings clearly with a general audience, and the most common writing assignments (e.g., literature reviews, research proposals, and APA-style manuscripts) do little to help develop writing skills for any domain other than within academia. In addition, as I explain to my students, regardless of their career paths, many of them will have jobs where they need to take some kind of technical information and clearly communicate it to an audience without the same background they have, whether that audience is a boss, a client, or the general public. Therefore, I propose that we would benefit our students by incorporating non-technical writing practice in courses of all types and levels.

In this talk, I will share examples from my own courses, ranging from class activities and test questions ("describe this concept so your 12-year old cousin would understand it," statistics discussion boards) to semester-long projects (class blog on relationship psychology; The Atlantic-style longform science journalism; mini TEDTalk-style presentations), as well as additional ideas culled from surveys of our professional network. In addition, I will suggest strategies to help develop these skills, as especially upper-level students with ample APA-style practice often struggle with reverting to a more accessible but still professional writing style. Finally, I will review other benefits to incorporating these types of assignments in our courses, many drawn straight from student feedback, such as providing opportunities for choice, creativity, collaboration, and community.

Takeaways:

- Most common course-based writing assignments (literature reviews, research proposals, APA-style manuscripts) do little to help develop writing skills for any domain other than academia, and only a small proportion of our students will pursue graduate training.
- However, written and oral communication are among the most important job skills in a range of fields.
- Therefore, we would benefit our students by practicing non-technical writing in a range of courses and formats.

105b: Authentic Writing Assignment to Assess Popular Myths About Learning

Suzanne Wood, University of Toronto

Given the abundance of information and disinformation found online, it is no wonder people today have a hard time discerning what is fact and fiction (Allcott & Gentzkow, 2017). Science, in particular, can be viewed as a matter of opinion rather than a method of developing knowledge (Scheufele & Krause, 2019). It is our job as educators to help prepare our students to distinguish information presented faithfully from that being misrepresented. Writing assignments can be particularly instrumental in enhancing critical thinking skills (e.g., Çavdar & Doe, 2012).

This presentation will detail a writing assignment used in a large (188 students) lecture course that requires students to critically reflect upon the distinction between scholarly and popular sources of information. The assignment pits peer-reviewed primary research articles related to the course topic (learning and plasticity) against popular sources, such as websites and blog posts. Students select one of several pairs of sources; each pair consists of one scientific and one popular source. Students then detail which points the sources agree or disagree upon. Finally, students argue whether or not the popular source should be changed to reflect the findings of the scientific source. The gains from this assignment are two-fold: 1) students develop a deeper understanding of a topic of interest in the course, learning through the process of engaging with the assignment, itself; 2) students practice critical thinking skills that can be applied to other topics outside of class, thereby developing a skill that can be authentically applied throughout their future lives.

This assignment translates across disciplines, in any field in which popular sources pick up and, at times, misinterpret primary findings. Participants will leave the session with a model of how to incorporate an authentic writing assignment into even their large courses.

Takeaways:

- Authentic writing assignments can be incorporated into large lecture classes.
- Critical thinking can be taught through writing.
- This assignment asks students to compare popular and original scientific sources.

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105c: Supporting Undergraduate Students in an Online Communication-Intensive Course by Prioritizing Productive Writing Habits*

*This is a University of Waterloo Learning Innovation and Teaching Enhancement (LITE) Grant-funded project

Nicole Westlund Stewart, Lakehead University

Nadine Fladd, Writing Centre, University of Waterloo

Dave Drewery, Work-Learn Institute, University of Waterloo

Wade Wilson, Kinesiology, University of Waterloo

In the Writing and Communication Centre and in the classroom, students are encouraged to develop productive writing habits to help them complete their course assignments successfully and manage the affective experience of writing. Despite the widely available literature on undergraduate writing habits and both writing self-efficacy and writing apprehension (e.g., Stewart, Seifert, & Rolheiser, 2015), it is unknown how different writing habits (e.g., writing at a certain time of day, looking up writing resources, utilizing a writing group, or using positive self-talk) impact the affective experience of writing for undergraduate students, particularly in an online learning environment. This LITE grant-funded research assessed which writing habits students used most often and whether certain writing habits were related to desirable writing outcomes, including writing self-efficacy, writing apprehension, and self-reported writing success.

First-year undergraduate students (N = 91) completed an online questionnaire assessing these variables after submitting the final writing assignment for their communication-intensive course. Descriptive statistics indicated that for their final writing assignment, students spent the most time thinking about the audience they were writing for, wrote at a productive time of day, and wrote in a space conducive to productive writing. Correlational analyses found that these writing habits were most closely associated with greater writing self-efficacy, lower levels of writing apprehension, greater levels of satisfaction with their paper, and a higher expected grade. Interestingly, habits that students used least often (i.e., writing collaboratively with other people, viewing writing as a social activity, and writing among others) showed a trend towards being significantly related to greater writing self-efficacy. These results are exciting because they provide guidance for instructors in terms of broadening students' repertoire of writing habits to help them manage the stressors associated with writing, especially in an online environment.

Takeaways:

- We test out Helen Sword's framework for writing (which describes effective writing processes as made up of Behavioural, Arisanal, Social and Emotional habits) that she developed for faculty and graduate students on an undergraduate communication course to see if these concepts are transferable.
- We find that a high proportion of students already use behavioural habits, and that these habits are associated with high levels of self-efficacy and confidence.
- We find that although they trend for self-efficacy and confidence, social habits are used by few students.
- These findings reveal opportunities for helping students to become confident, autonomous writers.

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Session 106: Presentations

106a: Implementing a Flipped Classroom for a Large First Year Physics Class as Part of the Dean's Undergraduate Teaching Initiative

Joseph Sanderson, Physics and Astronomy, University of Waterloo

Robert Hill, Physics and Astronomy, University of Waterloo

Gabriel Pasquino, Physics and Astronomy, University of Waterloo

We have created flipped classroom resources for Physics 111, an introductory physics course for life-science students. It is a course designed along the lines of the UBC model (Deslauriers et al., 2011) consisting of twenty-two pre-class online modules, one for each class, and a similar number of in-class worksheets for individual and groupwork activities. The online modules are timed to last no more than 10-20 minutes. They consist of Socratic-structured introductory information for each subject, utilising several quizzing methods, to prepare students for the activity orientated classroom sessions. The modules were designed throughout 2019 and developed in Mobius (in order to make their use seamless within LEARN). The in-class material was designed to expand on elements which have proved to be most useful in the last two traditional, lecture-style offerings of the course. We will discuss the use of formative assessment elements which are intrinsic to the pre-class modules and assess the level of their success in preparing the students for class.

Takeaways:

- Assessment of the impact of the flipped classroom consist of an ongoing process of analyzing the answers to student surveys and, in terms of pedagogical impact, by comparing of exam grades with traditional course offerings.
- We will present examples of the resources created, discuss the experience of implementing the course, student comments and how assessments indicate its effectiveness.

References

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106b: Use of Pre-Instruction Assessment of Student Understanding to Improve Outcomes

Karen Cummings, Physics and Astronomy, University of Waterloo

Richard Epp, Physics and Astronomy, University of Waterloo

Steve Pfisterer, Physics and Astronomy, University of Waterloo

This presentation will discuss the use of pre-instruction assessment of student understanding to improve outcomes in the first-term, calculus-based introductory physics course for science majors (PHYS 121). PHYS 121 is a fast-paced course with several hundred students enrolled. Students come in with a very wide range of backgrounds and it is difficult to address the diversity of needs within the primary course structure. Pre-instruction assessment of student understanding has been used in previous years to help students self-select into an academic support program. This approach was improved this year through improvement in the assessment. As part of a School of Science initiative to improve undergraduate instruction (Dean's Undergraduate Teaching Initiative), quite challenging activities were introduced in mandatory tutorial sessions and the assessment data was used to form mixed-level groups within this environment. We will report on the nature of the assessment and distribution of pre-instruction scores. We will also discuss results of a survey given to students that probed their response to the new activities and how they felt about working in assigned groups as well as the impact of the new activities and assessment on the academic support program designed to help under-prepared students. The pre-instruction assessment was given to students again at the end of the term and shifts in measured levels of understanding will be discussed.

Takeaways:

- Assessing what students know before the course begins helps improve outcomes in several ways. The information can help students self-identify for inclusion in academic support programs, helps instructors understand the appropriate level for the course and can be used to form mixed-level groups when appropriate.
- Pre-instruction assessment data also helps instructors look at end-of-term assessments with a more appropriate perspective.

106c: Flexible Assessment in an Entry-Level Statistics Course*

*This is a University of Waterloo Learning Innovation and Teaching Enhancement (LITE) Grant-funded project

Michael Wallace, *Statistics & Actuarial Science, University of Waterloo*

Kris Siy, *Art of Problem Solving*

Flexible assessment is a form of flexible learning where students are offered choice in how they are assessed. Examples include optional assessments, multiple weighting schemes, or a choice of assessment type. Despite being an important example of flexible learning more generally, flexible assessment has received comparatively little attention in the educational literature (Rideout, 2018), and studies of it have reported varying conclusions (Cook 2001, Sewell 2004, Pacharn et al. 2013, MacDermott 2013).

Funded by a LITE Seed Grant, we conducted a study of flexible assessment in an entry-level statistics course at the University of Waterloo in Fall 2018. The course offered a flexible grading scheme where some assessments could be missed without penalty. Using two surveys, students were invited to discuss why they did (or did not) miss an assessment, whether (and how) the flexible grading scheme affected their studies, and if they perceived benefits 'beyond the classroom' (such as to their health and well-being).

We present initial findings from the study, based on data from approximately 300 students in the class (75% of total enrolment). We highlight common themes among the reasons given for missing or writing an assessment, and discuss the relationship between missed assessments and performance in the course as a whole. Overall, students believed flexible assessment was beneficial to their academic performance (both in the course under study, and their other courses) as well as to their general well-being.

Takeaways:

- Students perceive flexible assessments as being beneficial. These benefits are not limited to academic performance in the course in which the flexible grading scheme is used, but also in their other courses, and more generally to their health and well-being.
- Missed assessments were most commonly attributed to time limitations, feeling ill-prepared, or to help reduce strain on well-being. Those who wrote assessments perceived them to help maximize grades, test knowledge, or prepare them for later assessments.
- Most respondents (54.7%) reported they engaged differently with the course as a result of the flexible grading scheme, such as feeling reduced stress or pressure (26.2%), putting in less effort (12%), or working more effectively (5%).

References:

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Session 107: Presentations

107a: You've Got a Friend in Me: Creating Social Connection in the Face-to-Face and Online Classroom

Christine Tenk, Brescia University College

Marena Dib, Brescia University College

Emily Sluys, Brescia University College

As humans, we are wired to meet our most primal survival need: social connection (Lieberman, 2013). Theorists have long asserted that "social interaction plays a fundamental role in cognitive development" (Vygotsky, 1978) and studies show that social connection is an essential element of effective teaching in both face-to-face and online courses (Delahunty et al., 2014; Lynch & Pappas, 2017). More specifically, stronger social connections in the classroom improve academic outcomes such as boosting academic performance, perceived learning and motivation to learn (Battistich et al., 1997; McKinney et al., 2006; Richardson et al., 2017). Both assessments and engagement activities can strengthen social connection in the classroom and through this represent valuable ways to boost academic success (McKinney et al., 2006).

In this presentation, I will share my experience of moving students 'beyond content' and using assessments to build student-to-student and student-to-instructor relationships to enhance learning and improve student outcomes. I'll begin with face-to-face teaching where I'll present how I use formative assessments in innovative ways (e.g. musical chairs think-pair-share; popcorn share competition) to counteract the distance and anonymity in a large class (Lynch & Pappas, 2017) and foster connection. Observations on the impact on student participation and interaction in class will be shared. With online learning, the need for social connection in the classroom is arguably higher (Hay et al., 2004). Therefore, I will also present my strategies for including connection-building formative assessments (e.g. muddiest point forum posts; practice question sharing) in the online classroom in practical, manageable ways. Preliminary data will be shared from a research study examining the student experience of social connection and community in the online classroom during COVID-19. These data highlight that assessments, activities and teaching strategies build classroom connection and community and show that these connections are significantly related to perceived learning and course satisfaction.

Takeaways:

- Assessments, activities and teaching strategies can foster student-student and student-instructor social connections.
- Social connections in the classroom are significantly related to perceived learning and course satisfaction.
- Social connection is often limited in large or online classes and should be actively developed to improve student learning.

References:

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107b: Performance Anticipation Hinders Learning in the Classroom

Noah Forrin, McMaster University

Emilie Caron, Psychology, University of Waterloo

Lydia Hicks, Psychology, University of Waterloo

Daniel Smilek, Psychology, University of Waterloo

Instructors commonly assess students' learning through assignments and activities that require public speaking (e.g., oral presentations, participation in class discussions). Although speech tends to enhance learning of the spoken information, the performance anticipation that people experience prior to speaking reduces learning (Brenner, 1973; *Journal of Verbal Learning and Verbal Behavior*). My colleagues and I hypothesized that students' anticipation of giving an oral presentation—an intellectual "performance" that is typically evaluated by the instructor—hinders their ability to learn information that precedes their performance. To test this hypothesis, my colleagues and I conducted a simulated classroom study at the University of Waterloo, in which groups of 5-9 undergraduate student participants (n = 240) individually prepared a short presentation. Some participants were discreetly informed that they would be presenting 2nd, others that they would be presenting 5th, and others that they would not be presenting. A research confederate posing as a participant gave the first presentation, which was immediately followed by a multiple-choice quiz that assessed students' memory for that presentation.

As predicted, students who expected to present (either 2nd or 5th) performed significantly better on the multiple-choice quiz compared to students who did not expect to present; the difference between the two presentation conditions was nonsignificant. Furthermore, a cognitive component of performance anticipation (frequency of thoughts about one's upcoming presentation) and an affective component (anxiety) were both strongly negatively related to quiz performance. These results suggest that the benefits of assessing students learning through oral presentations may be offset by the learning costs that arise from performance anticipation. To reduce these costs, we recommend that instructors spread oral presentations throughout the semester and ask students to give their presentations at the beginning of class.

Takeaways:

- When students expect to participate in class (e.g., giving a short presentation) they experience performance anticipation.
- While in a state of performance anticipation, students tend to experience anxiety and their attention is directed toward performance-related concerns (e.g., "what will others think of my presentation?"), which is detrimental to learning.
- Active learning and class participation and undeniably beneficial to learning, but performance anticipation can incur a "hidden" cost that warrants the attention of educational researchers and practitioners. We recommend that instructors spread oral presentations throughout the semester and ask students to give their presentations at the beginning of class.

References:

- Brenner, M. (1973). The next-in-line effect. *Journal of Verbal Learning and Verbal Behavior, 12*, 320-323.

107c: If You Don't Grade it, Will They Come?

Nicole Campbell, Western University

Stephanie Zukowski, Western University

Many educators assume that students will only engage if a learning experience is graded. Learning experiences that are not graded are often referred to as "low stakes" and for many students, this term or ideology is unfortunately synonymous with "minimal effort". Grades serve as an extrinsic motivator for students, which can influence their attitude, behaviour, and ultimately, negatively impact their perspectives on learning. As such, when redesigning a fourth-year interdisciplinary medical sciences laboratory course, the authors restructured the assessment model to remove grades from experiential learning opportunities throughout the course. These experiential learning opportunities were specifically incorporated to develop transferable skills such as decision-making, negotiation, teamwork, and critical thinking.

The authors explored how learning could be assessed and decided to foster an environment that would prompt students to be intrinsically motivated; reflective writing exercises were subsequently assigned, which encouraged students to be engaged and captured the learning that occurred. Students participated in an ethics decision-making simulation, a clinical case study, and a simulated Tri-Council grant panel. In each scenario, students were placed in small teams with specific roles and had to arrive at an identified outcome. Compared to previous offerings, where some of the activities were graded, students were more engaged and spent more time-on-task during these authentic experiences. Students wrote in their reflection journals and vocalized during the sessions that they felt liberated because they were not being graded. Specifically, they commented on how it reduced stress and anxiety because they were not focused on the correct answer. Instead, students spoke freely and encouraged their peers to contribute to hearing diverse perspectives. In this workshop, the authors will demonstrate aspects of each of the simulations, outline logistical considerations that should be made when implementing similar activities, and share findings from the reflection journals.

Takeaways:

- Students will engage in learning if you make it fun and authentic.
- How to design authentic experiential learning experiences that are not graded**.**

Poster & Assessment Showcase: 2:40 – 3:20 PM

Posters

Effectiveness of Cross-Cohort Projects in Mechanical Engineering Curriculum

Lucas Botelho, Mechanical & Mechatronics Engineering, University of Waterloo

Kamyar Ghavam, Mechanical & Mechatronics Engineering, University of Waterloo

Homeyra Pourmohammadali, Systems Design Engineering, University of Waterloo

Previous applications of a cross-cohort project structure in engineering education have been effective, therefore, there may be similar benefits if the project is implemented for mechanical engineering core courses. Second- and third-year students were grouped together to analyze, design, and prototype a dual-mechanism machine with certain tasks and specifications. The teaching and learning activities were defined towards accomplishing these objectives:

1. Provide a design challenge to guide students towards implementing creative potential solutions, given an input and desired output motion within design constraints.
2. Allow second-year students to analyze and design a mechanism which will be connected to a mechanism designed by the third-year students (and vice versa). The only way for each group to successfully complete the project was to design their own mechanism such in a way that the combination of mechanisms would complete the overall challenge, thus promoting intercommunication.
3. Introduce industrial related simulation tools and hands on prototyping skills: The students applied simulation software and computational tools, to effectively design, analyze and prototype their mechanism.
4. Facilitate cross-cohort collaboration within teams with more emphasis on students' peer exchange of knowledge and experience to simulate industrial environments with differing experience levels. Though there was no direct assessment associated with communication, there were two grand meetings held in the IDEAS clinic with both cohorts, one to introduce the project and the second to discuss effective feedback.

The students' abilities to successfully complete all phases of the project were reflected in the project assessment, peer evaluation was not included since this is the first time this project was implemented. The students reflected their opinion on the cross-cohort structure via a survey at the end of the term. This project was specifically designed for mechanical engineering students to apply dynamics concepts, but this structure can be applied to different fields and disciplines.

Takeaways:

- Having students from different cohorts collaborate on a project gives them experience that they may not otherwise have.
- The importance of critically analyzing feedback to make improvements on learning.

Learning to Share: How Students Communicate Disability-Related Information in the Workplace

Roxy H. Merkand, Psychology, University of Waterloo

John L. Michela, Psychology, University of Waterloo

Invisible disabilities include conditions that have no visible manifestation or have visible features not clearly connected to a disability (Santuzzi, Waltz, Finkelstein, & Rupp, 2014). Those with invisible disabilities choose how to disclose their disabilities in work-related domains (Ragins, 2008; Clair, Beatty, & MacLean, 2005). However, little is known about how disability disclosure varies as a function of a worker's job stage or how disclosure strategies are learned (Von Schrader, Malzer, Erickson, & Bruyere, 2011). Accordingly, this poster presentation seeks to inform university educators about disability disclosure strategies used by students in the workplace.

Undergraduate students with disabilities completed an online questionnaire concerning their disability disclosure experiences. As job searchers, the students typically disclosed disabilities with specific reference to fulfillments of job requirements. While employed, disclosure centred on the student's diagnosis. Disclosure strategies had been learned through trial and error, as opposed to having been taught through campus/community resources.

The present findings highlight functional variation in disability disclosure, based on one's job stage. From a developmental perspective, these findings can inform guidance for job seekers and workers with disabilities on effective disability disclosure. Future research will compare disability disclosure between co-op and non-co-op students, towards helping both groups form disclosure-relevant skills as they enter work-integrated learning opportunities and the workforce.

Connecting this research to the conference theme – Assessment for Learning – students can be viewed as assessors of their disability disclosure strategies. Students evaluate the extent to which their disability disclosure strategies are favourably received, and whether they are learning disability disclosure strategies over time. Therefore, a second goal of the proposed presentation is to highlight the need for evidence-based practices on disability disclosure – to help students avoid the challenging trial-and-error approach of learning disclosure strategies that is currently used by the majority of individuals with disabilities.

Takeaways:

- When students disclose their disabilities during the job search process, they connect their disability to the job requirements.
- When students disclose their disabilities in the workplace, they specifically reference their diagnosis.
- Students with disabilities are learning disability disclosure strategies largely through trial and error, as opposed to accessing on-campus and community resources. This highlights the need for evidence-based practices surrounding disability disclosure that students can use to assess the effectiveness of their disability disclosure.

References:

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- Ragins, B. R. (2008). Disclosure disconnects: Antecedents and consequences of disclosing invisible stigmas across life domains. *Academy of Management Review, 33*(1), 194-215.
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What Would You Suggest? Instructors Share Their Advice on Implementing Peer Assessment

Jennie Ferris, McGill University

Carolyn Samuel, McGill University

Peer assessment (PA) involves students providing feedback on other students' assignments to help them improve their work; this feedback may or may not involve a grade. Over the past few years, Teaching and Learning Services has conducted interviews with instructors from across the university to learn how they have implemented PA in their courses in support of students' learning, and to then share instructors' knowledge with other instructors in a blog post series (https://teachingblog.mcgill.ca/tag/peer-assessment-cases/). We did so because instructors have expressed appreciation for opportunities to learn about instructional strategies from peers (Thomson, 2015).

In our interviews, we asked: "What advice would you have for other instructors who are considering doing peer assessment in their courses?" Though the instructors' course contexts are diverse, as class sizes ranged from five to 400 students, and they come from seven different faculties, their advice is potentially transferable across course contexts (e.g., class size; undergraduate/graduate), disciplines, and even to remote learning environments. Instructors offered an outpouring of advice that falls within five overarching themes: (1) introducing specific assignment expectations; (2) providing students with support for giving and receiving feedback; (3) dealing with grading; (4) eliciting student feedback on their PA experience; and (5) making implementation decisions. These themes, and the instructors' specific advice, are shared on this poster. For each of the themes that emerged, we've linked the advice to relevant literature on PA. Considering the advice within these themes can help to promote a pedagogically sound PA experience for students, as they give and receive feedback on one another's work. If you are considering doing PA in your courses, and are seeking some advice before you try it for the first time, this poster is for you!

Takeaways:

- Instructors from several faculties who taught courses of various sizes offered advice for colleagues considering implementing peer assessment. This advice falls into five themes:
    1. introducing specific assignment expectations;
    2. providing students with support for giving and receiving feedback;
    3. dealing with grading;
    4. eliciting student feedback on their peer assessment experience; and
    5. making implementation decisions.
- For each of the themes that emerged, we linked the advice to relevant literature on peer assessment for readers interested in exploring further.

References:

- Thomson, K. (2015). Informal conversations about teaching and their relationship to a formal development program: Learning opportunities for novice and mid-career academics. *International Journal for Academic Development, 20*(2), 137-149. https://doi.org/10.1080/1360144X.2015.1028066.

A Mutual Feedback Model for Students and Instructors

Brit Paris, University of Calgary & Capilano University

This poster presents a mutual feedback model, developed from research conducted with instructors and undergraduate students at a large research-intensive university in western Canada between January and May 2020.

In order for learning to happen through assessment, students must be able to apply the feedback they receive to their learning processes (Carless & Boud, 2018). In order to apply the feedback, students must receive high quality feedback, however in providing high quality feedback, there are barriers that instructors must overcome (Dawson et al., 2019).

Through my study with instructors and students I found that in addition to workload and external constraints, one of the main barriers instructors face when providing effective written feedback is the lack of student action on feedback, which disrupts the feedback cycle. At the same time, students described receiving low quality feedback (i.e., feedback that is vague, untimely, or not constructive as barriers to applying the feedback). Therefore, I have developed a mutual feedback model which provides a framework from which to design feedback processes that work for both students and instructors. The purpose of this poster session is to share the model with instructors and students.

Takeaways:

- Feedback processes need to consider both student and faculty perspectives and experiences to be successful.

References:

- Carless, D., & Boud, D. (2018). The development of student feedback literacy: Enabling uptake of feedback. *Assessment & Evaluation in Higher Education, 2938*, 1–11. https://doi.org/10.1080/02602938.2018.1463354
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Integrating 3D Digital Multimedia into Anatomical Education*

*This is a University of Waterloo Learning Innovation and Teaching Enhancement (LITE) Grant-funded project

Anton Trinh, Kinesiology, University of Waterloo

Robert Burns, Kinesiology, University of Waterloo

Caryl Russell, Kinesiology, University of Waterloo

Chris Vigna, Kinesiology, University of Waterloo

This project examined whether utilizing digital 3D anatomy content (3D resources) could improve Kinesiology students' understanding of surface anatomy and their ability to translate the knowledge into better hands-on skills. 3D resources aimed to strengthen spatial understanding relative to hands-on skills. To evaluate the impact of 3D resources, this project looked at 1) practical exam/overall course grades, 2) preferential access of newly created 3D vs. 2D resources (existing content without 3D images and/or transcripts), and 3) student/instructor perceptions of preparedness and confidence or competence.

Overall, 3D resources did not have an impact on student performance as assessed by practical exam marks, or overall grades between course cohorts provided with 3D resources and those without. However, survey results indicated 3D resources were preferred over 2D resources by both instructors and students. Students self-perceived to have stronger working knowledge of anatomical structures whereas instructors did not perceive students to have improved working knowledge (with respect to previous cohorts). Students recalling 3D resources reported greater confidence in their working knowledge and subsequent hands-on skills.

Although overall student grades were not impacted by 3D resources, this project highlights the value of 3D resources in teaching, specifically related to spatial relationships between anatomical structures. As a result, Kinesiology has obtained Complete Anatomy licenses for teaching during this pandemic to support remote learning.

In addition to the student outcomes, this project has highlighted the need, on the part of Instructors, to better understand learner engagement with asynchronous digital materials. This project has heightened our awareness of the available learner data within LEARN. We believe this data can inform instructors as to how we can be more effective in creating digital content for our labs, and as a result, we will be looking to expand on our analysis of said data in the future.

Takeaways:

- Need to understand student engagement with supplementary materials.
- Learner data from LEARN can provide insights about student engagement with asynchronous material.

References:

- Pringle, Z., & Rea, P. (2018). Do digital technologies enhance anatomical education? Retrieved from https://www.openaire.eu/search/publication?articleId=core_ac_uk__::ab946b08a3667a2729bd15e9b50eea16.
- Wilkinson, K., & Barter, P. (2016). Do mobile learning devices enhance learning in higher education anatomy classrooms? Retrieved from http://eprints.mdx.ac.uk/17589

Assessment for Learning and Student Mental Health

Kira Smith, McGill University

The prevalence of post-secondary student mental health concerns has led Canadian post-secondary institutions to identify student mental health as an urgent crisis, which demands immediate, institution-wide action. Post-secondary institutions have established that instructors are uniquely situated to promote student mental health – they are the only human contact that students are guaranteed. There are a number of strategies that instructors can employ to assess student learning while promoting students' mental health.

Rooted in master's research conducted at McGill University in March 2020, this presentation will draw on the idea of inclusive assessment to propound an ethic of assessment founded in mental health promotion. More specifically, the poster will include findings from the qualitative research conducted. Primarily, my research found that instructors tend to engage in two general categories of mental health-promoting activities: student-supporting activities and assessment-related activities.

There will also be a number of suggestions for applications to practice across disciplines, which have been relayed by research participants and other instructors at McGill University.

Takeaways:

- Understand the inherent connection between assessment that promotes learning and student wellness.
- Recognize the potential for mental health promotion in various low-barrier teaching strategies.
- Discover new teaching strategies that could be used in a variety of disciplines.
- Reflect on their teaching and organizational practices, and begin to apply principles of mental health promotion to their work.

References:

- CMHA & CACUSS. (2013). *Post-Secondary Student Mental Health: Guide to a Systemic Approach*. https://healthycampuses.ca/wp-content/uploads/2014/09/The-National-Guide.pdf
- Kessler, R. C., Berglund, P., Demler, O., Jin, R., Merikangas, K. R., & Walters, E. E. (2005). Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the national comorbidity survey replication. *Arch Gen Psychiatry, 62*(6), 593-602. doi:10.1001/archpsyc.62.6.593
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Assessment Showcases

Creating Authentic External Peer Review Sessions for Science Communication Students

Maša Torbica, English Language and Literature, University of Waterloo

Tommy Mayberry, Registrar's Office, St. Jerome's University

Drawing upon key pedagogical insights from Bean (2011) and Sommers (1982; 2006), this assessment showcase session presents a collaboratively designed and administered peer review assignment for an undergraduate science communication course. As instructors who were scheduled to teach different sections of ENGL 193 during the same time slot, we decided to design two assessment activities where our students would meet, exchange assignments, and provide feedback on each other's work. The resulting assignment was called "External Peer Review" and applied principles of authentic assessment design in order to encourage deeper engagement with the peer review process. Learners participated in a modified version of the external peer review process used by professional scientists for vetting a wide range of proposals (grant, conference, journal article, etc.), and had a chance to reflect on this process.

Aiming to encourage and enable the successful adoption of similar assessment activities, presenters will provide an interactive, multimodal, and accessible display of relevant materials. Featured content will include assessment artifacts (assignment descriptions, peer review worksheets, final group posters), suggested research sources, as well as audio and print (available in large font format) samples of instructional scripts.

Takeaways:

- Authentic assessment design can significantly deepen learners' understanding of professional scientific communication protocols.
- Instructors teaching different sections of the same course can apply the recommended strategies in order to collaboratively implement innovative versions of the peer review process.

References:

- Bean, J. (2011). *Engaging ideas: The professor's guide to integrating writing, critical thinking, and active learning in the classroom* (Second Edition.). San Francisco: Jossey-Bass.
- Sommers, N. (1982). Responding to student writing. *College Composition and Communication, 33*(2), 148–156. https://doi.org/10.2307/357622
- Sommers, N. (2006). Across the drafts. *College Composition and Communication, 58*(2), 248–257. Retrieved from http://search.proquest.com/docview/220701459/

Using Learning Outcomes in Assessments in AHS 105 Mental Health Literacy*

*This is a University of Waterloo Learning Innovation and Teaching Enhancement (LITE) Grant-funded project

Gitanjali Shanbhag, Mechanical & Mechatronics Engineering, University of Waterloo

Christine Zaza, Centre for Extended Learning, University of Waterloo

University course instructors are increasingly engaged in designing courses to achieve constructive alignment (Biggs, 2014) between the course-level intended learning outcomes (ILOs), teaching/ learning activities, and assessments. Harden et al. (1999) mention that a learning outcomes-based curriculum encourages a self-directed and learner-centered approach to learning, as students can take responsibility for their studies, and are able to continually gauge their progress.

Learning Outcomes have the potential to serve as a tool for course content evaluation. Understanding students' perceptions regarding the outcomes they have and have not achieved can direct future revisions to the course. But how do we, the instructors, receive direct feedback on the extent of constructive alignment? How do we assess students' perception of their achievement of course-level ILOs? How can students reflect on and 'measure' their achievement of course-level ILOs?

In this showcase we will describe a novel assessment which involved incorporating the course-level ILOs into the final assignment in the undergraduate Mental Health Literacy course (AHS 105) which is offered to all students on campus by the Faculty of Health. By incorporating ILOs into the final assignment, students had the opportunity to demonstrate a deep appreciation of their achievement of the course-level intended learning outcomes and we, the instructors, were able to diagnose the gaps between students' and instructors' perceptions of learning and prioritize content revisions to achieve greater constructive alignment. We will explain how we incorporated the course-level ILOs into the final assignment and how we then used students' responses to guide us in revising all assessments for future offerings of AHS 105.

Conference participants will leave this showcase presentation with a set of assessment instructions and a marking guide that they can incorporate in their course, should they wish to employ this type of assessment.

Takeaways:

- We will showcase a novel assessment which involved incorporating the course-level ILOs into the final assignment in the undergraduate Mental Health Literacy course (AHS 105) which is offered to all students on campus by the Faculty of Health.
- Conference participants will leave this showcase presentation with a set of assessment instructions and a marking guide that they can incorporate in their course, should they wish to employ this type of assessment.

References:

- Biggs, J. (2014). Constructive alignment in university teaching. *HERDSA Review of Higher Education, 1*, 5–22.
- Harden, R. M., Crosby, J. R., & Davis, M. H. (1999). AMEE guide no. 14: Outcome-based education: Part 1 - An introduction to outcome-based education. *Medical Teacher, 21*(1), 7–14. doi: 10.1080/01421599979969.

Creative Artmaking in an Introductory Financial Mathematics Course

Vicki Jingjing Zhang, *University of Toronto*

The assessment I would like to showcase is at the intersection of a few of my pedagogical interests: emotion and value-based learning, embedded ethics education, and STEAM. I strive for more than cognitive-based learning, to affect values and attitudes of my students. STEAM is a movement in education that combines arts with STEM subjects to improve teaching and learning experience. Embedded ethics integrates ethical reasoning with a "distributed pedagogy" (Grosz et al., 2019) that introduces ethics directly into standard courses (as opposed to a standalone course on ethics).

With those pedagogical goals in mind, I experimented with a creative art-making assignment where students in an introductory financial mathematics course were given the opportunity to use artistic means to convey a topic they have learned in the course. A brief artistic statement needs to accompany the artwork to describe how the artwork connects to the course content. I also provided a list of financial ethics considerations that had already been embedded in the lecture content during the semester. This is an optional bonus assessment and I received submissions from about one-third of the class. The results were eye-opening. Students submitted drawings and paintings, concept maps, lyrics and poems, mini-movies, 3-D models, fictional stories, etc. Almost all submissions centered on a technical topic and the artwork helped illuminate and clarify the technical content. Moreover, some submissions focused on ethical issues with technical topics (e.g., predatory loans) and demonstrated greater understanding of students' personal and professional principles. I would like to showcase (1) my rationale, goal, and instructions of the art-making assignment; (2) some of the stunning artwork from the students with my reflective feedback.

Takeaways:

- Creative art-making can help achieve value-based learning, beyond the traditional cognitive-based learning.
- STEAM combines arts with STEM subjects to improve teaching and learning experience.
- The "covert" nature of embedding ethics as part of hands-on technical skill-building helps motivate and engage students, instead of turning them off, as often seen in a standalone, out of context, obligatory ethics course.

References:

- Grosz, B. J., Grant, D. G., Vredenburgh, K., Behrends, J., Hu, L., Simmons, A., & Waldo, J. (2019). Embedded EthiCS. *Communications of the ACM, 62*(8), 54–61. doi: 10.1145/3330794
- Institute of Arts Integration and STEAM: https://educationcloset.com/what-is-steam-education-in-k-12-schools/

Case Studies: The Effectiveness of a Big-Picture Framework

Jean Richardson, Science, University of Waterloo

Jason Thompson, Centre for Teaching Excellence, University of Waterloo

Within several disciplines, it is standard practice to build a course on a framework of essential topics or diagnostic criteria and then use case studies to provide more detail to develop a rich overall picture. However, when many case studies are used over several months and are presented topically, not chronologically, it can be difficult for students to retain the big picture, decipher general characteristics and see how a given case study fits the framework but still has individual differences.

In 2016, Jean developed an approach for SCBUS 225 that encompasses on-going class activity and a summative assignment to build awareness of the "big-picture" using Adizes' (2004) business life-cycle model as the overarching framework. Each case is covered in detail in lecture, assignments, or projects. The individual companies are framed in a financial sense, assessed in terms of their organizational behavior and how the OB parameter in question has influence business success. Each week, cases are plotted on the on-going life-cycle framework and, finally, a summary assignment is used to document and discuss the broader characteristics of the model.

The authors illustrate how students use numerous case studies to observe and reflect on how the data fit the framework and also predict future performance in specific situations (specific companies). Student views of this approach from academic, co-op and career perspectives will be shared. Participants will have the opportunity to discuss possible implementation of the process within their disciplinary context.

Learning objectives:

By the end of this session, participants will be able to:

- Define the advantages of implementing an ongoing summary activity to guide case based learning
- Consider application of a life-cycle or stage-based model within their own case-based context

Takeaways:

- Overarching frameworks help students organize, assess and contrast information from a variety of case studies, even when the cases are presented with respect to topics as opposed to chronology.
- Students actively use this information to predict business strategies and to make thoughtful co-op and career choices.

References:

- Adizes, I. (2004). *Managing corporate life cycles, 2nd edition*. Adizes Institute.

Involving Students in Self-Assessment: An Example from a First-Year Writing-Intensive Seminar

Ania Kowalik, Rice University

This Assessment Showcase will help participants to:

- examine different components of self-assessment (use of exemplars, discussion of criteria of performance, peer review, reflection, self-grading) and how they all fit together
- understand how to scaffold and grade self-assessment assignments and activities
- design student self-assessment into their own courses

In the context of current discussions about "ungrading" and "assessment as learning," student self-assessment offers an opportunity to de-emphasize grades and to deepen students' metacognitive and lifelong learning skills. At the same time, student self-assessment might seem challenging to implement. Instructors often wonder about the accuracy and fairness of this method, and worry that preparing students for self-assessment might take too much class time.

In this Assessment Showcase, I will share a self-assessment assignment from a first-year writing intensive seminar. The self-assessment was wrapped around an oral presentation assignment. It integrated peer-review, self-assessment and reflection, and self-grading. In order to understand the qualities of effective oral presentations, students spent one class session reviewing sample oral presentations and identifying the dos and don'ts of oral communication before delivering and self-assessing their own presentations.

The teaching materials in this showcase will give the participants a comprehensive picture of full implementation of self-assessment:

- description of pre-class and in-class activities during which students analyze exemplars and engage with the criteria of performance,
- prompt for the self-assessment assignment (incl. information on how this self-assessment was graded),
- rubric for assessing oral communication,
- two examples of student self-assessment,
- commentary from the instructor on implementing these activities in a face-to-face and online context and on technologies used in this assignment.

While this example of student self-assessment comes from a specific teaching and learning context, the activities and assignments provide a model of self-assessment design that can be integrated into courses across different disciplines.

Takeaways:

- Participants will get a set of general questions appropriate for most self-assessment contexts.
- Participants will closely examine a student-centered assessment and (un)grading model.
- Participants will understand the principles of designing self-assessment activities.

References:

- Bloom, S. D., (Ed.) (2020). *Ungrading: Why rating students undermines learning (and what to do instead)*. West Virginia UP.
- McMillan, J. H. & Hearn, J. (2008). Student self-assessment: The key to stronger student motivation and higher achievement. *Educational Horizons, 87*(1), 40-49.
- Race, P. (2001). *A briefing on self, peer, and group assessment*. LTSN Generic Centre.
- Tai, J. (2018). Developing evaluative judgment: Enabling students to make decisions about the quality of work. *Higher Education, 76*, 467-481.

Utilizing Pedagogical Technology to Facilitate Peer and Group Feedback in Hybrid Classroom - A Case Study at Deakin University

Vlad Ster, FeedbackFruits

Dan Hasen, FeedbackFruits

Assessment is at the heart of education, being a driving force behind effective learning (Conrad & Openo, 2018). To craft a good assessment means to cultivate a learning environment that encourages frequent feedback, collaboration, and diverse evaluation methods (Piezon & Donaldson, 2005). It is crucial yet challenging to maintain the presence of these components in any learning context. Teachers often find themselves facing several pedagogical challenges, such as free-riding in group work, low feedback quality, or result-oriented assessment. Therefore, there is a need for effective, innovative practices to tackle these issues.

This case study embraces the challenge of free-riding and feedback facilitation in hybrid classrooms, by implementing two pedagogical tools: Peer Review (PR) and Group Member Evaluation (GME). These tools can be integrated into the LMS and allow for feedback delivery among peers and group members. In this case study, 65 students from [institution] worked in groups of 4-5 to record a presentation and upload it into Peer Review. This is where students review each other's work based on a list of criteria and propose two questions to the presenters to be addressed in the subsequent online symposium. The symposium acted as a synchronous, summative assessment, in which the groups summarized their presentations and answered the questions. In the end, students evaluated their group members' contributions using GME.

Overall, there was a significant improvement in several aspects, namely: students' collaborative skills, performance, conversation, and discussion quality. As for teachers, the emphasis was on a more structured feedback process, as well as a strong preference for the straightforward, easy-to-use interface while using the two tools.

Takeaways:

- Understand the process of facilitating peer review and group member evaluation in synchronous and asynchronous context; along with the main features of the two pedagogical tools.
- Gain insights into the positive outcomes of peer/group assessment integration, in terms of deep learning, free-riding prevention, and group work quality.
- Explore future implications, directions in further developing this pedagogical approach.

References:

- Conrad, D., & Openo, J. (2018). *Assessment strategies for online learning: Engagement and authenticity*. Athabasca University Press.
- Piezon, S. & Donaldson, R. (2005). Social loafing and free riding in online learning groups. *Online Journal of Distance Learning Administration*. Winter.

Showcasing Student Learning through Google Site E-Portfolios

Amy Damrow, Kent State University at Stark

Sarah Flower, Kent State University at Stark

Haley Weller, Kent State University at Stark

Kayla Michels, Kent State University at Stark

Kyndal Frain, Kent State University at Stark

Ruth Rickerd, Kent State University at Stark

Logan McNutt, Kent State University at Stark

This moment in time--increased remote and online instruction during a pandemic--invited rethinking of instruction and assessment. In Fall Semester 2020, I replaced more traditional final cumulative exams with cumulative e-portfolios in two courses: Education in a Democratic Society and Educational Psychology. As an instructor, I saw an opportunity for students to experiment and become more comfortable using a range of new technologies to showcase and highlight their acquisition of knowledge and skills. On Google Sites they posted both traditional and multi-media course assignments. They demonstrated oral communication skills and content knowledge by creating narrated PowerPoints and learned to humanize screen-to-screen learning. They were motivated because they noticed how the skills they learned could support them in future coursework and in the teaching profession. Portfolios provided a valuable space for students to reflect on new technologies learned, whether we met the expectations of our accord, and whether students met their own goals for becoming more effective, self-directed learners. Leading up to the submission due date, e-portfolios were easily shared during peer review. In addition, colleagues and professors at other universities could access and offer feedback.

Materials shared include hyperlinks to instructor introduction and six student portfolios (Elementary Education, Middle Childhood Education, and Art Education).

Takeaways:

- Other instructors will be inspired by skills and learning demonstrated in student work.
- Students are co-authors and will also monitor the virtual space and respond to questions.

The Sustainability Contribution Project (E-book)

Nadine Ibrahim, Civil & Environmental Engineering

The recent transition to online teaching prompted changes in teaching delivery methods and assessments, in addition to more sharing of open education resources (McSorley et al., 2020). Building an engaging online community and creating opportunities for peer-to-peer learning enriches the learning experience (Hoyt et al., 2020). Leveraging the opportunities of remote learning, the instructor designed an activity involving the creation of a sustainability e-book as a community-building activity and a peer-to-peer learning opportunity while experimenting with a new type of assessment. "The Sustainability Contribution Project" e-book was made possible with the contribution of students in co-creating content.

In an undergraduate engineering course on Engineering and Sustainable Development at the University of Waterloo in Spring 2020, students were given the opportunity to contribute a sustainability idea as it applied in the context of urban sustainability. This activity encouraged students to explore sustainable cities, infrastructure, solutions, and technologies globally to bring together sustainability concepts introduced throughout the course.

Every student contributed a PowerPoint slide as they applied course topics to real-life, global cities on which they were assessed. A slide template was provided with detailed instructions to maintain formatting consistency among submissions. Audio-narration was part of the activity submission but not included as an integral part of the e-book. Submissions were scheduled throughout the term to maintain diversity among topics and were shared with the class as an additional learning resource on the relevant week's topic. The final product was compiled into a 140-page e-book for the benefit of students, and as an open educational resource on OER Commons for the benefit of the wider learning community.

The e-book can also be used by future learners and instructors to provide examples of sustainability applications, where there are several examples from global cities around the world that can be used to demonstrate best practices and innovations for sustainability solutions.

Takeaways:

- Teaching sustainability is best conducted when there are opportunities designed to learn from course material, the world around us, the media and news, and from each other.
- Leveraging the opportunities of remote learning, the instructor designed an activity which involved the creation of a sustainability e-book as a community-building activity and a peer-to-peer learning opportunity while experimenting with a new type of assessment.
- Each student was tasked with making a contribution to the e-book in the form of a slide as they applied course topics to real-life, global cities, and learned from each other's submissions.

References:

- McSorley, G., d'Entremont, A., Verrett, J., Ibrahim, N., Dickinson, J., Sellens, R., Salem, D. A. (2020). Open education resources in undergraduate engineering education: Opportunities and challenges. *Proceedings of the 2020 Canadian Engineering Education Association (CEEA-ACEG20) Conference*. https://ojs.library.queensu.ca/index.php/PCEEA/article/view/14183
- Hoyt, S., Theodore, N. D., & Alford, T. L. (2020). Creating a learning community and building engagement in online engineering courses using active learning instructional practices and EdTech tools. *International Journal on Innovations in Online Education, 4*(1). https://onlineinnovationsjournal.com/download/60c00fa41bb89e87.pdf

Concurrent Sessions (200): 3:20 – 4:20 PM

Session 201: Panel Discussion - Student Assessment in Facilitated Collaborative Learning

James Skidmore, Germanic & Slavic Studies, University of Waterloo

Panelists:

Mario Ioannidis, Chemical Engineering, University of Waterloo

Jennifer Whitson, Sociology & Legal Studies, University of Waterloo

Shannon Majowicz, School of Public Health & Health Systems, University of Waterloo

Michael Boehringer, Germanic & Slavic Studies, University of Waterloo

With the pivot to pandemic pedagogy in 2020, many instructors needed inspiration and examples about how to engage students and assess their learning in the online environment. This was the case at the University of Waterloo where James Skidmore, a faculty member with extensive experience in online course design, spearheaded the development of a website, webinars, and other resources to help instructors adapt to the new reality by switching from teaching to facilitating learning.

The simple but not simplistic facilitation approach promoted by Skidmore builds on the work of Flower Darby and Terry Anderson and frameworks such as the Universal Design for Learning, the Community of Inquiry model, and UW's own User Experience Design for Learning. These methods promote the revisioning of various course elements in the online space, among them assessment. The very notion of assessment changes in this new constellation: as courses shift from lectures to facilitated student discussions of content, instructors have the opportunity to observe students and evaluate their progress in collaborative learning settings. By using discussion forums and other interactive exercises to engage learners, instructors discovered that students could experience deep learning by working with and applying concepts in ways that wouldn't have been possible in face-to-face instruction.

This practice-based panel discussion will bring together four University of Waterloo colleagues from three faculties (Engineering, Health, and Arts) who adopted aspects of the facilitation model. Panellists will explain how they adapted and expanded the model to suit their course context and teaching objectives, and how these new structures affected the students' learning (and the instructors' evaluation of that learning). A large portion of the session will be devoted to discussion with attendees.

Takeaways:

- How facilitation, as opposed to lecturing, has certain advantage in the online environment.
- How assessment in facilitated learning may be different, but the quality of assessment can remain high.

References:

- Anderson, T. (Ed.) (2008). *The theory and practice of online learning. 2nd ed.* AU Press.
- *Community of Inquiry*. https://coi.athabascau.ca/coi-model/
- Darby, F., & Lang, J. M. (2019). *Small teaching online: Applying learning science in online classes.* Jossey-Bass.
- *Universal Design for Learning*. https://udlguidelines.cast.org/
- *User Experience Design for Learning*. https://cms.cel.uwaterloo.ca/honeycomb/index.aspx

Session 202: Workshop - The Power of Video Feedback: A Guide for Absolute Beginners

Sandra Duggleby, University of Calgary

Kimberly Grant, University of Calgary

Grounded in literature and firsthand experience, this synchronous workshop will introduce best practices in providing video feedback and inspire instructors to implement this empowering, personalized, effective form of feedback. During this workshop, participants will learn about evidence-based principles for using audio/video feedback as well as hear from an instructor who discovered that providing video feedback has a profoundly positive impact on students' social and emotional well-being and motivation to continue learning. Participants will be encouraged to use readily available technology to share constructive, criteria-based, future-focused feedback with their online students. Because discomfort with recording ourselves can be an obstacle to using video feedback, participants will have opportunities to practice some simple strategies for overcoming their hesitation. Despite the initial awkwardness, we know that when used effectively, video feedback can be personable, pleasant and can promote a safe learning environment to enhance students' learning experiences.

Takeaways:

- Participants will learn how instructor social presence is enhanced through video feedback and can lead to more highly motivated learning.
- Participants will practice combining authentic video communication strategies with principles of effective feedback to create meaningful video feedback.

References:

- Black, P., & Wiliam, D. (1998). Inside the black box: Raising standards through classroom assessment. *Phi Delta Kappan, 80*(2), 139 -148.
- Borup, J., West, R., Thomas, R., & Graham, C. (2014). Examining the impact of video feedback on instructor social presence in blended courses. *The International Review of Research In Open and Distance Learning*, 232-256.
- Cavanaugh, A., & Song, L. (2014). Audio feedback versus written feedback: Instructors' and students' perspectives. *Merlot Journal of Online Teaching and Learning, 10*(1), 122-138.
- Kim, L. (2004). Online technologies for teaching writing: Students react to teacher response in voice and written modalities. *Research in the Teaching of English, 38*(3), 304-337.

Session 203: Workshop - Connecting with Non-Majors in Required Courses

Michael Cooper-Stachowsky, Engineering Undergrad Office, University of Waterloo

Ayman El-Hag, Electrical & Computer Engineering, University of Waterloo

Students are often required to take courses outside of their chosen major. This may be due to breadth requirements or, for some programs such as engineering, accreditation purposes. Students often approach these courses with dread, feel disconnected from the material, and have difficulty connecting with the material (Sivaramakrishnana & Ganago, 2013; Fuller, 2017).

Our framework is based on answering three key questions:

- Who are our students?
- Who are we?
- How can we motivate our students through authentic assessment?

Drawing on prior research into using assessment to motivate and engage students (Stachowsky & Milne, 2018), participants will explore these three questions. The workshop will begin with a discussion of participant's perceptions of non-major students and contrast them to the realities revealed by literature. We will then explore the knowledge, skills, and attitudes that instructors must have to successfully teach within those realities.

We will present a client-focused approach to teaching non-major courses. This approach is based on three principles:

- Speaking in the language of the students' field of study
- Setting high expectations for excellence, and providing an environment for that excellence to emerge
- Finding and communicating your motivation to teach this course

The final portion of the workshop will be on how to create authentic, engaging assessments in such courses. Participants will learn techniques to manage the scope, authenticity, and relatability of assessments so that students remain challenged, interested, and motivated to succeed.

Takeaways:

- Describe the unique needs of non-majors taking required courses and how those needs change how the course is delivered.
- Apply a framework for creating engaging assessments that enhance student learning and motivation to succeed.
- Understand the client-focused worldview required to succeed as a teacher of non-major required courses.

References:

- Sivaramakrishnana, S., & Ganago, A. (2013). *Teaching strategy focused on sensory perception, students' interest and enjoyment* [Conference presentation]. IEEE Frontiers in Education Conference, Oklahoma City.
- Fuller, K. (2017). Beyond reflection: Using eportfolios for formative assessment to improve student engagement in non-majors introductory science. *The American Biology Teacher, 79*(6), 442-449.
- Stachowsky, M., & Milne, A. (2018). *What makes a good assessment? Assessments for learning* [Conference presentation]. CEEA, Vancouver.

Session 204: Presentations

204a: Welcome to Canadian Politics: Collaboration for Student-Led Knowledge Building*

*This is a University of Waterloo Learning Innovation and Teaching Enhancement (LITE) Grant-funded project

Alana Cattapan, Political Science, University of Waterloo

Emma Nero, Political Science, University of Waterloo

In the Winter of 2020, my class undertook a project to begin to develop an online, open-access introductory textbook for Canadian politics. Drawing on principles of critical pedagogy, the assignment engages students in group work to generate plain-language submissions that can connect with an audience beyond our classroom while contributing to knowledge-building in the field. To complete the assignment, students collaborate in groups to create straightforward, accessible primers about subjects in Canadian politics. Once submitted, students' work is compiled, edited and, with students' consent, uploaded to the project website (http://www.welcometocanadianpolitics.ca). Students have multiple opportunities to provide feedback about their experience and the website.

In the Fall of 2021, I received a seed grant to expand the project, including funds to: develop materials for participating students and teaching teams; revamp the website to facilitate submission, editing, and uploading; and create resources to support its use in classrooms beyond the University of Waterloo. Regarding this latter, the assignment will be implemented in at least two Canadian politics classrooms in Winter 2021, with plans for further expansion.

This presentation reports on the project to date, including its pedagogical foundations, learning objectives, motivations for scaling-up, and the successes and challenges the project has faced, particularly in light of COVID-19.

Takeaways:

- How to create student-led, collaborative learning resources by students, for students.
- How to foster creativity in assignments designed for use beyond your classroom.
- How to move from student submissions to website content.

204b: Using Infographics as an Alternative Assessment

Ahmet Ozkardas, Economics, University of Waterloo

First year students at Canadian universities are taking introductory courses which are developed to give the fundamentals of the related area and prepare students for higher and deeper understanding of their program. However, due to the large class sizes, it is challenging for instructors to make these courses efficient and engaging. Students usually study to earn higher grades rather than learning the concepts that are taught. Especially with a classical assessment styles, it becomes easy for students to forget all acquired knowledge as soon as the term ends.

From this perspective, we created an alternative assessment type, creating theme-based infographics, specifically designed for the Global Business and Digital Arts students at the University of Waterloo who are taking Introduction to Microeconomics during their 1B term. In addition to their term and final exams, online quizzes and a term project are added to the course outline. The term project is an ongoing (throughout the term) project and it is expected to create an infographic related to one of the topics of the course (over 33 topics covered during the term), and they are supposed to present their infographic to their classmates. Students will work in groups of four during the term and are supposed to explain the topic as efficiently as possible while using their digital arts talents and knowledge they acquire from their major. Grading of the term project has three components: infographic grading according to seven criteria (15% of the final grade), presentation of their work (5%) and self and peer evaluation (4%). Although each group is focusing on one topic as a term project, they need to follow all other topics during the lectures in order to be successful at online quizzes (6%), a term exam (25%), and a final exam (45%).

Takeaways:

- Creating an assessment for introductory (elective) courses based on students majors increases the learning outcome.
- Motivating the students to internalize the course subjects instead of learning for assessments can be achieved through alternative assessment styles.

204c: When Learning is the Learning Outcome: The Challenges of Assessing Course Engagement

Tracy Hilpert, School of Accounting and Finance, University of Waterloo

Lynn Carty, School of Accounting and Finance, University of Waterloo

Communicating assessments for learning is especially challenging when what is being assessed focuses on developing skills and behaviours of an engaged learner. Learning activities such as class preparation, class participation and practice provide students with valuable learning opportunities which are often missed by students who struggle to buy into the process of course engagement when external incentives are low. How can course engagement activities be designed, communicated, and assessed to encourage students to move beyond check marks and grades and become more invested in the learning process, open to the feedback available from their participation in this process, and ultimately change their behaviour with respect to their learning?

In this presentation, we will highlight our experience designing, communicating and assessing course engagement for a first-year undergraduate course offered to approximately 400 students. Our presentation will consider:

- How can we effectively:
    - communicate the assessment of course engagement?
    - prepare students for these course engagement assessments?
    - develop an appropriate grading rubric for course engagement assessments?
    - debrief students after the course engagement assessment to maximize the learning impact?
- What worked, what did not work, and what we will do next time as we continue to focus on learning as a learning outcome.

In the spirit of active learning, participants will be encouraged to pose questions during our presentation and reflect on how they assess course engagement in their own courses.

Takeaways:

The importance of:

- aligning course engagement assessments to course learning outcomes and communicating this to students (so students buy-in and understand why they are doing the assessment).
- clearly explaining to students what is required with respect to course engagement and how they will be assessed (so students understand exactly what is expected of them).
- debriefing students after the assessment (to encourage students to accept, embrace, and use feedback to improve how they learn going forward.

Session 205: Presentations

205a: Fostering Learning and Connecting Between Students through Remote Group Work*

*This is a University of Waterloo Learning Innovation and Teaching Enhancement (LITE) Grant-funded project

Jola Gurska, Biology, University of Waterloo

Marcel Pinheiro, Biology, University of Waterloo

Jason Thompson, Centre for Teaching Excellence, University of Waterloo

Both online and on-campus large-enrollment courses easily fall into the pitfall of failing to gather students with other members of their cohort for meaningful interaction. A group work framework was developed for Fall 2020, aimed at offering students the chance to interact with classmates while online, as recommended elsewhere (Rovai and Wighting, 2005). Students met weekly and worked on individual and group (5 member) tasks that were designed in the spirit of assessment for learning. This occurred in Fall 2020, in a first year (n = 228) and third year (n = 364) biology course. Both soft skills (e.g., evidence-based study skills and effective group dynamics) and content knowledge (e.g., creation of novel test questions by the group) were part of the assigned tasks. Considerable scaffolded materials were also provided to facilitate the team building and encourage students to work together with clear goals; those included group contracts, rotation through defined group member roles (facilitator, arbitrator, scribe, devil's advocate) and weekly agendas with icebreakers.

To quantify the impact of this framework, students completed surveys to assess their awareness of metacognition (Schraw and Dennison, 1994), and feelings of connectedness to their cohort (Rovai, 2002). End of term student comments were very positive. Students highlighted this framework as a remedy for feelings of isolation during remote learning in Fall 2020. The process was also perceived as an effective means for students to learn content and had the additional benefit of helping with organization and staying on top of workload. This presentation will showcase materials provided to students, rubrics and suggestions for implementation, and preliminary data of students' survey responses.

Takeaways:

- Presenting a group work framework to build cohort during remote instruction (or large-enrolment classes), with focus on skill building and content knowledge.
- Students work in groups remotely to connect with their peers, explore evidence-based study skills, and learn content knowledge.

205b: Remote Silver Linings and The Art of Reflection

Tara Cooper, Fine Arts, University of Waterloo

Teaching within a remote context closed a lot of doors, and I don't mean this as strictly metaphor. I teach in Fine Arts and we were quite literally locked out of our studios. Tasked with the job of teaching studio-based courses that focus primarily on making, I had no clue where to begin, or if it was even possible. At one point, drowning in the overwhelming sea of platforms—Padlet, Zoom, Teams, Pebble, Web Ex, Bongo and Learn—I checked when exactly I was eligible for the earliest of early retirement packages. However, the challenge of the remote format peeled away my habitual layers and assumptions of how things are done to reveal an unexpected opportunity, as well as new formats in expression and communication.

In this practice-based presentation, I will share what I learned about the power of reflection, as well as the benefits of video as a creative tool that fosters deep learning, the potential for mentorship with our alum, and asynchronous participation for visually-based projects. It will be a case-study approach based on two courses project examples include: "Where are you at?" (a pre-assessment assignment that kicked the semester off by asking students to take stalk of where they were and where they wanted to go), and "Where are they now?" (a speaker series where alum virtually came back to talk to our 4th years, sharing post-graduation trajectories). The takeaways will include the nuts n' bolts of how these assignments were structured; what worked and by default what didn't work; how I would improve them in the future; strategies for asynchronous participation, how to build community and the surprising benefits to me as an instructor, which offered much needed encouragement to forge ahead.

Takeaways:

- The nuts n' bolts of structuring reflective-based assessments that take advantage of the remote format.
- The hidden benefits of video-based learning from the teacher's and learners' perspectives.
- The mentorship potential of alumni.

205c: Comparing Students' Performance in Non-Proctored Online Assessments and In-Person Proctored Exams for Large Size Classes: Challenges and Lessons Learned During COVID-19 Pandemic

Ayman El Ansary, Western University

The COVID-19 pandemic has led to global disruption and has impacted the lives of people worldwide with most activities being forced to move online, including education. Since March 2020, most universities have transitioned from traditional "in-person" classes to online learning. This required a swift development of online courses with three main components; delivery, engagement, and assessment to be conducted in a remote learning environment. Various tools and learning platforms are currently available to help instructors successfully achieve the first two components. However, there are challenges with conducting assessments remotely during COVID-19, including a) conducting non-proctored online assessment for large-size classes (650+ students), b) impact of switching from paper-based exams with partial grading scheme to a computer-based assessment that includes a correct/incorrect final answer format, and c) detecting academic dishonesty in non-proctored online assessments.

In this proposal, the author addresses these challenges based on his practical teaching experience in a common first-year engineering course. The author implemented strategies and quantitative measures to successfully conduct remote assessments for 650+ students over a two-semester time frame, which can also be used when in-person teaching resumes (e.g., Mastering Engineering platform). In terms of overall students' performance, similar grades statistics have been noted by comparing in-class paper-based exam scores to non-proctored online assessments for the same cohort of students in the same course, as well as for different cohorts of students in the same course. These findings do not concur with number of studies that suggest randomized online-type questions significantly impact course grades and increase failure rate. Finally, strategies are presented in this proposal to detect cheating that took place in non-proctored online assessments (e.g., monitoring time taken in answering each question, correlation between different assessment components). Suggestions on how to mitigate cheating in online assessments are provided based on the author's accumulated practical experience.

Takeaways:

- Innovative strategies and quantitative measures utilized to successfully conduct non-proctored online assessments for large size classes.
- Strategies to detect cheating that took place in non-proctored online assessments (e.g., monitoring time taken in answering each question, correlation between different assessment components).

Session 206: Presentations

206a: Holistic Assessment for Learning through E-Portfolios: Building Knowledge and Skills during Remote Instruction

Amy Damrow, Kent State University at Stark

Sarah Flower, Kent State University at Stark

Kayla Michels, Kent State University at Stark

A shift to remote instruction during the pandemic invited rethinking course design and provided an opportunity to develop a more holistic and integrated approach (Fink, 2013) in two early teacher education courses. By "holistic assessment for learning" we mean assessment practices that 1) are mindful of social and emotional dimensions of learning, and 2) allow students to develop both content knowledge and a wider range of skills (oral communication, acumen with new technologies, and the study strategies that lead to enduring learning). As part of this approach, technology-infused final e-portfolios replaced more traditional cumulative exams.

In this session, we introduce three resources that supported this transition and briefly explain how each contributed to scaffolding and creation of e-portfolios: Fink's (2013) Taxonomy of Significant Learning, Pacansky-Brock's (2020) Liquid Syllabus, and Leamnson's (2002) "Learning (Your First Job)".

Final e-portfolios allowed students to highlight acquired knowledge and demonstrate oral communication and presentation skills. Students also reflected on how they became better learners and showcased their acumen with new technologies. This holistic approach to learning and assessment supported growth in professor and students alike.

As an instructor-student presentation team, we share our experiences and provide an opportunity for participants to learn from both perspectives. We also discuss scaffolding assignments and the assessment rubric. Hyperlinks to the instructor welcome site and student e-portfolios provide specific strategies and inspiration for incorporating holistic instruction and assessment in other disciplines and courses.

Takeaways:

- Students benefit from holistic course design.
- Multimedia e-portfolios exemplify assessment for learning.
- E-portfolios allow students to demonstrate content knowledge, oral communication and technology skills, and reflect on learning and becoming better learners.

References:

- Fink, L. D. (2013). *Creating significant learning experiences, revised and updated: An integrated approach to designing college courses*. San Francisco, CA: Jossey-Bass.
- Leamnson, R. N. (2002). *Learning (your first job)*. University of Massachusetts-Dartmouth. Accessed October 1, 2019. http://www.udel.edu/CIS/106/iaydin/07F/misc/firstJob.pdf.
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206b: Somatic Experience Review Paper: Assessing Student Learning in Design Education through Somatic Awareness

Stephen Fernandez, English Language & Literature, University of Waterloo

This paper examines the use of a somatic approach to design education and the assessment of student learning in an undergraduate user experience design course. In this course, students learn about the somato-sensory capacity of our body and its role in shaping our embodied perception of the environment and the people and objects that we interact with. Through this somatic approach, students develop critical insights into complex design problems in the real world. In order to assess my students' understanding of the somatic effects of experience design, I developed the Somatic Experience Review Paper. In this assignment, students review four distinct somatic experiences related to interactions with media technology (for example, smartphones and mobile tablet computers). The four somatic experiences relate to the following human senses: Sight; Hearing; Touch; and Motion. Working individually, students prepare a Review Paper that accounts for these distinct somatic experiences that they have encountered within the past month.

Drawing inspiration from Fink's (2003) Significant Learning Model, which emphasizes the "human dimension" of learning that "informs students about the human significance of what they are learning", the Somatic Experience Review Paper encourages students to be aware of how somatic experiences affect the interactions between humans and media technology. Understanding the somatic effects of these human-technology interactions will offer students an empirically informed foundation upon which to design experiences that cater to the sensory and perceptual uniqueness of each user. Against the backdrop of the COVID-19 pandemic, I seek to share lessons from the use of a somatic approach to assess students' understanding of experience design in a remote teaching context. I also seek to demonstrate that the development of somatic awareness through a somatic experience review assignment can improve the quality of student learning in design education, and more generally across the university curriculum.

Takeaways:

- Against the backdrop of the COVID-19 pandemic, my presentation will shed light on the use of a somatic approach to assess student learning in a remote teaching context.
- My presentation will also illuminate the ways in which the development of somatic awareness through a somatic experience review assignment can improve the quality of student learning in design education, and more generally across the university curriculum.

References:

- Fink, L.D. (2003). *Creating significant learning experiences: An integrated approach to designing college courses*. San Francisco, CA: Jossey-Bass.

206c: Using Flipped Classroom to Create a Progressive Assessment Cycle

Caelan Wang, University of Florida

Flipped Classroom is a learner-centred instructional method that fosters learning both inside and outside the classroom. When using this method, the learner has the freedom to learn the course material through the resources provided by the instructor before the class. Then the learners get to practice what they've learned and get individualized help during class time. Such formative assessment helps the instructor see how the students mastered the material from the pre-class assignments and give appropriate feedback in real-time. After class, the students are usually given further assignments to assess and reinforce the learning.

I have taught Calculus 1 using the flipped classroom method for two semesters. In this talk, I would like to give an overview of the flipped classroom method by introducing how the University of Florida runs it, and then share my personal experience with the audience. I will explain the benefits and potential drawbacks of the flipped classroom method, and how I personally think it can be best implemented based on my own experience. In particular, I want to focus on how to create a progressive assessment cycle by implementing the flipped classroom method in a course.

Because of the pandemic, instructors are more likely to have lecture videos already recorded. Flipping the classroom could be a lot less time consuming than before. The continuous assessment of the learning and the timely feedback make it a great instructional method to try!

Takeaways:

- Flipped classroom is a learner-centred instructional method that fosters learning by letting the learners have more ownership of their learning process.
- There are three main times to regularly assess the learners when running the flipped classroom: pre-class, in-class, and post-class. Good use of these assessments would help the learners to master the course material progressively.
- To run this instructional method, we need to design good pre-class material and in-class assessment, so that the learners are provided ample instruction and guidance while being challenged.

References:

- D. Chamberlain, Grady, A., Keeran, S., Knudson, K., Manly, I., Shabazz, M., Stone, C., & York, A. (2020). Transitioning to an active learning environment for calculus at the University of Florida. *PRIMUS*, DOI: 10.1080/10511970.2020.1769235

Session 207: Presentations

207a: Rethinking Assessment Workload for Students and Instructors through Concurrent Assessment: A Practical Case of Shared Mentorship

Carolyn MacGregor, Systems Design Engineering, University of Waterloo

Igor Ivkovic (post-humous), Systems Design Engineering, University of Waterloo

Ewen MacDonald, Systems Design Engineering, University of Waterloo

Kate Mercer, Library, University of Waterloo

In professional programs, students are required to demonstrate competencies in technical and "soft" skills (e.g., communication, teamwork). First-year courses serve dual purpose: assess entry-level skills; and, set the stage for ongoing mentorship of students developing skills expected of graduates. An unintended consequence of multiple formative assessments for effective learning is overloading through deliverables across many courses, some of which may overlap in terms of intended learning outcomes. Instructors mindful of impacts of work overload on student mental health may feel that they must forgo a skill assessment to lighten workload. An alternate strategy is to adopt a shared mentorship approach, by collaborating on assessments that cover diverse skills without increasing student workload.

We present an example of shared mentorship in which instructors of two courses created a concurrent assessment to evaluate multiple skills. The courses covered related but separate communication topics: visualization (e.g., sketching, 3D modelling); and more traditional written and oral (e.g., writing abstracts, presentations). Students in first year engineering programs were assessed on 3D modelling skills, as well as individual student oral presentation skills during a single team presentation. In the visual communication course, teams of 6-7 students were tasked with designing and 3D printing a complex and innovative 3D puzzle using computer-aided design software. Involving the instructor of the written-oral communication course allowed for student presentation skills and the team-based design skills to be assessed concurrently. Each team had 10 minutes to present their 3D puzzle with 7 minutes for questions. Each individual student was required to speak for at least 1 minute. Grading rubrics and supplementary instruction materials were provided in advance. In total, 190 students presented their design projects over 8 hours, which led to more efficient use of course instruction time. The concurrent assessment seemed more enjoyable and supportive for both students and instructors.

Takeaways:

- Experience with shared mentorship and concurrent assessment of diverse skills across two related courses.
- Finding opportunities for shared mentorship and concurrent assessment across broader curriculum.

207b: Cultivating Inclusive Assessment in Post-Secondary Classrooms

Sarah Reddington, Mount Saint Vincent University

Jeanne Fletcher, Annapolis Valley Regional Center for Education

Research shows that there is an increasing number of students with disabilities entering postsecondary education in Canada and those with learning disabilities are the largest segment and receive almost half of all academic accommodations (Harrison & Holmes, 2012). Further, mental health concerns expressed by students are on the rise, including pressure to succeed, to meet course expectations, and manage work overload (Bunbury, 2020; Hamza et al. 2020; Henderson et al. 2020). It is therefore imperative that instructors within postsecondary institutions account for the complexity of student experience and offer flexible inclusive assessment opportunities (Osborne, 2019).

In this practice-based presentation, we share strategies for cultivating creative inclusive assessment for students as a means to support diverse learning styles and maximize student engagement with course content. The presenters will utilize their expertise as a learning disability specialist in the school system as well as a professor whose research is in the field of critical disability studies to explain the relevance and importance of cultivating inclusive assessment in the classroom. More specifically, the presenters will (1) describe common learning disability characteristics in the classroom and why inclusive assessment tools matter (2) explain the impact of inclusive assessment in building students' capacities and self-determination, and (3) give exemplars of inclusive software that instructors can adopt easily where students can share their knowledge through meaningful forms of representation. Explicitly, the presentation with focus on visual assessment tools that are intended to ignite students' creativity and heighten their connections to curriculum content through an accessible platform.

Takeaways:

- The participants will gain access to accessible inclusive assessment tools to support diverse learners in post secondary education.
- Participants will see the relevance and importance of why inclusive assessment is required as a means to support students who face a complexity of experiences (i.e., students with learning disabilities, students with significant mental health issues) when attending post secondary.
- Participants will understand the positive impact visual inclusive assessment design has in relation to student engagement and understanding curriculum content.

References:

- Bunbury, S. (2020). Disability in higher education: Do reasonable adjustments contribute to an inclusive curriculum? *International Journal of Inclusive Education, 24*(9), 964-979.
- Hamza, C. A., Ewing, L., Heath, N. L., & Goldstein, A. L. (2020). When social isolation is nothing new: A longitudinal study psychological distress during COVID-19 among university students with and without preexisting mental health concerns. *Canadian Psychology/Psychologie canadienne.*
- Harrison, A. G., & Holmes, A. (2012). Easier said than done: Operationalizing the diagnosis of learning disability for use at the postsecondary level in Canada. *Canadian Journal of School Psychology, 27*(1), 12-34.
- Henderson, L., Thompson, K., Hudson, A., Dobson, K., Chen, S. P., & Stewart, S. (2019). An analysis of campus culture, mental health, and drinking at three Canadian Universities. *Canadian Journal of Community Mental Health, 37*(3), 97-113.
- Osborne, T. (2019). Not lazy, not faking: teaching and learning experiences of university students with disabilities. *Disability & Society, 34*(2), 228-252.

Thursday, April 29, 2021

Keynote: 12:00 – 1:00 PM

A Triad Approach for Assessment in Blended and Online Courses

Dr. Norman Vaughan, Mount Royal University

A number of educational researchers have stated that assessment drives approaches to learning in higher education (Biggs, 1998; Hedberg & Corrent-Agostinho, 1999; Herman & Linn, 2013; Marton & Saljo, 1984; Ramsden, 2003; Thistlethwaite, 2006). Entwistle (2000) indicates that the design of the assessment activity and the associated feedback can influence the type of learning that takes place in a course or program. For example, standardized tests with minimal feedback can lead to memorization and a surface approach to learning while collaborative group projects can encourage dialogue, richer forms of feedback, and deeper modes of learning.

With the pivot to blended and online courses during the Covid-19 era the question arises about how these types of learning environments can support meaningful assessment practices. Garrison and Vaughan (2008) define blended learning "as the organic integration of thoughtfully selected and complementary face-to-face and online approaches and technologies" (p.169). Educational research studies have demonstrated that a blended approach to learning and teaching has benefits for both students and faculty members (Vaughan, 2007). Students indicate that blended learning provides them with greater time flexibility and improved learning outcomes while faculty suggest that blended courses create enhanced opportunities for teacher-student interaction, increased student engagement in learning, added flexibility in the teaching and learning environment, and opportunities for continuous improvement.

The focus of this keynote session will be on exploring how digital technologies can be used to extend what we've learned through the Covid-19 pandemic to blended teaching opportunities in the future, specifically with regards to the design of a triad-approach for student assessment (Vaughan, 2014). This triad-approach consists of self-reflection, peer feedback, and teacher/expert assessment strategies and techniques (Vaughan, 2013).

Learning outcomes:

- Integrating the use of self-reflection, peer feedback, and teacher/expert assessment strategies in a blended (flipped classroom) course.
- Designing diagnostic self-assessment approaches to gauge student learning before a synchronous (F2F) session.
- Incorporating formative peer assessment techniques for timely and specific feedback during a synchronous (F2F) session.
- Developing effective summative teacher/expert assessment after a synchronous (F2F) session.

References:

- Biggs, J. (1998). Assumptions underlying new approaches to assessment. *Curriculum and assessment in Hong Kong: Two components, one system* (P. Stimson & P. Morris, Eds.). Hong Kong: Open University of Hong Kong Press.
- Entwistle, N. J. (2000). Approaches to studying and levels of understanding: The influences of teaching and assessment. *Higher education: Handbook of theory and research*, XV (J. C. Smart, Ed.). New York: Agathon Press.
- Garrison, D. R. & Vaughan, N. D. (2008). *Blended learning in higher education*. Jossey-Bass.
- Hedberg, J. & Corrent-Agostinho, S. (1999). Creating a postgraduate virtual community: Assessment drives learning. *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications* (B. Collis & R. Oliver, Eds.). AACE: Chesapeake, VA.Retrieved from http://www.editlib.org/p/7040

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- Marton, F. & Saljo, R. (1984) Approaches to learning. *The experience of learning* (F. Marton, D. Hounsell & N. Entwistle, Eds.). Edinburgh: Scottish Academic Press.
- Ramsden, P. (2003). *Learning to teach in higher education (2nd ed.)*. London: Routledge.
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- Vaughan, N. D. (2007). Perspectives on blended learning in higher education. *International Journal on E-Learning*, *6*(1), 81-94.

Concurrent Sessions (300): 1:10 – 2:10 PM

Session 301: Panel - Assessment Opportunities Intersecting Learning Moments: Exploring Three Case Studies at Trent University

Cathy Bruce, Trent University

Panelists:

Claire Mooney, Trent University

Robyne Hanley-Dafoe, Trent University

Lauryn Bons, Trent University

Assessment for learning is a relatively new evidence-based construct in tertiary education. Trent University faculty and students have been expanding and refining assessment practices, including self, peer, and group assessment strategies that focus on assessment as an integral process in learning. We aim to move beyond the premise that: when students learn what is intended in the curriculum, we have achieved the key outcome. In this panel discussion, we will begin by offering a set of principles to frame the session. We will then feature three detailed case examples of learning through assessment at the undergraduate and graduate levels.

Case 1 – Independent and group collaborative learning during testing: This case explores a strategy where students respond independently and then confer with peers to refine their responses. Both responses may be included for evaluation. This form of assessment aims to support "learning on the go".

Case 2 – Learning through authentic assessment: Graduate students complete a persuasive letter assessment which allows for real world application and demonstration of knowledge mobilization related to a problem of practice. Assessment aims to bridge academic experiences to authentic professional practice.

Case 3 – Student reflection and assessment design: Students engage in formal reflection to analyse their learning and to inform assessments and criteria for evaluation during future implementation of the course. This strategy models flexibility and reflection in situ, incorporating student experience and perspectives.

After exploring these cases, the moderator will encourage discussion with participants and the panel members focusing on questions of ***how*** emerging assessment practices foster learning and the role of students in the process.

Takeaways:

- Collaborative assessment engages students and enhances learning.
- Student-created assessment is authentic and ensures student agency and voice.
- Authentic assessment can bridge the gap between theory and professional practice.

Session 302: Workshop - How the WCC Can Amplify your Teaching

Stephanie White, Writing & Communication Centre, University of Waterloo

Graeme Northcote, Writing & Communication Centre, University of Waterloo

Olivia Davitt, Writing & Communication Centre, University of Waterloo

While Writing and Communication Centre (WCC) specialists and tutors do not assess writers' work in the sense of assigning marks, they contribute to students' learning by providing authentic, actionable feedback of students' writing and communication. This feedback complements and enhances course-based assessment. Through a description and demonstration of the unique tutoring approaches writing centres follow, this synchronous workshop will demonstrate how WCC tutoring can amplify students' learning in their courses in any discipline.

In the first 20 minutes of this 55-minute online workshop, a WCC specialist and a WCC graduate peer tutor will use segments from a video-recorded virtual tutoring session (used with the tutor's and student's permission) to demonstrate WCC's evidence-based feedback strategies that put students in control of their learning (Brooks, 1991; Henning, 2005): balancing directiveness and non-directiveness (Kopec, 2008; Truesdell, 2007), asking questions so that students find their own answers (Harris, 1995; Thompson & Mackiewicz, 2013), and a focus on teaching for transfer into other communication situations within and beyond university (Bromley et al., 2016; Devet, 2015). In the next 5 minutes, the undergraduate student will explain in a recording how the WCC's feedback on their writing supports their learning and transfers to additional contexts. Participants will then take 15 minutes to respond to brainstorming prompts so they can identify places in their courses where encouraging use of the WCC will be beneficial to their students. The final 15 minutes will be Q&A and buffer time for unanticipated tech issues.

By the end of this workshop, participants will be able to:

1. Describe how the WCC puts into practice evidence-based writing centre feedback strategies, and
2. Identify how and when WCC tutoring can contribute to their students' learning in any discipline.

Takeaways:

- Writing and Communication Centre (WCC) specialists and tutors contribute to students' learning by providing authentic, actionable feedback of students' writing and communication through evidence-based tutoring practices.
- By encouraging students to meet with a WCC specialist or tutor at the start and middle of assignments, instructors in any discipline can amplify students' learning in their courses.

References:

- Bromley, P., Northway, K., & Schonberg, E. (2016). Transfer and dispositions in writing centers: A cross-institutional mixed-methods study. *Across the Disciplines, 13*(1).
- Brooks, J. (1991). Minimalist tutoring: Making the student do all the work. *Writing Lab Newsletter, 15*(6), 1-4.
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- Thompson, I., & Mackiewicz, J. (2013). Questioning in writing center conferences. *Writing Center Journal, 33*(2), 37+.
- Truesdell, T. (2007). Not choosing sides: using directive and nondirective methodology in a writing session. *Writing Lab Newsletter, 31*(6), 7.

Session 303: Workshop - Learning Through Reflection: How to Benefit from Reflective Practice in Higher Education

Lisa Dyce, McMaster University

It is generally accepted that reflection is an important part of both self-directed and experiential learning in higher education (Finlay, 2008). Engaging in regular reflective practice can be beneficial for learners as this process may facilitate ongoing consolidation of knowledge; increase self-awareness of one's strengths, areas for improvement, assumptions, beliefs, and/or interests; encourage application to other context or experiences; and provide a record of learning and development (Pretorius & Ford, 2016). Although the benefits of reflection are numerous and significant, it has been suggested that the skills and approach needed to effectively engage in and learn through reflection are not commonly taught in higher education (Atkins & Murphy, 1993; Mann, Gordon, & MacLeod, 2009; Finlay, 2008; Pretorius & Ford, 2016).

In order to overcome this lack of training, learners in this workshop will first identify benefits for engaging in reflection as an assessment of learning within their discipline. Then, learners will describe and apply key steps of reflection to generate personalized reflective prompts for guiding their practice. Finally, learners will consider potential barriers to and considerations for engaging in reflective practice as an assessment tool, outlining ways to prevent or overcome these barriers. At the end of the workshop, participants will have created a personalized take-home sheet for guiding their reflective practice.

Takeaways:

By the end of this workshop, participants will be able to:

- Identify purposes of engaging in reflective practice, both personally and professionally.
- Describe common elements of reflective practice models.
- Create personalized prompts to guide their reflective practice.
- Identify barriers and facilitators of reflective practice.

References:

- Atkins, T. W., & Murphy, K. (1993). Reflection: A review of the literature. *Journal of Advanced Nursing, 18*, 1188-92.
- Finlay, L. (2008). Reflecting on "reflective practice". *PBPL paper 52*.
- Mann, K., Gordon, J., & MacLeod, A. (2009). Reflection and reflective practice in health professions education: A systematic review. *Advances in Health Sciences Education, 14*, 595–621.
- Pretorius, L., & Ford, A. (2016). Reflection for learning: Teaching reflective practice at the beginning of university study. *International Journal of Teaching and Learning in Higher Education, 28*(2), 241-253.

Session 304: Workshop - Introducing Critique to Enhance Traditional Evaluation in Your Large Classroom

Matt Borland, Systems Design Engineering

Kate Mercer, Library

In Engineering design courses there are a number of logistical challenges that result in a large number of student interactions framed through the lens of "evaluation". There exist opportunities to develop a different set of skills within students by acting as a mentor, not an evaluator, during the process of providing Critique. This workshop will provide a basic framework differentiating the two modes of interaction, provide some lessons learned from implementing this teaching approach with 4th Year Capstone Design Project students, and engage participants hands-on in a structured critique activity. The workshop will be based on the critique method presented in "Discussing Design" by Connor and Irizarry. The interdisciplinary value of critique will be discussed within the context of current research literature to highlight different approaches to implementing critique within the classroom.

Takeaways:

- The basic components of critique as a tool for design communication.
- A structure way to implement good critique in a large class.

References:

- Goldschmidt, G., Hochman, H., & Dafni, I. (2010). The design studio "crit": Teacher–student communication." *Artificial Intelligence for Engineering Design Analysis and Manufacturing, 24*(3), 285-302.
- Khaidzir, K., Mohamed, A., & Lawson, B. (2013). The cognitive construct of design conversation. *Research in Engineering Design 24*(4), 331-347.
- Oh, Y. O., Ishizaki, S., Gross, M. D., Yi-Luen Do, E. (2013). A theoretical framework of design critiquing in architecture studios. *Design Studies 34*(3), 302-325.
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Session 305: Presentations

305a: Storytelling as Pedagogical Practice: Assessing Creativity and Establishing Community in the Humanities & Sciences

Amanda Montague, McMaster University

Abeer Siddiqui, McMaster University

In this presentation, we will describe our respective undergraduate Storytelling courses for the Humanities and the Life Sciences. While we teach in distinct disciplines, we recognize that effective storytelling bridges creator and audience. We wanted to establish a similarly reciprocal relationship between ourselves as instructors and our students and leveraged creative assessment practices to empower our students as storytellers.

We will discuss student-generated rubrics, peer-to-peer learning as a way to evaluate creativity, and low-stakes formative assessments for experiential learning in the Humanities and the Sciences. Our approach to assessment aimed to empower students as both critical consumers and producers of knowledge and placed greater value on process over product. Students developed their own individualized rubrics to best reflect their unique deliverables, thereby reducing student anxiety and reluctance to take creative risks. Peer-to-peer learning better captured and assessed the creative process. Students were evaluated on both their final deliverables as well as the feedback and encouragement they provided their peers. Of greater importance, peer-to-peer learning helped establish a community of practice and a culture of shared empathy. Low-cost formative assessments were baked into experiential learning activities and provided instructors frequent opportunity to check-in with students and rectify gaps in course content. This year, we reshaped our respective assessments for the online environment and leveraged technology to facilitate these assessment practices without sacrificing a shared sense of community.

Storytelling served as the basis of course content and course design. While our course objectives may have varied – one of us was inspired to use storytelling to connect her students with their communities, while the other employed storytelling as a way to stem the rise of misinformation – teaching Storytelling through storytelling became a unified way of empowering students and ourselves as instructors regardless of discipline.

Takeaways:

Practices related to:

- Assessing creativity in the Humanities and the Sciences.
- Using storytelling to inform course content and course design.
- Leveraging peer-to-peer learning/assessment to build sense of community.
- Empowering students to take risks through student-generated rubrics.

305b: A Focused, High-Circulation Method for Peer Review Workshops

Bruce Dadey, English Language and Literature, University of Waterloo

There are few assessment methods more full of learning potential than peer review, in which students assess and give feedback to one another. Peer review can create the sense of writing for a genuine audience, de-center authority in writing classrooms, and reinforce assignment criteria (Keating; Lundstrom and Baker). However, peer review can also provide feedback that students perceive as unfair, inaccurate, and unhelpful (Kaufman and Schunn; Topping; Liu and Carless).

In my practice-based presentation, I will outline an in-class peer review workshop method I have used that has produced high-quality comments and positive feedback in course evaluations. The process is a variation of Peter Elbow's doubting and believing games.

Prior to the workshop the instructor lists the major assessment criteria for the assignment to be reviewed and creates a series of numbered readings based on the assessment criteria, one per criterion. Each reading contains a series of specific commenting and editing tasks related to the criterion.

In the workshop, students bring hard copies of their assignments and receive a copy of the readings. The assignments are distributed to other students, and each student writes Reading 1 across the top and performs the tasks associated with that reading only. When they are done Reading 1, they give up the paper, take another, and do the tasks associated with the next reading, writing its number across the top to let the next student know what readings have been done. When they are done the tasks, they once more give up the paper and take another. In this way papers circulate through multiple readers during the workshop, receiving focused and relevant feedback at each stage.

I will show examples of reading series that I have constructed for various writing assignments and outline advantages, disadvantages, and possible variations of this peer review workshop method.

Takeaways:

- How to create peer review tasks that reflect and reinforce assignment criteria.
- How to have students produce focused and constructive peer review comments.

References:

- Elbow, P. (1973). *Writing without teachers*. Oxford UP.
- Keating, B. (2019). 'A good development thing': A longitudinal analysis of peer review and authority in undergraduate writing. *Developing writers in higher education: A longitudinal study* (A. R. Gere, Ed.). University of Michigan Press, pp. 56-79.
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305c: Using Collaborative In-Class Assignments in Large Introductory Courses

Dina Dawoud, Statistics & Actuarial Science, University of Waterloo

Diana Skrzydlo, Statistics & Actuarial Science, University of Waterloo

Based on research conducted through a LITE grant, we have been using "Tutorial Assignments" in our classes since 2015. These collaborative in-class assignments are both an assessment and a learning activity in one: students can use their notes, consult each other, and get clarification from the instructor and TAs who walk around and interact with each group. We choose the questions to reinforce ideas they will be seeing on the more traditional test the week after, taking the opportunity to confront misconceptions where they can be corrected. They are also immensely enjoyable and energizing to administer!

After the success of using them in a small third-year statistics course, we wondered if they would also work in large introductory classes. These courses typically adopt a more traditional tutorial set-up where the instructor or TA presents a question followed by the solution with no or little student interaction. We often found low attendance and for the most part students walked away having not gained much more insight on the topics or how to approach questions. In our small third-year course we found that the in-class assignments addressed several of these concerns and so were hopeful that the same benefits could be extended to the larger classes.

Adopting the in-class assignments to our larger classes required some tweaks, but overall the benefits did in-fact remain the same – more frequent review of material by students, increased engagement, creating a community of learners, and more interaction between students and course staff.

In this session we will talk about how we designed and administered the assessments, benefits for student learning, and best practices if you'd like to try them yourself in any size course of your own.

Takeaways:

- Using in-class collaborative assignments can work even in large classes.
- Students learn from each other and instructors/TAs present.
- Increases engagement and creates community.

Session 306: Presentations

306a: Incorporating Resubmission into Skills-Based Courses

Michael Liut, University of Toronto Mississauga

Andrew Petersen, University of Toronto

Revision is an intrinsic component of the writing process, and paired with reflection, revision is a key learning tool in writing courses (MacArthur, 2018; Cho & MacArthur, 2010; Cox et al.). However, in STEM disciplines outside of writing, resubmission (revision) of work appears to be uncommon, as evidenced by repeated calls to incorporate resubmission as a learning aid in our discipline (Malmi & Korhonen, 2004; Holland-Minkley & Lombardi, 2016). Similar to Malmi and Korhonen (2004) and Holland-Minkley and Lombardi (2016) our goal is to encourage adoption of interdisciplinary learner-focused resubmission practices.

We report on our experience using revision in introductory computer programming courses. These courses emphasize the development of a professional skill that requires the adoption of a perspective: that writing (programs) is a process that includes planning, coding, evaluating (testing), and revising. This process is common to core activities in many disciplines; only the domain, programming, is specific to ours. However, students tend to focus on parts of the process that they find enjoyable: the coding. Planning, evaluating, and revising are key components of the process, and we provide scaffolding to encourage students to engage with these activities. In our course, resubmission opportunities are built into most assessments. In larger assignments, an explicit resubmission opportunity is provided, with feedback being provided soon after submission, to encourage engagement in evaluation and revision. For weekly, formative assessments, immediate automated feedback is provided, and students are encouraged to resubmit until their work is judged fully correct.

In our presentation, we will describe the resubmission process that we use in our courses and will provide some contextual information to understand the decisions we have made. Then, we will identify problems we have encountered over several years, including the need to frame the activity for students and to provide appropriate feedback and incentives to encourage student participation. Finally, we will engage the audience to brainstorm skills in other disciplines where resubmission might be beneficial.

Takeaways:

- The opportunity to resubmit can drive learning in a course and can prompt students to engage in evaluation and revision.

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306b: Student Involvement in Design and Assessment of STEM and Non-STEM Blended Courses

Taru Malhotra, York University

Ron Owston, York University

Mary Power, Centre for Teaching Excellence, University of Waterloo

Blended learning is a pedagogy that offers a combination of in-person and online forms of instruction (Bonk & Graham, 2006). As blended courses become a norm in higher education, researchers and designers measure and test several aspects of blended learning. Research, over time, has shifted from measuring student perception, engagement, and satisfaction to exploring student-centered collaborative and engaging pedagogies to looking for student involvement in course design and assessment (Blau & Shamir-Inbal, 2017; Fidalgo-Blanco, Martinez-Nunez, Gene, & Sanchez-Medina, 2017; Gerbic, 2011; Owston, 2018; Owston, York, & Malhotra, 2019; Vaughan, 2020).

This study explores instructors' beliefs, attitudes and practices to examine student involvement in the design and assessment of their blended courses. The study further analyzes these relationships and how they vary across STEM and non-STEM disciplines. Using a socio-constructive approach and drawing from Fishbein and Ajzen's belief and attitude theory, this mixed-methods study draws its data from an online survey with 71 instructors in a south western Canadian university, interviews with 24 instructors, and one to four classroom observations with 15 instructors. Data is analyzed using NVIVO and SPSS.

Findings show strong relationships around instructors' beliefs, attitudes towards technology and student involvement across STEM and non-STEM blended courses. The study suggests that instructors who believe in their students' self-regulation skills allow students to participate in the design and assessment of their blended courses. Additionally, strong associations were seen between the instructors' attitudes towards technology and student involvement in design and assessment. It is suggested that instructors and instructional designers include components such as student-led or inquiry-based projects while designing their courses and include strategies such as peer evaluation and peer assessment to allow students to take charge of their learning. This paper will further offer different implications for teaching and learning in STEM and non-STEM courses.

Takeaways:

- It is important for instructors to be aware of their own beliefs around knowledge, teaching, and learning as these will show in their practices. Knowing this will give them an opportunity to reflect.
- It is also important for instructors' and designers to know instructors' attitudes towards technology so they understand how they can use technologies in their blended courses within a given discipline.
- It is suggested that instructors and instructional designers include components such as student led or inquiry-based projects while designing their courses and include strategies such as peer evaluation and peer assessment to allow students to take charge of their learning. It is also suggested that designers need to be more mindful of these strategies in STEM blended courses.

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306c: Assessing Student Problem-Solving Skills*

*This is a University of Waterloo Learning Innovation and Teaching Enhancement (LITE) Grant-funded project

Chris Rennick, Engineering Ideas Clinic, University of Waterloo

Gregory Litster, Management Sciences, University of Waterloo

Ada Hurst, Management Sciences, University of Waterloo

The application of knowledge to solve problems is one of the undergraduate degree level expectations for the University of Waterloo. Problem solving is also a common accreditation requirement for professional programs; and more broadly, is a useful life skill for students to develop. When designing problem solving opportunities in the academic setting, it is useful to understand the range of possibilities, and it is necessary to rigorously assess student outcomes. To that end, a group of Faculty were awarded a LITE full grant to operationalize Jonassen's (2000) influential design theory of problem solving as a means of better understanding, and of assessing, student problem-solving outcomes.

Jonassen's theory presents several useful ideas: the structural elements of a problem, the pertinent characteristics of the solver, and a typology of problems. According to Jonassen, a problem is characterized according to its levels of structuredness (the degree to which the problem has elements that are unknown) and complexity. A second important characteristic is the problem representation, which in the academic setting is under the control of the instructor. The representation is composed of the context; the level of information provided; and the fidelity of the representation. From the perspective of the solver, problem-solving skills are a function of: familiarity with problem type; domain and structural knowledge; metacognition; epistemological beliefs; and affect and conation. Lastly, the typology ranges from logical problems at one end of the spectrum to design problems and dilemmas at the other extreme.

This presentation has two outcomes: to provide a brief overview of Jonassen's design theory of problem solving as it pertains to instructional design, and to briefly describe the work undertaken in the first year of the LITE grant to apply the theory to study students' problem-solving skills relating to design problems (which are highly unstructured and complex).

Takeaways:

- Instructional design for problem-solving skill development is well understood, with Jonassen's Design Theory of Problem Solving being one notable, comprehensive theory.
- We as instructors and instructional designers should be creating more high fidelity, real-world problem solving experiences in the academic setting.

References:

- Jonassen, D. H. (2000). Toward a design theory of problem solving. *Educational Technology Research and Development, 48*(4), 63–85. doi: 10.1007/BF02300500.

Session 307: Presentations

307a: Adapting the Motivated Strategies for Learning Questionnaire to Help Students Take Control of Their Learning

Erin Jobidon, Student Success Office, University of Waterloo

Maria Barichello, Student Success Office, University of Waterloo

Jhotisha Mugon, Arts Undergraduate Office, University of Waterloo

Nam-Hwui Kim, Mathematics, University of Waterloo

Andrea Prier, Student Success Office, University of Waterloo

Helping learners understand their learning needs, strategies and motivations is an important step in supporting academic success. Recent changes in provincial policy have negatively impacted many incoming first-year students' abilities to develop essential academic skills, such as time-management and self-regulation. Despite learning supports being readily available, students are often unaware of their need for these supports, thus many will not actively seek out information or support beyond what is shared in the classroom.

The Motivated Strategies for Learning Questionnaire (MSLQ), is a widely used assessment tool in educational research to measure learning strategies and academic motivations. The MSLQ can be adapted for different contexts and purposes in university settings, as a student self-assessment tool and for program assessment. We have adapted the MSLQ for use within the Arts First program and the Math First Year Seminar Series. This session will outline the process we undertook to modify and integrate the MSLQ as a tool into each context.

Within the Arts First program the MSLQ results were shared with students to help them identify and act on skills gaps. Learners were encouraged to engage in self-reflection and identify areas for growth while completing the survey, during a debriefing session and by interacting with a personalized online dashboard.

Within the Math Seminar Series the MSLQ was implemented to identify potential skills gaps for incoming first year Math students. The data is being used to assess the success of seminar topics and to support students in their transition to the faculty. As a next step we plan to use this data to influence future iterations of the seminar series.

The successes and learning opportunities from each approach will be discussed within the frame of helping learners to become self-aware, gain tools to assess their own skills and take control of their academic success.

Takeaways:

This session will outline:

- The different uses of the MSLQ within the Arts program and the Math Seminar Series.
- The processes we undertook to modify and integrate the MSLQ as a tool into each context.
- The successes and learning opportunities from each approach.

References:

- Crede, M., & Phillips, L. A. (2011). A meta-analytic review of the Motivated Strategies for Learning Questionnaire. *Learning and Individual Differences, 21*, 337–346.

307b: Assessment for Learning: What Do Students Say?

Carolyn Samuel, McGill University

Eva Dobler, McGill University

Bruktawit Maru, McGill University

Mariela Tovar, McGill University

The way instructors choose to assess student learning is a determining factor in the way students engage with course content and employ study strategies (Struyven, Dochy & Janssens, 2005). When students perceive assessments to be relevant and meaningful, they may be more likely to engage with them, and if they engage, they may be more likely to learn (Sambell, McDowell & Montgomery, 2013). In other words, a backwash effect exists. Therefore, it could be helpful for instructors to have a sense of what types of assessments students perceive to be relevant and meaningful. This project addressed the question: How can students' perceptions of assignments that help them learn inform instructors' choice of assessments?

We administered an online survey to our university's student population that asked, along with demographic questions:

1. What's an assignment that helped you learn?
2. How did it help you learn?

We received 108 responses from students in ~60 different programs. Data analysis involved descriptive and then pattern coding (Saldaña, 2016). The majority of the assessments students described fell into the following categories and sometimes straddled more than one:

1. higher order thinking skills (Anderson & Krathwohl, 2001);
2. the development of affective skills (Krathwohl, Bloom & Masia, 1964); and
3. sustained interaction with course content (e.g., multi-stage assessments; bi-weekly submissions).

We will share examples of assessment types students described and address how the results might inform instructors' choice of assessment strategies to better align with their course learning outcomes when designing their courses. We are also interested in getting feedback from participants in this session on alternative ways of framing our results. We would like to know from instructors and educational developers: Based on our categories, how might you be able to use the survey results? What other ways can you imagine framing the results?

Takeaways:

- Students perceive that assignments that help them learn involve higher order thinking skills; affective skills; and assessments that call for sustained interaction with course content.
- Practical use of the survey results for instructors and educational developers is explored.

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307c: Assessing Students' Learning through Brookfield's Critical Incident Questionnaire: Lessons Learned from a Pilot International Course Alignment Project*

*This is a University of Waterloo Learning Innovation and Teaching Enhancement (LITE) Grant-funded project

Elena Neiterman, School of Public Health & Health Systems, University of Waterloo

Raushan Alibekova, Nazarbayev University

Tierney Boyce, School of Public Health & Health Systems, University of Waterloo

Karla Boluk, Recreation & Leisure Studies, University of Waterloo

In this presentation, we will describe how we used Brookfield's (2015) Critical Incident Questionnaire (CIQ) in two classes, to assess students' abilities to critically reflect upon their involvement in an international course alignment. Specifically, our analysis is based on the reflections of students in a 3rd year undergraduate course taught at the School of Public Health and Health Systems at the University of Waterloo, Canada and a 1st year graduate course taught at the Master of Public Health Program at Nazarbayev University, Kazakhstan. Our project aimed to provide our students with an opportunity for international collaboration by developing community engagement projects broadly related to public health. Brookfield's CIQ (2015) serves as a mechanism to engage learners in reflecting on their experiences in the classroom by answering five broad questions. We integrated a modified version of the CIQ into our courses as a tool for formal assessment and also a way to "check in" with the students while working on this pilot project.

During this presentation, we will describe (a) how we integrated CIQs into our courses; (b) what role the CIQs played in modifying/adjusting the course; (c) what we, as instructors, learned from this experience; and (d) how we plan to adjust our courses for their next offering. Our interactive presentation will engage the audience to share their experiences with using CIQs or any other similar form of reflection assignment. Our takeaway message will include a list of "Do's" and "Don't's" generated from our analysis and experience using CIQs in our international course alignment.

Takeaways:

- Critical Incident Questionnaires (CIQs) allow students to reflect on their learning and to assess what they learned in class.
- CIQ is particularly helpful when piloting a new project/activity, as it provides timely feedback about class engagement/student learning.

References:

- Brookfield, S., D. (2015). *Critical Incident Questionnaire*. Retrieved from http://www.stephenbrookfield.com/ciq

Session 308: Presentations

308a: Hagey Hall of Hogwarts: Gamification and Narrative Immersion in the "Popular Potter" Course

Andrew Deman, English Language and Literature, St Jerome's University

Jacob Pavicic, Psychology, University of Waterloo

In the spring 2019 term, I taught a 1st year English course on Harry Potter. Building on Henry Jenkins theories of collaborative learning and Gunther Kress's concept of mimesis, I incorporated practices of gamification and narrative immersion into the course. This was done, in part, by sorting students into "houses" that correspond to those from the Harry Potter novels, and by offering them optional challenges, synchronized with the content of the syllabus, that put them in the shoes of the characters they were studying in order to help them understand the texts' content at a more intimate and visceral level. The students engaged with the optional game in a way that allowed them to consider the texts in new ways and to interact as a classroom in a dynamic manner.

This team-taught presentation (instructor and an active student participant) will assess the successes and failures of this experiment from the perspective of both the designer and the target audience. By walking through student assessments of the course, with the aid of our student guide, we will draw important conclusions about what narrative immersion has to offer both literary and non-literary pedagogy, whilst metatextually highlighting the gap between instructor and student perception when it comes to innovative pedagogy. Throughout the presentation, we will explore how the different benefits of this design impact the nature of formal and informal assessment. All this will showcase how breaking down boundaries between classroom and off-classroom campus experiences can lead students to a more positive and memorable learning experience. At the same time, this talk will explore the challenges that come with undertaking these practices and the need for appropriate supports (financial and other) to instructors who are willing to undertake them. Finally, this talk will also showcase the importance of student buy-in for achieving success.

Takeaways:

- The opportunities and challenges created through gamification and narrative immersion in literary pedagogy.
- Unique methods by which the classroom experience can be extended into the greater campus context.
- The ability of students to contribute to pedagogy through viral participation.

References:

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308b: Accessing Student Curiosity: Three Case Studies of Teaching Practice in First Year Seminars

Barb Bloemhof, Economics, University of Waterloo

The first-year seminar provides student with an opportunity to explore how self-directed learning modalities and continuous feedback can foster learning. Small group learning provides the curricular space for students to follow their curiosity and take ownership of their own learning, which has a high likelihood of activating key learning proficiencies that last a lifetime. In this session, three case studies of first-year seminar formats provide alternative ways of accessing the curiosity that Eyler (2018) situates at the heart of human learning. All of the first-year seminars presented have similar or overlapping learning goals and assessments that are to a greater or lesser extent "authentic" (Fenwick and Parsons 2000, 16-18) through a focus on having students actively performing secondary research. The seminars, therefore, provide a broad inventory of assessments that illustrate how to support first year students engaged in developing a wide portfolio of key academic proficiencies. An overarching goal, however, is to uncover the hidden curriculum that incentivizes learning effort in students. This session incorporates insights from the commonalities and distinctions among the three cases, linking it to a set of proficiencies that are best delivered by having the student act rather than listen.

Takeaways:

- How to structure assessments to balance challenge and support.
- Local conditions matter to the learning environment and must be carefully considered.
- Formative feedback is a valuable mechanism for unlocking curiosity.

References:

- Eyler, J. (2018). *How humans learn: The science and stories behind effective college teaching*. Morgantown: West Virginia University Press.
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308c: Using Comics to Teach Programming Concepts in CS1*

*This is a University of Waterloo Learning Innovation and Teaching Enhancement (LITE) Grant-funded project

Ken Jen Lee, Electrical and Computer Engineering, University of Waterloo

Sangho Suh, Computer Science, University of Waterloo

Celine Latulipe, University of Manitoba

Bernadette Cheng, Electrical and Computer Engineering, University of Waterloo

Edith Law, Computer Science, University of Waterloo

Recent work proposed coding strip, a form of comic strip accompanied by corresponding code, as a pedagogical tool for teaching programming concepts. While the work presented several ways students and teachers wanted to use them for learning and teaching, these use cases were not examined in the classroom setting and left no detailed accounts of how they can be administered. This makes it difficult for interested instructors to use them, let alone understand the associated benefits and challenges. Thus we tested four use cases of coding strips in an undergraduate introductory computer science course. We surveyed students and analyzed their code submissions for one of the use cases. Our work contributes a demonstration of ways in which comics can be used to introduce and reinforce programming concepts, as well as an initial understanding of the benefits and challenges of using comics in computing education.

Takeaways:

- Students enjoyed four different ways comics were used to introduce and reinforce programming concepts in CS1.
- Students recommended the use of comics in computing classes because it helped them better understand and be interested in the concepts being taught.
- Understanding what makes certain comic designs more effective than others needs to be investigated as future work.

References:

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Igniting our Practice: 2:20 – 3:00 PM

The Igniting our Practice Plenary Session showcases some of the amazing teaching done by instructors at the University of Waterloo. With the conference this year focusing on assessment for learning, but also recognizing the transformational shift everyone has had to navigate due to embracing remote teaching, the lessons they share will showcase opportunities to think about teaching and assessment in the online modality. After each speaker's session, we will reflect on and discuss the ways in which these methods might be adapted in our own fields and within our own classrooms.

Dr. Veronica Austen, English Language & Literature, St. Jerome's University

In her talk, Dr. Austen will address the importance of grappling with "difficulty" by showing why she concludes her first-year Introduction to Literary Studies course with texts that frustrate a reader's desire for comprehension. As she will demonstrate using an excerpt from M. NourbeSe Philip's *Zong!*, enabling students to be comfortable with a lack of understanding can encourage them to be open to learning, to acknowledge their own positionality and what they can bring to a conversation, and thus to develop strategies that allow them to confront rather than turn away from that which they find difficult.

Dr. Rob Hill & Dr. Brenda Lee, Physics, University of Waterloo

In this session, Brenda and Rob will explain how they used group work in a large 1st year Physics class to meet the dual challenges of student engagement and assessment in a remote teaching environment.

Concurrent Sessions (400): 3:10 – 4:10 PM

Session 401: Panel - What Do Grades Really Mean? Using Specifications Grading to Better Align Assessment with Learning Outcomes and Program Competencies

Mary Power, Centre for Teaching Excellence, University of Waterloo

Panelists:

James Nugent, Environment, University of Waterloo

Paul Heidebrecht, Peace and Conflict Studies, Conrad Grebel University College

Ian McKillop, School of Public Health & Health Systems, University of Waterloo

Steffanie Scott, Geography, University of Waterloo

Marcel Pinheiro, Biology, University of Waterloo

Specifications grading is a form of standards grading that puts the focus on transparency, student learning and choice rather than grades. A "specs" course is structured into modules or assessments that align with specific learning outcomes or competencies. Course grades reflect the number of modules or assessments that students achieve competence in (e.g., pass = B+), with some resubmission allowed in the case of failed attempts. Students achieve higher final course grades by demonstrating competency over increasingly complex learning modules or outcomes.

Specs grading promises to "raise academic standards, motivate students, tie their achievement of learning outcomes to their course grades, save faculty time and stress, and provide the reliable gauge of student learning that the public and employers are looking for" (Nilson, 2015). But does specs grading live up to these lofty goals in practice? In this panel, course instructors from three different faculties will describe and assess their unique models of specifications grading. Student participants will also share their experiences with specs grading.

The panel discussion will address several questions:

- Does specs grading operationalize desired shifts towards competencies-driven assessment and an emphasis on formative vs. summative assessment?
- What practical challenges arise when implementing specs grading (e.g., managing TA hours given unknown levels of resubmissions; integration into an LMS)?
- How to anticipate and navigate institutional and student concerns about how specs grading relates to official grading policies and practices?
- How do benefits of specs grading weigh against the learning curve for both instructors and students?
- How well does specs grading scale-up for large classes?
- How might specs grading be used to assess or track program curricular competencies or competencies associated with professional certification standards?
- Does giving students greater choice over their assessment pathways cultivate self-motivated learning or rather increase anxieties associated with an entirely new grading system?

Takeaways:

- A basic introduction to specifications grading and three models being used at UW.
- Strategies for addressing the practical challenges with implementing specs grading.
- How specs grading aligns learning objectives/curriculum competencies with assessment.

References:

- Nilson, L.B. (2015). *Specifications grading: Restoring rigor, motivating students, and saving faculty time*. Sterling, Virginia: Stylus

Session 403: Alternative Session - Starting the Journey to Indigenizing Our Classrooms

George Freeman, Electrical & Computer Engineering, University of Waterloo

Mary Robinson, Engineering Undergrad Office, University of Waterloo

Michael Seymour, Mathematics, University of Waterloo

Nickolas Rollick, Mathematics, University of Waterloo

John Johnston, Earth Sciences, University of Waterloo

Building on work reported by Niagara College's Indigenous learning circle at the Teaching and Learning conference in 2019, especially their closing remarks of "that's our truth, now get going with your reconciliation", the FAUW STEM Indigenization Community of Practice is proposing a chance for us to get going.

The purpose of this session is to gather together any interested parties, be they people already doing the work to Indigenize their classrooms, those who have ideas of where to start, or those who want to explore how to get started on their path to reconciliation, in a place to share. We will start this session with a short presentation of basic terminology and frameworks, then move into a circle-style group discussion with participants.

If we view reconciliation as a multi-generation process, most students should be exposed to the knowledge, skills, and relationship-building needed to equip them to this life-long task. Presumably, this can and should be codified as outcomes and assessments in their curricula.

Our goal is to connect with like-minded individuals who are (or want to be) working towards reconciliation, gather local support so the University of Waterloo can seek a post-secondary chapter affiliation with .caISES (the Canadian region of the American Indian Science and Engineering Society), and discuss ways to create a safe environment where we can properly support both the education and wellness of First Nations, Métis, and Inuit students.

The 'STEM' distinction here is fuzzy at best and just reflects us being housed in academic units where Indigenization is a less natural topic because we mostly come to it with less formal preparation and fewer existing relationships with Indigenous communities or scholarship. However, there are STEM units with very sophisticated approaches to Indigenization and non-STEM units with a similar long learning journey ahead. All are welcome!

Takeaways:

- It is time to seize the opportunity to begin reconciliation work in disciplines (like much of STEM) where this is not a natural topic of academic discussion.
- To equip students to the ongoing task of reconciliation, we should consider outcomes and assessments in the curricula.
- A small critical mass of interested people exist so it is possible to begin making changes if we share ideas and resources.

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Session 404: Presentations

404a: Self-Reflection and Individualization: Assessments in Graduate Professional Skills Programming

Sarah Howard, Graduate Studies and Postdoctoral Affairs, University of Waterloo

Justine Salam, Graduate Studies and Postdoctoral Affairs, University of Waterloo

Ellen Zhiyu Gong, Chemical Engineering, University of Waterloo

In recent years, there has been significant investment in graduate professional development programs, such as University of British Columbia's "Graduate Pathways to Success" and University of Toronto's "Graduate Professional Skills." Many programs require students to complete a set of workshops and assessments are based solely on workshop completion. However, University of Waterloo wished for a more flexible model, which required an alternative assessment model.

A unique program structure incorporating classroom and experiential learning was developed. Using the theoretical underpinning of Wallace's Reflective Model of Teacher Development and Blooms Taxonomy of Educational Objectives, self-reflection became the basis for assessment. In addition, a comprehensive professional skills self-assessment tool was developed for students to evaluate current skills and create an Individual Development Plan (IDP).

The program includes multiple levels of assessments. First, we assess the relevance and usefulness of activities and workshops proposed in students' IDP, based on their skills and career objectives. Students then self-assess activities through a reflection piece highlighting learning outcomes, skills used, and challenges. Finally, we evaluate students' reflections and learning outcomes (as opposed to the activity itself).

The benefits of this approach are multiple:

1. the assessment is individualized: students may have different learning outcomes for similar activities;
2. the self-reflection empowers students to "fail" (failure can "pass," as students are assessed on their reflection of the "failed" experience);
3. by writing their reflection, students internalize their learning outcomes, leading to long-term growth;
4. the written reflection can be used for future reference;
5. students have freedom to define their own learning outcomes, drawing on intrinsic motivation.

Nevertheless, there are challenges:

1. there is no rubric to measure progression in a streamlined, one-size-fits-all approach;
2. evaluating a "pass" or fail" is subjective;
3. there is less oversight, as the program entrusts students with their own learning progress.

Takeaways:

- Assessing students' reflections instead of the activity they perform provides for a safe environment that allows "failure" and focuses on learning outcomes.
- Self-reflection, as an assessment model, allows greater individualization of programming, increasing students' intrinsic motivation as content is specific to the students' individual objectives, goals, and interests.
- The main challenges to this approach are the difficulty to measure progression in a streamline approach due to the absence of a rubric and the evaluation of "pass" or "fail" as a relatively subjective endeavor.

404b: Helping Students Develop into Lifelong Learners Through the Use of Reflective Learning Journals

Ashley Waggoner Denton, University of Toronto

Regardless of the content that we teach, one of our most important goals as teachers is to help our students develop into lifelong learners who will be able to continue learning (effectively and across a range of topics) long after they have left our classrooms. However, it is not always clear how to do this. In this presentation, I will describe the ways in which I have used reflective learning journals to help my students learn how to learn. According to Fink's taxonomy of significant learning (2013), learning how to learn takes a number of different forms, including learning how to be a better student, learning how to construct new knowledge in a discipline, and learning how to become a "self-directing learner" (Fink, 2013, p. 59), someone who is able to recognize gaps in their understanding and formulate plans for filling those gaps. These different forms of learning how to learn are emphasized to different degrees depending on the particular nature of the course I teach (e.g., introductory course versus upper-level seminar). But in all cases, the use of a reflective learning journal (RLJ) is a critical part of the process. Although not every student will benefit from this writing activity (and a few alternatives will be discussed), many students report that the journals are beneficial to their learning (see Waggoner Denton, 2018). Not only the learning of specific course content, but to their understanding of themselves as learners; lessons they will carry with them. It is my hope that by the end of this talk, attendees will understand how this low-stakes assessment strategy can promote transformative changes in student learning. Session attendees will also walk away with concrete ideas for how these journals can be feasibly incorporated into their own courses, regardless of the course content, format, or size.

Takeaways:

- Reflective learning journals encourage students to take responsibility for their learning and focus more on the how and why of their learning, rather than the what.
- These journals can be implemented in large (1,500 student) courses as well as small seminar/lab courses; however, the ways in which they are assessed will vary across these courses.

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- Waggoner Denton, A. (2018). The use of a reflective learning journal in an introductory statistics course. *Psychology Learning and Teaching, 17*, 84-93. DOI: 10.1177/1475725717728676

404c: Undergraduate Science Students' Perspectives on Reducing the Stigma of Failure

Krystal Nunes, University of Toronto Mississauga

Sherry Du, University of Toronto Mississauga

Riya Philip, University of Toronto Mississauga

Majd Mourad, University of Toronto Mississauga

Nicole Laliberte, University of Toronto Mississauga

Fiona Rawle, University of Toronto Mississauga

The importance of failure in the learning process has been well-established as it increases resilience, provides opportunity for reflection and refinement of study habits, and prepares one for similar situations beyond university (Henry, Shorter, Charkoudian, Heemstra, & Corwin, 2019). These are core transferrable skills in the sciences for which progress depends on information gained from both successful and failed experiments. Assessments can provide opportunity for failure and learning, particularly when designed with this outcome in mind (e.g., scaffolded or low-weight assignments) (Perry, Hutchinson, & Thauberger, 2008). However, even when such assessments are provided, there remains a fear and stigma associated with failure.

We investigated undergraduate science student perspectives on how to decrease the stigma of failure both within and beyond the university context. All students enrolled in an introductory biology course at the [institution] were invited to participate in an online survey (response rate 69.8%, n = 822). The survey consisted of open-ended questions on perceptions of failure and steps that can be taken within and outside universities to reduce the stigma of failure. In the open-ended questions on stigma reduction, we identified 8 major response themes within the university context and 8 major response themes beyond the university context (6 themes were shared between these two contexts). The most common shared theme identified a need for increased communication surrounding failure, including the discussion of its value and the sharing of experiences. Course design was the second most common theme identified for stigma reduction within universities, which suggests a need for improved flexibility and opportunities for students to make mistakes and learn from failure. This would include the design of student-centred assessments that develop resilience and reduce fear of failure.

Takeaways:

- The importance of failure in the learning process has been well-established, but there remains a fear and stigma associated with failure.
- We gathered undergraduate student perspectives on how to decrease stigma within and outside the university context.
- The most common suggestions were to increase communication on the subject, and to design courses and assessments with greater flexibility and opportunities for students to make mistakes and learn from failure.

References:

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Session 405: Presentations

405a: Building Feedback Literacy Through Video Feedback Processes

Brandon Sabourin, University of Windsor

Feedback is a vital component of effective assessment practices. Increasingly, as teaching and learning practices continue to expand into digital and technology-enhanced spaces, so too do possibilities for multimodal feedback processes.

This presentation will explore the results of a scholarship of teaching and learning (SoTL) research study that sought to understand the effects of video feedback on feedback literacy. Framed within the existing literature on feedback literacy and specifically that relating to audio and video feedback (Henderson & Phillips, 2015; Mahoney et al., 2018), I will share my experiences of recording nearly 800 videos in order to provide the pre-service teacher education students in my Digital Technology and Social Media Applications course with feedback solely in video format. Students were invited to participate in this research at the end of the course via an electronic survey. Data suggest a lack of prior experience with video feedback, and yet unanimous agreement that the video feedback was more useful than previous non-video feedback. All participants (n=12) said that in their future K-12 teaching, they would be "somewhat likely" or "very likely" to use video feedback. Interestingly, however, their definitions of feedback still described feedback as a product rather than a process (Carless, 2006).

Framed within Trigwell and Shale's (2004) idea of "pedagogic resonance" being a key shareable of SoTL research, I will round out this session with reflections from my teaching journal on the process of giving video feedback. Some examples of this include time commitments, the need for explicit instruction about feedback literacy, and the ability to connect more meaningfully with individual students' work. Ultimately, the results of this project reaffirm the notion that video feedback, like any type of feedback, should be deliberate, timely, ongoing, and specific (Carless & Boud, 2018).

Takeaways:

- Participants in this presentation will be able to identify the four components of feedback literacy and explain their importance in the feedback process.
- They will also be able to reflect on their own feedback practices in light of the experiences shared from this research.

References:

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405b: The Last Class Workshop – A Versatile Tool for Course Evaluation and Evolution

Erin Styles, University of Toronto

Recognizing that the last session of class at the end of the term is often not very materially productive, I have searched for a way to make this last class meaningful and functional for both me and my students. In this presentation, I will describe adaptations to a workshop first developed by Dr. Elizabeth Bleicher as a means of obtaining real-time course evaluations and driving course evolution (Bleicher, 2011). This approach generates more honest and useful feedback than standard post-mortem course evaluations and can be used in the context of many types of courses and across any discipline. This presentation will describe models of the "Last Class Workshop" for both in-person learning and synchronous online learning, as well as suggest straightforward adaptations for asynchronous online learning environments.

During this session I will focus on describing the preparative work done by both students and instructors, as well as the practical elements surrounding how to effectively deliver the workshop. The success of the "Last Class Workshop" depends on the openness of the facilitator to accepting feedback of all types, and on the active engagement and deliberate metacognitive reflection of students (Pintrich, 2002; Bovill et al., 2011), and much of the preparation before the session is oriented towards appropriately framing it for success in these areas. It is presented as an opportunity for student activism during which students are asked to contribute to improving future iterations of the course and has three fundamental rationales: 1) Student contribution as both assessors and creators in pedagogical planning, 2) Course evolution, and 3) Course evaluation.

Fundamentally, the "Last Class Workshop" is built on the idea that the students themselves are the best source of constructive critique, innovative adaptations, and updates in a course. It is not difficult to implement, has a meaningful impact for participants, and can provide transformative feedback.

Takeaways:

- The "Last Class Workshop" is an engaging, dynamic session that's situated in the last contact session of a course, to solicit real-time feedback from students pertaining to any / all aspects of the course.
- The "Last Class Workshop" is not content or discipline specific, can be offered in the context of many types of courses, and is very amenable to a synchronous in-person or virtual learning environment. It can also be readily adapted to an asynchronous learning environment. Preparing for and delivering this workshop requires only limited preparative work by the instructor and is mostly centred around deciding which specific elements of the course to request student feedback on.
- The premise behind the "Last Class Workshop" is that students are the best source of ideas when it comes to evaluating, updating, and refreshing a course. It creates a safe forum to first solicit anonymous written student feedback that's visible to the entire class, and then to provide an opportunity for students to both anonymously and non-anonymously brainstorm and build on each other's suggestions of what a course could be in the future.

References:

- Bleicher, E. (2011). The last class: Critical thinking, reflection, course effectiveness, and student engagement. *Honors in Practice – Online Archive, 130*, 1–15.
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405c: Implementing an Assessment Framework - Experiences from a BSN Program

Kamal Ahuja, British Columbia Institute of Technology

Michele Bridge, British Columbia Institute of Technology

Amanda Egert, British Columbia Institute of Technology

Cheryl Isaak, British Columbia Institute of Technology

Sam Juan, British Columbia Institute of Technology

Selma Kerr-Wilson, British Columbia Institute of Technology

Laurie Speakman, British Columbia Institute of Technology

The British Columbia Institute of Technology's (BCIT) Bachelor of Science in Nursing (BSN) program recently developed a concept-competency based curriculum – concepts act as the categories of knowledge which learners then apply by demonstrating nursing practice competencies. As implementation has rolled out, there is an opportunity to gather feedback, analyze, and refine the curriculum. As part of this rigorous process that leads to an increasingly validated curriculum, the program developed an Assessment Framework (AF) to govern formative and summative assessment of each course's competencies.

The AF outlines 13 principles based on research and best practice in the area of assessment that guide summative and formative assessment, definitions of terms and a guide for specific application of the framework congruent with BCIT assessment policies and the BSN program (BCIT, 2015; 2016; Billings, & Halstead (2020); McMillan, 2011; Oermann & Cussatis, 2018; Pellegrinio, Chudowsky & Glaser 2001). The application guide includes an analysis rubric which explores implications of the AF on a course's assessment design so recommendations may emerge.

The AF is implemented in a 5-step process – Introduce the AF, Map the Current Assessment Structure, Analyze Courses & Identify Recommendations, Create a Work Plan for Revisions, Implement Revisions. Faculty use the AF to examine their courses to ensure there is alignment between learning outcomes and both formative and summative assessment strategies supporting a culture of practical and continuous assessment for learning. The framework ensures a sound assessment structure that promotes reasonable workload for both learners and instructors, best practices in instructional design, adherence to institutional policies of evaluation, and a cohesive program wide approach to assessment that supports student learning - ultimately leading to excellence in nursing education.

In this presentation, we will share the AF – its structure, implementation and outcome – as a model for adoption by other programs.

Takeaways:

- Using an assessment framework can help to strengthen a program's overall design.
- An assessment framework consists of key principles related to assessment design and delivery that are based on research, institute policy and best-practices.
- Courses within a program can be reviewed and refined using the framework to guide design and maintenance of both summative and formative assessments.
- At a course level, an assessment framework promotes alignment to learning outcomes in both formal summative assessments and formative classroom learning activities - encouraging a culture of assessment for learning - as well as promoting objectivity in assessment evaluation.
- At a program level, an assessment framework ensures balance in assessment strategies across the program and promotes balanced workload for both learners and instructors.
- The outcome is a program where the assessment structure fosters enhanced focused learning.

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Session 406: Presentations

406a: The Proof Proficiency Practice Test: Creating an Inventory for Mathematical Proofs

Timothy Yusun, University of Toronto Mississauga

Concept inventories are standardized tests that focus on assessing student conceptual understanding of basic principles in a particular topic. Inventories are primarily used to measure the effectiveness of teaching and learning interventions in courses; however, they also serve as a diagnostic tool for instructors to evaluate student understanding and inform classroom practices.

In the Summer 2019 term, the so-called "Proof Proficiency Practice (PPP) Test" was administered in a first-year introduction to mathematical proofs course at the beginning and at the end of the term. Around 200 students were tested on their logical reasoning and quantifiers, abilities to unravel mathematical definitions, and whether they could correctly evaluate mathematical proofs.

While the primary purpose of the test was diagnostic (Are students learning what instructors would like them to learn in the course?), we have analyzed the validity of the PPP test (Does it measure what instructors would like to test?), supported by a teaching and learning research grant. This was conducted through statistical analyses and the qualitative coding of student cognitive interviews; these think-aloud interviews reveal students' misconceptions about the topics and alternative readings of the questions which in turn inform possible modifications to the test.

The hope is to adapt the PPP test into a "proof skills inventory" that can be used for benchmarking teaching and learning innovations in future iterations of the same course and of proof-based courses in general.

In this talk, we will discuss the pre- and post-test results from the Summer 2019 term, the methods and findings of both quantitative and qualitative analyses, as well as possible implications and recommendations.

Takeaways:

The main takeaways from the talk have to do with the methods used in the design and development of an inventory for mathematical proof:

- Quantitative analyses were performed on the pre-test and post-test data.
- Student think-aloud interviews (where they verbalize their thinking processes while answering the test questions) were transcribed and then coded/tagged with misconceptions about the content or the presentation of the questions.
- Expert interviews were also conducted to inform question modification and topic selection (both in general, and in relation to the specific mathematical proofs course where the test was first administered).
- Future work will involve rinsing and repeating: administering the modified test again, then validating the results.

406b: Improving Student Performance in Cell Biology through Two-Stage Collaborative Testing

Sobia Iqbal, Wilfrid Laurier University

The aim of this form of testing was to improve students' understanding of the course material through peer collaborative testing in a third-year undergraduate cell biology course in the Faculty of Science at Wilfrid Laurier University. Previously taught sections of the course used traditional lectures and labs to develop understanding of theories and methods, and multiple choice and short answer testing. With the most recent cohort of students enrolled in the course I used two-stage collaborative testing, whereby students first completed the midterm individually, followed by completion of same multiple-choice midterm with a group. Course evaluation data provided a clear message that student learning was deepened by applying this testing practice. Students expressed increased confidence and enjoyment through collaborative learning from their peers. Two-stage collaborative testing during earlier midterm evaluations, ultimately resulted in an increase to final exam grade compared to previous sections of course that used traditional midterm testing.

Takeaways:

- Two-stage collaborative testing during earlier midterm evaluations, ultimately resulted in an increase to final exam grade compared to previous sections of course that used traditional midterm testing.
- Course evaluation data provided a clear message that student learning was deepened by applying this testing practice.
- Students expressed increased confidence and enjoyment through collaborative learning from their peers.

406c: Increasing Student Learning and Metacognition with Weekly Proctored Quizzes

Jordan Hamilton, Mathematics, University of Waterloo

Dan Wolczuk, Mathematics, University of Waterloo

Assessments for learning remains an important and active area of research for all levels of education. Well-designed assessments can provide powerful learning opportunities for students (Graham & Claire, 2004). Since 2006, our understanding of the testing effect and active retrieval has expanded greatly. Studies show that active retrieval significantly increases student learning and performance (Agarwal & Bain, 2019). Moreover, as indicated by Khan and Balasubramanian (2012), the Internet makes it increasingly easy for students to cheat on homework assignments. This presentation will focus on the results of our study on the use of closed-book quizzes as a replacement for homework assignments.

In 2016, we noticed that there was an increasing number of students who were not using homework assignments for learning. As a result, we began experimenting with the use of weekly closed-book proctored quizzes instead of the usual weekly homework assignments. The goals were to increase learning through active retrieval, curb cheating, decrease student illusion of competence, and to allow for earlier identification of at-risk students. We not only found that our closed-book quizzes had a larger positive impact on student performance than homework assignments, which matched the results of Roble and Luna (2017), but additional benefits were observed as well. For example, we also found that we were able to provide better feedback on quizzes, which increases student learning (Graham & Claire, 2004), and we witnessed significant improvements in student metacognition and confidence.

Participants of this presentation will learn about the journey we took in transitioning from homework assignments to quizzes and about the successes and challenges we have faced. They will have the opportunity to express their support for or reservations about making this switch, as well as their experiences with closed-book quizzes.

Takeaways:

- Quizzes are more effective than assignments for promoting and evaluating student learning.
- New technologies like the internet are making assignments less effective in promoting and evaluating student learning.

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Session 407: Presentations

407a: Readiness-for-Practice Formative Assessment as a Tool to Evaluate Active Learning in Clinical Skills-Based Courses: Design and Baseline Assessment

Brett Barrett, School of Pharmacy

Thomas McFarlane, School of Pharmacy

Tejal Patel, School of Pharmacy

J.M. Gamble, School of Pharmacy

Wasem Alsabbagh, School of Pharmacy

Michael Beazely, School of Pharmacy

Barbara Coulston, School of Pharmacy

Background:
Active learning strategies have been shown to increase pharmacy students' knowledge and confidence (Gleason et al, 2011). As part of the University of Waterloo's Dean's Undergraduate Teaching Initiative (DUTI), a variety of active learning strategies will be implemented in a stepped approach across a series of clinical skills-based courses in the School of Pharmacy. Evaluation of such an intervention is a necessary step in continuous efforts of improving and advancing our educational program to produce better practitioners.

Objective:
Evaluate the change in students' clinical knowledge, skills, and self-efficacy following the implementation of active learning strategies.

Methods:
Various active learning strategies will be incorporated into the Integrated Patient Focused Care (IPFC) series of the PharmD curriculum, starting in the 2B term and ending in 3B. Active learning strategies include web-based interactive assignments, problem-based learning activities, two-stage examinations, implementation of a flipped classroom, and use of standardized patients. These strategies will be implemented throughout 2020 and into Winter 2021. During the 4A term, prior to the start of clinical rotations, students will have their cumulative clinical knowledge and skills evaluated using a formative multiple choice assessment. Self-efficacy will be assessed by questionnaire using a 4-point Likert scale. As these active learning strategies are being introduced at different times in the curriculum, different cohorts of students will experience variable levels of active learning. The Rx2020 cohort will serve as the pre-implementation group, while Rx2021 and Rx2022 cohorts will be the post-implementation groups (partial and full, respectively). Results of the 4A assessments, as well as self-efficacy questionnaires, will be compared between these cohorts.

Results:
By April 2020, baseline data will have been gathered from the Rx2020 cohort. Outcomes data will be collected in the 4A term from the Rx2021 and Rx2022 cohorts (April 2021 and April 2022, respectively).

Takeaways:

- As part of the School of Pharmacy's efforts to move away from didacticism and generate evidence for active learning strategies in the classroom, an optional, formative, knowledge and skills-based assessment was added near the end of the PharmD curriculum.
- The impact of these strategies will be determined by comparing cohorts who receive differing levels of active learning across their four-year curriculum.

References:

- Gleason, B., Peeters, M., Resman-Targoff, B. H., Karr, S., McBane, S., Kelley, K., Thomas, T., & Denetclaw, T. H. (2011). An active-learning strategies primer for achieving ability-based educational outcomes. *American Journal of Pharmaceutical Education, 75*(9), 186. doi:10.5688/ajpe759186

407b: Examining Students' Future-Readiness: Employing the Future Ready Talent Framework as an Assessment Tool

Brittany Etmanski, Work-Learn Institute, University of Waterloo

Janice Bruin, Co-operative and Experiential Education, University of Waterloo

Alex Jennings, Co-operative and Experiential Education, University of Waterloo

As the future of work is changing, it is increasingly important to ensure we are preparing students accordingly. The Future Ready Talent Framework (FRTF), developed to support programming across the Co-operative and Experiential Education portfolio, is a research-backed tool to help students, employers, and educators understand the key competencies needed to navigate the future of learning and work. Implementing a process of data triangulation, the FRTF mapping process employs data from course syllabi and Waterloo Works job postings to examine their alignment with the 12 skills identified in the FRTF.

The learning outcomes of this assessment process are twofold. First, by mapping course syllabi to the FRTF, we are able to examine how course deliverables (e.g., learning outcomes and assessments) prepare students for employment. Second, by mapping Waterloo Works job postings to the FRTF, we are able to examine how employer needs align with the skills emphasized by the FRTF.

To demonstrate the value of the FRTF mapping process, this competency framework was implemented as a pilot assessment tool amongst the Applied Health Sciences (AHS) faculty, with intention to expand to other faculties moving forward. Broader implementation of the FRTF mapping process, across faculties, will allow us to develop a standardized framework language that spans across many aspects of higher education and work-integrated learning.

Takeaways:

- Current course offerings prioritize fostering students' communication, critical thinking, and discipline & context specific skills.
- In comparison, courses were least often linked to developing students' technological agility and career development & lifelong learning.
- In relation to job posting mapping, job filled by AHS students were more likely to require: project management and reporting skills, health care experience, process improvement, and research.

407c: Moving Beyond the Test: Authentic Assessment as a Catalyst for Organizational Change in Higher Education

Jacob Kelley, Auburn University

Assessment, both formative and summative, plays a fundamental role in teaching and learning in higher education (Hawe & Dixon, 2016). As such, it is crucial for faculty to truly understand the extent to which students have learned. One possible strategy to achieve just that is authentic assessment. Swaffield (2011) conceptualizes authentic assessment as "the assessment of learning that is conducted through 'real world' tasks requiring students to demonstrate their knowledge and skills in meaningful contexts" (p. 434). Authentic assessment, then, is a way for students to step into the disciplinary context and do the discipline (Eddy & Lawrence, 2013; Wiggins, 1998).

The purpose of this presentation is to demonstrate the potential of authentic assessment as a catalyst for organizational change in higher education. It will strive to achieve this by sharing three courses as cases in which authentic assessment was implemented as part of the (re)design. Each case offers insight into the individual choices made by faculty that foster organizational change toward a culture that is reflexive, responsive, and relevant. Thus, authentic assessment presents a myriad of potentialities for significant learning (Fink, 2013) when we move beyond the test.

Takeaways:

- Authentic assessment is a way for students to step into the disciplinary context and do the discipline.
- Authentic assessment asks students to complete tasks that mirror the real world outside of the academy.
- Authentic assessment promotes significant learning by making the content relevant.