Teaching and Learning Enhancement Grant Recipients

2019 Recipients

A Proven Approach to Supporting Indigenous Community Empowerment

Anne Johnson, Robert M. Buchan Department of Mining Engineering

CTL Support is sought to fund development of two lessons:

- Community Visioning – Supporting Community and Indigenous Economic Development Models
- Collaborating with Local Governments for Inclusive Development

within MINE 803, Engagement for Community Development, an online course.

Expertise to develop this curriculum content is unavailable at Queen's. Funding will permit collaboration with NetPositive, a registered charity that works with communities to help them articulate their values and aspirations, and to develop plans for sustainable, culturally relevant and affirming local economies.1 NetPositive will provide students with a practical approach to community empowerment. NetPositive will also share the experience and insight from communities they have supported, with a focus on Indigenous groups in Canada.

This course contributes to Reconciliation by providing concrete, practical ways future professionals can support Reconciliation and approach cultural difference with respect and empathy.

Introductory Computer Science Mentorship Program

Wendy Powley, School of Computing

Learning to program can be challenging and intimidating, especially for young women who feel they don't belong in a male-dominated field. Creative Computing (CISC 110) is a course designed to entice women to try computing for the first time. 60% of the class is female. Although inspired by the course, however, many do not continue to take further courses. The goal of this peer-mentoring project is to provide students with individualized assistance in the form of active learning, code walk-throughs, detailed written feedback, and personal support to solidify their knowledge and boost their confidence. The mentorship program will also foster leadership and further the School's equity, diversity and inclusion (EDI) efforts. The goal is to increase the number of students (particularly women) who continue in Computer Science after taking CISC 110 and to train students to educate and mentor in an inclusive and sensitive manner.

GeroCast: Using Podcasting to Deliver Living Cases in Gerontology Education

Mohammad Auais, School of Rehabilitation Therapy; and Lucie Pelland, School of Rehabilitation Therapy

Podcasting is an emerging e-learning tool in education that are disseminated on the internet and played on computers and handheld devices. Recent evidence suggests that Podcasting enhances student experience and outcomes. Learning Context: We will develop a case-based group project for a physiotherapy gerontology course using podcasts to present a series of 'living cases'. Podcasting was chosen for its effectiveness, popularity and accessibility. Methods: We will develop a variety of living cases with seniors from the community and then create podcasts. The podcasts will be assigned to

student groups to work on through the course and then present findings. Evaluation: Student learning outcomes and experiences will be evaluated with a survey. Priority Alignment: Queen's Teaching and Learning Action Plan has identified the development of university-wide support for e-learning as one of fifteen recommendations. Applicability: The living case podcasts will have broad applicability to other aging and/or health courses at Queen's.

Decolonizing Opera: Micro-Internships as Experiential Learning

Coleen Renihan, Dan School of Drama and Music

Opera is an inherently colonized genre, and its history of misogyny, racism, and exclusion has been harshly (and rightly) critiqued, particularly following the rise of the #metoo #blacklivesmatter and #idlenomore movements. It is also, meanwhile, being re-visioned by many creative Canadian composers, directors, and performers as a site of transformation and change. In this project I propose what I am calling a "Micro-Internship" innovation in my MUTH332: Opera Practicum course that would allow students to learn how and why some of Canada's most exciting arts entrepreneurs are using opera for social transformation in 2019. In addition to innovating the curriculum by teaching students about opera's potential for decolonization, and by giving them a unique opportunity to analyze and evaluate this in practice, this project also serves as a pilot project that considers the problem of how to frame and capitalize on a unique form of experiential learning in the arts.

Simulations, Role-Play and Long-form Scenarios: An emerging experiential learning opportunity to teach through complex issues

Kathryn Fizzell, Experiential Learning Hub; and David Skillicorn, School of Computing

Simulation-based exercises are attracting growing interest from faculty and staff who want to add experiential learning components to their courses or programs. This project explores simulations that involve presenting students with a specific situation and problem, and assigning them roles that require them to work together to develop tactics and strategies for responding in positive ways. Simulation-based exercises are a way to bring real-world scenarios into the classroom, creating unique hands-on learning opportunities for students. To support faculty and project coordinators in using this form of experiential learning, the EL Hub, in partnership with the School of Computing, will conduct background research on pedagogical strategies related to simulation, role-play and long form scenarios to create practical resources and materials for supporting their design and delivery. These materials will be piloted through a long-form scenario table-top cybersecurity training exercise being delivered by the School of Computing to students in the new NSERC CREATE Cybersecurity Graduate Training Program and promoted to other faculty and project coordinators through the EL Hub website and workshop presentations.

Freehand Sketching for Design Ideation in Mechanical Engineering

Roshni Rainbow, Department of Mechanical and Materials Engineering; and Brian Surgenor, Department of Mechanical and Materials Engineering

Freehand sketching promotes creative problem solving, spatial visualization, ideation, and communication, all which are critical in engineering design. While mechanical engineering students are introduced to sketching and computer aided drawing during their first year, there remains a challenge of

integrating the concept of freehand sketching to engineering design education to promote visual thinking and the design process. It is our hypothesis that improvements in students' freehand sketching abilities will foster creativity and innovation in engineering design; here, we propose to continue to improve mechanical engineering students' skills in basic freehand sketching through the implementation of sketching workshops and assignments into the second-year mechanical engineering section of APSC200: Engineering Design and Practice.

ELEC 280: Fundamentals of Electromagnetism

Muhammad Alam, Electrical and Computer Engineering

Engineering Laboratories are vital to the quality of engineering education, in an era of high speed evolving the technology. Yet, these labs activities need constant reviewing and updating to meet the industry needs and to keep graduates up-to-date with what's happening in the real world and to provide them with an edge to compete in the workforce. The main objective of instructors in engineering is always to create new active learning experiences that engage students in engineering as a profession.

2018 Recipients

Development of an Ethnocentrism Measure: Better measures fueling better advocacy and cultural sensitivity outcomes in a transformative global health observership

Jennifer Carpenter, Global Health; Eleftherios Soleas, OPDES; Nicholas Cofie, OPDES; Mikaila De Sousa, Global Health; Jenna Webber, Global Health

Global Health placements are a transformative learning opportunity for students to become advocates and develop cultural sensitivity. To ensure that these goals are being met, reliable measurement tools are a necessity to make the most of this innovative form of education. We propose the development of a contemporary cultural sensitivity instrument based on real student-reported scenarios as a part of a portfolio of measures to be taken in a pre-post-test evaluation design. This evaluation aimed at evaluating and improving the efficacy of our program. Our work will be transferable across many kinds of observerships and placements at Queen's and beyond.

Online Critical Enquiry Modules: Building a Flipped Classroom

Rosemary Lysaght and Gail Woodbury, School of Rehabilitation Therapy

The flipped classroom is a pedagogical approach that involves online learning as homework along with active learning activities in the classroom. Emerging evidence supports this approach in enhancing student experience and outcomes. Learning Context: A first year inter-professional occupational therapy/physical therapy course will be redesigned to develop a series of flipped classroom experiences to facilitate the learning and teaching of critical enquiry methods. Enhancement: Online learning activities including critical enquiry modules, case studies and quizzes will be developed along with interactive, team based lab activities. Brightspace, onQ, will be used to host the online components. Evaluation: Student learning outcomes and experiences will be examined using quizzes, an integrated program exam and student and faculty surveys. Priority Alignment: Queen's Teaching and Learning Action Plan has identified the development of university-wide support for e0learning as one of fifteen

recommendations. Applicability: The generic critical enquiry modules that are part of the online homework will have broad applicability to other critical enquiry courses at Queen's.

Development of Online Radiology Modules: Medical Imaging to Promote Comprehensive Anatomical Understanding

Alexandre Menard, Department of Radiology; and Chloe DesRoche, Department of Computing

Medical schools have reduced the quantity of classical cadaveric dissection to teach human anatomy. There is a need for quality self-directed online modules that utilizes diagnostic imaging (CT scans/ MRI) to modernize anatomy teaching. We propose to continue our work on the creation of diagnostic imaging based online modules for musculoskeletal and abdominal/pelvic anatomy. These modules would be shared with other medical schools, and possibly other Health Sciences related programs here at Queen's.

2017 Recipients

Qlicker: An open-source clicker developed for and by students

Ryan Martin, Department of Physics, Engineering Physics & Astronomy

Qlicker is an open source in-class response system ("clicker") that we will enhance and evaluate using this grant. Queen's computer science students developed a working prototype during the 2016-2017 academic session. Because the system was developed with pedagogy as a priority, it includes features not provided by commercial solutions. For example, in order to increase learning, students can contribute questions to the system that faculty can then use in class. Qlicker was designed so that it could be easily integrated into onQ with the long term goal of a University-wide adoption. This grant will support the deployment and evaluation of Qlicker to a small number of classes during the 2017-2018 session. Along with funds from the Department of Physics, the grant will be used to support personnel to maintain, enhance and evaluate the performance of Qlicker during the trial period (both as a learning enhancement tool and the technical aspects).

Inquiry in the Physics Laboratory

Rob Knobel and Bei Cai, Dept. of Physics, Engineering Physics and Astronomy

Science experiments in undergraduate courses serve a number of learning purposes – from teaching technical skills, to communicating science, critical thinking and data analysis – all are important regardless of the scientific discipline involved. However many experiments were designed to demonstrate phenomena – to show that the concepts covered in an associated lecture course exist in the "real world". In Physics 350 and Engineering Physics 353, many such experiments have become merely "cookbook" style activities, where students follow a recipe and attempt to observe and confirm the equations taught in class. These activities do not prompt meaningful learning and tend to lead to disengaged students. We propose to redesign ENPH 353 and PHYS 350 to emphasize a half-course experimental group project – students will propose, design, carry out and report on an experiment of their own emphasizing modern physics. This project, and the associated student reports and presentations, will address the desired learning outcomes of the courses. But merely throwing an open problem to the students isn't enough: we want well motivated, well-done experiments that help

students stretch to ambitious goals. To do this, we will hire two learning assistants who will help transform the courses, and measure the effect of the course transformation through objective measures. The first half of the courses will have carefully designed activities to instill skills and attitudes in the students that lead to a successful – and less stressful – project in the latter half of the courses. With this grant we will design these activities, emphasizing both the quantum nature of matter and the instrumentation needed to measure it.

Developing an Active Learning Library for Peer Instruction of Introductory Biostatistics

Michael A. McIsaac, Dept. of Public Health Sciences

The Guidelines for Assessment and Instruction in Statistics Education (GAISE) project made several recommendations for statistics education that align perfectly with Peer Instruction (PI), an instructional method that focuses on 'teaching by questioning': PI was designed to stress conceptual understanding and foster active learning, and the think-pair-share strategy promotes peer-review, self-evaluation, and timely formative assessment; the software tools available for PI lend themselves to the incorporation of statistical technologies for analyzing and visualizing problems involving real data.

However, initial implementation of PI is challenging because its success depends on good question design. Other science disciplines (physics, in particular) have the advantage of online banks of freely-shared questions designed for PI. This project will create materials for the implementation of PI in EPID 821: Introductory Biostatistics. These materials will be assessed in terms of their impact on student engagement and conceptual understanding. Both the materials and the findings will be shared widely.

Learning From Each Other: Exploring New Models in Student-Faculty Dialogue

Dr Shannon R. Smith, English Literature, Bader International Study Centre

In his landmark treatise on radical education, The Pedagogy of the Oppressed (1980), Paulo Freire advocates dismantling the hierarchy of authority found in most university classrooms in favour of creating a more equitable setting, where students and faculty learn from each other. This project seeks to explore new models for student-faculty dialogue about the undergraduate learning experience. Three Collaborators with research interests in student experience, critical pedagogy, and faculty professional development will support a maximum of four Student Participants in their design and delivery of a professional development workshop for Bader International Study Centre (BISC) Faculty delivered as part of an established faculty workshop series. Student Participants, Collaborators, and BISC Faculty workshop attendees will be Surveyed about their experiences and the results will be disseminated through: a presentation at the BISC Festival of Ideas Research Conference, a short, co-authored report delivered to the BISC Curriculum Committee, and a co-authored journal article submitted to the Journal of Critical Scholarship on Higher Education and Student Affairs or a similar title.

2016 Recipients

Gendered and Colonial Violence: Beyond 'Awareness Raising' and toward experiential education using applied drama and collaborative materials development

Dr. Aaron Franks, Cultural Studies Program and the Centre for Indigenous Research Creation (CIRC); and Dr. Lindsay Morcom, Faculty of Education, Aboriginal Teacher Education

The two-year research project Gendered and Colonial Violence: Beyond 'Awareness Raising' and toward experiential education using applied drama and collaborative tool creation (Beyond 'Awareness Raising') pursues the potential for self-guided learning in collaborative environments through performance and respectful engagement with Indigenous cultural protocols. Focusing on three threads, 'flipped' and engaged learning spaces, Indigenous cultural safety, and the gendered and colonial dimensions of social justice education, Beyond Awareness Raising is inspired by a Queen's Native Student Association production of the play The Hours That Remain, which explored the crime of missing and murdered Indigenous women through an intimate and familiar setting.

Revisiting the play in a new series of workshops with Indigenous education students, the project will maximize the potential for embodied, experiential learning for multiple targeted student and educator communities at Queen's and beyond. Experiential learning, diversity and Indigenization are not waiting to be developed—they are waiting to be shared.

Community-Supported Learning in LLCu 295: Indigenous Digital Media

Dr. Jennifer Hardwick, Department of Languages, Literatures and Cultures (Indigenous Studies Program)

LLCu 295: Indigenous Digital Media is a seminar course which explores the relationship between digital media and Indigenous cultures in North America. As part of the course, students must produce a public-facing final media project that engages with course material and the broader community. With the intent of supporting students in their final projects and deepening and expanding Indigenous Studies and Digital Humanities (DH) networks at Queen's, LLCu 295 will pilot a mentorship model that incorporates experts and knowledge keepers into curriculum. Five mentors with practical experience in DH and/or Indigenous ways of knowing and learning will be asked to give a guest lecture, hold an open office hour, and attend a final showcase of student projects. Students and mentors will be surveyed about their experiences and results will be disseminated via the Centre for Teaching and Learning, the Aboriginal Council of Queen's University, and the Digital Pedagogy Institute of Ontario.

2015 Recipients

Re-thinking Pedagogy in International Relations in an Era of Globalization and Disruption

J. Andrew Grant, Political Studies; and David J. Hornsby, University of Witwatersrand

The way in which we teach and construct learning environments in International Relations (IR) requires a fundamental re-think. While traditional IR programs tend to focus on the delivery of discipline relevant content, societal needs and expectations have changed. In this era of globalization and disruption, students require a broader tool kit of skills, such as critical thinking, effective communication, team work, and cross-cultural understandings, which will complement course content. The proposed workshop seeks to bring together educators interested in the scholarship of teaching and learning with the intent of discussing innovative approaches that move IR beyond the traditional teaching orthodoxy. This initiative will ensure that IR and other internationalization-oriented disciplines across the Queen's campus and beyond keep up with the contemporary needs of students and continue to be relevant in efforts to enhance student learning in the future.

Development of a Library of Online Learning Modules for Biology Students

Barb Vanderbeld, Biology

There is considerable interest in the Department of Biology in developing a collection of online learning modules that can be made available to all Biology students at any time. Modules could be assigned by individual course instructors in order to ensure all students have the same background information pertaining to a particular laboratory skill or theoretical concept regardless of which courses each student has completed. The topics covered by these modules would include basic lab techniques, protocols and other procedures commonly used in many Biology courses, accompanied by relevant theory. The ability of instructors to assign these modules to students instead of re-teach these topics in multiple different courses would reduce redundancy for those students already proficient in these areas and free up valuable lecture, lab and tutorial time for higher order learning opportunities.

Online Anatomy Modules: Building a Flipped Classroom

Catherine Donnelly, Rehabilitation Therapy

The flipped classroom is a pedagogical approach that involves online learning as homework along with active learning activities in the classroom. Emerging evidence supports this approach in enhancing student experience and outcomes. Learning Context: A first year occupational therapy course will be redesigned to develop a series of flipped classroom experiences to facilitate the learning and teaching of anatomy. Enhancement: Online learning activities including anatomy modules, case studies and quizzes will be developed along with interactive, team based lab activities. Brightspace, onQ, will be used to host the online components. Evaluation: Both student learning outcomes and experiences will be examined using quizzes, an integrated program exam and student survey. Priority Alignment: Queen's Teaching and Learning Action Plan has identified the development of university-wide support for elearning as one of fifteen recommendations. Applicability: The generic anatomy modules that are part of the online homework will have broad applicability to other anatomy courses at Queen's.

Peer Instruction Meets Team-Based Learning: Integrating Labs

James Fraser, Physics

Phys104/Phys106 is the entry level calculus-based physics course serving all students in the Faculty of Arts and Science. Due to resource constraints, the two courses are combined and taught by the same instructor. With a fully flipped format, (pre-lecture reading assignments with online questions, interactive lectures targeting problem areas using peer instruction) normalized learning gains (measured using pre-to post-test gains on concept inventories) match reported results for highly interactive courses (Hake, 1998). With immediate feedback throughout the term, students quickly realize the pace they must attain to succeed. In 2014/15, only three students (out of 170) failed the course. Students consistently rate the course very highly (most recent USAT results question 1: 4.6, question 2: 4.9 – the highest mean for any course in the department). Even with such successes, there are outstanding challenges. Since Phys104 and 106 are combined, the backgrounds of the students and their interest level is extremely varied, ranging from students who are committed to specializing in physics to students who would have preferred algebra-based physics (Phys117) but had timetabling constraints. These students enter the course often with the opinion that they are "not good at physics." Over the 2014/15 year, 70 students dropped phys104/106. Of those who remained, attendance measured through clicker

participation averages ~75% by the end of the year, and the quarter of the class not attending are the students who are doing the most poorly. We hypothesize that due to poor preparation and poor work habits, a considerable number of students are overwhelmed by the flipped format and need additional support to master content and, in particular, its application. Currently to put concepts to practice, students attend weekly tutorial and laboratory components (1, 5 hour slots lead by different graduate students TAs). In tutorials, students work in small groups to solve a list of problems using a small whiteboard under the guidance of a mentor (i.e. graduate student). Student response to the tutorials is extremely positive (midterm feedback and USAT comments). In the laboratory under the direction of a laboratory demonstrator with a different TA, students spend time exploring physics concepts in a hands-on manner. Due to time constraints, they usually complete the lab only after lab hours and submit it two days later. Due to lab resource limitations and scheduling, work is done in pairs (but handed in individually). These experiments sometimes cover physics concepts that have not yet been presented in the course readings. This creates a disconnect in the material between class and the laboratory and adds an extra challenge for students as they try to keep up with the course content. Student response to the laboratory component is mixed. The most popular component is the year-end "design lab" which provides students with an authentic challenge to overcome (while working in groups of 3-4). To overcome this challenge, we propose to integrate the collaborative experience of the tutorial with the laboratory component to create a seamless course delivery, using best practices discussed and tested in the team-based learning literature.

Collaborative Practice: Introduction and Application through On-Line Modules and Experimental Team Learning Events in Health Science Students

Rosemary Brander, Anne O'Riordan, Denise Neumann-Fuhr, Office of Interprofessional Education and Practice; Lindsay Davidson, Pediatric Orthopaedics; Sheila Pinchin, Faculty of Health Sciences

The majority of Faculty of Health Sciences (FHS) student learning experiences are in highly individualized and competitive environments, yet it is important for them to learn about, and to develop skills for, collaborative practice so that they can effectively provide safe and quality healthcare 1,2,3. Queen's University FHS Faculty Board supports and directs the involvement of all health sciences students (Medicine, Nursing, Occupational Therapy and Physical Therapy) in an active program of Interprofessional Education (IPE) through the Office of Interprofessional Education & Practice (OIPEP) to support competencies in the documented domains of collaborative practice 4,5. This project aims to strategically re-develop the IPE curriculum to better address learning needs with respect to Collaborative Practice.

2012 Recipients

Film 110

Dorit Naaman and Clarke Mackey, Film and Media Studies

OT843 Web-Based Quiz Module

Susanne Murphy and Philip Wong, School of Rehabilitation Therapy

TUMBLR and Microwriting: Enhancing Written Communication through On-Line Peer-Learning

Jill Scott, Languages, Literatures and Cultures

Developing an Auditory Bank of Pediatric Cardiac Sounds and Phonospectographs

John Smythe and Aleksander Meret, Paediatrics

2011 Recipients

Ongoing Development of Undergraduate Statistical Resources and Formal Evaluation Tools

Mark Kelly, Department of Biology

Late Roman Coin Identification Using Reflectance Transformation Imaging (RTI)

Dr. George Bevan, Assistant Professor, Classics

Interactive learning videos to enhance teaching and learning within OT 843 – Physical Determinants of Occupation

Susanne Murphy, Lecturer, Occupational Therapy Program

The Queen's Pedagogy Commons

Aaron Mauro, English Language and Literature

Multimedia Content, Laboratory Enhancements, and Interactive Simulation Software for Courses in Digital Logic and Computer Architecture.

Dr. Naraig Manjikian, Associate Professor, Department of Electrical and Computer Engineering, Valerie Sugarman, Computer Engineering (Undergraduate student)

This project involves enhancements to improve learning outcomes for two core courses in the Department of Electrical and Computer Engineering: ELEC 271 Digital Systems and ELEC 274 Computer Architecture. These courses are also taken by students in certain program options of Math and Engineering, Engineering Physics, and Mechanical Engineering. There are three main aspects to the project: multimedia content on course concepts and practical applications, custom simulation software to model digital logic and computer system behavior as a learning aid, and new laboratory exercises for use with new equipment based on programmable logic chips. The multimedia content consists of diagrams, animations, and examples with narration to explain and illustrate concepts in digital logic and computer organization, narrated tutorials on use of computer-aided design software and digital laboratory hardware, short presentations by practicing engineers, and narrated site visits to engineering companies to show the development and use of digital systems. Each presentation is no more than five minutes in length, and is either available to students through a streaming server for independent learning or intended for display in lectures to increase student interest and engagement. These enhancements are being used in the two courses during Fall 2011 and Winter 2012.

Interprofessional Teaching and Learning Online Module: Educational Strategies for Enabling IPE and Collaborative Practices

Nancy Dalgarno, Curriculum Developer, Office of Interprofessional Education and Practice

The Hyper-Collaborative Contemporary Canadian Literature Project

Marc Andre Fortin, Department of English Literature

A pilot test of the turnitin.com PeerMark system in KNPE 225 and POLS 391: Evaluating students ability to fairly grade and the educational value of the peer review process.

Dr. Brendon Gurd, Assistant Professor, School of Kinesiology and Health Studies

Development of an online information Literacy Toolkit for Inquiry-Based Learning

Dr. Corinne Laverty, Head, Education Library

2010 Recipients

Multimedia Content, Laboratory Enhancements, and Interactive Simulation Software for Core Courses in Digital Logic and Computer Architecture

Dr. Naraig Manjikian, P.Eng., Assoc. Prof., Dept. of Elec. and Comp. Eng.

Valerie Sugarman, Computer Engineering (Undergraduate student)

This project involves enhancements to improve learning outcomes for two core courses in the Department of Electrical and Computer Engineering: ELEC 271 Digital Systems and ELEC 274 Computer Architecture. These courses are also taken by students in certain program options of Math and Engineering, Engineering Physics, and Mechanical Engineering. There are three main aspects to the project: multimedia content on course concepts and practical applications, custom simulation software to model digital logic and computer system behavior as a learning aid, and new laboratory exercises for use with new equipment based on programmable logic chips. The multimedia content consists of diagrams, animations, and examples with narration to explain and illustrate concepts in digital logic and computer organization, narrated tutorials on use of computer-aided design software and digital laboratory hardware, short presentations by practicing engineers, and narrated site visits to engineering companies to show the development and use of digital systems. Each presentation is no more than five minutes in length, and is either available to students through a streaming server for independent learning or intended for display in lectures to increase student interest and engagement. These enhancements are being used in the two courses during Fall 2011 and Winter 2012.

Blended Learning: Pathway to Collaboration

Nancy Dalgarno, Curriculum Developer, Office of Interprofessional Education and Practice

OT 852: Group Theory and Process -Video Project

Megan Edgelow Adjunct Lecturer, Occupational Therapy Program , School of Rehabilitation Therapy

Initiative on creating a wiki-page for research in the biological sciences: a first step towards integrated technology in scientific research.

Dr. Colin Funk, Professor of Physiology, Professor of Biochemistry

Exploring two blended-learning approaches designed to integrate disability theory and occupational therapy practice.

Margaret Jamieson, Associate Professor, Occupational Therapy Program, School of Rehabilitation Therapy

Enhancing the Learning of Queen's Physical Therapy Students during Clinical Education: A pilot project using video-conferencing to support the collaborative clinical placement model

Trisha Parsons Assistant Professor, Physical Therapy Program, School of Rehabilitation Therapy

2009 Recipients

Coursecasting for FILM240X: Popular Culture Studies

Dr. Sidney Eve Matrix, Department of Film and Media

Revise and Redesign of School Law and Policy

Dr. Benjamin Kutsyuruba and Dr. Ruth Rees, Faculty of Education

Harmonization of Case Based Learning in Graduate Education

Catherine Donnelly, School of Rehabilitation Therapy

Integrated Learning Guide for Organic Chemistry

Dr. Natalie M. Cann, Department of Chemistry

Creating a Virtual Commons: Re-thinking the Approach to Teaching POLS 110

Dr. Catherine Conaghan, and Jonathan Rose, Department of Political Studies

Creation of an Expert-Moderated Wiki: The Beginnings of What Will Replace Reference Textbooks

Dr. Kathleen Norman, School of Rehabilitation Therapy

Embodied Pedagogy

Dr. Dia Da Costa, Global Development Studies

The Internet Lab: Promoting Student Engagement in Developmental Psychology

Dr. Stanka A. Fitneva, Department of Psychology

2008 Recipients

Knowledge Translation Course

Margaret B. Harrison, Christina Godfrey, Marianne Lamb, School of Nursing

This project developed and evaluated a unique course to be offered by Queen's within the Council of Ontario Universities Programs in Nursing. The intent of NURS-898 is to build on Nurse Practitioners' (NP) experiential knowledge. In addition to the core competencies required by primary health care nurse practitioners, students had opportunities to develop broader based skills in critical appraisal and research inquiry. They engaged in a major project to develop an evidence synopsis in a substantive practice field using established methodologies within the science of synthesis. Our plan is to fully utilize

the resources we have developed over the past few years at the School of Nursing with this new educational opportunity through our work with the Queen's Joanna Briggs Collaboration and the international Cochrane Library.

E-Learning Modules for Resident Physicians relating to the CanMEDS Physician Competency Framework

Mala Joneja, Rupa Patel, Shayna Watson, School of Medicine

The funds provided by the grant assisted with the creating of video clips for on-line teaching modules. The grant provided funding to hire a professional videographer. Video clips were taken of local Queen's University educators who are seen as 'champions' or role models for particular roles. It was hoped that including local educators would have a greater impact on resident learners here at Queen's University. Learners would have the opportunity to engage in further conversation with these teachers. To date two modules have been completed: "CanMEDS Introduction" and "CanMEDS Collaborator".

Exploiting the Potential for Complex Learning in an Adult Neurorehabilitation Course for MScOT Students

Michelle Villeneuve, School of Rehabilitation Therapy

The overall purpose was to re-design teaching and assessment strategies in order to enhance opportunities for complex learning in OT844 (Cognitive-Neurological Determinants of Occupation). This instructional design project integrated face-to-face and multimedia learning activities to support complex learning for two units of study. The goals of this project included:

To develop video-based case studies of actual clients with cognitive-neurological conditions along with face-to-face learning activities that would scaffold whole-task learning for case analysis.

To develop multimedia learning modules as worked-out examples to support and scaffold student learning for: selecting, administering, scoring, and interpreting the results of standardized cognitive evaluation tools.

To support these goals the available funds were used to re-structure the content to provide opportunity for case-based learning using authentic problems from clinical practice around available video-based case studies and to complete each of the modules as a finished product for 4 of the 11 standardized cognitive-perceptual evaluation tools currently available at Bracken Library.

The Perk Station – Hands-on Surgery Experience for Students

Gabor Fichtinger, Computer Science

The grant helped build a novel teaching tool called Perk Station surgical navigation system and introduce it to undergraduate courses at Queen's University.

The purpose of this tool was to:

Introduce students to practical biomedical engineering applications. In particular, provide experience in computer-assisted surgery in affordable and reproducible lab environments.

Enhance understanding of concepts learned in class through hands-on practical experience.

Entice students to advanced studies in biomedical technology.

The Perk Station has been presented in various demonstrations and outreach events. Experimenting with the Perk Station appeared to be a profoundly novel and exciting experience for students who had an opportunity to use it. Many of them seemed to have been energized to learn more about the potentials of computing and engineering in medicine. The Perk Station has been integrated into laboratory modules of the CISC-330 and COMP-230 courses. With the Perk Station, students perform needle based surgery with virtual reality navigation. They plan surgeries through a computer interface by calculating target locations, tool trajectories and other critical parameters. They perform the surgical intervention on anatomically realistic test objects (called phantoms) and evaluate accuracy relative to the surgical plan. The apparent simplicity of the Perk Station should not belie the depth and breadth of engineering research leading to the system. Since receiving the grant, our research team has produced six publications and has secured significant external research funding.

The Efficacy of a Video-Based E-Teaching Tool in Medical Student Education

Vladimir Kratky, Department of Ophthalmology

One of the most common stresses that medical students face is the vast amount of information that they have to absorb in a relatively short time. We have undertaken to run a project formally comparing the learning retention of key points in an educational video on the 'Triage Competency of Eyelid Lesions in Ophthalmic Plastic Surgery. The initial results of a small pilot project are very promising, showing a significant improvement in test performance after watching a short video. We plan to expand this prospective trial to include a full class of medical students (about 100 subjects) and to evaluate their learning retention on 'difficult-to-teach' topics in clinical practice. Furthermore, these video clips will be posted on-line to allow students ready access at any time.

The Assessment of Engineering Student Engagement and Development through Community Service Learning

Brian Frank, Department of Electrical and Computer Engineering

Skills like creativity, communication, and information literacy are critical in most programs in higher education. These skills can be developed well through student-directed experiential learning strategies, like service learning projects, which motivate inquiry, develop management skills, and provide a connection to the community.

Every year first-year engineering students tackle problems in a design project course, APSC-100: Practical Engineering Modules. Community service projects were introduced into this course in the 2005-2006 academic year, and greatly expanded in successive academic years. Currently the majority of the 650 first-year students are involved in some sort of community service project. Anecdotally students indicate that the projects encourage creativity and develop the ability to communicate with clients. This study was undertaken to examine more rigorously the impact of service learning projects and provide data for further improvement.

This study is using student self-reports about engagement and skill development, and an instrument developed to assess design cognition, to compare the outcome of client-based projects, particularly

service learning projects, with non-client based projects. This will then be used to assess the contribution of community service learning projects to professional skill development.

This research is related to a broader initiative to investigate development of design skill cognition from first year to graduating year that was reported in presentations at the national engineering education conference in 2008 and 2009. The data from that study are being applied to assess the impact of service learning projects in first year.

2007 Recipients

Enhanced Professional Skills Instruction and Student Learning in Rehabilitation through the Integration of Technology across the Curriculum

Diana Hopkins-Rosseel, School of Rehabilitation Therapy

In collaboration with Paul Kasden, IBL-Internet Business Logic Inc., Alice Aiken, School of Rehabilitation Therapy, and Sarah Wickett and Matthew Thomas, Bracken Library, Diana Hopkins-Rosseel introduced an innovative teaching and learning strategy into the physical therapy curriculum by integrating a novel patient/client management software platform, IBL Clinic Server, across several courses in the curriculum. This program aims to improve the students' written patient/client documentation skills, provide a platform for problem-based learning activities, promote future best practices through evidence-based client management, and expose students to current and diverse information technology rehabilitation. After completing an online tutorial, students documented their interaction with a volunteer at the Clinical Education Centre, and then compared their entries to other students who had interviewed the same volunteer as a peer learning method. Student response to the new technology has been positive. They have recommended that it be used in the curriculum on an ongoing basis.

Multimedia Course Design for FILM240: Media and Popular Culture

Sidney Eve Matrix, Department of Film and Media

The objective of this project is to enhance the student learning experience by designing stimulating multimedia lectures using award-winning advertisements from around the world. Grant funding allowed Professor Matrix to pay for a subscription and licence to a corporate advertising database (Adforum), and to pay for staffing costs to hire an undergraduate research assistance. This new course was a huge success. The retention rate was extremely high: of the 290 students who registered, 283 finished the course. USAT feedback indicated that students rated the course at 4.8 on a five-point scale in terms of excellence, and 55% of them specifically mentioned the multimedia lectures and use of visuals as particularly enjoyable and interesting. Final grades were higher than expected with a mean of 77% and students commented that the visual examples helped them when recalling content at exam time. Students were so engaged in the classes that the average attendance rate was 86% per class. Professor Matrix was nominated for two teaching awards.

SOCY223 Race and Ethnic Relations

Cynthia Levine-Rasky, Sociology

In an effort to engage students deeply in the topic of Race and Ethnic Relations (now called Race and Racialization), Professor Levine-Rasky created a poster component to her course. Students were

assigned topics about which they had to develop a visual presentation of research for display to the Queen's Community, the media, and the public. Following a hands-on training workshop for the students, the posters were designed and laid out electronically with PowerPoint and printed professionally. Topics included Phillippe Rushton and pseudo-scientific racism, white supremacist groups, Somalis in Canada, Filipino domestic workers, the 1907 Vancouver Race Riot, Muslim women, Roma in Canada, Aboriginal residential schools, the Sleeping Car Porter Union, racism in the criminal justice system, affirmative action policy and critical whiteness studies. Space was then booked in the John Deutsch University Centre, and invitations were issued across the university and to the general public. Guests were invited to view the students' work, engage in discussion, and write comments about the event. The benefits for students were evident in the skills acquired including the ability to synthesize research to key textual and visual components. The event also instilled in the students a greater sense of social responsibility.

The Qscalpel Project: A Model for Developing Blended E-Learning Instructional Units for the M.D. Clerkship Curriculum

Lindsay Davidson, Orthopaedic Surgery; A Szulewski, School of Medicine; Elaine van Melle, Health Science Education; and David Pichora, Orthopaedic Surgery

Moving to a more student-centred learning approach, this team of educators hired a group of three students to develop content, based on existing surgical clerkship seminars in the Queen's MD program. Modules were developed around a series of authentic clinical cases (such as Acute Hand Problems, Blood Transfusion, Skin Cancer, Common Eye Problems seen in the Emergency Room and Fluids and Electrolytes). Each was designed to explore some of the learning objectives described at the outset. Multimedia enhancements including photographs, illustrations and reproductions of imaging studies were included in the cases. Formative assessment with embedded feedback was included in each module as multiple choice and short answer questions, allowing students to assess their knowledge as they progressed through the module. Surgical clerks who worked through the modules and then completed a content-based quiz, scored 1.15 marks (out of 10) higher than the clerks who had attended the didactic seminar and completed the quiz. Focus groups revealed that the modules provided a consistent, accessible and flexible learning environment.