Fall 2012

ResearchFanshawe Magazine Special Edition 1

Leslie McIntosh  
Fanshawe College of Applied Arts and Technology

Dan Douglas  
Fanshawe College of Applied Arts and Technology

Follow this and additional works at: http://first.fanshawec.ca/researchfanshawemag

Recommended Citation
McIntosh, Leslie and Douglas, Dan, "ResearchFanshawe Magazine Special Edition 1" (2012). ResearchFanshawe Magazine. 3. 
http://first.fanshawec.ca/researchfanshawemag/3

This Book is brought to you for free and open access by the Magazines at FIRST: Fanshawe Innovation, Research, Scholarship, Teaching. It has been accepted for inclusion in ResearchFanshawe Magazine by an authorized administrator of FIRST: Fanshawe Innovation, Research, Scholarship, Teaching. For more information, please contact first@fanshawec.ca.
The faces of Fanshawe research

Read researchfanshawe online: www.fanshawec.ca/services/research
Welcome to Applied Research and Innovation

One of the most frequent questions we are asked at Applied Research and Innovation (ARI) is: “Why are colleges doing research? Isn’t that a university thing?”

Not anymore. Not, in fact, since 2002, when the Ontario Colleges of Applied Arts and Technology Act was amended to permit colleges to engage in applied research. Colleges enthusiastically pursued innovation projects for one main reason – to build upon what we already offer, hands-on learning experiences for, and in, the real world.

Applied research and innovation projects provide students with the opportunity to apply classroom learning to real world situations and problems. This develops critical thinking and problem-solving skills, always in high demand when employers are asked about desirable employee traits. Participation on a research team helps students learn teamwork, critical thinking, interpersonal and communications skills, familiarizes them with ethics, provides the chance to network within their occupational sector, and often results in higher levels of engagement, motivation and student retention.

Student researchers at colleges and institutes have won awards for their work, found employment with the companies they worked with, and/or discovered their research activity was the differentiator when an employer had multiple applicants for limited positions. The innovation and entrepreneurial skills that result from participation in applied research prepares students for a changing workplace in which these skills are becoming more and more a requirement for success and career advancement.

Our goal is to make applied research and innovation a student-focused enhancement to the teaching and learning process, rather than an activity unto itself. That’s why applied research activity at colleges requires student participation. Projects are rarely undertaken if they do not provide an opportunity for a student or students to be involved.

ARI facilitates applied research and innovation projects across Fanshawe College. We encourage you to engage your students in these types of projects. We’re here to help you do it. Give us a call.

Meanwhile, enjoy this special edition, which features stories from previous issues of research fanshawe magazine.

Dan Douglas
Acting Dean, Applied Research and Innovation

RESEARCH FOCUSES ON HOW STUDENTS “PLAY THE GAME” By Leslie McIntosh

Eleanor Fullick knows about games and technology. And her experience as a gamer and recent graduate of Fanshawe’s Media Theory and Production program gives her a unique perspective as a researcher investigating “gamification”. A multimedia technician in the School of Contemporary Media, Fullick is principal investigator (PI) on a pilot study into gamification as a methodology to engage and teach today’s postsecondary students.

“Gamification” is the application of gaming behavioural principles to other purposes, such as education or marketing. Games are based on the theory of positive reinforcement – achievements and rewards motivate gamers to continue to play in order to reach higher levels or earn some other type of reward or recognition. Some games also allow participants to compete directly, so competition becomes another motivator. Fullick says the theory behind gamification is, put simply, about presenting curriculum in a way most familiar to students. For the so-called Net generation, the Internet, social media, mobile technology and texting are as natural as these technologies are alien to their grandparents. Current debate in the field has focused on the fact that most teaching methodologies were designed decades ago and may no longer work well for teaching the so-called Net generation. The gamification pilot project is the first of a planned program of research aimed at examining this issue. Fullick’s study was funded by the Fanshawe College Research Innovation Fund (RIF). Working with co-investigator Robert Haaf, Fullick developed her research using a class of eleven students from her web design course, part of the Fanshawe-Western Media Theory and Production joint diploma/degree program.

The course deals primarily with fundamental scripting and coding concepts used in website development. The research took place in the winter 2012 semester. In the first part of the term, students were taught using traditional methods. In the second half, gamification methodology was used. Fullick set up a website (see background in photo). Students could redesign their websites (different colours, for example) to personalize them and share their themes (called “skins”) with classmates. Each student’s individual website had a dynamic, moving timeline showing assignment deadlines, how much time was left in the term to complete the work and the student’s achievements. Students also received points for such activities as class attendance, participation and helping other students. Additional points were earned for “sidequests”, i.e., bonus assignments, which could be counted for up to 20% of the student’s grade. While all students got points, using positive reinforcement meant more points were earned by students who turned in assignments early, did extra work, etc., than others. Small rewards or privileges were offered for top students in specific categories. Students who consistently turned in work early, for example, got a pass to be 24 hours late with a future assignment without penalty if they needed a days’ grace. There also was an anonymous leaderboard that showed progress by all participants, with prizes awarded to the top students. (Screenshots for the website can be viewed online at http://www.fanshawemultimedia.com/screens.html) Fullick says using a website was beneficial and made it unnecessary for the research team to manually collect that information, since the site automatically logged critical data on students’ progress.

Preliminary findings indicate the students felt positively about their experience and liked the achievement system and associated rewards. They especially liked the idea of earning more points for bonus assignments. Data showed students took on bonus assignments at first, although that tapered off as the course progressed. Fullick says she suspects that happened because students were busy with their university courses later in the term. Interestingly, students perceived that the website motivated them to submit assignments earlier; however, submission time data didn’t bear that out.

Fullick says the pilot did not point the researchers toward any definitive conclusions – the sample size of eleven students was far too small for that – but the pilot has raised other questions and will help to scope future research.

HOW CAN ARI HELP YOU?

• Research funds sourcing
• Pre-award project development, proposals, project budgets, post-award implementation
• Business and industry partnership facilitation
• Information, ethics and research skills development
• Research Innovation Fund (internal seed fund)
• Communications that celebrate our research achievements
Housing the Three Little Pigs

The big, bad wolf can blow it down, but first it has to be built. When researchers at Western University needed a house for their $7 million research project – dubbed The Three Little Pigs – they called upon the faculty and students of the School of Building Technology. Led by Prof. Marty Askes (pictured, far right), Fanshawe students built a two-storey, four-bedroom, brick house, complete with plumbing, wiring and all the amenities. The house had to be built on a special base with monitoring equipment – rather than on a conventional foundation – a unique construction challenge, since the researchers needed to move the house in and out of the test building on rails. Fanshawe students solved the problem by adjusting the placement of the exterior brick walls, all while maintaining the stability and authenticity of the structure. Located at the London International Airport, 3LP is the first testing facility of its kind to subject full-scale houses to winds as strong as a Category 5 hurricane. The project is aimed at improving structures to reduce costly damage and loss of life during natural disasters.

PASSION AND PURPOSE DRIVE FANSHAWE INVESTIGATOR’S WORK

A faculty member in Fanshawe College’s Counselling and Accessibility Services since 1999, Dr. Robert McEwan helps students with learning challenges use assistive technology and develop strategies to overcome learning problems.

Twenty years ago the education system did not recognize people as having unique learning styles, McEwan says. And although students with learning challenges were often very intelligent, they could have significant problems coping in a traditional academic environment. That observation led McEwan to undertake a special applied research project as a member of Fanshawe’s Millennium Centre to study whether assistive technology could help apprentices succeed. Data showed that apprentices who received assistance were more likely to complete their in-school training than students who did not get help. Today, the University of Toronto-trained educator is involved with applied research projects that focus on vulnerable learners, essential skills, and students with psychiatric disabilities.

Students with psychiatric problems often face significant barriers in the postsecondary education system. Those who suffer from anxiety, self-image or social issues may not relate well to classmates, deal with school bureaucracy, or generally cope well in a system designed for students with fewer life challenges. “The problem with mental illness is that it doesn’t coincide with the academic calendar. If a student becomes sick in November and has to spend December in hospital, there is no flexibility in the system. The student has to come back and start over again the next September, pay again and repeat everything already learned,” McEwan says. Led by LEADS Employment Services, a non-profit employment agency that serves the disabled, McEwan is working with the Canadian Mental Health Association and Dr. Abraham Rudnick (a Western University professor and psychiatrist) to use case studies to examine systemic barriers within postsecondary education. The purpose of the research is to identify issues and barriers to success for students with psychiatric problems, and develop models to support them in school and on the job. In addition to acquiring knowledge that benefits students, the College and its employees benefit greatly from the development of strong, interdisciplinary community partnerships, he notes. While the postsecondary educational system focuses intently on student success, many practices, policies and procedures do not easily lend themselves to that goal, McEwan notes.

What has driven him to do research is a belief that an evidence-based approach to problem-solving is a key to helping educators help students.

“If we are going to improve student success, our actions should be based on evidence. There needs to be a way to test out ideas to see if they work,” says McEwan, who adds that applied research is crucial to the gathering of that evidence.

SEND IN THE NOUNS!

When was the last time you laughed in a grammar class? In fact, as a student, how often did you ever GO to your grammar class? That was the dilemma facing Corinne Marshall, School of Language and Liberal Studies. In her words: “I quickly found I couldn’t talk about grammar in the classroom for more than five minutes without risking a riot, or at least an empty classroom. There certainly wasn’t much learning going on.”

Funded by two research seed grants, Marshall created humorous learning materials and later tested them in a classroom setting. Grammar students at Fanshawe are able to make up to three attempts on their grammar quizzes before the results are recorded. Many opt not to do so. Preliminary data indicates that students in the experimental group were more likely to make second, even third attempts, on a quiz than were students in the control group. Students in the former group scored, on average, 5% higher on their final grammar test than did students in the control group, leading Marshall to conclude that use of humorous grammatical material may indeed exert a positive influence on student achievement.
Health innovation not just for dummies

Steve Vaughn was in serious trouble. He was in the hospital with a tracheostomy tube in his throat, and when two respiratory therapists came in to change it, his blood pressure and heart rate dropped suddenly and alarmingly. His therapists called a doctor and between the three of them, they managed to restore Steve's stats and get his tube changed. It was a tense few minutes, but Steve survived.

Fortunately, Steve feels no real pain. He's a very sophisticated mannequin and his therapists, Fanshawe College students, were participating in a simulation as part of their program. They passed the test, which means they'll be ready for a similar scenario when they have responsibility for live patients in the real world. The College has developed learning labs - for nursing, MRI, X-ray, and surgeries - that are outfitted with professional equipment to simulate working conditions in hospitals and other care centres. Carol Butler, Coordinator of Clinical Learning and Simulation (pictured above, far left), says students really enjoy the hands-on approach that simulations offer. "They get to play their own roles without someone telling them what to do."

They can make mistakes here and it's okay," says Butler. Key to the simulation experience is debriefing, which happens after each exercise is complete.

Steve and other mannequins add a huge element of authenticity to the scenarios. As a high fidelity mannequin, he has a programmable pulse, different breath and bowel sounds, a jaw that can be adjusted for intubation practice, a bladder that can be filled and emptied, and a wide variety of other features. He can even "receive" medications during surgical simulations through a built-in radio transmitter. Instructors use speakers and voice changing software to speak for him when the simulation calls for it. While the simulations are definitely instructive for students, Butler says they also inform teachers and program coordinators. As Fanshawe continues to develop its labs and add more equipment, simulation will only keep growing as a feature of health sciences programs.

CSEEING THE FUTURE OF PROJECT-BASED LEARNING

Once only a concept on a federal grant application, a team of dedicated researchers are breathing life into Fanshawe's new Centre for Sustainable Energy & Environments (CSEE).

Volkening, who also teaches project management, says student involvement in relevant, real-life projects with industry teaches discipline, builds teamwork skills and provides great learning experiences that can give graduates an edge in today's competitive job market. Placing students in a learning environment where outcomes aren't necessarily known or predictable forces them to work "outside their comfort zones" and challenges them, all the while allowing them to make and learn from their mistakes.

Davis notes that research at CSEE supports many of the environment goals adopted by our society, and will provide Ontario with the highly skilled and qualified personnel needed for development of a "green" economy.

Makaran, recently named as the College's first industrial research chair and leader of the team, says the group is a band of "true believers" when it comes to using project-based methodologies to teach students. "The CSEE team collectively realizes the value of what we are doing. It's all about the student experience. We are increasing the chances of students getting work and providing companies with the skilled people they need. Project-based learning represents a different, and more effective, way of educating students, in my opinion."

"The biggest gift you can give to students," Makaran notes, "is relevance."