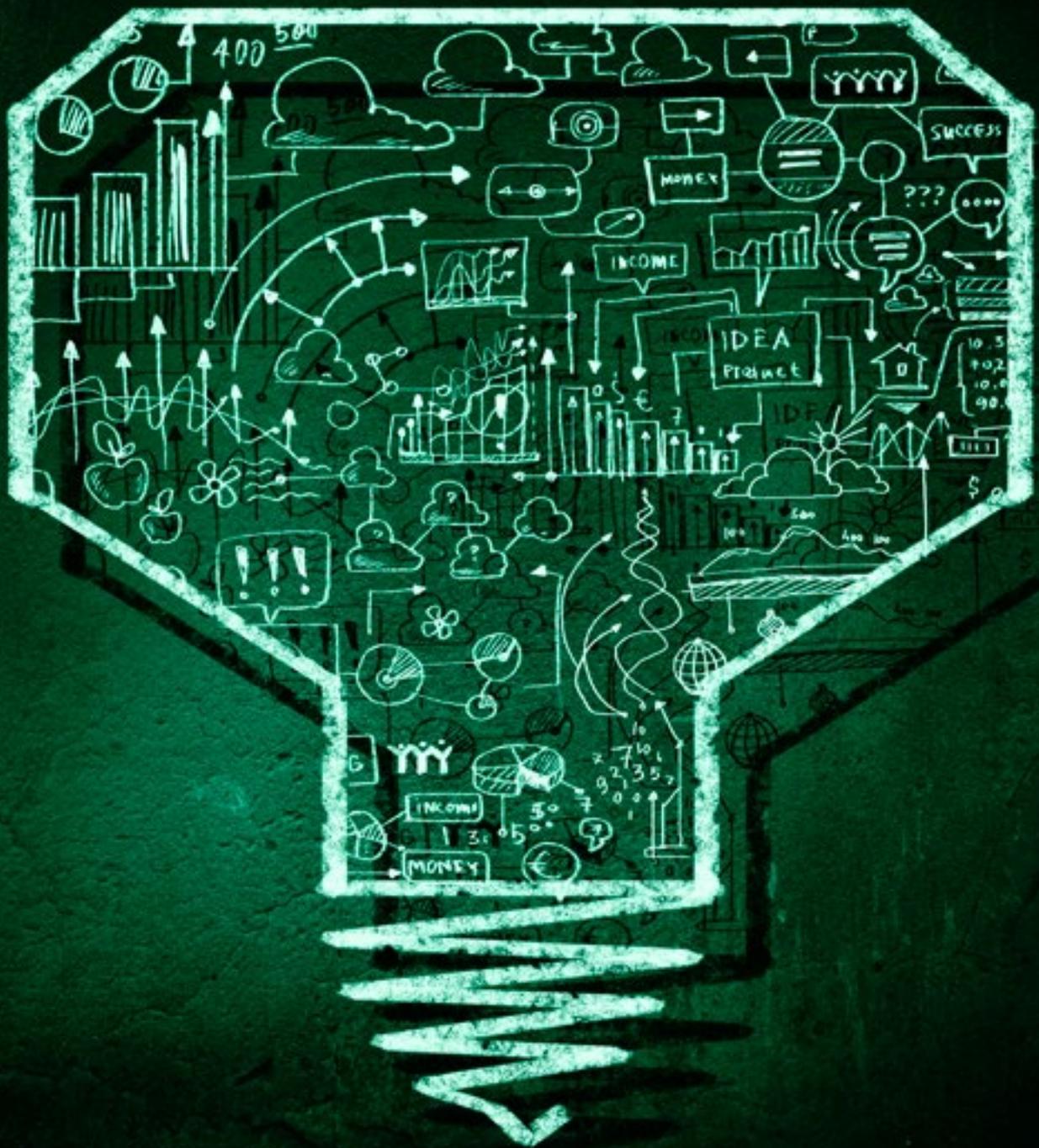


# Advancing Research Culture

OFFICE OF RESEARCH SERVICES AND INNOVATION (ORSI)  
ANNUAL REPORT 2013-2014



# Message from the president

Over the past few years, the growth of the Durham College (DC)'s student population has been unprecedented and matched by scholarship and research endeavours that serve both students and the community.

Since opening the Office of Research Services and Innovation (ORSI) in 2009, we have maintained a strong commitment to applied research projects and activities here on campus and working with our partners in the community while continuing to focus internally on both institutional research and planning. I am proud to say we have done this and more while providing our students with ongoing opportunities to gain hands-on research experience designed to prepare them for today's ever-changing job market.

2013-2014 marked another year of remarkable achievements including the college being ranked number 25 on the list of Canada's Top 50 Research Colleges for the second year in a row. To date, we have received \$7.22 million in funding, to support 108 research projects involving 277 students and 118 faculty and staff. We continue to conduct research in diverse areas such as science and technology, information technology services and agribusiness, showcasing the breadth of knowledge of DC's faculty, staff members and students.

Another major achievement was Natural Sciences and Engineering Research Council of Canada approval for three different Applied Research Tools and Instruments (ARTI) proposals, creating additional research opportunities for members of our college community and industry partners with a focus on advanced manufacturing, agriculture and craft beer.

I would like to thank all of our research and funding partners for their ongoing support and encourage small- and medium-sized businesses looking to grow or market their products to contact the office and find out how we can help.

I continue to be very proud of ORSI's collaborative culture of engagement, which is both student-centered and community-focused, and I congratulate the entire ORSI team and everyone involved in research at DC for driving our research agenda forward year after year.

Well done on another successful year!

Don Lovisa





## Message from the vice-president, Academic

DC has a history of excellence, offering a warm collegial campus experience with a solid capability and capacity for research. Ongoing quality assurance processes continue to enhance program performance complemented by a focus on the scholarship of teaching and learning.

As a premier post-secondary learning environment, we take pride in enhancing quality education with experiential learning and applied research opportunities that contribute to societal needs and improve the economic prosperity of the community. Preparing students for the demands of a knowledge-based, technology-driven, globalized work environment is enhanced through high standards in program delivery and an active research environment. Every aspect of serving students is positively influenced by the services that ORSI provides.

Judith Robinson

## Message from the director, ORSI

I invite you to explore the accomplishments of a truly dedicated team of faculty, students and staff within this report. Together we provide opportunities for individuals to explore and realize their potential in a dynamic and supportive learning environment. The 2013-2014 fiscal year was significant for ORSI for our many contributions to quality programming, applied research and experiential learning.

I extend my sincere appreciation to our faculty researchers and students as well as our ORSI team members for their outstanding commitment to the research enterprise at DC. It is through their efforts that we have firmly established a culture of research at the college that will continue to grow.

Debbie McKee Demczyk



# About ORSI

ORSI is unique in that it embraces all manner and types of research and quality assurance activities that occur throughout the college. It supports those who are new to research as well as those who are more experienced to participate and lead interdisciplinary research opportunities. The commitment of ORSI and the college's faculty makes a demonstrable difference to the college community. The many achievements between April 1, 2013 and March 31, 2014 are highlighted in this annual report.

## Highlights 2013–2014:

- Met all six quality assurance criteria outlined on the Program Quality Assurance Program Audit.
- 130 First-Year Profile reports.
- 123 Retention reports with new subset reports generated for first-generation and Aboriginal students.
- 110 Key Performance Indicator (KPI) program report cards and 17 service/facility report cards.
- 114 Program Health Matrix reports and seven School Snapshots.
- 48 students engaged in 32 funded research projects.
- 24 faculty and seven staff members participated in research activities.
- \$1.43 million awarded in support of applied research.
- Third-annual Research Day celebrated.
- Ontario Centres of Excellence (OCE) Discovery Days booth displayed research achievements with partners Bykart Software Ltd. (Bykart) and OASYS.

## Research Day

A successful third-annual Research Day was attended by a 130 faculty, staff, students, industry collaborators and other guests. Together they celebrated research excellence in the areas of entrepreneurship; engineering; education; health care; information technology; and the humanities. Twelve different breakout sessions focused on industry success, faculty expertise and student experiences. During this event, outstanding faculty and students were recognized for their contributions to research.

### FACULTY RESEARCH AWARD WINNERS:

- **First-place winner**  
Alex Dvorkin, School of Science & Engineering Technology (SET)
- **Second-place winner**  
Hossein Ahari, School of SET
- **Third-place winner**  
Rob Braithwaite, School of SET

### STUDENT RESEARCH AWARD WINNERS:

- **First-place co-winners**  
Anthony Smeelen, Computer Programmer Analyst program  
Nicole Ottley, Biotechnology Technologist program
- **Second-place co-winners**  
Brad Morris, Electronics Engineering Technology program  
Adam MacDonald, Electronics Engineering Technology program
- **Third-place winner**  
John Harvey, Mechanical Engineering Technology program

# Program Development and Quality Assurance (PDQA)

The PDQA team supports the quality of more than 140 full-time programs by constantly adapting to reflect advances in knowledge, technology and student needs. This team manages the process for new academic program development, enabling the college to be competitive within the post-secondary system and aligned with the changing post-secondary and labour-market sectors. The program mix was expanded this year to include the development of four-year baccalaureate degrees, which will be put forward for Ontario Ministry of Training, Colleges and Universities' (MTCU) approval. Another key aspect is the ongoing and continuous improvement of current programs and quality assurance initiatives.

## Program Quality Assurance Process Audit (PQAPA)

DC's commitment to providing students with quality programs and a superior learning environment was endorsed through an auditing process conducted by the Ontario College Quality Assurance Services. The PQAPA external evaluation included the completion of a quality criteria form, self-study report and two-day site visit. Auditors toured the college's facilities and met with various members of the college community including the Durham College Leadership Team and members of the Durham College Board of Governors and Program Advisory Committees. Members of the PQAPA review panel also spoke with students, staff and administrators from many student services departments and program teams.

Following the external evaluation was a summative report from the PQAPA review panel, which documents the degree to which each college's processes conform to the criteria and provides recommendations for improving and enhancing processes and procedures to ensure that learning comes first. The panel, impressed with the quality assurance policies and processes at DC, recognized the college's collective quality assurance efforts and determined that all six quality criteria were met. A microsite where the evidence and report were loaded for the auditors to review was considered innovative and received high praise.

## KPI Student Survey administration

For the last 15 years, colleges have collected and reported performance data to ensure the needs of the stakeholders are met and institutions remain accountable, effective and responsive. This year the PDQA team administered more than 6,200 in-class KPI Student Satisfaction surveys.



# Program development

## New programs

The terms of reference for the Program Proposal Review Committee (PPRC) were revised in 2013-2014 to better focus on the feasibility of new programs from a labour-market and student-demand perspective.

The PDQA team collaborated with the relevant program teams on revisions to the extensive baccalaureate degree submissions for the Health Care Technology Management and Behavioural Sciences programs. Once finalized, the submissions will be presented to the Post-Secondary Education Quality Assessment Board (PEQAB) to demonstrate how the college meets degree-level standards and benchmarks of program quality and institutional capacity.

The PPRC reviewed a total of 16 proposals for new programs and the following eight new programs were approved by the DC Board of Governors over the course of the year:



PROGRAM	CREDENTIAL
<b>SCHOOL OF HEALTH &amp; COMMUNITY SERVICES (HCS)</b>	
Behavioural Science	Baccalaureate degree
<b>SCHOOL OF SET</b>	
Healthcare Technology Management	Baccalaureate degree
<b>SCHOOL OF MEDIA, ART &amp; DESIGN (MAD)</b>	
Journalism – Broadcast and Electronic Media	Ontario college diploma
Media Fundamentals	Ontario college certificate
<b>SCHOOL OF CONTINUING EDUCATION</b>	
Thanatology	DC certificate
Spanish	DC certificate
Mental Health Nursing	DC certificate
Criminal Psychology and Behaviour	DC certificate



## Major program changes

Academic schools continually review and revise course curricula and programs of study to ensure programs are current, relevant and meet students' and employers' expectations and needs. As a result, changes to programs of study, both minor and major in nature, may affect functional areas of the college and have a significant impact on a student's academic experience. In recognizing the importance of ensuring quality assurance and academic integrity, the manager of PDQA and the registrar, collaborated on the development of a policy and procedure to track and monitor major program changes. Once approved and launched, these documents will guide and support program stakeholders through the process of implementing program changes. Both minor and major changes will be vetted and approved through the PPRC to ensure that program learning outcomes; course learning outcomes; and essential employability skills continue to be met.

Over the past year, the following eight programs have undergone significant changes such as title modifications; changes to program length and program of study; new intakes; and/or mode of delivery:

PROGRAM	MAJOR CHANGE
Journalism – Web and Print	Title modification
Construction and Hoisting Techniques	Title modification
Community Services and Child Studies Foundations	Title modification
Mechanical Engineering Technician (Non-Destructive Evaluation)	Fast-track
Horticulture	New intake
VFX and Digital Cinema	Added a semester and changed program of study
Advertising and Marketing Communications Management	Changes to program of study
General Arts and Science – Engineering and Social Science Update	New stream and changes to program of study



# Program review and renewal

Regular and comprehensive reviews of the quality of post-secondary programs are conducted to ensure that programs are:

- Appropriate to the credential and the outcomes expected of the graduate.
- Consistent with the MTCU program standards (where they exist), the Minister's Binding Policy Directive, Framework for Programs of Instruction.
- Aligned with the PQAPA criteria.

During the year, the following programs were identified and included on a roster to undergo a comprehensive program review. This process assesses all of the elements/criteria of program function, delivery methods and curricular content as well as student, graduate and employer feedback:

1. Animation – Digital Arts/Animation – Digital Production.
2. Business Fundamentals.
3. Chemical Engineering Technology.
4. Dental Reception and Administration.
5. Early Childhood Education.
6. General Arts and Science.
7. General Arts and Science – Health Preparation.
8. Human Resources Management.
9. Law Clerk Advanced.
10. Motive Power Technician – Service and Management.
11. Mechanical Technician – Maintenance and Control.
12. Water Quality Technician.
13. Youth Corrections and Interventions.
14. Food Service Worker.\*
15. Interior Design.\*

\*Continuing Education

The following activities were accomplished as part of the program review and renewal process:

- 10 student focus groups conducted.
- 115 students provided feedback.
- 5 external assessments completed.
- 6 external focus groups facilitated.
- 13 Strengths, Challenges, Opportunities and Threats (SCOT) matrices developed.

Quality Assurance Council structure and function were reviewed and revised to better advocate for quality programs and services that support student development and success. As a result of this review, a smaller, more efficient group of key stakeholders will meet regularly to discuss and make strategic decisions that affect quality assurance and continuous improvement matters for program-specific and college-wide initiatives.

# Institutional Research and Planning (IRP)

With an increased demand for accountability and transparency, it is the IRP team that provides information to support decision making, planning and mandatory reporting. Accurate data is collected, analyzed, and disseminated to meet ever-increasing requests to assist with quality assurance efforts; student services; program growth and new program development in addition to answering ad-hoc queries from internal and external stakeholders.

In addition to data collection and analysis, IRP has an active role in addressing data integration, data integrity and the standardization of information within the college. Providing value-added information not only supports planning, decision making and performance measurement, it ensures continued responsible strategic growth within the capacity of the college. Enrolment projections greatly assist with planning to determine areas of need and potential future programs as articulated in the Strategic Mandate Agreement (SMA).

Reports are generated and provided to MTCU in compliance with requirements, including the Multi-Year Accountability Agreement Report Back, as well as reports on the number of enrolled Aboriginal and first-generation students.

In collaboration with Information Technology Services (ITS), the IRP team gained familiarity with a new business intelligence and performance management software, Cognos 10, and validated the framework and database information for ITS. As well, areas of improvement were identified for the Banner Revitalization project, a comprehensive review of the college's student information system.

Investments were made to acquire Explorance Blue, an enterprise-class software system for gathering and analyzing feedback through surveys, evaluations and assessments. Explorance Blue was integrated with the existing learning management and student information systems and two pilots were successfully launched. The tool is allowing the college to make continuous improvements from the insights gathered with an enhanced survey capacity on a more effective and efficient basis.

Research methodologies; statistical and survey software; and analytical skills are the tools used to deliver quality data and support for continuous quality improvement endeavours. Through a collaborative culture of engagement, the IRP team dedicates time and attention to researching and providing reports for several major initiatives and committees on topics related to institutional priorities.

## Program development and review

A new environmental scan (e-scan) template was developed and the structure and content revised to meet the information requirements of the PPRC. A total of nine e-scans were completed with comparative college program data and relevant labour market information delivered for consideration of the proposed new programs. Significant resources were invested into the two baccalaureate programs, which were supported with surveys on post-secondary education institutions and employers to incorporate as evidence into the PEQAB application.

In 2013-2014, 15 full-time and two continuing education program reviews were supported with a revised program information package (PIP) format. The PIP contains comprehensive information on program comparisons to other colleges; application data; catchment area; enrolment and retention data; and program performance and labour market outlook. These were complemented with 12 information-relevant presentations to the program teams as a key component of the program review and renewal process.

## KPIs

The IRP team analyzed the key performance measures for student, graduate and employer satisfaction; graduation rate; and graduate employment rate and then presented the results in detailed program-specific and service area report cards.

In 2013-2014, 65 new variables were added to the program report card template and the template for the service report card was revised to reflect the new KPI Student Satisfaction Survey format. In total, 110 detailed program report cards and 17 service report cards were published and posted on the college's intranet. In addition, customized utilization and satisfaction analyses were presented to service directors.

## Surveys

In total, there were 27 surveys conducted throughout 2013-2014, the following being the most new and notable during the year:

- Durham College Teachers' Training to evaluate the certificate program.
- Student's Perceptions of Learning to assess courses and faculty.
- Employee Engagement.

## Reports

On a biannual basis, Program Health Matrix reports are prepared as a summative measure of a program's effectiveness. Key information is provided on program quality and growth, two important dimensions critical to the sustained viability of a program. In 2013, 114 Program Health Matrix reports were published including seven School Snapshots.

In September 2013, the First-Year Students survey was completed with a focus on college students who started at DC during the 2013-2014 academic year. The survey was distributed to enrolled students and a total of 130 First-Year Profile reports were prepared at the program, school and college level.

For the second consecutive year, 123 Retention reports were generated to measure retention and attrition on a college, school and program basis. Separate Retention reports were prepared for specialized populations, including international students and students with disabilities, with additional new reports this year on Aboriginal and first-generation students.

Weekly Student Success reports were developed to identify the resources required by new students to support their success. These reports were sent to the first-year co-ordinator to support a customized email outreach program. In addition, four departmental reports (Student Academic Learning Services, Access and Support Centre (ASC), Career Services and Financial Aid and Awards office) were generated for planning purposes.

## Custom reports

A number of custom reports were developed this year including the following:

- DC-University of Ontario Institute of Technology (UOIT) Pathways.
- Apprenticeship Programs KPI Summary.
- Continuing Education Report Card.
- Application Type and Gender (for Strategic Enrolment Services).
- Successful and At-Risk Student Summary (for School of Business, IT & Management).
- Low KPI Student Satisfaction 2010-2012.
- DC-UOIT Further Education Expo Attendance.
- First-Generation Student and Aboriginal Student (for MTCU).
- OSAP Performance Indicators.
- Ontario Colleges Application Service Data.

## Presentations

For the second consecutive year, ORSI's two research and planning analysts were selected to deliver a presentation at the annual Canadian Institutional Research and Planning Association conference. This year's presentation was titled How Many Applications Does it Take to Impact Retention?



## Applied research

Research expertise and innovation are promoted to support companies and organizations who are interested in improving their products and processes through applied research activities. Collaborative research teams of students, faculty and industry members work together to overcome challenges and solve real-world problems. Not only does applied research provide professional development opportunities for faculty members, it also supplies students with meaningful, experiential learning experiences. This is directed by the college's Strategic Research Plan and builds on its commitment to enrich the academic environment with research activities that encourage discovery and innovation.

## Performance metrics

### ACTIVE RESEARCH PROJECTS

32

### RESEARCH INQUIRIES FROM BUSINESS/INDUSTRY

32

### DISCOVERY MEETINGS

21

### RESEARCH FUNDING

\$1.43M

The second round of Federal Economic Development Agency for Southern Ontario Applied Research and Commercialization (ARC) applied research projects successfully came to an end in 2013-2014. In one of the most significantly funded research initiatives, ARC provided \$1.4 million over two years and brought together teams of students, faculty members and local industry partners for a total of 32 projects in which prototypes and new products were developed; proof of concepts designed; and business processes improved. In partnership with the college, small- and medium-sized companies were provided with the means to accelerate innovation and improve their productivity and competitiveness while exposing students to real-life problem-solving experiences.

## Community partnerships

2013-2014 was a busy and fruitful year, building on existing relationships with community partners to expand applied research opportunities for students, faculty and local entrepreneurial innovators. In September 2013, ORSI took office space in the newest convergence centre, Core21, in downtown Oshawa, Ont. Core21 is a collaborative and dynamic work environment for small businesses, entrepreneurs, community groups and the arts community. This co-location provided regular opportunities to interact with other Core21 tenants including Spark Centre, Community Innovation Lab and UOIT.

The result of the co-location has been a closer collaborative working relationship with key partners to support both student and community entrepreneurs with the full spectrum of support needed.

In addition, it has helped advance DC's role as a prototype builder. DC industry partners now have a clearer pathway to services such as expert intellectual property advice; building a business model; information on angel investment; and market entry assistance.

The Spark Centre is now established as a key partner in supporting technology start-up companies and development is underway with Business Advisory Centre Durham to establish a similar relationship for traditional businesses.

## Faculty research liaisons (FRL)

FRLs provide leadership and facilitate research opportunities within their respective schools. In addition to fulfilling teaching duties, the FRLs are responsible for planning research activities; participating in the technical aspects of writing grant applications; and acting as liaisons for new field placement opportunities.

The following faculty members served as FRLs and were also involved as principal investigators for research projects during the year:

School of MAD	
Linda Cheng	Principal/co-investigator for: GAP APP Stockgaming Bykart
School of Skilled Trades, Apprenticeship & Renewable Technology (START)	
Greg Moran	Principal investigator for: Durham Solar Wall Phase 2 Air Circulation Tower Floor Joist Drilling Toll
School of SET	
Pravin Patel	Principal/co-investigator for: Research, design, build and test a smart wheelchair Energy Harvesting and Intelligent Vehicle Detection
School of Business, IT & Management (BITM)	
Darren Puffer	Co-investigator for: GAP APP
School of HCS	
Randy Uyenaka	Ontario Human Capital Research and Innovation Fund Project team member Co-principal investigator for the Insight Development Grant proposal





## Research Advisory Committee (RAC)

The RAC is a group of internally appointed members mandated to define, strengthen and cultivate the direction of research pursuits at DC and enhance the level and quality of research. In 2013-2014, the following members of the committee served in this capacity:

- Darrin Caron ..... Dean/principal,  
School of START
- Linda Cheng ..... Professor, School of MAD
- Matthew Jelavic ..... Professor, School of SET
- Barbara MacCheyne ..... Director, Financial Operations
- Greg Moran ..... Professor, School of START
- Megan Parker ..... Financial co-ordinator, ORSI
- Debbie McKee Demczyk ..... Director, ORSI
- Pravin Patel ..... Professor, School of SET
- Darren Puffer ..... Professor, School of BITM
- Judy Spring ..... Dean, School of BITM
- Susan Sproul ..... Dean, School of HCS
- Sue Todd ..... Dean, School of SET
- Randy Uyenaka ..... Professor, School of HCS
- Aki Tomizawa ..... Manager, Insurance and  
Risk Management

## Research Ethics Board (REB)

The REB is a vital part of research at DC and ensures all research involving human participants is conducted with respect for human dignity. The REB reviewed 34 applications and was comprised of the following individuals:

- Dana Chorney (chair, January 2014 and ongoing), School of HCS
- Mark Frayne, School of Justice & Emergency Services (JES)
- Brenda Garant, School of Interdisciplinary Studies & Employment Services (ISES)
- Ralph Hofmann, (chair until September 2013) School of JES
- Lynne Kennette, School of ISES (starting September 2013)
- Paul McGary, community member
- Alexandra Penn, School of ISES (starting January 2014)
- Dave Roger, Human Resources
- Deborah Tsagris, (vice-chair and acting chair, September to December 2013) ASC.

Meetings and application reviews were conducted on a monthly basis. The REB reviewed a total of 25 research applications during the 2013-2014 academic year. Throughout the review and approval process, the REB honoured its commitment to provide researchers with a written response within ten business days and facilitated the research application process. In some cases this took the form of ad hoc meetings to facilitate deadlines and an open communication process. Of the 25 applications reviewed, 23 were approved and two were withdrawn by the researcher.

Of the 23 applications approved:

- 20 were education related, one was health sciences related and two were social science related;
- Six were funded by internal research funds, two were funded by Ontario Council on Articulation and Transfer (ONCAT), two were funded by the Ontario Human Capital Research and Innovation Fund (OHCRI), one was funded by the Ontario Ministry of Health, one was funded by the Ministry of Training, College, and Universities (MTCU), and 11 were unfunded;
- 16 researchers were internal to Durham College and seven researchers were external;
- 17 applications were approved after one meeting and six applications were approved after two meetings; and
- Seven change requests were received, 12 renewals were received, and 15 completion reports were received.



# Research and innovation activities

## Research-Community Links networking series

UOIT, DC and the Social Services Department of the Regional Municipality of Durham initiated a forum for ongoing dialogue to explore community issues and research opportunities. Sessions on elder abuse; early learning and child care; housing and homelessness; and diversity were held to explore research questions and facilitate the collaborative pursuit of research between social science faculty and social service providers.

## NSERC

Through the College and Community Innovation Program, three ARTI grants were submitted and subsequently approved. The funding of more than \$400,000 will support the purchase of microbrewing; agriculture; and rapid prototyping research equipment to increase the college's applied research capacity and strengthen its ability to help businesses innovate and contribute to the economic prosperity of Durham Region.

## SCIENCE AND TECHNOLOGY

### AIR CIRCULATION TOWER

A prototype tube with a fan and motor in the tube was designed to push cold air up to the top of the repair shop thereby mixing cold and hot air and eliminating air stratification. The results reduced the heating costs in the shop and increased the comfort of the environment for workers.

Research team: Greg Moran and Craig Godfrey (co-principal investigators) and Ivan Goss (inventor)

Funded by: Internal Research Fund (IRF)

### SMART WHEELCHAIR

This project was intended to research, design, build and test an electronic wheelchair to help improve the mobility of disabled people, in addition to measuring various physiological parameters with alerts sent electronically to appropriate health-care personnel.

Research team: Rao Gorantla (principal investigator); Lauren Fuentes, Chris Daniel, Philip Jarvis and Pravin Patel (co-investigators); and Thomas Sanders, Kyle Aus, Aaron Leclair, Matt Bryan, Brent Lessard, Brad Dundas, Kenneth Gardner and Nicholas Russell

Funded by: IRF

### FLOOR JOIST DRILLING TOOL

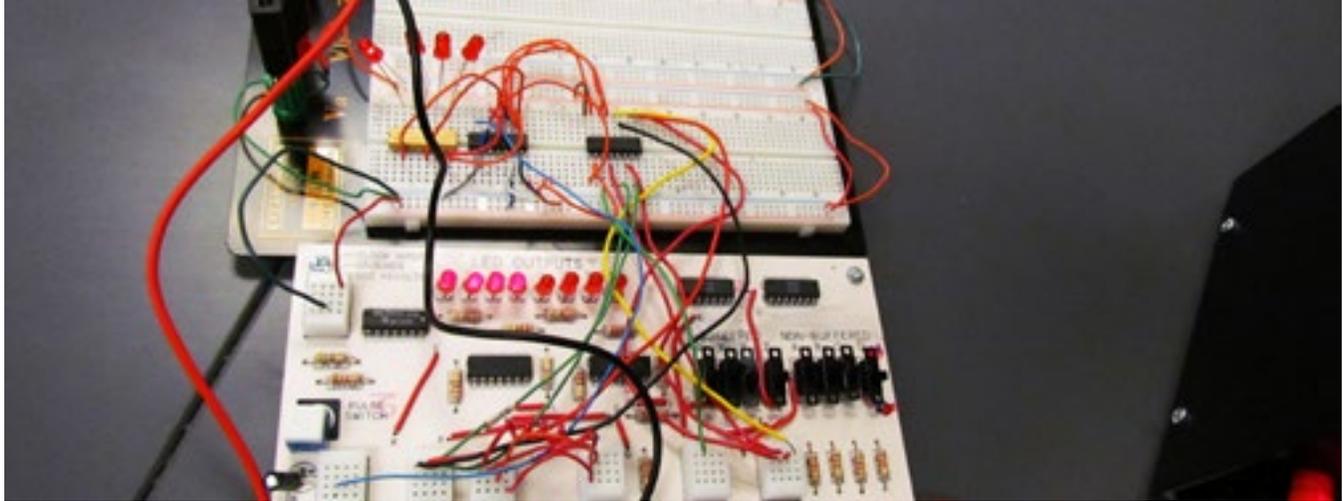
This project was intended to design and prototype a tool to drill holes without the use of a ladder, making the task much safer and faster; reducing labour costs; and potentially decreasing worker compensation claims.

Research team: Rob Nokes (principal investigator) and Greg Moran (co-investigator)

Funded by: IRF

### PLUMBING TOOL

Inspiring and fostering entrepreneurial spirit and collaboration enhances the student experience. An enterprising student in the Entrepreneurship and Small Business program had an idea for a plumbing tool and ORSI staff connected him with a Mechanical Engineering Technology program, student needing placement hours. The result was the development of a prototype that benefitted both students.



## RENEWABLE ENERGY AND SUSTAINABLE TECHNOLOGY

### POWER CONSERVATION MODULE

North Line Canada has years of experience in the development of new and innovative technology for the remote monitoring of highway traffic. Recently it expanded into the relatively new field of energy harvesting that uses materials and devices, which allow ambient energy sources to be converted into electrical power. Working with DC, a prototype miniature energy power conservation device was developed, which will initiate an entirely new generation of sensors.

Research team: Philip Jarvis (principal investigator), Ryan King and Kenneth Gardner

Funded by: NSERC

### GRID-FREE SOLAR POWER SYSTEM

Miratec Inc. collaborated with DC to develop and test a grid-free solar power system comprised of a solar panel mounted on a pole. The voltage generated is transmitted down to a weather-proof enclosure that houses the electronics to regulate the voltage and charge deep-cycle batteries. The entire system is easily assembled and disassembled, thereby reducing the cost when compared to systems presently available in the market. These pre-packaged solar electric systems are ideal for remote locations.

Research team: Philip Jarvis (principal investigator) and Thinesh Paramanathan, Steven Ruttle and Adrian Rose

Funded by NSERC

## ADVANCED MANUFACTURING

### SUNCUBE – NEXT GENERATION SOLAR PANEL

FS Energy worked with DC to improve the designs of the Suncube, a unique solar panel with the ability to convert sunlight at a high efficiency rate, without degradation over time.

Research team: Philip Jarvis and Rob Braithwaite (principal co-investigators) and Adair Carter and Ray Wesley

Funded by: NSERC

## INFORMATION AND COMMUNICATION TECHNOLOGY

### DEALER DESKTOP MODULES AND FEATURES

In collaboration with DC, a research project with Sunspace Modular Enclosures Inc. integrated various software systems into a robust Enterprise Resource Planning (ERP) management information system. With the integration of ERP, Sunspace was able to expand its dealer network and process more orders with increased accuracy within a reduced time period.

Research team: Johanna de Boer (principal investigator) and Kyle Brougham, Taha Amjad, Patrique Ouimet, Anthony Smeelen, Joyce Chan, Jacob Breen and Kevin Riley

Funded by: OCE

### APPLICATION DEPLOYMENT TOOL

To enhance its sales, Bykart developed strategic alliances with companies that have installed mission critical software in hospitals across North America. With the help of DC, it designed an application deployment tool, a module which allows its partners to automate the configuration process and implement a suite of products into legacy systems with high-level precision.

Research team: Linda Cheng (principal investigator) and Nick Sprague and Joshua Sanger

Funded by: OCE

## AGRI-BUSINESS

### SPINACH HARVESTER

Durham Foods Limited engaged with DC to develop a prototype of an automated harvester for hydroponic spinach production. Its unique pond-based technology in a controlled environment is superior to field-grown spinach. The harvesting device allows Durham Foods to improve its efficiency, reduce harvesting costs and further increasing its high level of food safety for the end consumer.

Research team: Philip Jarvis and Rob Braithwaite (principal co-investigators) and Matt Haase, Cody Booth and Patrick Decastro

Funded by: OCE



## SOCIAL SCIENCES AND HUMANITIES

### WHAT ARE WE MISSING? CAPTURING SERVICE PROVIDER AND CLIENT EXPERIENCE TO INCREASE UNDERSTANDING OF FACTORS CONTRIBUTING TO THE RATE OF RE-ENTRY INTO SOCIAL SERVICES.

For the first time, ORSI submitted an Insight Development Grant proposal to SSHRC. This was a large undertaking with researchers from the School of HCS joining forces with researchers from UOIT and Ryerson University, along with the RMD Social Services Department. The purpose of the research was to reconstruct social service provider experiences with clients and to demonstrate the co-construction of knowledge that underpins decision-making; service provision; and resource allocation. Due to the number of proposals SSHRC receives and a finite amount of funding, only 30 per cent of the submissions in 2013-2014 were successful. While this proposal was not successful, workshops by UOIT faculty and assistance by its Office of Research Services in completing the Canadian Common Curriculum Vitae provided a greater understanding of the process and forged new and lasting partnerships.

### CAPTURING THE SIGNIFICANCE OF SOCIAL SERVICE WORK

From experience to impact was a follow-up workshop to the successful 2012 innovation forum event titled The Impact of Social Services: A Lifespan Perspective. In response to participant feedback, this experiential workshop was designed to enhance quantitative quarterly reporting to include stories of service workers' impact on service users and build critical reflective capacity in staff for lifelong learning and service enhancement.

Research team: Randy Uyenaka (DC principal investigator); Darren Levine (the Regional Municipality of Durham (RMD) principal investigator) and Jasna Schwind (Ryerson University) and Gail Lindsay (UOIT), facilitators

Funded by: Social Sciences and Humanities Research Council (SSHRC)

### LEAP TO DURHAM COLLEGE

Improving Access to College Programs for Participants of the Ontario Works Learning, Earning and Parenting (LEAP) Program was a collaborative research project between DC, RMD Social Services Department and Durham Continuing Education – Durham District School Board.

The outcome of the research provided insight into the perceptions of young parents surrounding post-secondary education before and after an intervention program. As a result of the intervention, participants reported fewer concerns and were more confident in their ability to enter and succeed in post-secondary education. Discussions ensued to explore options for continuing support for this client group to facilitate their pursuit of post-secondary education.

Research team: Patricia Mongeon (DC) and Darren Levine (RMD Social Services Department) – co-principal investigators; Leslie Linstrom, Bev Neblett, Nicky Patel, Lucy Romao Vanderpol, Randy Uyenaka, Debbie McKee Demczyk, Jane Hilton (DC staff and faculty and members of the project team); and Charlene Alguire, Julie Burnett, Cassidy Darch, Mikki Decker, Alanna Dowd, Asley Gillard, Jenna Grant, Megan Heuser, Michelle Hosier, Yanique Nelson and Michelle Wagg and students and staff from the Durham District School Board and RMD

Funded by: MTCU through the Ontario Human Capital Research and Innovation Fund (OHCRIF)

## SCHOLARSHIP OF TEACHING AND LEARNING

### DURHAM COLLEGE STUDENT SUCCESS EPORTFOLIO: ESSENTIAL EMPLOYABILITY SKILLS

This research project explores student, industry and faculty experiences using an ePortfolio in the assessment of Essential Employability Skills, a generic set of skills, attitudes and behaviours within selected programs. The gathered data will be assessed for the perceived effectiveness, relevance, feasibility and appropriateness of the Student Success ePortfolio in the assessment of Essential Employability Skill outcomes. This project is scheduled to conclude in fall 2014.

Research team: Jacqueline Towell (principal investigator) and Randy Uyenaka, Debbie Morrison, Deb Shuh, Chris Hinton and Olga Labaj

Funded by: Higher Education Quality Council of Ontario (HEQCO)

### EXPLORING THE BENEFITS OF COLLABORATIVE TESTING

Many students experience a great deal of anxiety before and during testing and often do not retain the content they have learned for a test. The purpose of this research was to determine whether collaboration during a two-stage test increases students' retention of concepts and whether a two-stage test significantly decreases student anxiety.

Principal investigator: Alexandra Penn

Funded by: IRF



### INCLUSIVE TEACHING IN BROADCAST EDUCATION AND ITS POTENTIAL IMPACT ON THE CANADIAN MEDIA LANDSCAPE

Inclusive classrooms are spaces where opinions are valued, viewpoints are expressed without fear and course content allows learners to be exposed to a multitude of perspectives. Given the lack of visible minorities in broadcast media and at senior management levels, this research investigated whether broadcast educators created inclusive learning environments and considered how an inclusive classroom would impact the Canadian media landscape.

Principal Investigator: Anna Augusto Rodrigues

Funded by: IRF

### PHASE TWO: TRANSITIONING INTO UNIVERSITY LIFE: IMPACT OF PROGRAM SPECIFIC ORIENTATION

Nursing faculty can assist first-year students in their transition to university by providing them with adequate tools and resources. This research took a qualitative approach and further evaluated the impact of the Mandatory Program Specific Orientation for Year 1 Collaborative Bachelor of Science (BScN) and Year 1 Practical Nursing to BScN students.

Principal co-investigators: Fabiola Longo and Arlene de la Rocha

Funded by: IRF

### STUDENT CHOICE AND VOICE: THE IMPACT OF GNED

The School of ISES recently created a new General Education (GNED) model for its students, which promotes student choice during the course selection process. This research analyzed enrolment data by theme; day of the week; time slot; and mode of delivery and conducted focus groups to determine whether the recently adopted GNED model was student-centred and successful.

Principal co-investigators: Alexandra Penn and Mubeen Ladhani

Funded by: IRF

### ASSESSING THE EFFECTIVENESS OF ONTARIO COLLEGE PREPARATORY PROGRAMS OFFERED AT DURHAM COLLEGE

Preparatory programs provide students with foundational and/or specific skills required for admission to other college programs of instruction and have become a popular choice for students who are uncertain about their specific career goals. The research being undertaken will better understand the outcomes of the 2,600 students enrolled in these preparatory programs for the last five years. Through an exploration of student pathways, this

project is intended to develop strategies to expand these pathways and enhance the experience to an accessible, responsive and high-quality post-secondary education system in Ontario. It will conclude in fall 2014.

Principal co-investigators: Rashmi Gupta, Kyle Paul, Stephen Draper and Debbie McKee Demczyk

Funded by: Ontario Council on Articulation and Transfer (ONCAT)

### INCREASING THE QUALITY OF GRADUATE CONTACT INFORMATION

DC partnered with Humber and Niagara colleges to identify strategies that would increase the quality of graduate contact information for the purpose of obtaining relevant and valid graduate employment survey data. This exploratory study assessed current capabilities in order to make recommendations on how to improve the quality of graduate contact information.

Funded by: Productivity and Innovation Fund (PIF)

### PROGRAM PRIORITIZATION – SUSTAINING QUALITY OUTCOMES

While many quality assurance processes currently exist at DC, this project engaged stakeholders to develop and test a model for program prioritization. The goal of the project was to improve quality outcomes and support student learning. Given the finite resources to fund and maintain quality academic programs and services, a comprehensive, conceptual framework and methodology was defined to focus on priorities, identify successes and engage in evidence-based decision making.

Funded by: PIF

### TEACHING EVALUATION

In collaboration with Conestoga and Centennial colleges, this project was designed to improve the quality of learning and the learning experience for students through the development of a common teacher evaluation form and reporting templates. As part of the research, a standard student feedback form was developed to better evaluate teaching in courses delivered in class, online or hybrid. The results would provide more reliable and impactful data to better guide faculty professional development.

Funded by: PIF



# Faculty research dissemination

Simulation in undergraduate education: The Canadian perspective found that 95 per cent of nursing programs in Canada included simulation in varying degrees as an adjunct to clinical hours or in place of clinical hours. Faculty development and financial barriers were identified as barriers to integrating more simulation.

Principal co-investigators: Leslie Graham and Nicole Harder (University of Manitoba)

'All through the night': An inter-professional high fidelity simulation exercise provided nursing students and inter-professional team members with the opportunity to experience the nightshift and develop strategies that would mitigate the effects of fatigue. After experiencing the all night simulation students felt more confident and appreciated the opportunity to collaborate within an inter-professional team setting.

Principal co-investigators: Leslie Graham, Arlene de la Rocha and Dana Chorney

## Publications

**Matthew Jelavic and Dawn Salter**

Managing Facilitation in Cross-Cultural Contexts: The Application of National Cultural Dimensions to Groups in Learning Organisations, published in *Transformative Dialogues: Teaching and Learning Journal* (March 2014).

**Lynne Kennette**

Advice for implementing best practices from professional development sessions: One bite at a time with Wes Hanzuk, published in *Transformative Dialogues: Teaching and Learning Journal* (March 2014).

The value of peer-review opportunities for students in writing-intensive classes with Nicole Frank, published in *Psychology Teaching Review*, 19 (2) 106 – 111, (Autumn 2013).

Creating a Sense of Instructor Presence in Online Courses with Bibia Redd, published in *Essays from Excellence in Teaching: Society for the Teaching of Psychology*, (2013).

Enhancing Teaching and Learning: How Cognitive Research Can Help with M. Bowman and D. Frame, published in *Journal on Excellence in College Teaching: Brain-Based Learning (Special Issue) Volume 24, Number 3* (2013)

## Conference presentations

**Ali Taileb (invited)**

Life-cycle assessment of LEED gold building with alternative external walls: The case of Brookside Public School in Toronto, Canada at the third International (avnIR) LCA Conference on Life Cycle Assessment in Lille, France, November 2013.

Life-cycle assessment as an environmental tool to enhance the LEED rating system with Hamoud Dekkiche at the International Conclave on Data Analytics, Business Intelligence, Action research & Cases in Power and Energy Sector, Dubai, UAE, February 2014.

**Lynne Kennette**

On the disambiguation of meaning: The effects of perceptual focus and cognitive load with L.N. Wurm at the Midwestern Psychological Association, Chicago, IL, May 2013.

Student Satisfaction of a Hybrid Learning Course [poster] with R. Horgan at the Society for Teaching and Learning in Higher Education, Cape Breton, N.S., June 2013.

Creating a sense of instructor presence in online courses [roundtable discussion] with B.R. Redd at the Midwestern Psychological Association convention, Chicago, IL, May 2013.

# Furthering the research culture – what’s ahead

Looking ahead to 2014-2015, DC has both a new SMA and Academic Direction to further advance its ability to provide the best possible learning experience for students. ORSI will continue to be instrumental in ensuring academic quality and building successful partnerships. A broad range of research and scholarly initiatives will continue to be supported for the benefit of faculty, students, industry and the community.

As a premier post-secondary institution, the traditional scholarly pursuits that advance academic achievement will be maintained and enhanced.

ORSI has implemented a new communication plan to effectively disseminate the college’s research story to internal and external stakeholders, as well as enhance a two-way exchange of ideas. A number of strategies with measurable outcomes will be developed to promote accomplishments, raise awareness and generate positive perceptions.

The college’s first SRP, published in 2011, established a foundation on which to support research initiatives and guide early progress. In 2014, a new SRP will be developed, in consultation with the college community and interested stakeholders, to further expand research as a core endeavour that broadly enriches the college. The new plan will build on research strengths; stimulate innovation; and respond to a rapidly evolving landscape. It will provide a framework in the areas of sustainability and sustainable energy; advanced manufacturing; health care; teaching and learning; and agribusiness. The adoption of digital technology has created the need for research into the nature, impact and integration of digital technologies in all aspects of our economy, society and culture.

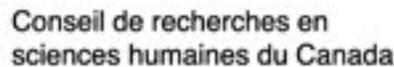
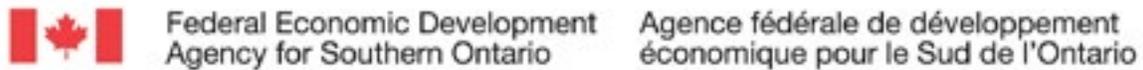
Trends emerging to date as potential areas for industry-led collaborative projects include building automation and control; phantom family applications for technology test beds; computer-aided design and rapid prototyping linked with computer-aided manufacturing to facilitate the rapid deployment of ideas into products; simulation technologies that enhance the skills of our health-care providers, improving quality of care; custom adaptable mobility solutions for the growing number of persons with disabilities (temporary and permanent); automation in agribusiness; and support for the Ontario craft beverage industry with innovation in technology, equipment and techniques through the development of a beverage institute at dLab.

## 2013-2014 ORSI team:

- Debbie McKee Demczyk, director
- Megan Parker, finance and ethics compliance co-ordinator
- Rashmi Gupta, manager, IRP
- Kyle Paul, research and planning analyst, IRP
- Stephen Draper, research and planning analyst, IRP
- Joshua Gerrow, junior research analyst, IRP
- Michelle Cole, manager, PDQA
- Shelley Irving, project co-ordinator, PDQA
- Chris Gillis, manager, AR Business Development
- Vibha Tyagi, project manager, Industry Liaison, AR
- Jane Hilton, project manager, Grants and Special Projects



ORSI is grateful for the support of the following funders and organizations, as advancing the research culture would not be possible without them:





*Effectiveness → Performance → Innovation*

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