

Fanshawe College

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researchfanshawe

Putting knowledge to work

Are colleges ready for research?

How colleges are moving into AR&I



What you had to say

Results of the national faculty survey

The new innovators

Stories on past and current projects



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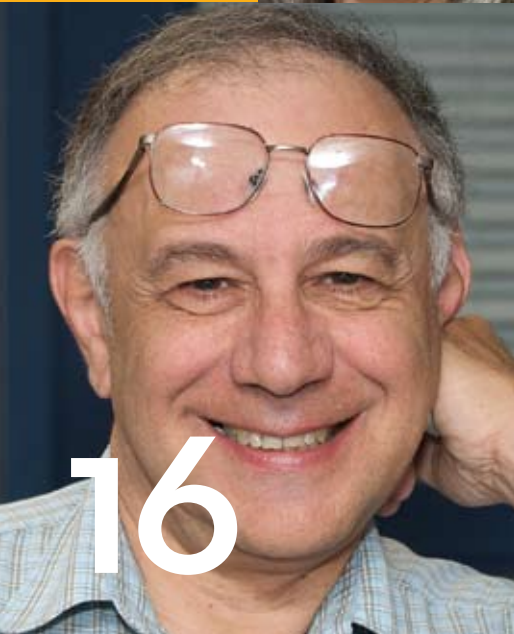


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Q&A

A few minutes with... Dr. Howard Rundle

Q. *The Fanshawe College Board of Governors recently adopted six new Strategic Directions for the College. Direction number three is to engage in applied research and scholarly activity by building our research capacity, integrating applied research within the College and working with other institutions, businesses and governments on innovation projects. Why was this activity adopted as a strategic direction?*

A. **Colleges exist to facilitate economic success.** The main way in which we do that is to produce skilled graduates for the labour market. But we also serve our communities in other ways. Applied research by Fanshawe people can help local businesses become more successful and competitive. Involving students in applied research projects provides them with an enhanced learning experience and improves the quality of their learning. If we can combine these two things – creating a higher quality learning experience for students while, at the same time, helping companies in our region, that's a double win.

Q. *Applied research at colleges is fairly new. How do you see applied research and scholarship fitting in with colleges' traditional role of teaching students?*

A. **It's a question of providing a quality learning experience and environment.** Enhancing learning by giving students real world learning experiences with business and industry can give our graduates an edge in the job market. It can produce better grads that are likely to be more economically successful. As a scientist who spent years in labs working on prepared assignments, I can appreciate how meaningful it would be for students to work on applied projects and acquire real-life learning that is specifically employment-related. Another obvious benefit is that applied research on how students can best learn advances our own business. Unfortunately, there hasn't been a lot of research done on college-level teaching and learning. It's ironic that much of the research that has been done on colleges has been conducted by universities.

Q. *How will employees and the College benefit from Fanshawe's participation in applied research and innovation activities?*

A. **Applied research and innovation provides an excellent professional development opportunity for our employees.** It broadens their knowledge and experience and allows them, in the case of faculty, to acquire new knowledge that can be brought back into the classroom. Certainly, research activity is required for anyone planning to pursue an advanced degree. Some applied research or scholarly projects undertaken by our employees also may provide a direct benefit to the College by helping us solve a problem or improve our teaching. Applied research and innovation raises Fanshawe's profile. Establishing a reputation as a College where people participate in innovation can distinguish us from other institutions and enhance our attractiveness – both as an educational choice for the best students and for highly qualified staff as a prospective employer.

Q. *What is your vision for applied research and innovation at Fanshawe?*

A. **My vision is that Fanshawe will become a polytechnical institution** that continues to offer diploma programs but that also offers a significant number of applied degree programs or pathways to degrees. I think we should be giving students the opportunity to see the whole spectrum of post-secondary educational opportunities. We aren't about to abandon our current mission – almost all of our learning will still be geared toward employment – but this would represent a broadening of our mission. Applied research and innovation activities will play an important role in this.

Dr. Howard W. Rundle is the President of Fanshawe College. He holds a PhD in Chemistry from the University of Toronto.

Innovation takes root at Fanshawe College

Business is blooming at Fanshawe's Centre for Applied Research, Innovation & University Partnerships (ARIUP) as more and more employees participate in ARIUP's internal research and innovation funding programs.



In the three short years since the programs were started in 2005, applied research activity by members of the College community has jumped to a total of 49 projects to date. In previous years, historical data shows that only one or two College-funded projects per year were conducted. Almost unheard of were research applications to external funding agencies.

Between fiscal years 2004/05 to 2008/09, 16 projects received support from the Curriculum Innovation Fund (CIF). The Pilot Innovation Fund (PIF) supported eight projects. The Research Innovation Fund (RIF) has funded 25 projects.

On the external front, two projects are being funded through the Colleges Ontario Network for Industry Innovation (CONII) proof-of-concept program, Ministry of Research and Innovation (MRI) funds to which ARIUP has access because of its CONII membership. Another

two projects were funded by the Canadian Council on Learning (CCL). A study on the Ontario apprenticeship system was funded by the Ministry of Training, Colleges and Universities. Human Resources and Social Development Canada (HRSDC) just funded a national essential skills research project involving Fanshawe's Disability Services Unit, Bow Valley College (Alberta) and the Canadian Virtual College Consortium (CVCC). The Oxford County Campus is involved in a national project on essential skills services led by Douglas College of British Columbia.

In addition Fanshawe personnel are involved in three major projects with the University of Western Ontario (nursing education in Rwanda, the Three Little Pigs house, and a project to help students with mental health issues succeed in postsecondary education programs).

Several other major projects are under development and will be submitted to external funders in the coming months.

Unique study aims at reducing occupational stress for paramedics

By Leslie McIntosh

Paramedics have one of the hardest jobs in the world. For them, pain, blood, horrific injuries and death is just another day at the office.

The daily occupational stress under which paramedics must work makes them prime candidates for psychological distress and burnout. In fact, studies estimate that up to 22% of all paramedics suffer symptoms of post-traumatic stress disorder (PTSD) and as many as 8.6% are at risk of burnout. In contrast, the incidence of PTSD in the general population is 5% for men and 10.4% for women.

"The hardest thing for paramedics to handle is their shattered sense of how the world works. They constantly see things that don't make sense. Events like the death of child can be particularly difficult. They need coping strategies that anchor them and allow them to continue to function when their world view is in flux," says researcher Shirley Porter, a counsellor in Fanshawe's Counselling and Student Life Department.

Porter has just completed a pilot study entitled *Increasing Paramedic Students' Resiliency to Stress: Assessing Correlates and the Impact of Intervention*, a study of paramedic students and occupational stress. Fanshawe paramedic students do about 270 hours of clinical placement with local ambulance services and health care facilities throughout the first three semesters of their program, plus a full-time ambulance internship in the final semester.

Porter's study is unique in that it is the first to use pre and post-testing, provide actual interventions, then measure and quantify the results. Previous studies have been conducted, but they have been generally retrospective in nature.

For the past 10 years, Porter has been the counsellor assigned to liaise with the Fanshawe College paramedic program and helps students cope with

stress and the traumatic events they witness. Fanshawe is one of very few Ontario colleges that offer this service to paramedic students.

Porter also has a personal interest in the profession because many people in her family are emergency responders.

"Paramedics are generally very stoic. They are caring, compassionate, super-responsible people who tend to take excellent care of others, but not very good care of themselves. Coming from a professional culture that seems to place a high value on emotional composure, they often cope by emotional avoidance or repression. Being perfectionists, their extremely high expectations of themselves make it difficult to accept the reality that they can't save every patient, even when they've tried their best," she says.

Using 23 volunteers who were randomly divided into two groups - an 11-member control group and a 12-member treatment group - the study sought to determine whether peer support, negative attitude toward emotional expression and specific coping techniques are tied to levels of burnout and distress. Her hypothesis was that by encouraging significant positive changes in the three categories being measured, the latter group would experience a reduction in psychological stress and burnout symptoms.

All participants completed a variety of psycho-social assessments at the start of the study and at its conclusion. The control group pursued their clinical placements as usual, while the treatment group participated in 13 psychoeducational group counselling sessions where they discussed their experiences and feelings, and learned and practiced specific coping exercises and strategies. The treatment group took part in a variety of stress reduction and relaxation exercises, visualization and other practical activities to encourage more positive thought and behavioural processes.

While peer support was not found to be a significant factor in predicting psychological distress and burnout, negative attitude and specific coping processes were. Other interesting trends emerged in that there was greater improvement in the test scores of the treatment group as compared to the control group, in terms of attitude toward emotional expression, two types of coping processes (planful problem solving and positive reappraisal) and personal accomplishment. Also, the treatment group experienced greater improvement than the control group on 10 out of 10 variables measuring psychological distress and burnout symptoms, a result Porter calls "an important trend". It appeared that participants in the treatment group came to better recognize the importance of balance in their lives and became more open about sharing their feelings and experiences.

Porter, a registered social worker with a Masters degree in Counselling, had help with statistical analyses from Andrew Johnson, a statistician and researcher from U.W.O. The pilot study was funded through a grant from Fanshawe's Research Innovation Fund.

Porter says it may come as a surprise for people to learn that some paramedics receive little or no supportive professional counselling, even when they experience traumatic incidents on the job. Some ambulance services don't even have employee assistance programs. Her work suggests that such supports could help keep paramedics more emotionally healthy and on the job longer. She notes that the pilot study underscores the need for more research to investigate and verify her findings, and to ultimately find the means to increase resiliency among paramedics.

In future, she would like to expand her study to include paramedic students and working paramedics throughout the Southwestern Ontario region and also use the findings to create a program that could be used by students and professionals alike. Similar studies also could be undertaken for emergency responder groups.

Porter sees this type of applied research as an important part of teaching and learning. "The College has a responsibility to equip these students with the skills and strategies that will prepare them for their profession and protect them on the job," she says.

"As educators, it is our responsibility to continue learning what students need to know so we can teach it to them. Sometimes we don't have that knowledge, so we do applied research to begin to fill in the gaps."

The hardest thing for paramedics to handle is their shattered sense of how the world works. They constantly see things that don't make sense.

Changing the landscape

A vast wasteland. If you were an aspiring principal researcher at a Canadian college, that's what you were most likely to find when you searched for funding.

But the desert is finally beginning to bloom.

The old days of colleges being relegated to junior partners in university-led projects are rapidly disappearing as governments and funding agencies recognize the contribution colleges can make to applied research and innovation. The change is reflected in the language on many funders' websites. Eligibility rules that once said "university researchers" now say "researchers from post-secondary institutions".

Ontario research and innovation funding programs have begun to permit college researchers to be principal investigators on projects. That commitment deepened with recent Ministry of Research and Innovation (MRI) funding of the Colleges Ontario Network for Industry Innovation (CONII). Fanshawe is a founding member of CONII, a 10-college research and development consortium. Over the years, college advocacy at both the federal and provincial government levels also have played a major role in changing perceptions and attitudes.

"I'm absolutely delighted that the tremendous potential of college people to make significant contributions to our country and economy has been recognized by the creation of this program,"

Greg Weiler, Fanshawe College's Dean of Applied Research, Innovation & University Partnerships (ARIUP).

Following a few starts and stops in the late 1990s, the federal government reached a major milestone in 2007 with a new program created exclusively for Canadian colleges – the College and Community Innovation (CCI) Program. CCI is run by the Natural Sciences and Engineering Research Council of Canada (NSERC), one of the largest funding agencies in the country, in partnership with sister agencies the Social Sciences and Humanities Research Council (SSHRC) and the Canadian Institutes of Health Research (CIHR),

CCI was unveiled in the February 2007 federal budget and includes an initial funding allocation of \$48 million. The program supports applied research projects and technology transfer in four priority areas – environmental sciences and technologies, natural resources and energy, health and life sciences, and information and communications technologies. Funding is awarded through a competitive process and students must be involved.

"I'm absolutely delighted that the tremendous potential of college people to make significant contributions to our country and economy has been recognized by the creation of this program," says Greg Weiler, Fanshawe College's Dean of Applied Research, Innovation & University Partnerships (ARIUP).

of Canadian research



“In addition to our traditional role of providing highly skilled graduates to the workforce, we will now be able to contribute knowledge and solutions to help business and industry, and also impact such critical public policy issues as healthcare and the environment,” Weiler says.

CCI was the centerpiece of the annual national research symposium sponsored by the Association of Canadian Community Colleges (ACCC), which was held in Edmonton in February 2008. The guest speaker was Dr. Suzanne Fortier, President of NSERC.

“We have entered a new era of research with the colleges,” Fortier told a group of about 100 college researchers, research administrators and senior managers. She said all three major granting councils were working together to coordinate federal research funding programs and eliminate barriers that have traditionally favoured universities over colleges.

“We need a real spirit of co-operation if the country is to accomplish its goals. We need you, as we need all people of talent in this country. Innovation is key to our future prosperity. We can’t afford to leave anybody behind or anybody out,” Fortier said.

The federal government also recognizes the value college students can bring to the table, because, through their participation, they learn to become Canada’s future innovators, entrepreneurs and researchers, she added.

The value of undergraduate student participation in research has been the subject of major studies by American universities of late. Data indicates strong benefits to participants and institutions in the form of increased student retention, sharper career focus, greater self-confidence and enhanced analytical, communication and teamwork skills. (See the editor’s column in this issue for more.)

In general, colleges are viewed as being more closely connected to business and industry than universities. College research focuses on short-term practical results. Universities lean toward longer-term and basic research. Behind the

scenes, indications are that governments – focused on global competitiveness, economic growth and job creation – believe that not all of their decades-long investments in research have paid off as well as expected in terms of tangible results and economic payback. If colleges can meet expectations, there may be much more funding down the road.

Industry Canada (funder of NSERC, SSHRC and CIHR) also is turning its sights on colleges to fill innovation gaps. The powerful federal department recently commissioned a study on college research capabilities from Fanshawe faculty member Roger Fisher after officials learned about his national survey of college faculty attitudes toward applied research. His report to the Director of Industry Canada’s Higher Education Research and Development Policy Directorate – The College Advantage: Private Sector Innovation & Highly Qualified Personnel – will serve as a foundational resource for the development of future college research funding programs.

Meanwhile, Fanshawe stands to benefit from the new funding landscape – and from programs like CCI – in several ways, Weiler explains.

“We see this as a great opportunity to obtain much-needed resources to increase activity in areas such as green technologies, manufacturing, new media and other emerging sectors. Students will benefit from a terrific, project-based learning experience, which should enhance their education and future employability,” he says.

Learning styles may impact student success, research team finds

By Leslie McIntosh



Are you a verbalizer or a visualizer?

If you are a prospective student, the answer to that question may hold important implications for your academic success. The issue may even have broader implications for the future direction and focus of the Ontario college system.

“Verbalizer” and “visualizer” refers to the way in which people learn, in short, their learning styles, says Fanshawe researcher **Dr. Robert McEwan**. McEwan and his colleague **Shelley Reynolds** have just completed a preliminary statistical review of five years worth of data collected from more than 100 students who sought support from the Disability Services Unit. McEwan and Reynolds are counsellors in that unit, which is part of the Counselling and Student Life Services department.

Verbalizers are language-oriented, says Reynolds, meaning that these students can learn by listening and reading language, e.g., in lecture-style classes and by reading textbooks. Visualizers, on the other hand, learn

best when diagrams and charts – visual representations of information – are used in teaching. Visualizers can excel when they actually do, that is, they get hands-on experience in performing tasks. A learning style is cognitively (psychologically) determined; it isn’t something an individual chooses, it’s an innate characteristic and people are born with the inclination toward a certain learning style.

Reynolds and McEwan undertook the study out of personal interest and a desire to help students succeed. By understanding why some students are more successful than others, the counsellors felt they could design interventions that would help more struggling students succeed.

The team looked at the success rate of more than 100 students who had contacted Counselling to request academic help and who demonstrated a distinctive cognitive style on a standardized aptitude test. Reynolds and McEwan divided the students into three groupings based on field of study – health/ human services, technology/ science/design and general arts/business/information technology. They looked at student success in two different ways; by grade point average (GPA); and by whether students actually completed their programs in which they originally registered.

The analysis yielded some interesting results.

“We found that 70% of the students were visualizers and 30% were verbalizers. Traditionally, visualizers go to college and verbalizers tend to choose universities,” McEwan says. The visualizer-verbalizer

distinction is based on the dual-coding model of information processing first proposed by Dr. Allan Paivio, psychology professor at the University of Western Ontario.

The finding that 78% of verbalizers studied completed their original college programs, and only 53% of the visualizers finished their studies, called for further investigation.

“We assumed there would be differences between the two groups that might account for one group’s higher rate of success so we looked at other factors,” says Reynolds. “On the whole, we were surprised to see that both groups were equally bright and scored similarly on IQ tests. We didn’t find any significant difference in their GPAs, nor were there any real differences between male and female students. Yet, for some reason, the visualizers were more likely to leave the college before they could graduate.”

There also did not appear to be any major differences between programs, she adds.

McEwan and Reynolds suspect that the print-based materials used in many programs may be a factor in student success. As occupational skills requirements become more complex and printed materials more necessary, the technical language and concepts taught in college programs – including programs previously considered to be more visual – present a much higher verbal challenge for students. This situation gives verbalizers a decided advantage over students who are visual learners. Clarification of the importance of the complexity of instructional materials could lead to development of new interventions to help visualizers overcome these barriers, they note, and help programs recognize and accommodate visual learners.

The team would like to continue their research and expand the study to the general Fanshawe College population. But if their preliminary findings hold true – that most college students are visualizers – it raises some interesting questions about the future direction of the college system.

- If colleges’ traditional market is visual learners, what implications does the changing nature of college system have for these learners?
- If colleges continue to move toward offering more applied degree and advanced programs – which tend to favour verbalizers – how will this affect visualizers?
- What impact will larger classes delivered in a lecture format have on visualizers? While it may make economic sense for the financially-strapped Ontario college system, does it make sense from an academic perspective for the majority group of learners?
- What academic supports will be required to improve the student success rate among visualizers?

McEwan and Reynolds hope that future applied research will address these questions.

Top photo: Dr. Robert McEwan
Bottom photo: Shelly Reynolds

Fanshawe researchers tackled air pollution in major research project



Top photo: Physicists Dr. Barrow Baldwin and Dr. Victor Sells



Bottom photo: Dr. Mollin Rampersad

A five-year study led by researchers at Fanshawe College has broken new scientific ground in the field of air quality research. Physicists Dr. Barrow Baldwin and Dr. Victor Sells, and Dr. Mollin Rampersad, an organic chemist, all of the School of Manufacturing Sciences, received Fanshawe's second external research grant from the Canada Foundation for Innovation in 2000 for a major project that subsequently lasted until late 2005.

The project involved using state-of-the-art environmental monitoring equipment to track rapid fluctuations in air quality, fluctuations that once were below the regulatory radar screen. Their data showed that traditional air quality monitoring standards – based on taking readings once every hour – might be missing high pollution levels.

What is innovative about their work is that they studied variations in ozone and small particulate matter over 10-minute intervals and detected measurable changes throughout the day and night, even during this short period of time. Observations they made during a previous research project (led by the University of Western Ontario researchers and the Department of National Defence) had tipped the Fanshawe researchers to suspect that major fluctuations in air quality occurred over shorter intervals than one hour.

The project also looked at the health impacts on persons with chronic obstructive pulmonary disease (COPD) patients. In order to collect the environmental data and assess its health affects, the researchers worked with chief respirologists from two London teaching hospitals, public sector environmental and area public health officials. Data from the original study are now being analyzed by the medical members of the research team to identify any potential links between rapid air quality changes and the health of COPD patients.

The project also was funded by the Canada Foundation for Innovation, the Ontario Innovation Trust, TD Canada Trust Friends of the Environment, the ELJB Foundation, Lehder Environmental Services, the Ontario Centres of Excellence, Trudell Medical International and other industry partners. Twelve coop students from Fanshawe's environmental technology program also participated over the course of the project.

Significant technical support came from equipment suppliers whose companies gained valuable information about the performance of their instruments in the field. As a result, one company was able to make modifications that led to overall product improvement.

Despite the end of formal funding, the researchers continue to collect environmental data to this day. They are currently collaborating on a research paper and hope to publish their findings in the near future.

COMMON DEFINITIONS

Action Research A multi-stage type of research where a problem is researched, changes made, the problem is researched again, more changes are made and so on until the problem is resolved (e.g. trying a new teaching method in class, evaluating it, then making some modifications until it works effectively). Action research projects are sometimes called “pilot” projects. They also are a type of applied research.

Applied Research The application of new knowledge to solve a problem or address a concern. This may involve researching an issue of public/social concern (e.g. youth violence, environmental policies) or solving a specific problem for a business or an organization. It also can include best practices. College applied research is usually problem-driven and short-term.

Basic Research The discovery of new knowledge. Typically conducted at universities, basic research tends to be more theoretical, longer-term and curiosity-driven rather than problem-driven.

Commercialization When applied research involves practical applications of new knowledge to develop or improve existing products, processes or services, that type of applied research is known as commercialization.

Innovation Change brought about through the adoption of something new. Innovation can be a new interpretation or application of existing knowledge. For example, building a better mousetrap or finding new uses for mousetraps is innovation. Most innovation is incremental – that is, it involves small changes or gains, not major or

breakthrough inventions such as the Blackberry.

Program of Research A program of research is a series of individual research projects on a related theme. Individual projects are usually linked to, or build upon, the previous project(s) in the program. They can involve one researcher, a team of researchers or different researchers who work on various projects within the program.

Scholarship Scholarly work (e.g., research, investigation, development of new knowledge, experimentation, assessment, evaluation or application) that is communicated. To be considered scholarship, results must be communicated to peers so findings can be shared, discussed and debated.



Housing the Three Little Pigs

Fanshawe College can soon boast that it built the house the Big, Bad Wolf blew down. Testing will begin this year on a house constructed by students from Fanshawe's building technology programs as part of a \$7 million insurance industry-University of Western Ontario research project. Known as the "Three Little Pigs", the project will assess damage to a house from winds of up to 200 kilometers per hour. The moniker "three little pigs" was coined in reference to the famous children's story. The official name of the facility is the Insurance Research Laboratory for Better Homes.

Led by Prof. Marty Askes, School of Building Technology (pictured in photo, far right), a two-storey, four-bedroom, brick home was constructed by about 90 Fanshawe students over the summer of 2006. The fact that the house had to be built on a special base with monitoring equipment - rather than on a conventional foundation - posed a unique construction challenge and could have comprised structure stability. The student team was able to solve the problem by designing a plan and adjusting placement of the exterior brick walls - all while maintaining the stability and authenticity of the structure.

The project is the first facility of its kind in the world to subject full-scale houses to winds as strong as a category five hurricanes. The insurance industry and researchers are interested in examining better ways of building and renovating houses in the light of rising costs from natural disasters such as hurricanes and tornados.



Bored with grammar class? Time to 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 grants from Fanshawe's Curriculum Innovation (CIF) and Research Innovation (RIF) funds, Marshall created humorous grammar learning materials for instructional use and later tested the materials in a classroom setting.

Grammar students at Fanshawe are able to make up to three attempts on their grammar quiz 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 the 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.



Right high school courses key to college math success

Prof. Mark C. Henning, math coordinator, Faculty of Technology, studied the correlation between high school math courses and student success in the first year of college technology programs. MAP4C, the math course for college/apprenticeship, is currently required for admission to technology post-secondary programs in Ontario. MCT4C, the

math for college technology programs, is recommended but not mandatory.

After examining diagnostic test data, students' previous academic records and performance in their first college semester, Prof. Henning found a strong relationship between the last high school math course taken and success rates in college math. Henning also found that MAP4C did not appear to be the best preparation for first semester technology math. It resulted in his recommendation that colleges should adopt MCT4C as a required course for admission to all technology programs across the Ontario college system if they wished to improve student success.

Henning's research was funded through grants from Fanshawe's Research Innovation Fund. He has since received another RIF grant to continue his work with a new group of first-year students, a project that also is part of a larger project with other Fanshawe researchers on student retention and success.



Innovative photography project captures a snapshot of a profession

The profession of photography is changing rapidly in the world of computer imaging, digital capture, and Photoshop image processing. Students in the photography program will enter a diverse and challenging working world. In his project, Prof.

Dave Homer, School of Contemporary

Media, created a video documentary project to shadow several professional photographers as they went about their daily business. The first graduate profiled – a sports and news photo-journalist – started the day at a baseball game then finished at a soccer game. The second grad, who works at a large photo retailer, was interviewed in the store as she assisted customers. The third grad, a wedding photographer, was followed through a full day of taking wedding photos. The fourth subject runs a portrait studio and demonstrated a location engagement photo session.

The final product was a DVD disc featuring the graduates. Photography students who saw the DVD noted the sessions were live and clearly show the effort involved with real-life photo situations, including a segment where the photographer's camera broke. Showcasing graduates in a visual video format is a convincing way to present career possibilities to college students, who will go on to become tomorrow's industry professionals.



Project-based learning for students helps make communities greener

The environment may be a little greener thanks to Prof. Wendy Wilson, School of Language and Liberal Studies, and her technical report production students.

Together, the team produced two soft-covered books on environmentally friendly building technology.

The first publication was a 192-page book entitled *The Greener Home – A Guide to Eco-Friendly Renovations*. Working under Wilson's supervision, students in her course (the 2008 graduating class of the Architectural Technology Diploma Program) researched the subject, interviewed experts, wrote, designed and executed all the drawings and photos used in the publication. Under normal circumstances, the students would have written book reports for their course, but Wilson saw a way to integrate project-based learning into the course in an innovative way that resulted in useful publications and a unique learning opportunity for the students.

Wilson worked with a second group of Architectural Technology students (the class of 2009) on a 172-page book, *Taking the LEED: A Pocket Guide to Building a LEED Certified Home*. Material from both publications will be used in postsecondary courses. The publications can be purchased by contacting Wilson at wwilson@fanshawec.ca. The project was funded by a CIF grant.

Meanwhile, the professor has recently been awarded a Pilot Innovation (PIF) grant to produce a book about the Congregational Centre of the Sisters of St. Joseph in London, a new residence for nuns who require assisted living or nursing care. The building has been LEED certified at the gold level. The new project will involve students from both Fanshawe's architectural and graphic design programs and is slated for completion in late 2008.



International project reaps practical skills and understanding for Fanshawe students

Students from Fanshawe's Early Childhood Education (ECE) and Child and Youth Worker (CYW) programs got a unique learning experience in a Central American nation thanks to an innovation project initiated by their professors.

ECE faculty member Carol Tracy and Margot Sippel, a professor in the CYW program, School of Human Services, secured funding from ARIUP's Pilot Innovation program (PIF) to help support one and two month field placements in Costa Rica for 10 of their students.

Teamed with Costa Rican university students and workers from local community agencies, Fanshawe students in the Crossing International and Interdisciplinary Borders project worked with street kids and abused



Top photo: Carol Tracy
Bottom photo: Margot Sippel

and abandoned children in shelters and child care centres in the northwest Province of Guanacaste.

Costa Rica doesn't have the equivalent occupation of child and youth worker as understood in Canada. Shelters often are staffed by only a few women as maternal figures, who do all the cooking and cleaning.

The Fanshawe students were able to bring new information and universal ideas about play, music, art and games and use it in innovative programming to help the children build positive relationships. The students and faculty also developed and conducted practical training sessions for local psychologists and university students, and shared some of the latest information and practices with their Costa Rican colleagues.

The opportunity challenged Fanshawe students by placing them within a new type of child welfare system in a different culture. Students benefited, their professors say, because the project was specifically designed to enable them to develop leadership, team work and other essential skills, and complete vocational and generic learning outcomes. The students gained valuable international work experience and cultural perspectives that will enhance their employability in a global world.

research 101

A DECENT (WINNING) PROPOSAL You have an idea for an applied research and innovation project. You've thought your project through, discussed it with the folks in the Centre for Applied Research, Innovation & University Partnerships (ARIUP) and now you're ready to apply for funding. It's time to write a proposal.

The search for funding means you will be engaged in a competitive process. Opportunities to submit proposals generally occur when a funding agency issues a Request for Proposals (sometimes referred to as a Call for Proposals), a call for Letters of Intent or Expressions of Interest. These opportunities are widely circulated and may attract dozens if not hundreds of applications. Many proposals are submitted; fewer actually get funded.

Your proposal is the most important document you will create if you want to obtain funding.

Your proposal is the most important document you will create if you want to obtain funding. Since the chances of you ever getting to appear before the funding review committee to explain your project in person are virtually zero, your proposal has to do the talking for you.

A proposal is both an information and a marketing document. It must stimulate interest as well as inform. It generally starts out with basic information about you –background, education, experience and contact information. A proposal will include an in-depth description of what you want to do (the hypothesis or research question to be answered), how you will do it (project methodology), why it should be done (what gaps in knowledge your research fills), who is involved (the research team, their roles and qualifications) and who benefits and how. Funders will ask about evaluation – in other words, how will you measure the project's success? A budget, a communications/ dissemination plan and other supporting documentation also is required. Proposals are submitted in the name of the institution on behalf of its researchers, or to the few programs in which awards go directly to individuals.

Proposals go through several stages. First, agency staff review submissions to ensure that they meet basic funding criteria. Proposals that pass this screening are sent on for review by the selection committee. So what makes a winning proposal?

- Do your homework. Make sure you are up to date with the knowledge in your field.
- Your project may build upon or advance previous research, but it shouldn't duplicate work that's already been done. To avoid this, conduct a literature search first. Need help? Talk to the Reference Desk staff in Library and Media Services. They can provide assistance on how to conduct literature searches.
- Follow proposal preparation instructions to the letter. You'd be amazed at how many proposals don't make it past the first stage because whole sections were left blank, key details were missing or supporting documentation wasn't attached. According to program officers, about 25% of applications don't make it past this step. A complete, well written proposal is your best chance for success. Watch out for those pesky spelling and grammar errors, too!
- Scope your project. Consider the amount of time in which it has to be completed and make sure it can be done in that time. If you are funded, there will be a legally binding contract stipulating the project will be done as described within the time frame specified. It's better to err on the side of conservatism than to promise more than you can realistically deliver.

What will ultimately make your proposal stand head and shoulders above the rest is a proposal that is thoughtful, provides a strong rationale as to why this project is important, stresses its benefits and demonstrates why you are the best person to do it. ARIUP staff is available to assist with project and proposal development, so give us a call.

TOP 10 REASONS PROPOSALS DON'T MAKE IT

10. The applicant didn't do his/her homework.

Funding agencies expect applicants to be familiar with the latest knowledge in their fields. They won't fund projects if that same work has already been done by somebody else. You are expected to do a literature review before preparing your proposal. Your project may build on or advance previous research, but it shouldn't duplicate it.

9. The project didn't fit the funding program.

The Request for Proposal (RFP) and the funder's website should explain the purpose and scope of the program, its rules, and results/outcomes expected by the funding agency. Read the RFP carefully. Look at previously-funded projects. If you are still unsure whether your idea meets the program mandate, ask ARIUP. Don't waste your time or the funder's with proposals they can't consider.

8. The proposal is dubious and appears to only benefit the researcher and/or the institution.

Funders prefer to support projects on relevant topics that benefit as many stakeholders as possible. National funding programs look for benefits to Canada, provincial programs, for benefits to Ontario, etc. Your proposed study may have a local focus, but are its results applicable to other communities? Could it result in a model that could be replicated by other communities or institutions?

7. The budget contains items that are ineligible expenses under the program guidelines.

Programs only pay for certain things, i.e., equipment, or replacement salary costs. Don't ask funders to pay for items that aren't eligible. They won't, and it hurts your credibility to ask. Also, check your math. Make sure your numbers add up.

6. The proposal is submitted late and/or inappropriately.

Applicants have been known to e-mail proposals when the funding agency only accepts hard copies. Or the funder asks for four signed hard copies, and the applicant submits one. All of these details are usually specified in the RFP. Given the strong competition for funding and large number of applications, funders will not accept proposals submitted after the deadline. If an applicant can't submit a proposal according to instructions or on time, it calls into question that person's ability to actually deliver on the project.

5. The applicant left the proposal to the last

minute. Remember the last time you pulled an "all-nighter"? Tried to write that major college/university paper the day before it was due? Chances are it didn't work then, and it won't work for a proposal now, especially in today's highly competitive funding environment. A thoughtfully prepared proposal stands a much better chance of being funded. Estimate the time you think it will take. Then double it. With so many conflicting and unexpected demands on everyone's time these days, it doesn't take a guy named Murphy to know that things don't always go according to plan!

4. The proposal is incomplete.

Whole sections left blank, original signatures not obtained, missing support documents - these errors are the fastest way to doom your proposal to the reject pile. Incomplete applications are disqualified at the start of the review process.

3. The proposal is written in jargon and is hard to understand.

Proposals are generally screened before being passed on to a review committee. If the screeners can't understand it, it probably won't make it to stage two. Most RFPs stipulate plain language, so write it that way. Have friends or colleagues read your draft to see if they understand it. If they don't, it needs a re-write. Avoid convoluted sentences; give direct answers to questions.

2. The project is poorly explained.

Applicants sometimes assume that reviewers are so familiar with their fields that they will mentally fill in missing details. But what is obvious to you isn't necessarily obvious to someone else. Never assume reviewers will guess what you mean. Explain your project fully.

1. The applicant didn't follow the instructions.

This catch-all category covers a multitude of sins and is the most frequent reason a proposal doesn't make it past the first review. It can be a combination of any of the above reasons. It also may involve exceeding page or word limits - a situation funders often deal with by simply tearing off the offending pages before sending it on to the next stage. That can leave the proposal incomplete or incomprehensible. If this happens, you are unlikely to get funding.

Applied research isn't new at Fanshawe College. Staff have been involved in innovation on their own, either out of interest or in pursuit of a degree, for probably as many years as the College has existed.

The new

What is news, is that never before in the history of the Ontario college system has there been such a directed effort to engage in applied research and innovation. Research offices are springing up at colleges across the province, and concepts like project-based learning are making the college community take a new look at the meaning of education in the 21st Century.

Ten years after taking the first formal plunge into applied research, the people of Fanshawe have embraced this new wave and are enthusiastically testing the innovation waters. Applied research and innovation are finding a new harbour at Fanshawe College.

This magazine was established to recognize, disseminate and celebrate these activities.

In this and in future issues, you will find interesting projects, useful information - and hopefully, a little inspiration - in the stories we plan to bring you.

Ladies and gentlemen, meet the new innovators.

By Leslie McIntosh

ARE COLLEGES READY FOR RESEARCH?

THE ANSWER IS A RESOUNDING **YES**, ACCORDING TO A NATIONAL SURVEY OF COLLEGE FACULTY.

innovators

“There is a very high level of interest among college teachers in participating in research in a range of areas. Teachers also believe that research is good for both the college and the students,” says Fanshawe College researcher Roger Fisher.

Fisher, a professor in the School of Language and Liberal Studies (SLLS), recently conducted a major national study of college faculty attitudes and interests. Using an online questionnaire, full and part-time faculty at 90 of Canada’s 150 public colleges and Cegeps in 10 provinces and in one territory were asked about their attitudes toward research, their individual research interests, and their opinions on incentives and barriers to participation. A total of 2,410 faculty, including 94 from Fanshawe, filled out the online survey.

The overall level of interest in research was 80% nationally and 80% at Fanshawe. The survey was conducted over a 10-week period in the winter of 2007.

Fisher notes that in recent years, there has been a rapid growth of research infrastructure at Canadian colleges in terms of administrative positions, research offices and updated mission statements. Activity in Ontario accelerated when the provincial government gave colleges the right to offer applied degrees, which include an applied research component. However, he says the growth has been fueled almost exclusively by college administrators. The purpose of Fisher’s study was to examine the attitudes of faculty who will be the primary catalysts for research at colleges.

The overwhelming majority of national respondents said that research would have a positive effect on their college (86%) and on their current duties and responsibilities as faculty (77%). They also agreed/strongly agreed that research should be a high priority at their college (78%).

Corresponding percentages at Fanshawe were similar, with 84% calling research a positive activity for the College and 77% saying it would have a positive impact on their jobs. Seventy-one percent agreed that research should be a high priority at Fanshawe.

Three areas dominate

The majority of national respondents reported interest in three principal areas: curiosity-driven research (85%); research into teaching and learning (80%); and applied research (55%). The relative ranking of these three areas of interest remained constant across all seven demographic variables used in the survey (gender, age, employment status, years of teaching experience, academic credentials, subject area, and province).

In the curiosity-driven category, the majority said they were interested in research activities related to their own subject area (92%), 77% favoured topics of personal interest, and 89% indicated an interest in research that advanced their discipline. Corresponding Fanshawe numbers were 77% interested in subject research, 74% had personal research interests and 88% chose research that advanced knowledge in their own field.

In regard to teaching and learning related research, 87% said they were interested in research to improve teaching skills, 83% were interested in projects involving students, and 82% were interested in researching student success. At Fanshawe, those numbers were 80%, 83%, and 67% respectively.

Results were a little more problematic when it came to the question of applied research. Nationally, 57% indicated an interest in applied research (47% at Fanshawe). Seventy-four percent of respondents said they were interested in research that involved working with business and community partners, 66% said they were interested in technological advances/processes, 52% said they wanted to help industry solve problems, and 32% indicated support for commercialization projects. At Fanshawe, 73% chose to work with business and community partners, 59% were interested in technological advances/processes, 59% opted for technological advances, 49% chose industry problem-solving and 17% indicated an interest in commercialization.

Fisher says the fact that almost half (44%) of national respondents and 34% of Fanshawe respondents selected the “neutral” option when asked about commercialization suggests the lower positive responses may be related more to uncertainty surrounding the definition of “applied research” rather than negative attitudes toward it.

Release time biggest barrier to participation

If faculty are so interested in doing research, what’s stopping them? According to 80% of national respondents (77% at Fanshawe), it’s lack of funding for release time.

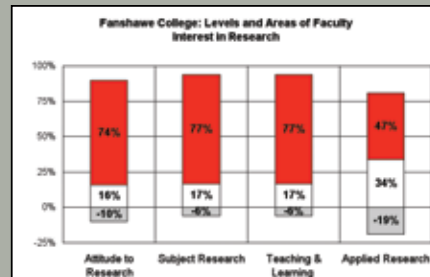
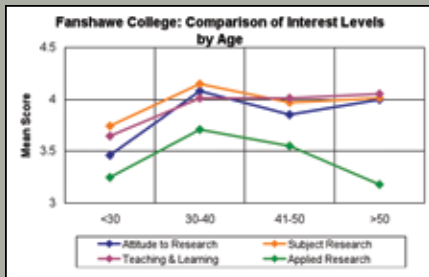
Universities are funded based on an assumption that faculty will split their time 50-50 between research and teaching, says Fisher. Colleges, however, are funded based on the assumption that professors will devote 100% of their time to teaching.

While provinces like Newfoundland, Alberta and British Columbia have college funding formulas that recognize the need for money to hire replacements for faculty doing research, Ontario does not. Faculty in provinces with these funding formulas consistently produce far more research than faculty in provinces without, Fisher says.

“Lack of funding for release time is the single greatest barrier keeping Canadian faculty out of research. If governments really want to build college innovation and research capacity, they need to change the way in which colleges are currently funded,” he says.

Meanwhile, there are no lack of willing participants at Fanshawe and its sister colleges.

“My study provides empirical evidence that college faculty are ready, willing and able to participate in research activities,” Fisher says.



THE LITTLE PROJECT THAT COULD

The old adage that one thing leads to another couldn’t be truer than in the case of Prof. Roger Fisher.

The story of how one small applied research project led to a national survey and a report for a heavyweight federal government department is a classic example of how a research project can turn into a research program.

In 2006 Fisher, a faculty member in the School of Language and Liberal Studies (SLLS) applied for a Research Innovation Fund (RIF) grant from the Centre for Applied Research, Innovation & University Partnerships. Fisher’s idea was to develop and conduct an online survey to gauge the level of interest in applied research by Fanshawe College faculty.

With assistance from the Institutional Research and Planning Department and the support of SLLS Chair Whitney Hoth, Fisher designed and tested his online survey with 22 volunteers. Subsequently, 400 faculty and academic managers were invited to participate. Invitees were asked about their research interests, previous research experience, years

of teaching experience and perceptions of the barriers to participation. The response rate was excellent – more than 30% – and 80% of respondents indicated a strong or very strong interest in applied research. A comparable number also thought applied research was beneficial to students, teachers and the College.

“After looking at the results, I was curious about the level of interest among my colleagues across Canada,” say Fisher. “I also had returned to school in a PhD program and this was an opportunity to develop and demonstrate research skills.”

Fisher took his idea to the Canadian Council on Learning (CCL), a federally funded research agency that investigates teaching and learning, and to the Association of Canadian Community Colleges (ACCC). Both CCL and ACCC agreed to help fund the national study. Word of the survey quickly spread to other Ontario colleges. Excited by the prospect of receiving useful data about their own faculty, Seneca, George Brown and Niagara colleges contributed some funding for the project. The study caught fire across the country and 90 of Canada’s 150 public colleges agreed to participate. A total of 2,410 faculty, including 94 from Fanshawe, participated.

As Fisher prepared his research paper (Faculty Participation in Research at Canadian Colleges: A National Survey), Industry Canada entered the picture. As key funder of Canada’s three major research granting councils, the department was interested in the capability and willingness of Canadian colleges to engage in applied research with the private sector in order to advance Canada’s economic and global competitiveness agenda. News of the survey convinced Industry Canada officials that if they wanted a report, Fisher was their man.

Their resulting conversation led to a commission for a report to the Director of Industry Canada’s Higher Education Research and Development Policy Directorate. The College Advantage: Private Sector Innovation & Highly Qualified Personnel was published in March, 2008 as a foundational resource in the development of a national research funding program for Canadian colleges.

“This research experience has been a great opportunity to make a contribution beyond the classroom, to further my own education, and to collaborate with other educators. It’s been a rewarding adventure, and I’m returning to the classroom more enthusiastic than ever,” says Fisher.

New studio makes Fanshawe a leader in teaching innovation

By Steve Torrens and Bruce Moore

Fanshawe College is leading the way in teaching and learning innovation with the creation of its new Learning Object Studio (LO Studio).

The LO Studio works to create interactive learning tools to support the teaching and learning process. Located in the Centre for Innovation in K-Building, London Campus, the LO Studio operates as a joint venture between the Curriculum Development Unit, Centre for Applied Research, Innovation & University Partnerships, and Learning Systems Services.

The brainchild of instruction designer Steve Torrens and Bruce Moore, a multi-media specialist, the LO Studio is an offshoot of the work both have done at Fanshawe for more than a decade. Although other colleges are developing similar facilities, Fanshawe College was one of the first colleges in the Ontario system to recognize the relevance of this new type of instructional design.

The online courses have made it possible for all employees to complete important training in a very short period of time.

A learning object is a single piece of instructional material used to support the teaching and learning process. Small, self-contained, and reusable, learning objects have been compared to building blocks.

Just as blocks can stand-alone or be used to build larger structures, learning objects can be used singly or strung together to support units throughout a course. Learning objects can range from a simple diagram to a video clip to a complex interactive computer simulation. Because learning objects explain encapsulated ideas, they can be shared among instructors, programs and other educational organizations to convey the same piece of information to many audiences.

In the past, finding learning objects to support college courses was a time consuming process for faculty. Today the process is much simpler. The digital formatting of learning objects has made sharing them straightforward and convenient. Learning objects are stored in searchable databases, known as a Learning Object Repositories (LOR).

FanshaweOnline has an LOR that allows faculty to share, search, and store learning objects and other resources, as well as conduct extended searches of other repositories.

In addition to supporting teachers and students, the LO Studio has been a major player in the creation of online courses for employee training. In the last year, the LO Studio has created nine courses for Fanshawe College employees on topics ranging from respect in the workplace to workplace safety. Each lesson is narrated,

and features interactivity and knowledge testing for the learner. More than 1,500 Fanshawe employees have taken this online training, which can be accessed at anytime from anywhere.

“The online courses have made it possible for all employees to complete important training in a very short period of time,” says Lori Nemeth, Manager of Organizational Development and Learning.

“The courses are available as soon as new people join the College. There is no waiting for a classroom session for each subject area. The courses remain available for anyone to review what they’ve learned. The courses are interactive and well-designed, which strongly supports learning and retention. The graphics and animation made possible by the LO Studio add life and some fun to the courses and on-line quizzes help employees test their learning,” she says.

“We’ve had positive feedback from employees about the convenience and immediacy of learning on-line. We always assess the best delivery method for any training that is needed. We are fortunate that the LO Studio has allowed on-line courses to be a viable, cost effective delivery choice when the subject matter lends itself to on-line learning.”

Services provided by the LO Studio include:

- Leadership in the design and implementation of instructional technologies;
- Facilitation in the production of e-learning content;
- Research into systems and software supporting the creation of learning objects;
- Consultation in learning object development, authoring and tools.

Anyone wishing more information about the LO Studio should contact Bruce Moore at bmoore@fanshawec.ca (phone 519-452-4430, ext. 4889) or Steve Torrens at storrens@fanshawec.ca (phone 519-452-4430, ext. 4611).

Ontario colleges add innovation to education

Applied research and innovation has taken off at many of Ontario's major public colleges in recent years as faculty and students team up to take on real world challenges. Here are just a few examples of the types of innovation projects completed or in progress at these institutions.

Faculty from **Algonquin College's** Game Development Program are collaborating with a University of Quebec psychologist on a virtual reality project to help people overcome phobias. Using 3D goggles or an immersion room that allows 3D images to be projected on six walls, patients are exposed to the object of their fear and confront it with the help of a therapist. Algonquin designed the interface that makes the technology easier to use.

Another Algonquin student-faculty applied research team helped Treverrow Ltd. design and build a wire cylinder separator for use in harvesting black walnuts. The machine separates the valuable kernels from their less valuable shells. The team's effort has laid the groundwork for the company to create Ontario's first viable black walnut industry.

Centennial College worked with Michener Institute for Applied Health Sciences, **George Brown College**, **Ryerson University**, the **University of Toronto** and industry partners to develop an innovative, Web-based course on interprofessional collaboration in emergencies. The new eight-week course is available to college students from all health and security programs, including nursing, allied health, police foundations, paramedic, social services and pharmacy technician programs. Another Centennial project with **REGEN Energy Inc.** is helping reduce electricity costs in commercial buildings via an innovative load management device (patent pending) that helps large users reduce demand, conserve energy and save money. A team from Centennial's Energy Institute validated performance of **REGEN** controllers in commercial buildings in the GTA. The project was nominated for the Ontario Centres of Excellence 2008 Mind to Market Award.

A **Conestoga College** student-faculty applied research team designed an innovative new in-suite ventilation system (ISV) for high-rise buildings. Their design for modification of existing ISVs resulted in an improved product that is more environmentally friendly, costs less to construct, and operates more efficiently. Currently, a Kitchener-area manufacturing company is working with the college to build several prototypes, which – after final testing – will be introduced to the commercial marketplace.

George Brown College's Centre for Advanced Engineering Technologies partnered with the University of Toronto's Laboratory of Collaborative Diagnostics to invent a new way of assembling and configuring computer-based health informatics and monitoring stations in support of medical devices used in homecare delivery. The team created a new computer case and cabling design for the university's collaborative diagnostics service. The project resulted in four prototype LCD boxes, one of which was selected for further testing and commercialization.

Niagara College has formed the Niagara Environmental Corps (NEC), a group of students who, along with faculty, work on various environment projects with the private and public sector. Projects include landfill site monitoring for an area municipality and development of new soil enhancement products with a local environmental services company. Students hone their data analysis skills at a closed landfill site by evaluating the performance of a wetland biofilter treatment system installed to manage leachate. Another team worked with a vineyard owner on an innovative solution to the costly problem of winter vine damage. Using three-dimensional mapping and geographical information system technologies, the Niagara team created an accurate visual model of the vineyard that allows the owner to pinpoint the best location for specially-

designed wind machines (needed to prevent cool air from pooling) and help address drainage and soil issues.

A faculty-student research team from **Seneca College** is collaborating with Mozilla, a leading open source software company, to develop new features for its acclaimed Firefox browser. Principal investigator Prof. David Humphrey, School of Computer Studies, is working on the project with student research assistants. Humphrey credits the Mozilla-Seneca partnership with providing students the opportunity to help build software on a scale unlike anything offered in most academic institutions.

Seneca students are also involved in the development of several prototypes for system designs company Tertec Enterprises Inc. Projects include a robotic arm that enables a blind person to control the operation of a microwave,

a pill dispenser that ensures medications are taken in accurate doses at the right time, a security device designed to recognize and detect the shape – as opposed to heat or motion – of a person, so that it can alert a third-party if a patient falls, and a communication system that offers good, accurate voice recognition at an affordable cost.

It's not often you have to build a major Canadian city in two months, but **Sheridan College's Visualization Design Institute (VDI)** did just that for the City of Ottawa to showcase its proposed Light Rail Transit system. The VDI worked with McCormick Rankin, the engineering firm leading the project, to build a virtual version of the city. The job involved measuring and photographing 120 buildings over two km., collecting accurate measurements of major building shapes and virtual design work involving 3,200 photographs.

Students at **St. Clair College** successfully tested a revolutionary cold-spray technology developed by Centre Line Ltd., a local automotive company, confirming engine repair as a new, marketable use for the product.

It's not often you have to build a major Canadian city in two months, but Sheridan College's Visualization Design Institute (VDI) did just that for the City of Ottawa to showcase its proposed Light Rail Transit system.



It's not every day you have to build a major Canadian city in only two months, but **Sheridan College's Visualization Design Institute (VDI)** did just that for the City of Ottawa to showcase its proposed Light Rail Transit system. The VDI worked with McCormick Rankin, the engineering firm leading the project, to build a virtual version of the city. The job involved measuring and photographing 120 buildings over two km. collecting accurate measurements of major building shapes - and virtual design work involving 3,200 photographs. VDI delivered the final version of the real-time fly through in only eight weeks.

The city that Sheridan and McCormick Rankin built



Niagara College is working with private and public sector partners in a series of projects to help protect one of Canada's most beautiful, bountiful and renowned environmental regions. Current projects include monitoring for the city of Thorold at its closed Rice Road Landfill and the development of new soil enhancement products with Integrated Municipal Services (IMS) Inc. At Rice Road, students in the Niagara Environmental Corps (pictured above) are honing their data analysis skills by evaluating the performance of a wetland biofilter treatment system installed to manage leachate. These partnerships will result in future projects in the environmental sciences.

Niagara aids industry while protecting environment



Centennial College and REGEN Energy Inc. are helping reduce electricity costs in commercial buildings via an innovative load management device (patent pending) that helps large users reduce demand, conserve energy and save money. Project analyst Dave Clark (left) and Herb Sinnock, manager of Centennial's Energy Institute were part of the team that validated performance of REGEN controllers in commercial buildings in the Toronto area. The project is a nominee for the 2008 OCE Mind to Market Award.

Centennial and REGEN take charge of energy costs

Health, technology, teaching and learning among recently funded projects



(L to R): Pat Bethune-Davies, Janice Elliot and Lorena Harvey

Learning in an Online Community of Practice: Baccalaureate Nursing Students' Perception of Online Group Discussion of the Therapeutic Nurse-Client Relationship

Co-investigators **Pat Bethune-Davies**, **Janice Elliot** and **Lorena Harvey**, School of Nursing, will examine the perceptions of students in the joint Fanshawe-UWO Collaboration BScN program. As part of the Self and Others course, students participate in online discussion groups where they are asked to think critically on the constructs of the nurse-client relationship. The team's project will explore students' perceptions, identify themes and provide a basis for a more complete assessment of the online component of the Self and Others course. The study is funded by RIF.

Hip Fracture Prevention

Hip fracture is a major, preventable occurrence with huge financial impact on the Canadian health care system. The lifetime risk of fracturing a hip – one chance in six – is higher than the lifetime risk of getting breast cancer (one chance in nine) and the mortality rate is higher. On average, one in four hip fracture patients die within a year. Almost 95% of fractures occur when seniors experience a fall. Principal investigator **Dr. Elsa Polatajko-Lobos**, School of Manufacturing Sciences and colleagues **Dr. Z.J. Lobos**, an industrial latex chemist, and UWO associate professor **Dr. Mark Speechley** will undertake the first stage of a multi-phase research program aimed at reducing the instances of hip fracture. Phase one involves a literature review on existing hip protection devices and an examination of current research in the field. Future phases will include development of more effective protective devices and a study of government and public policy initiatives that may reduce the number of these injuries. This project is funded through the CONII PoP Fund.



Carol Butler

Integration of Human Simulation Technology in Health Sciences Programs

Carol Butler and project team members **Sandi Annett** and **Bobbi-Thomas Bailey**, all of the Faculty of Health Sciences and Human Services, have received a CIF grant for a project to integrate human simulation technology into Fanshawe's health sciences programs

and promote an interdisciplinary approach to care. The team will critically examine traditional teaching methods, develop a vision for a Faculty-wide simulation program and create and test interprofessional scenarios. The project has the potential to impact more than 600 students enrolled in the Faculty's nursing, practical nursing, respiratory therapy and pharmacy technician programs.



(L to R): Anne Lamesse, Becky Bulsza and Karen O'Brien

The Lived Experience of First-Year Nursing Students' Learning through Aesthetics

Anne Lamesse, **Becky Bulsza** and **Karen O'Brien**, School of Nursing, will conduct focus groups with first-year nursing students to investigate how students learn and understand concepts, beliefs and values pertaining to their relationships with colleagues and clients. "Aesthetic knowing" involves self-awareness and learning and understanding life and personal experience through the veil of an individual's values, perceptions and beliefs. It also involves self-expression, interpersonal communications and relationships. The team will be facilitating focus groups with nursing students in the Self and Others course to validate and measure its effectiveness. The project is unique because there is little research on first-year students' experience of learning within an aesthetics environment. The project is funded by RIF.

ARIUP administers three internal funding programs – the *Curriculum Innovation Fund (CIF)*, the *Pilot Innovation Fund (PIF)* and the *Research Innovation Fund (RIF)*. These programs fund projects of short duration and are intended to help Fanshawe employees gain experience in conducting applied research. ARIUP also has external funding through the Colleges Ontario Network for Industry Innovation (CONII) project. CONII is a network of 10 Ontario colleges – including Fanshawe – formed to assist small and medium-sized enterprises with proof of concept and applied research projects. CONII is funded by the Ontario Ministry of Research and Innovation. The following are descriptions of recently-funded projects approved under these programs. For more information about any of our funding programs, contact ARIUP at research@fanshawec.ca.



Dee Morrissey

Student Engagement and Classroom Response Systems

Dee Morrissey, School of Language and Liberal Studies, will study the use and effectiveness of classroom response systems on student success. Response systems – commonly known as clickers – have become one of the latest trends in postsecondary education. The technology will be used with 240 students in a first-year business marketing course to determine whether

the clickers affect student engagement and success. The investigation will include comparison and measurement of the success and engagement levels between a class of students using the classroom response system and a control group of made up of students receiving traditional classroom instruction. The study also will include qualitative data gathered through surveys and focus groups. Morrissey expects the findings will have broader implications for college programs by helping determine whether clickers are an effective instructional technology for college students. The project is funded by RIF.



Ke Liu

Solar Powered Electric Golf Cart

Faculty member Ke Liu and co-investigator John Makaran, both of the School of Manufacturing Sciences, will study the application of solar power technology to small electrical vehicles such as golf carts and airport ground utility vehicles. The project will study a number of factors involved in charging electrical vehicle batteries using solar power.

Currently, the design of electrical batteries – with their limited capacity, short power duration and long battery charging times – makes the use of such vehicles problematic. However, electrically powered vehicles are more environmentally friendly than gasoline-powered vehicles because they have no emissions and make less noise. The duo will examine battery operation and charging processes and plan to develop a converter prototype that controls the power from solar cells to batteries. The project includes training students to function as research assistants. The developed technology will be integrated into a prototype golf cart. The investigators also will explore the applicability of the technology to other small vehicles as potential future projects. This project is funded through the CONII Proof-of-Concept (PoP) Fund.



(L to R): Otte Rosenkrantz, Wendy Wilson, and Dana Morningstar

Education in Second Life

Second Life is a 3D virtual world representing an advanced level of social networking. Now used by more than four million people around the world, SL allows users (known as “residents”) to develop their own characters – called avatars – and interact with each other. Residents can meet, socialize, participate in individual and group activities and create and trade virtual goods and services. Each virtual world – called an island – is built and owned by its residents.

A large number of colleges and companies have established a presence in Second Life and are exploring the possible usages of this social phenomenon. Professors Otte Rosenkrantz, Wendy Wilson and Dana Morningstar, School of Language and Liberal Studies, have received a PIF grant to investigate the feasibility of using SL to deliver courses and conduct research. Team members will create a rich virtual world for team meetings and exchange of project-related research information and also will explore methods of presenting course content in a SL environment. This initiative will involve students and staff from other Fanshawe departments.

presentations & publications

FANSHAWE RESEARCHERS ARE ON THE MOVE – doing presentations to conferences and professional associations, and publishing articles and papers in journals. P&P focuses on dissemination activities and, where possible, provides online links where you can read the works. If you have recently made a research-related presentation to an external group, or published a research-related book, paper or article, let us know. Researchers and innovators funded under any of Fanshawe’s internal programs – the Curriculum Innovation Fund (CIF), the Pilot Innovation Fund (PIF) or the Research Innovation Fund (RIF) – produce reports on their work at the conclusion of their projects. These reports can be read in the publications section of the Research Fanshawe website at www.fanshawec.ca/research.

Presentations

Prof. Roger Fisher, School of Language and Liberal Studies, presented the results of his national study on attitudes of college faculty toward applied research at a national applied research conference earlier this year. Fisher presented his findings at the Association of Canadian Community College’s (ACCC) 2008 Applied Research Symposium in Edmonton in February.

Prof. Helen Harrison, School of Nursing, presented an abstract on Incorporating Best Practice Guidelines into the Practical Nursing Curriculum. It was presented at the Canadian Association of Practical Nurse Educators conference, St John’s, Newfoundland, in October 2007.

Professors Lorena Harvey and Judy McKale-Waring, School of Nursing, made a presentation on the topic of Reclaiming Our Heritage: Ritual and Ceremony in Nursing Education at a symposium in Toronto earlier this year. The presentation focused on the socialization of nursing students into the profession and the use of ceremony and tradition. More than 200 people attended the Spring Symposium of the Provincial Nurse Educator Interest Group May 22. This year’s theme was Esprit, Excellence and Evolution. PowerPoint slides from their presentation can be viewed online at the Research Fanshawe website. The UWO/Fanshawe collaborative nursing program has started a new tradition with a pinning ceremony just before students begin their first clinical placements. Students receive a pin to commemorate their “becoming nurses” and going into clinical placements for the first time. Following an initiative of the World Health Organization and the Nightingale Initiative for Global Health (NIGH), the students also recite a pledge where they commit themselves to excellence in health care. The first ceremony occurred in January 2008.

Professor Wendy Wilson, School of Language and Liberal Studies, presented at Taking Stock: Green Building in Education, the educators’ portion of the Canada Green Building Council’s first national summit, Shifting into the Mainstream. Wendy was one of seven presenters from Canadian postsecondary institutions that included York University, Ryerson, Carleton, McGill, University of Montreal, and Centennial College. As the only English teacher presenting in a group of architecture and engineering professors, Wendy received an enthusiastic response from the 150 participants for her Green Book Project. The Green Book project was funded by CIF.

Publications

Prof. Roger Fisher, School of Language and Liberal Studies, has published the results of his national study on attitudes of college faculty toward applied research. Funded by the Canadian Council on Learning (CCL), his work is

posted at (www.ccl-cca.ca/CCL/Reports/Other+Reports/200804FacultyParticipationResearchCdnColleges.htm). The initial study (Fanshawe College faculty survey) in the CCL project was funded by a RIF grant. Prof. Fisher also recently undertook a commissioned study for the Higher Education Research and Development Policy Directorate, Industry Canada, on applied research capacity at Canadian colleges. The College Advantage: Private Sector Innovation & Highly Qualified Personnel is posted on the ACCC website at www.accc.ca/ftp/pubs/brochures/200803_CollegeAdvantage.pdf. Both reports also can be read at the Research Fanshawe website.

Prof. Bernie Koenig, School of Language and Liberal Studies, has published a book about the relationship between knowledge and moral values, and how new knowledge leads to new values. The work, *Natural Law, Science and the Social Construction of Reality*, is published by the University of America Press. Koenig’s latest book, *Art Matters: Art of Knowledge/Knowledge of Art*, will be published by the Academia Press in spring 2009. The book explores the creative side of knowledge and the technical side of art, and examines the relationship between art and science.

Prof. Helen Harrison, School of Nursing, has co-authored and published several peer-reviewed papers in several major journals in the field of genetics. One of her most recent collaborations, an article entitled Results Communication and Patient Education after Screening for Possible Hemochromatosis and Iron Overload: Experience from the HEIRS Study of a Large Ethnically and Linguistically Diverse Group, appeared in the November 2007 issue of *Genetics in Medicine*. Another peer-reviewed article by Harrison and her co-authors entitled Screening for Hemochromatosis and Iron Overload: Satisfaction with Results Notification and Understanding of Mailed Results in Unaffected Participants of the HEIRS Study will appear shortly in a future issue of *Genetic Testing*.

Prof. Mark C. Henning, Math Coordinator, Faculty of Technology, published an article in the winter 2007 issue of *College Quarterly*. His abstract on the level of math preparedness of high school students entering Fanshawe’s manufacturing programs in fall 2005 can be read at www.collegequarterly.ca/2007-vol10-num01-winter/henning.html. His complete study is available on the Research Fanshawe website. The study was funded by a grant from Fanshawe’s Research Innovation Fund.

Prof. Marilyn Ott, School of Nursing, and co-author **Heather Wirick, a student in McMaster University/Mohawk College’s collaborative nursing program**, have published an article in the *Canadian Operating Room Nursing Journal*. The article, entitled Vancomycin Resistant Enterococci and the Role of the Health Care Worker, appeared in March 2008.

Project on Acquired Brain Injury Kicked Off Formal Research at Fanshawe

The era of formal applied research at Fanshawe College began in 1999 with a project that examined how information and assistive technology could be used to help students with acquired brain injuries overcome learning difficulties.



The researchers are (from left to right) Margot Sippel and Ann Hill posing with Centres of Excellence representative and a community partner in 1999.

That year the **Canada Foundation for Innovation (CFI)** created the **College Research Development Fund**, the first major federal funding program in which colleges could be lead institutions. Each college had to first qualify and be designated as a research institution before CFI would accept proposals. Up until that time, colleges' participation in externally funded research was negligible. The few colleges that did do research could only get funding if a university agreed to lead the project.

Professors Anne Hill, Margot Sippel and Dr. Danielle Renaud, School of Human Services, were the first Fanshawe research team to apply for CFI funding. Their project, **Investigation of Acquired Brain Injury Support Systems Using Collaborative Information Technology**, involved the use of Knowledge Forum™, a Canadian Internet-accessible knowledge building software tool developed by the Ontario Institute for Studies in Education/University of Toronto (OISE/UT). Acquired brain injury usually occurs as a result of head injury in an accident and can result in various types and severities of learning disabilities.

Working with students from Fanshawe's **Educational Assistant (EA)** postgraduate program, Hill, Sippel and Renaud enlisted area school boards, teachers, high school students with brain injuries, their parents and service providers to explore ways to use Knowledge Forum™ and other software to overcome learning difficulties. The study also focused on enhancing the literacy and social interaction skills of the participants.

Led by the Fanshawe team, partners included OISE's Telelearning Network Centre of Excellence, the Children's Hospital of Western Ontario, the Thames Valley Children's Centre, the Avon-Maitland, London District Catholic and Thames Valley district school boards and numerous community groups and service agencies. Betacom Bridges, a software company, contributed most of the software used in the study on an in-kind basis. The project received matching funding from the Ontario Innovation Trust and additional monies from the federal government's Office of Learning Technologies.

The project allowed area high school students with brain injuries and their parents an opportunity to access cutting edge technology. It widely disseminated information on the use of the technology to secondary school and college teachers, service providers, community organizations and other stakeholders throughout the project and via Community Technology demonstration workshops. EA postgraduate students received hands-on experience in working with students, and much of the knowledge gained was incorporated into the EA curriculum.

The research team subsequently received a 1999 Telelearning Award from the National TeleLearning Centre of Excellence for their innovative use of the Knowledge Forum™ software.



Dr. Terry Boyd

New ethics board aims to educate and assist

Fanshawe’s entry into the arena of applied research has sparked creation of the College’s first Research Ethics Board (REB).

The REB serves the College research community as a consultative body. Formed in 2005, it has responsibility for independent, multidisciplinary review of the ethics of research activities to determine whether projects meet established ethical standards.

“Applied research is a relatively new activity for most people at Fanshawe and we anticipate that participants will need some guidance in this area,” says Dr. Terry Boyd, Chair of the REB.

“Education is part of our mandate; we’re not just here to pass judgment on individual projects. The REB is a resource for researchers. Our focus is on improving the overall quality of research, which will help our researchers meet the standards required by external funding agencies,” he says.

When applied research involves human subjects, there are several guiding ethical principles to be considered:

- Respect for human dignity;
- Free and informed consent of participants;
- Respect for vulnerable persons;
- Privacy and confidentiality considerations;
- Respect for justice and inclusiveness;
- Balancing harms and benefits - minimizing harm, maximizing benefit.

The REB is accountable to ensure any and all research involving human subjects conforms to ethical standards contained in the federal Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans and in Fanshawe College policy 1-J-03, Ethics Guidelines & Review Process for Research Involving Human Subjects. The Tri-Council policy establishes uniform ethical standards for projects funded by Canada’s three major research funding councils. Fanshawe has signed a Memorandum of Understanding with the Tri-Council confirming its intent to adhere to these standards.

Fanshawe researchers who plan to involve human subjects must complete an Application for Ethics Review and have that application approved by the five-member panel. Boyd says the REB tries to expedite ethics reviews whenever possible, and can offer general feedback on applications before, during and after the process. REB review also is required for any project involving College employees or students, even if part, or all of the research team, comes from another academic, hospital or research institution.

The REB consists of five members – a Chair, three Fanshawe employees (usually faculty) and a community representative with no College associations. There are three alternate positions to ensure that every REB meeting has quorum to make decisions. Each member serves a three-year term, which is renewable for an additional three years. The REB meets monthly between September and March.

Any Fanshawe employee with an interest in ethics issues can apply to be a member of the REB. Previous knowledge or background in ethics or legal issues is an asset, but not a requirement. Potential applicants can apply by contacting Boyd at tboyd@fanshawec.ca.

Meanwhile, the REB website contains useful information, application forms, a list of current members and a

Frequently Asked Questions section. It can be found at: www.fanshawec.ca/REB-FAQ.

The site also links to the Tri-Council’s Introductory Tutorial for the Tri-Council Policy Statement, where visitors can complete the tutorial and earn a certificate from the Tri-Council’s Interagency Advisory Panel on Research Ethics.

Other research-related Fanshawe College policies are posted on Fanshawe Online. Click on “Administrative Policies” (under the Policies and Procedures category) and select section J – Research to view these policies.

Education is part of our mandate; we’re not just here to pass judgment on individual projects. The REB is a resource for researchers. Our focus is on improving the overall quality of research, which will help our researchers meet the standards required by external funding agencies.

Fanshawe CIIC Offers Practical R&D Solutions to Business and Industry

Fanshawe College has opened a College Industry Innovation Centre (CIIC) to help business and industry connect with the applied research and innovation expertise at Ontario colleges.

CIICs have been established across the province by the Colleges Ontario Network for Industry Innovation (CONII). CONII is a partnership of 10 of Ontario's leading colleges. Funded by the Ministry of Research and Innovation, CONII helps companies solve problems, adapt new technologies for the marketplace and develop new or improved products and services in response to industry needs. The purpose of the network is to help keep Ontario companies competitive. Fanshawe is a founding member of CONII.

Fanshawe's CIIC is housed within the existing Centre for Applied Research, Innovation & University Partnerships and serves as the local contact for the CONII network. Drawing upon the expertise of Fanshawe researchers to solve business problems, the CIIC also can make referrals to others in the network with needed expertise. Students are involved, where appropriate, and work under the direction of knowledgeable faculty because real-world learning enhances students' skills and can make graduates more valuable to future employers.

CIICs assist with projects in key economic sectors: alternate and renewable energy; construction; digital media; environmental technologies; health and life sciences; hospitality and tourism; information/communication technologies; manufacturing and materials; and viticulture and agri-business. They provide a wide range of services including needs assessment, technical solutions, prototype development, knowledge/technology transfer, new/enhanced products and services, market research and feasibility studies, and proof-of-concept funding. CIICs also can work with companies to identify potential funding sources and develop proposals to programs for which the company might qualify.

For example, School of Manufacturing Sciences Chair Dr. John Makaran is currently working with lead CONII partner Humber College and Wind Simplicity Inc. on a small environmentally-friendly wind turbine. The company's Windancer™ is expected to be less costly, more efficient and more adaptable to Canadian weather than the large imported turbines currently on the market. It has the potential to provide low-cost and renewable energy, especially in remote areas of the country. The company has developed and tested several prototypes. Fanshawe is assisting in product specification and validation.

To connect with CONII at Fanshawe College, e-mail the Fanshawe CIIC at coniii@fanshawec.ca or telephone 519-452-4430 ext 4703.



from where i sit

By Greg Weiler

It's all about the body of knowledge.

Once upon a time there was a period called the Dark Ages. Historians tell us those years were characterized by a scarcity of literature, contemporary written history or major artistic and cultural achievements. Most people were illiterate. Public education was nonexistent; the little education that was available was restricted to the wealthy and the privileged.

Since then, enlightened societies have recognized the value of knowledge. They have invested in building and sustaining a body of knowledge to be passed on to subsequent generations. Those generations have understood and used that knowledge to the benefit of society while adding to it new knowledge of their own.

That body of knowledge is the heart of education, learning, research and innovation. From where I sit, education is about helping people learn, be aware of, understand, use and ultimately contribute to our society's body of knowledge.

Universities are recognized as key players in advancing the body of knowledge. Ontario colleges were created in the 1960s primarily to help people to put knowledge to practical and productive use. At colleges, we teach people how to find, understand, assimilate, and apply knowledge. More and more, we also are helping advance the body of knowledge through applied research and innovation activities.

Innovation often is perceived as major transformational breakthroughs – inventions like the wheel, the steam engine, the transistor, the personal computer or the iPhone. In fact, innovation is really just about making changes. Most innovations are incremental and evolutionary, not revolutionary.

When we teach people to put knowledge to work we are teaching them how to innovate. Often innovation goes hand in hand with trying out new ideas to see if they will work, modifying the ones that don't, and experimenting until an outcome is achieved – that's applied research.

Teachers practice applied research every time they experiment and evaluate the effectiveness of new teaching methodologies in their classrooms. Technicians and technologists practice applied research every time they

modify, test and adjust a piece of machinery or a vehicle to achieve a specific goal, such as better performance or greater fuel efficiency.

A recent example of innovation makes the point. A laundry manager for British Columbia's Interior Health Authority (IHA) recently was honoured with an Excellence in B.C. Healthcare Award for his innovative approach to the old, drafty hospital gown. The gown, which ties at the back of the neck but leaves much of the patient's backside exposed, has inflicted indignity upon patients for decades.

But working with a Montreal gown manufacturer, laundry manager Bill Kirkland designed a new gown that closes securely at the front, but is baggy enough to allow medical personnel access to a patient's body for examinations and procedures. Lightweight and made of durable fabric, the environmentally-friendly gowns cost a little more to make, but dry faster in a dryer and last years long than the old gowns. The change in design and material has resulted in a savings of time, labour, energy and cost of replacement. The IHA has ordered thousands of them for provincial hospitals.

That's incremental innovation. Evolution, not revolution.

At Fanshawe, we want to encourage members of the College community to openly embrace this way of thinking and doing – all with an eye on helping our students and our communities solve problems, seize opportunities and achieve their goals and dreams.

We invite you to join us in this evolution.

Greg Weiler is the Dean of Applied Research, Innovation & University Partnerships at Fanshawe College.

next

By Leslie McIntosh



So, what's all of this innovation stuff got to do with teaching students? Start a discussion on applied research and innovation and it isn't long until that question arises.

The recent entry by colleges into applied research and innovation provides an opportunity to challenge some of our basic assumptions about education. In fact, it can be argued that in the 21st Century, colleges are no longer just in the education and training business – we're in the knowledge business.

Much of the Western world's educational thinking appears to be based on the Industrial Revolution production model. A student enters the system, learns the basics, and then goes on to acquire specific skills for a specific occupation. The student graduates, gets a job and works at that job until he or she either retires or dies. Then another graduate is plugged into the system and takes up where the previous worker left off.

That model may have worked many years ago, but we all know the world has changed radically. The rise of globalization has had a significant impact on the labour market. We have experienced more technological innovation in the past 100 years than at any time in human history. College programs are demanding higher and higher skills levels.

Ask employers what is most lacking in employees today and they will point to a lack of so-called "soft" or "generic" skills. Graduates may possess adequate technical knowledge, but can they reason logically, communicate effectively, anticipate/solve problems and apply abstract concepts to a variety of situations? Can they function as both team leaders and team players?

When I was in high school, I struggled with math. I could solve problems if I followed the examples in the textbook. But the moment I had to apply these concepts to problems where there were no specific examples, I was stymied. Did this mean I was dumb? No. What it really meant was that I didn't understand the concept behind the mathematical operation since I had learned it by rote with no real understanding of the process. It was only when I understood what I was doing and why I was doing

it could I apply the concept to other problems.

Some of today's students still try and learn just what they need to pass the test. How many times do college teachers get asked "what material do we need to know for the test?" The answer should be: "You need to know it all. What's on the test is beside the point."

So where does innovation fit in? Innovation projects challenge students to deal with real problems in the real world in real time. Projects may start out with certain assumptions, but they may subsequently be disproven. Multiple factors and obstacles can arise that make the project turn out quite differently than first imagined. Students must learn to change focus quickly, think critically, solve problems and work within the constraints of deadlines, budgets and business agendas. Participation in innovation projects force students to solve the problems that aren't in the textbook.

Is there value to students in this type of learning? To date, there have not been any major studies on college students' perception of the value of applied research because it isn't yet a widespread activity in the Canadian college system. However, the benefits of having university undergraduates do applied research is one of the hottest topics in the U.S. academic community and has been the subject of national conferences sponsored by the National Science Foundation, the Howard Hughes Medical Institute and the American Association of Colleges and Universities.

The prevailing view among students surveyed in these studies is that participation in applied research brings value to their educational experience. And, students being students, there is every reason to believe that college students, if asked, would answer the questions in a similar way. The popularity of college cooperative education programs provides convincing evidence that students, and presumably, their parents, find value in experientially-based learning.

A survey by University of Colorado researchers of

first-year students participating in research with faculty at four U. S. liberal arts colleges showed that 91% of respondents reported gains from the experience. A University of Delaware study of perceived benefits, involving more than 1,000 undergraduates and alumni, showed respondents felt their participation had increased their technical, independence and teamwork skills, improved their ability to overcome obstacles, helped them learn to think creatively, boosted their self-confidence and improved their communication skills. More than 90% of participating faculty also reported gains from the experience.

University of Michigan researchers assessing its Undergraduate Research Opportunity Program (UROP) found that students in the program had an attrition rate 32% lower than UM students in general. A UM-National Science Foundation longitudinal study currently underway indicates that UROP does influence students' academic achievement, retention, behaviour and post-graduate educational and professional activities — all intended goals for the program. These results have been validated in numerous other studies.

The National Conferences on Undergraduate Research, an American postsecondary educational association that organizes conferences for student researchers, notes on its website that "what once was primarily an activity undertaken by faculty at four-year schools has become an important pedagogy for teaching and engaging undergraduate students and revitalizing the curriculum..."

"We believe that undergraduate research is the pedagogy for the 21st century. As an increasing body of evidence makes clear, inquiry-based learning, scholarship, and creative accomplishments can and do foster effective, high levels of student learning".

Leslie McIntosh is the editor of Research Fanshawe and Senior Project Developer in the Centre for Applied Research, Innovation & University Partnerships (ARIUP).

researchfanshawe

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Grow your applied research and innovation career with our seed funding

The Centre for Applied Research, Innovation & University Partnerships (ARIUP) administers small, internal seed programs designed to help Fanshawe College employees engage in applied research and innovation activities. There are no deadlines. Expressions of Interest (EOIs) are accepted and reviewed year-round.

Curriculum Innovation Fund (CIF)

CIF grants must have direct linkage with the College mission and goals, and meet project criteria, including sound project design, potential for success, and short and long-term academic, resource and financial considerations.

Pilot Innovation Fund (PIF)

PIF provides funding for innovative, educational-related projects that do not fit in with the CIF program.

Research Innovation Fund (RIF)

RIF grants are one-time awards for applied research projects of modest scope. Preference will be given to applicants who intend to use their projects as a basis for eventually seeking external funding.

EOI forms and guidelines are available on the ARIUP website at www.fanshawec.ca/research

For more information on these programs, contact:

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