

Fanshawe College FIRST: Fanshawe Innovation, Research, Scholarship, Teaching

ResearchFanshawe Magazine

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ResearchFanshawe Magazine Issue 4

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Q&A

A few minutes with... Jamie Mackay

Q. As Fanshawe's VP External, you focus primarily on colleges' second mandate, namely impact on communities and the economy, is that correct?

A. Well, a major focus of mine is selling Fanshawe to government and our community. While Fanshawe College's focus is the education and training of students, the working world is their ultimate destination, and that is where they will make their marks. Preparing students for jobs is what we do, why we do what we do, and why government and citizens support it.

Q. How do colleges impact the economy?

A. Producing qualified graduates and providing co-op students to business and industry are the obvious ways. But, in order for companies to compete and prosper in the global economy, innovation is essential. Many SMEs do not have – or cannot afford – people to do R&D. They are too busy keeping up with the daily demands to think about inventing new products or processes, or improving old ones.

Q. How can colleges help?

A. Colleges have a lot of expertise, facilities, knowledgeable faculty and students eager to help. In addition, colleges often can offer a whole host of other services, including market research, marketing and business plan assistance. Both the federal and Ontario governments have recognized the value colleges can bring to the table and are making more programs open to college researchers. The success of the Colleges Ontario Network for Industry Innovation (CONII) initiative was the first step in that direction.

Q. What has Fanshawe's focus been to date?

A. What we are trying to accomplish is to both build internal capacity and establish partnerships in sectors in which we can contribute. We are involved in a number of projects with SMEs, especially in renewable energy and sustainability, through our new Centre for Sustainable Energy & Environments (CSEE) and CONII. What we focusing on right now is our new partnership with the City of London and The University of Western Ontario in a new Advanced Manufacturing and Green Park (AMGP), where we'll work directly with business and industry.

Q. What are the plans for the new AMGP?

A. That's confidential right now, but we'll be unveiling our plan in due course. You can be sure it will focus on helping London become an innovation leader, will involve students, and will mark the next definitive phase in Fanshawe's innovation evolution.

Q. That's an optimistic assessment, but surely there are challenges?

A. The greatest challenge colleges have is making research funding agencies and governments understand that we are financed very differently from universities. Some funders assume our faculty spend a portion of time doing research and have fewer courses to teach than many actually do. Some funders don't provide money for release time or replacement costs in their programs. Unlike faculty at universities, college faculty do not have paid research time. So when faculty members are involved in research for part of their week, others may have to teach some of the courses those people would have taught had their time not been used for research. That's often an extra cost for colleges, and one which is not covered by our current operating grants.

Q. How would providing release/replacement funding help the economy?

A. Colleges have made tremendous headway in working with businesses. For the most part, they have done these projects on a shoestring. Just think of the economic impact we could make if we actually had the resources to do more.

Jamie Mackay joined Fanshawe College in August 2009 as Vice-President, External Relations. Mackay was Vice-President of Policy and Analysis for the Council of Ontario Universities and has held senior positions in postsecondary education and government including director of the Universities, Student Support, Corporate Services and University Relations branches of the Ministry of Training, Colleges and Universities. Mackay has an Honours BA in History and Political Science from the University of Waterloo and a Master's degree in Public Administration from Queen's University.

newsflash



Canada Foundation
for Innovation

Fondation canadienne
pour l'innovation

Feds announce new college research infrastructure fund

Colleges, polytechnics and institutes will now have access to a special research infrastructure fund administered by the Canada Foundation for Innovation (CFI), the federal government announced July 26.

A total of \$32.5 million will be available for research equipment and infrastructure to enable colleges to support applied research and innovation projects with the private sector. Minister of State for Science & Technology Gary Goodyear made the announcement at St. Lawrence College in Kingston. The fund comes after a recommendation to the federal government by the Association of Canadian Community Colleges (ACCC). The first requests for proposal will be issued in December, Goodyear said.

The new fund is the first specifically targeted to colleges since the late 1990s, when CFI introduced the College Partnerships Program (CPP). CPP ran for two years, during which time Fanshawe received funding for two applied research projects in air quality and assistive technology.



Dr. Roger Fisher

Fisher joins ARIUP team as research consultant and mentor

Dr. Roger Fisher has joined the Centre for Applied Research, Innovation & University

Partnerships (ARIUP) as Fanshawe's first Research Consultant. As the research consultant, Fisher will provide direct assistance and mentoring to faculty and staff to encourage and support engagement in applied research. His duties include helping faculty and staff develop research skills, design research projects, select methodologies and prepare research ethics applications.

"Roger will be a valuable asset to the ARIUP

team as we continue with our mandate of creating an innovation culture at Fanshawe College," says Dean of Applied Research & Innovation Greg Weiler.

Fisher was seconded for the one-year position from his previous job as a faculty member in the School of Language and Liberal studies. Over the past several years, he has conducted numerous externally-funded research studies ranging from Canadian college faculty attitudes toward applied research to student retention issues, studies that can be read online in the Publications, Presentations and Articles section of the Research Fanshawe website. Fisher can be reached at rfisher@fanshawec.ca or by telephone at (519) 452-4430, ext. 4586.

Painting London's industrial landscape green

Thanks to the City of London, Fanshawe College and the University of Western Ontario will soon be assisting business and industry in a new Advanced Manufacturing and Green Park (AMGP). Earlier this year, the city gave Fanshawe and Western a total of 35 acres of industrial land - 25 to UWO, 10 to Fanshawe - for research and innovation facilities and activities. The land is located in the city's Innovation Park on Bradley Avenue, just east of Veterans Memorial Parkway. Both institutions have 10 years in which to come up their plans for the site.

Western announced that it will build its Wind Engineering, Energy and Environment Dome (WindEE dome), the world's first hexagonal wind tunnel at the site. The university also recently confirmed a deal with Germany's Fraunhofer Institute of Chemical Technology to partner on an international composites research centre at AMGP where automotive and aerospace companies can develop new, lightweight materials.

Fanshawe currently is developing its plan for the site, which will focus on research and development with small and medium-sized enterprises (SMEs) in the fields of alternate energy and renewable energy technologies.

The partners hope the new facility will be an asset to area companies, help attract new industries and jobs to the city, and provide valuable learning experiences for postsecondary students who will be involved with various research projects.

Fanshawe joins WORLDiscoveries

Fanshawe College has become one of the newest members of the WORLDiscoveries Tech Transfer Consortium, a London-based business development initiative that helps commercialize research through licensing and new company spin-offs.

"The College is open for business and this is an important opportunity for us to advance our objects while making London increasingly attractive for investment. With our renewed focus on research and partnerships with the private sector, it was a natural progression for us to become part of WORLDiscoveries," says Greg Weiler, Fanshawe's Dean of Applied Research, Innovation & University Partnerships.

Fanshawe's membership comes at a time when the R&D community is moving toward a greater sharing of limited resources and expansion of partnerships. WORLDiscoveries has provided industry connections and sector-specific knowledge to area researchers, has created eight start-up companies and has generated more than \$5 million in annual licensing income from research in London.



Otte Rosenkrantz

New REB chair, 2010-11 schedule announced

The Fanshawe College Research Ethics Board (REB) has elected Otte Rosenkrantz as its 2010/11 chair.

Rosenkrantz is a faculty member and a curriculum consultant in the Centre for Academic Excellence. In addition, five new people have joined the REB as full or alternate members. REB also released a list of its 2010/11 hearing dates, which fall on the second Thursday of each month from September to June.

For a complete listing of members and hearing dates, visit the REB's webpages (on the Research Fanshawe website) at <http://www.fanshawec.ca/EN/research/research/463.html>.

Ontario Colleges:

TAKING A BIGGER BITE OUT OF INDUSTRY RESEARCH

by Lisa E. Boyes

Industry and Ontario colleges came to the table four years ago to collaborate on workforce shortages, and those talks over breakfast ultimately led to a much fuller plate of R&D opportunities for SMEs and colleges working together on industry-generated projects.



Linda Franklin

“That was the start,” says Colleges Ontario President and CEO Linda Franklin, “of what is now a robust network of applied-research projects among small-and-medium-sized enterprises (SMEs) and colleges. Industry representatives did most of the talking at that first breakfast. The fact that they spoke of early R&D needs already being met demonstrated that colleges have valuable connections to industry, and energized faculty and students.”

But what was still needed—hence the industry advocacy—was both additional public financial support and a larger critical mass of college researchers to leverage what industry was providing in terms of opportunities and resources for applied research.

It turns out that industry advocacy is synchronizing with provincial and federal policy. Over the past several years, the Ontario Innovation Agenda (OIA) and Canada’s Science and Technology (S&T) Strategy have increasingly supported the productivity of SMEs. These companies, with 500 employees or less, represent most of Ontario’s and the country’s businesses, according to Statistics Canada. They have a large potential to expand the economy and jobs through innovation or improvements in products, processes and services.

But many SMEs need more resources in order to innovate. As a result, the OIA’s cornerstone funding agency, the Ministry of Research and Innovation (MRI), as well as the federal Natural Sciences and Engineering Research Council (NSERC), and a FedDev Ontario program now have significant funding available to colleges of applied arts and technology for research on SME-based problems. Project completion timelines are approximately six to 12 months for provincially-funded programs, and up to five years for federally funded college/industry projects.

MRI’s Colleges Ontario Network for Industry Innovation (CONII) was Ontario’s first public funding program for industry/college R&D in 2006. The provincial government has renewed CONII at the level of \$10 million through to 2013.

“What SMEs are seeing is a concerted commitment from several government levels to put colleges more fully in the R&D game with us,” says John Breakey, president of business-communications technology and consulting firm Unis Lumin Inc. in Oakville.

Breakey sits on CONII’s Project Allocation Committee, which assesses college applications for funding on industry-led applied

research projects. “As a result of CONII,” Breakey adds, “20 Ontario colleges are able to step up and partner with industry on process development or improvement, proof-of-principle projects and testing, and business and commercialization services.”

To date, CONII has created industry-driven collaborations among more than 400 Ontario SMEs and 2,000 college faculty and students, including industry/college partnerships at Fanshawe College. Ontario companies can access up to \$30,000 in funding through CONII. All CONII-member colleges respond to an industry R&D request within five to 10 business days. For colleges, their return on investment is the engagement of faculty and a range of students on industry projects, thereby contributing to the relevance of college curricula and the up-to-the-minute skills of college graduates in their chosen fields.

The next important step for industry and college partnerships is more rigorous evaluation of their impact on Ontario businesses and the Ontario economy. Through its partnership with the Ontario Centres of Excellence, CONII will have a system to survey and track this impact by December 2010, says CONII operations director Vanessa Williamson. Evaluation will be based on such metrics as industry revenue and marketplace reach, job creation, and industry satisfaction with colleges’ contributions to their applied research.

Meanwhile, Colleges Ontario is coming full circle in its advocacy efforts with industry to boost their use of college research expertise and resources. “I expect there is a large enough group of Ontario SMEs who still don’t know what colleges can do for them,” says Franklin. That may begin to change with college networking at the Ontario Chamber of Commerce’s annual, high-level Ontario Economic Summit in October 2010.

For further information on support for industry applied research at Fanshawe College, please contact Greg Weiler, Dean, Centre for Applied Research, Innovation and University Partnerships, at conii@fanshawec.ca.

The next important step for industry and college partnerships is more rigorous evaluation of their impact on Ontario businesses and the Ontario economy.

research 101

DEMYSTIFYING THE LITERATURE SEARCH:

Choosing database and defining parameters

Editor's note: For the next two issues, the Research & Database Services Staff (R&DS), part of our resource news team, will provide expertise in that most critical of all first steps for researchers — the literature search.

All research projects begin with a thorough, in-depth search of the research literature in your field. Library & Media Services provides high quality academic resources for conducting your literature search. Although some researchers include books or book chapters in their key literature, most research literature is concentrated in proprietary databases of peer reviewed journal articles.

Fanshawe College subscribes to many of the same databases and resources available through university research libraries. Searching databases that contain authoritative, current research will provide you with an up-to-date snapshot of what's been done in your field. This can help you identify gaps that may lead to research ideas, and provide the foundation for your research project. In addition to Fanshawe resources, we have reciprocal borrowing agreements in place with other colleges and universities to enable you to access a wider spectrum of scholarly information.

The first step in your literature search is to identify the databases that contain research published in your topic area.

You can find the best databases for your literature search by:

- Reading database descriptions on Fanshawe's Virtual Library;
- Conducting trial searches in various databases and looking at where your best results are coming from;
- Consulting the subject guides in Virtual Library, which include some key databases for each subject area);
- Asking R&DS staff to help you identify the best databases.

Once you've identified the databases you want to search, you need to set up the parameters for each search.

Literature searching is like panning for gold.... once you've found the right stream (database), you will want to improve your search technique to get the most nuggets per pan (your search strategy).

A good search involves multiple iterations, where you may refine your search terms or you may impose limitations on your search as to type of publication, date, etc. Seldom does even the most expert researcher get the best search on the first try!



Before you begin searching, it may be useful to write down different facets and subjects of your proposed research. Also note alternate terms that may be synonyms or similar concepts to enrich your searches and get the best results. Replacing one search term with another during the search process may alter your results set dramatically. Being aware of alternate terminology, and reviewing any controlled vocabulary or jargon in your subject area will aid in making your searches effective and inclusive.

Since you're trying to find all of the relevant literature in your field, you'll want to fill your pan to begin with, then narrow your search strategy to bring up fewer irrelevant articles. Upon seeing your first set of search results, you may experience anxiety from too few or too many results. This is common, and can be fixed by changing the search terms that you are using.

For instance, if you have too few results, you could try searching more broadly using more general or an alternate term, add alternate terms using "or", or if you have set up an 'x and y and z' search, consider dropping a term. If you have too many results, you could focus your search by adding terms using 'and' statements, or by using more specific terms. You may also decide to impose limiters on the type of article (i.e. only peer reviewed journal articles), or specify a limited date range in your search parameters.

Being over/underwhelmed with search results only means that you must try using a different set of search terms and limits to find the most relevant materials for your research.

Part II: Running your search, saving results and updating your search. Watch for it in the next issue of research fanshawe!

If you have any questions about accessing or searching the resources available in the Virtual Library, please contact Martha Joyce, Liaison and Instruction Librarian at mjoyce@fanshawec.ca, ext. 4556 or ask any member of the Research and Data Services Team at the Library's R&DS Desk, ext. 4169 or ext. 4275. We are here to help you! We love research and would be happy to talk to you about your project and how we can support your work.



The Research & Data Services Team. First row, left to right: Martha Joyce; Linda Crosby; and Donna Sevenpifer. Back row from left: Arla Longhurst; Pam Goettl; Tony Onorato; and Nancy Rushton. Absent from photo: Ayshin Mousavi and Marshall Lemon.

CSEEding what learning can become

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

Together with colleagues, the CSEE team – Dr. Solomon Asantey, Tom Davis, Steven Ries, Dr. Ke Liu, Reg Chavis, Martin Volkening, Amneh Kalloush and chairs Dr. John Makaran (Applied Science & Technology), Dan Douglas (Building Technology), Rob Gorrie (Motive Power Technology) and Helen Pearce (Design) – are turning that concept into reality. Just one year into the project, CSEE is rapidly becoming a catalyst for engaging college students in project-based learning and teaching them the research, thinking and problem-solving skills needed in the new economy.

CSEE is an applied research centre of expertise that focuses on the emerging “green industry” -- energy generation, energy management and sustainable communities

“The biggest gift you can give to students,” Makaran noted, “is relevance”.

– the latter embracing everything from renewable energy to environmentally-friendly urban planning, buildings, design, and recyclable materials to energy efficient transportation and communications technology. At present,

the Faculties of Technology and Arts, Media & Design are involved in a series of sustainability projects, some of which are related. Many of the projects involve private sector partners. New projects, other College areas and new researchers are expected to be brought onboard as the centre's activities expand. (Descriptions of current projects appear on pages 8-9.)

Some team members recently sat down with *research fanshawe* to discuss the new centre of expertise. CSEE, said faculty member Tom Davis, “is an opportunity to practice what we preach. It's a chance to teach interprofessional practices and provide students with skills that are relevant to the market place.”

Chair Dr. John Makaran acknowledged that CSEE doesn't follow the traditional model of pedagogy, a statement with which fellow chairs Dan Douglas and Helen Pearce agreed. “We are somewhat breaking with the university model of learning through traditional lectures and getting back to the roots of applied learning in an innovative, creative way.” Douglas said.

Makaran added CSEE is a means to engage students in relevant topics in sustainability, can better prepare them to work in the real world, and, should they go onto university, prepares them for university graduate work. Pearce noted that project-based learning is an excellent way of teaching students how to think.

Faculty member Martin Volkening, who also teaches project management, said getting students involved in relevant real-life projects with business, industry and community partners teaches students discipline, builds team work skills and provides great learning experiences that can give college graduates an edge in today's competitive job market. Volkening added that placing students in a learning environment where outcomes aren't necessarily known or predictable forces them to work “outside their comfort zones” and challenges them, all the while allowing them to make and learn from their mistakes.

Research at the centre, noted Davis, contributes to many of the environment goals adopted by our society and will provide Ontario with the highly skilled and qualified personnel needed for development of a “green” economy.

And there is evidence to indicate that students are open to this new way of learning. About 50 students have so far been involved in the centre's seven foundational projects, either via class projects related to their program curriculum, or engaged individually as research assistants or in co-op placements. One project quickly filled five out of six available spots, and another CSEE research job posting received 10 applications, more applications than any other external co-op opportunity offered to the students in that semester.

Beyond the obvious benefits of skills development, the academic managers are excited by the idea of increased cross-disciplinary collaboration. Pearce said the team shares a “big picture” view of environmental and sustainability issues, understanding that it is a broad concept that takes in many disciplines and can involve students from many programs. It's a plus for Fanshawe and “could be the start of many things” for the College, she said. Externally, it raises Fanshawe's profile and provides another way for the College to contribute to the community.

Describing the team as a band of “true believers”, Makaran said, that despite the various internal challenges encountered along the way, the CSEE team “collectively realizes the value of what we are doing. It's all about the student experience. We are increasing the chances of students getting

work and providing companies with the skilled people they need. Project-based learning represents a different, and more effective, way of educating students, in my opinion”.

“The biggest gift you can give to students,” Makaran noted, “is relevance”.



1. Dr. John Makaran
2. Amneh Kalloush
3. Dr. Ke Liu
4. Dan Douglas
5. Dr. Solomon Asantey
6. Reg Chavis
7. Helen Pearce
8. Rob Gorrie
9. Martin Volkening
10. Steven Ries
11. Tom Davis



New energy and environmental centre seeds more faculty-student innovation projects

Seven foundational projects were included in the original proposal for the Centre for Sustainable Energy & Environments (CSEE). But the initiative has caught the imagination of other Fanshawe researchers and is rapidly becoming a larger portfolio of projects coming together under the CSEE umbrella.

Faculty members Tom Davis, School of Building Technology, Martin Volkening, School of Applied Science & Technology and a student team are working with the BMO Financial Group on a sustainable design standard for bank branches. BMO has committed \$1 billion to the goal of becoming carbon neutral by the end of 2010. The Fanshawe team will review designs of approximately 1,000 branches coast to coast to evaluate the environmental sustainability of the existing network, and to provide recommendations on design improvements that could be implemented in future renovations. This process also will be used to evaluate the approximately 100 new branches per year BMO hopes to open. Similar evaluations will be conducted for the Harris Bank of Chicago, owned by BMO, which operates about 500 branches in the U.S.

School colleague Kerry Traynor, co-investigator and School Chair Dan Douglas, and a team of students are working with the Fanshawe College Student Union and Habitat for Humanity London to develop sustainability kits for home owners, residential homebuilders, and college students and administrators. The kits are expected to include a variety of information materials and aids that not only will facilitate energy conservation, but will lead to behavioural change. Initially funded by a Research Innovation Fund (RIF) grant, that project now has a grant from the Colleges Ontario Network for Industry Innovation (CONII).

Over in the School of Design, two projects are underway, both of which have received funding support from RIF and CONII. Interior Decorating program coordinator Julie McIntyre, colleagues Russell Schnurr, Eli Paddle and Wayne de Groot, an architectural technology professor, and students are engaged in a design charette with Habitat for Humanity London in which the students will determine the feasibility of, and create sustainable models for, affordable housing. In the second project, Urban Planning program coordinator Russell Schnurr, colleagues Laverne Kirkness, Eli Paddle and Ben Billings and their students are creating designs for the redevelopment of the Port Stanley Harbour in partnership with the Port Stanley Business Improvement Area and involved municipalities. The harbour was acquired by the Municipality of Central Elgin from Transport Canada. The series of designs the students will create and present to the municipal partners will be used by them as they embark on community consultations and further planning.



About the Centre for Sustainable Energy & Environments

Harnessing renewable energy resources, exploring new ways of recycling and reusing, and developing efficient and sustainable communities in the broadest sense is the focus of Fanshawe College's new applied research centre, the **Centre for Sustainable Energy & Environments (CSEE)**. CSEE brings together College expertise, students, business, industry and the community to address problems and issues facing the planet. Companies - especially small and medium-sized enterprises (SMEs) - tap into Fanshawe expertise and resources to solve problems, or innovate or develop products, services or processes. Companies benefit in the short-term from the R&D help, but also benefit in the long-term since they are contributing to the training of highly qualified personnel - students - who may become their future employees. Funded by a grant from the College and Community Innovation Program (CCI), administered by the Natural Sciences and Engineering Research Council of Canada (NSERC), CSEE projects also have private sector partners and funding support from the Ontario Ministry of Research & Innovation, the Ontario Research Commercialization Program (ORCP), the Ontario Centres of Excellence (OCE), and the Colleges Ontario Network for Industry Innovation (CONII). Seven foundational projects were included in the original CCI proposal.



Improving the Efficiency of Solar Arrays

This project, undertaken by principal investigator and School of Applied Science & Technology Chair Dr. John Makaran and faculty co-investigator Martin Volkening, examines how solar collectors

perform in the Canadian climate and how weather patterns affect energy generation. Many standard solar panel components are designed for the hot, dry Californian climate, not for the Canadian climate. Virelec Ltd., a renewable energy systems integrator, is the private sector partner. The project received a grant from the Ontario Centres of Excellence and also has been awarded a CONII grant for a second phase.



Beams & Slabs Project

This project investigates ways of increasing the strength and durability of concrete used in building and transportation structures. This project involves training students in the design and workmanship skills needed to improve strength and durability

of concrete through experimentation. As a result of this project, student team members entered the 2010 Pre-Stressed Concrete Institute's (PCI) **Big Beam Competition** and competed against other North American universities to design and construct a 15-foot pre-tensioned concrete beam. The Fanshawe team won second prize in their category and was only one of two colleges entered in the competition. (See page 15 for more details.) Investigators: Dr. Solomon Asantey, and Amneh Kalloush, School of Building Technology.



Next-Generation Wind Turbine & Generator

This project focuses on the design, construction and testing of a 2.5kW wind turbine prototype for use in urban areas. It will be installed at a test site and built by School of Building Technology

students. Vital Group, a local wind turbine manufacturer, is the industry partner. Investigators: Dr. John Makaran and Martin Volkening, School of Applied Science & Technology and Dia Mossa, President, Vital Group.



Orientation-Specific Solar Controlling Window Design (OSSCWD)

A variety of shading applications can be used in buildings, including canopies, louvers, shelves, blinds, and window coatings/films. This faculty-

student applied research project explores the feasibility of using these shading devices as solar collectors. Since these applications have the potential to significantly impact the architectural features of a building, part of this research will be to look at the seamless incorporation of these solar elements into building design. Investigators: Steven Ries and Dan Douglas.



Solar-Powered Utility Vehicles

Current limitations on battery energy management and recharging processes currently make ongoing use of solar technology to power small utility vehicles impractical. Researchers on this faculty-student project will attempt to

improve these systems, and also study novel motors and motor drives. A donated golf cart served as a frame for the prototype, but the technology would be applicable to other small conveyances such as airport ground utility vehicles. A future project will explore the feasibility of using the technology to power larger vehicles. Investigators: Dr. Ke Liu and Dr. John Makaran, School of Applied Science & Technology.



Solar Power Station Optimization

Ontarians can now sell solar-generated power to the provincial power grid. A control and feedback system that can better manage that energy is timely. In partnership with London Hydro, researchers and students from the School of Applied Science & Technology are developing

an algorithm to facilitate the transfer of solar power to the grid and designing an improved energy management system. The project includes simulation and feasibility studies, system design, construction, testing and proving. Investigators: Dr. John Makaran, Dr. Ke Liu, Martin Volkening and company CEO Dr. Vinay Sharma.



Utilization of Harvested Energy Through Active Technology (UHEAT)

High performance buildings offer superior performance in a variety of areas without necessarily increasing capital costs. The

purpose of this faculty-student project is to explore the feasibility of incorporating passive solar heating and cooling hydronic loops to supplement building requirements for heating and cooling, to provide excess energy for sidewalk and/or roadway de-icing in winter, to off-set urban heat island effects, and to facilitate building cooling in summer. The project also will explore the use of low voltage and conventional ground source heat pump technology to power these systems when less solar energy can be collected, e.g., on cloudy days and at night. Investigators: Dr. Solomon Asantey, Tom Davis, and Dan Douglas.



Up on the roof

The first of two planned green roofs is growing atop a building at the London campus. The 850 square-foot green roof – made up of six different varieties of sedum -- was installed atop D Building over the summer by a team of Fanshawe co-op students. A second is slated for installation at the new Centre for Applied Transportation Technology, a few blocks east of the London campus. First developed in Germany in the 1960s, green roofs help reduce noise, improve air quality and generate energy savings. The students received training and professional certification in green roof installation through a partnership with Caradoc Green Roof, a local company.

Building a more efficient Fanshawe

by John Huff

Small steps. Big difference.

When it comes to reducing energy consumption at a community college, particularly one like Fanshawe -- with a sprawling main campus and the population of a small city -- it's the simple things that really count.

While Fanshawe's students and researchers focus on developing green technologies for the future, the College is taking advantage of existing opportunities to be more energy efficient and preserve the environment. In recent years, Fanshawe has made significant investments in upgrading lighting, heating, ventilation and cooling (HVAC), and other systems as part of an ambitious campus renewal program. The College also continues to explore evolving green-based technologies that support conservation and sustainability. For example, Fanshawe has installed:

- Energy efficient lighting and daylight harvesting technology, including some solar and LED light installations that cut down on energy and last longer, requiring less frequent replacement and maintenance. Upgraded lights and systems in London's J-Gym will reduce energy consumption in that facility by an estimated 65%.
- Occupancy sensors that turn lights off and reduce temperature when rooms are empty, as well as flexible fixtures in certain areas that can be programmed to dim when maximum output isn't necessary.

- A College-wide building automation system that optimizes the efficiency of HVAC systems, plus real-time operating systems on electrical meters that allow facilities staff to monitor energy usage on an up-to-the-second basis and determine the effects of efficiency measures. Similar systems will soon be installed on gas meters.
- Premium efficiency motors with variable speed control on all major fan systems and pumps – “smart” technology that slows down motors when maximum heating and cooling are not required.

Fanshawe also is looking at ways to implement sleep mode on the approximately 4,000 computers in operation on the London campus. Shutting those machines down when they aren't in use will mean major energy savings for the College. New emphasis has been placed on recycling and conservation as well through such initiatives as electronic pay stubs and online hiring processes that reduce paper consumption. Composting programs also are putting kitchen waste to more productive use.

In addition to retrofits on existing buildings, the College is building a green focus into new buildings. The new Centre for Applied Transportation Technologies, scheduled for completion in March of 2011, will feature a vegetated green roof that uses drought-resistant plants to help keep the building cool in hot weather, maximize storm water retention, and protect the roof membrane from the sun's rays.

Taken together, all of these efficiency improvements add up to a significantly-reduced footprint for Fanshawe – a small step to building not only a more sustainable campus, but a more sustainable community.



Shining a light on solar research

Research team members and Fanshawe staff (from left) Robert Bray, Nathan Gerber, Dr. John Makaran, Dan Douglas and Martin Volkening, all associated with the new Centre for Sustainable Energy & Environments (CSEE), recently installed a solar array atop B Building at the London campus. Teams of faculty, staff and students currently are working with partners on a number of CSEE applied research projects, including a study on solar array efficiency with Virelec Solar Ltd. CSEE is funded by a five-year grant from the College & Community Innovation Program, administered by the Natural Sciences & Engineering Council of Canada (NSERC).

Greening of Business course focuses on sustainable operations

by John Huff

What difference does a light bulb make? How about unplugging unused appliances or installing sensor faucets? Are small acts of “green” really worth the time and effort for businesses?

Yes they are, and Fanshawe’s students are proving it, thanks to a new course in the Lawrence Kinlin School of Business.

The Greening of Business is a crash course in energy-efficient and environmentally-friendly business practices, introduced in the fall 2009 semester. Students look at the costs and benefits of sustainability in the workplace, researching new technologies and new ideas that are helping companies go green, save money, and enhance their corporate profile – then test those ideas in the real world.

Central to the course is a community-based project that has students working with local businesses to help them improve the green side of their operations. Students work in groups of up to three, offering their client an initial hour-long assessment, followed by a thorough report with recommendations. The reports focus on effective ways to reduce energy consumption and save money, from using energy-efficient light bulbs and appliances to installing programmable thermostats and improving window weatherstripping. There is also a focus on recycling and using recycled materials.

It’s a challenging assignment. Students have to find their own clients, and then make presentations based on their findings – excellent practice for life in the corporate world.

“The course is putting a spotlight on something that is becoming bigger and bigger in business,” says Tanya Wickett, who helped develop and teaches the course. “Businesses want to be aggressive and innovative and competitive. In order to do that, they know they need to market themselves more green. I think they understand the benefits, but they’re looking for help.”

Participating businesses have been impressed with the results so far. Over the past two semesters, about 30 clients have been part of the program, including restaurants, a spa, and even a campground. Students have shown those businesses many simple – and a few not-so-simple – ways to make greening a priority. Whether they have recommended dual flush toilets or suggested a vegetated green roof, students have opened their clients’ eyes to new possibilities, and to potential cost savings.

Students involved in these projects have not only done some good for the environment, but have given themselves an advantage in the job market.

“Greening is not a fad,” Wickett says. “It’s a trend that’s not going away. People want to be a part of it, but they just don’t know enough. Our students will be able to walk in with some extra tools on their belt and some extra features they can add to their profile. This is a job they could even pitch for themselves at a company.”

New programs, facilities highlight green strategy for Ontario’s colleges

Fanshawe isn’t the only college in Ontario that has made sustainability a priority. Many colleges across the province have not only built more energy-efficient facilities, but developed programs aimed at training students for jobs in an emerging green economy.

St. Lawrence College will officially open its new **Wind Turbine and Trades Training Facility**, a state-of-the-art learning environment for students in the college’s Wind Turbine Technician, Brick and Stone Masonry, Industrial Electrician, and Millwright programs, in fall 2010. A full-size wind turbine nacelle will be installed at the facility.

Algonquin College is demonstrating green building practices in the nation’s capital, courtesy of the **Algonquin Centre for Construction Excellence**. Scheduled to open in the fall of 2011, the building is LEED platinum certified, and will be a showcase and teaching laboratory for best practices in sustainable construction. Among many green innovations, the facility will feature a storm water recovery system that will capture rainwater to flush toilets; solar panels to provide some power and hot water; and a four-storey, plant-covered biowall to help control humidity and clean the air.

Last fall, **Lambton College** launched the **Suncor Sustainability Centre**, which brings the college together with industry and community organizations under one roof to combine their resources and study local sustainability. The centre is now home to the Bluewater Sustainability Initiative, the Industrial Educational Co-operative, Community Awareness and Emergency Response, the Sarnia-Lambton Environmental Association, and Lambton’s own sustainability initiatives.

With renewable energy and a green commitment in mind, **Durham College** is midway through a massive renovation of its Whitby campus. Durham also launched two new programs - Energy Audit Techniques and Renewable Energy Technician - in 2009 to meet demand for green energy jobs in the next three to five years.

Seneca College has developed degree, diploma, and certificate programs aimed at preparing students for green jobs. One of these is a Green Business Management graduate certificate that teaches students to integrate environmentally responsible strategies into business operations.

Fleming College is engaged in wetland research through the **Centre for Alternative Wastewater Treatment (CAWT)**. CAWT is a hub for constructed wetland and alternative wastewater treatment expertise, research, and resources. Created to facilitate applied research and interdisciplinary interest in studying alternate wastewater technologies for universities and colleges, CAWT has been consulted by the United Nations and the Ministry of Environment.

Georgian College is earning accolades for developing a green corporate culture. The *Globe & Mail* recently named Georgian one of Canada’s greenest employers for its waste reduction and diversion strategies, enhanced environmental literacy, and increased emphasis on sustainability when purchasing goods and services.

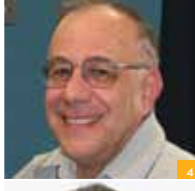
presentations & publications



Dr. Barrow Baldwin, School of Applied Science & Technology, presented the results of a study into variations in air quality and their impact on chronic obstructive pulmonary disease (COPD) patients at the 2010 Canadian Respiriography Conference in Halifax April 30-May 1. **Good Air Days, Bad Airs** examined the levels of air pollution in the London area on specific days during the summers of 2002 and 2003. The data was correlated with the experiences of COPD patients at St. Joseph's Health Care Centre and the London Health Sciences Centre. Co-investigators included the late Dr. Victor Sells, and respirologists Dr. R.G. McFadden and Dr. N.A.M. Paterson, both of the Division of Respirology, Department of Medicine, Schulich School of Medicine and Dentistry, The University of Western Ontario. The research was funded by the Canada Foundation for Innovation, the Ontario Innovation Trust and the Ontario Centres of Excellence, with contributions from foundations and numerous private sector partners.



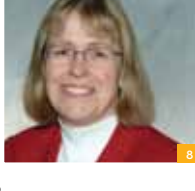
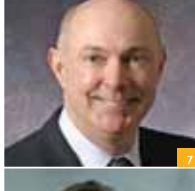
Professor **Anne Hill, School of Human Services**, and a team of colleagues across the country, facilitated the recent **Bridges to Learning 2010: Educational and Assistive Technology (AT) for All** conference in Toronto. Approximately 300 postsecondary educators, educational software companies and agencies serving the disabled participated in the conference May 13-15. An additional 1,000 viewed sessions via live web streaming, facilitated by Fanshawe broadcasting students working under the supervision of Fanshawe faculty members **Greg Latham** and **Michelle Heslop, School of Contemporary Media**. Led for the past two years by Bridges Canada, the conference educates stakeholders about assistive technology and encourages AT research. It was funded by the Social Sciences and Humanities Research Council of Canada, with pre-conference planning support from Fanshawe's Research Innovation Fund.



Dr. Roger Fisher, School of Language & Liberal Studies, spoke at the Colleges Ontario student retention conference May 18-19. **Student Retention: a College-Wide Imperative** also featured a presentation by Fanshawe Vice-President Academic **Dr. Lane Trotter**. Fisher presented the results of his recent study, *Factors Affecting Attrition at a Canadian College*, which was funded by the Canadian Council on Learning. Results of that study indicated that academic unpreparedness, lack of student engagement and gender all play a role in attrition. His study followed 6,500 students in the fall 2007 cohort for three academic semesters. Both Fisher's presentation and his paper can be read in the *Publications, Presentations & Articles* section of the Research Fanshawe website (www.fanshawec.ca/EN/research/research/13038.html).



Dr. John Makaran, Chair, School of Applied Science & Technology, has published an article in the peer-reviewed journal *IEEE Transactions on Power Electronics*. The May 2010 article deals with gate charge controls for MOSFET turn-off in PWM motor drives and comes as a result of his work on solar-powered utility vehicles and battery charging methods.



Makaran also was a presenter at the Wind-Water-Sun Renewable Technologies Conference held at the London Convention Centre March 2, sponsored by the London Economic Development Corporation, London Hydro and Miller Thomson LLP. Makaran's article is posted on the Research Fanshawe website at www.fanshawec.ca/EN/research/research/13038.html.

Professor **Murray Morgan, Lawrence Kinlin School of Business**, made a series of presentations on international business and trade and successful business-education partnerships in fall 2009 and spring/summer 2010. In June, Morgan co-presented with International Business program graduate Emmanuel Asafo Adjei at the Forum for International Trade Training (FITT) in Ottawa. Morgan also co-presented on the topic of innovative business-education partnerships at the Association of Canadian Community Colleges (ACCC) Annual Conference 2010. He presented *Innovation to Win* and *A Business-Education Partnership Model Featuring International Business Management Students, SMEs and the Forum for International Trade Training* at the 10th International Education Business Partnership Conference in Toronto in April. The International Business Management Program earned an Honourable Mention in the 2010 Global Best Awards for a collaborative partnership between the students, FITT, and four London SMEs. Morgan's paper, *Linking SMEs and International Business Students for Global Success*, also was published in *Business Education Forum*, the official publication of the U.S. National Business Education Association in April 2009.

Professor **Marguerite Moore, School of Information Technology**, has published her third book. **Title Searching and Conveyancing in Ontario, 6th Edition** focuses on real property law, and includes land registration, title and off-title searching, title and mortgage fraud. Moore, a lawyer, has extensive expertise in real property law, title searching and land registration technology. The book is published by LexisNexis Canada and can be ordered at www.lexisnexis.ca/bookstore/

1. Dr. Barrow Baldwin
2. Anne Hill
3. Greg Latham
4. Dr. Roger Fisher
5. Dr. Lane Trotter
6. Dr. John Makaran
7. Murray Morgan
8. Marguerite Moore

project file

The project file features recently-funded and completed projects. Some are funded through Fanshawe College's internal seed funding program, the Research Innovation Fund (RIF). Others are funded from external sources such as the Colleges Ontario Network for Industry Innovation (CONII). For more information about funding, contact ARIUP at research@fanshawec.ca.



Dr. Barrow Baldwin, School of Applied Science & Technology, received a RIF grant to present research findings at the **2010 Canadian Respiratory Conference** in Halifax in June. The research into variations in air quality and health impacts was conducted over the past decade by Baldwin and his colleague, the late Dr. Victor Sells and involved 12 Fanshawe co-op students. (See page 12 for more details.)



A RIF award helped get the MOJO working for **Professor Robert Collins** and two students in the **School of Contemporary Media**. Funding enabled the students -Nick Wynja from Radio Broadcasting and Ashley Rowe from Broadcast Journalism - to take part in a major field test of new, advanced electronic newsgathering software developed for the iPhone. The pair worked with software developers Vericorder Inc. and KLZ Innovations, and subsequently used the software to shoot, edit and transmit a series of news reports from the 2010 Olympic Games in Vancouver to the School's newsroom. The grant also included funding to help the companies demonstrate the new technology at the annual National Association of Broadcasters conference in Las Vegas in June. MOJO reports and background info is posted on the Fanshawe website at www.fanshawec.ca/newsroom/olympics2010/mojo2010.asp



Developing wireless sensors modules that can manage energy is the focus of an innovation project by **Professor Sudhir Gupta, School of Applied Science & Technology**. Gupta received a RIF grant and a Proof of Principle (PoP) grant from the Colleges Ontario Network for Industry Innovation (CONII) program for his work. This work represents the development of a new use for wireless sensors.



Dr. John Makaran, Chair, School of Applied Science & Technology, received a RIF grant to support publication of a paper in an international, peer-reviewed journal. The paper, **Gate Charge Control for MOSFET: Turn-OFF in PWM Motor Drives Through Empirical Means** appeared in the May 2010 issue of IEEE Transactions on Power Electronics. The paper is posted on the Publications, Presentations & Articles page of the Research Fanshawe website at <http://www.fanshawec.ca/EN/research/research/13038.html>



Professor Julie McIntyre, School of Design, was awarded a RIF grant for Phase 1 of a project to research and develop sustainable design strategies for affordable housing. The funding supported the literature review and project development activities. Her work will involve design students and form the basis for a collaborative design project with Habitat for Humanity.



Research to support a student project in the **Sustainability of the Built Environment** course is the focus of a RIF-funded project by **Professor Kerry Traynor, School of Building Technology**. During the project phase, students will create kits for consumers that address all three aspects of sustainability - environmental, economic and social.

1. Dr. Barrow Baldwin
2. Robert Collins
3. Sudhir Gupta
4. Dr. John Makaran
5. Julie McIntyre
6. Kerry Traynor



In Memoriam

Dr. Victor E. Sells, a long-time faculty member in the School of Applied Sciences & Technology, passed away January 29, 2010 in his 71st year. One of Fanshawe College's research pioneers, Dr. Sells and his colleagues established

a program of atmospheric research, and were among the first Fanshawe faculty to receive external research grants when the College became involved in applied research in the late 1990s.

A lifelong London-area resident, Dr. Sells earned a PhD in physics from The University of Western Ontario, did post-doctoral studies at Queen Mary College, University of London, England, and was UWO Research Scientist in Atmospheric Studies before joining Fanshawe in 1979. Although he retired in 2004, Dr. Sells continued his work with colleague Dr. Barrow Baldwin, and was actively engaged in research at the time of his death. His infectious enthusiasm, inquisitive mind and desire to use the research experience to engage and enrich student learning was a hallmark of his research philosophy.

Dr. Sells is survived by his wife, Ruth, daughter Rachel, son Steven and four grandchildren. Family, friends and colleagues have established the Victor Sells Memorial Award in Environment Technology or Science Laboratory Technology, to be awarded annually to a deserving student in one of the programs. Contributions to the award can be made by contacting Vicki Hayter, Development Office, at 519-452-4430, ext. 4752 or via her e-mail at vhayter@fanshawec.ca.



from where i sit

By Greg Weiler

Focus is key to building applied research capacity. Where is the best fit between interest, capability, opportunity and potential impact?

This issue of research fanshawe highlights the area of green technologies, just one of our emerging areas of focus.

Our applied research projects in green technologies have converged together under the Centre for Sustainable Energy and Environments (CSEE). CSEE, created to anchor several projects, is funded by a major grant from the federal College & Community Innovation program administered by the Natural Sciences & Engineering Research Council of Canada (NSERC).

The CSEE grant is a five-year, \$2.3 million capacity building grant. What this means is that it is an institutional grant, held in trust by Fanshawe's Centre for Applied Research, Innovation & University Partnerships (ARIUP), and has two primary components.

It funds some of ARIUP's work to help areas of the College develop and manage applied research projects with industry that fit within the CSEE mandate as defined in the grant proposal.

More importantly, ARIUP also is able to allocate funds to cover the incremental costs to execute those projects.

Further project funding comes from other sources including provincial grants, the industry partners, donors, and the in-kind contributions Fanshawe makes such as access to College facilities and equipment.

CSEE is directly aligned with the College's green agenda. It also complements the emerging economic development plans of municipalities in the London region in areas of alternate energy and advanced building materials.

Our vision is to develop CSEE as one of the key applied research areas of the College. Project work initially is based primarily in the Faculty of Technology's Schools of Applied Science & Technology and Building Technology. CSEE has the potential to undertake collaborative projects involving service areas, for example, such as Facilities Management and the Lawrence Kinlin School of Business.

A key research theme in the School of Applied Science & Technology is management of energy from renewable sources such as wind and solar. That research is centred on optimization of systems and components in order to address the complex dimensions of a simple question: when energy is generated from alternate sources, what is the best way to optimize its local use, storage, or transmission to the power grid?

The School of Building Technology's focus is on projects with the potential to create more sustainable, materials, built environments and structures. Projects include exploration of more sustainable concrete for road and bridge construction, development of window coverings for residential and commercial buildings that can function as solar collectors, a solar powered de-icing system for concrete (e.g., parking garages) and sustainable building design and construction.

From where I sit, this is exciting!

We have secured substantial funding to help build one of the key areas of interest identified in our Strategic Research Plan, and we are undertaking projects that are providing enriched learning experiences for our students, faculty, and staff.

The projects will be of direct benefit to our industry partners and our community, and will contribute to a greener, more sustainable environment for us all. The grant is enabling projects already on our books, and projects we haven't even thought about yet!

Stay tuned!

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



Should applied research become the fourth R?

Reading, 'riting, 'rithmetic and... research?

All across North America, more and more postsecondary institutions are engaging students in faculty-led research projects, some with external partners from the private and public sectors. Studies on the value of student participation in applied research projects – also referred to as project-based learning – are encouraging. In study after study, students and faculty identified a common set of benefits including: enhanced technical skills; improved leadership, team work, and presentation and communications skills; stronger problem solving, analytical and critical thinking skills; career path clarification through exposure to the field in projects with external partners; higher student retention and engagement; and increased marketability after graduation.

At Fanshawe, two academic areas in particular have been on the front line of project-based learning, the Faculty of Arts, Media & Design (FAMD) and the Faculty of Technology (FT).

Last February, FAMD's School of Contemporary Media had a unique opportunity to be part of an applied research project that involved the Vancouver 2010 Winter Olympics. Vericorder Technology Inc., a company in Western Canada, had developed software that allows a reporter to record, edit and transmit broadcast quality video and audio reports to a newsroom from the field using an iPhone and iPod Touch. The company was looking for students to field test the product, was willing to pick up many of the costs, and already had engaged a team from the University of Missouri's School of Journalism. Fanshawe was welcome to take part, but participants had to provide their own iPhones, iPods and microphones.

Broadcast Journalism coordinator Bob Collins approached ARIUP to apply for a Research Innovation Fund (RIF) grant to buy equipment

for two student participants. Broadcast journalism student Ashley Rowe and radio broadcasting student Nick Wynja subsequently were chosen. The students' reports from Vancouver shone, and this new approach to broadcasting – dubbed MOJO journalism – became the subject of many news stories and features in broadcast industry publications. (Their reports are posted on the Fanshawe website at <http://www.fanshawec.ca/newsroom/olympics2010/mojo2010.asp>.) Wynja



Ashley Rowe and Nick Wynja

also joined company executives and Collins at the National Association of Broadcasters conference in the U.S., where the Fanshawe graduate helped demonstrate the new technology at North America's biggest and most influential media convention and trade show.

Vericorder was so impressed with Wynja's technical know-how that it hired him for a technical sales and support job. When last heard from this summer, he was in Amsterdam with a company team demonstrating the software to potential European customers. As for Ashley Rowe, you can watch her on CHCH-TV newscasts, where she is now an on-air reporter. Collins says there is no doubt that participation in the research project played a part in the students' success. "By being involved in an innovation project, they had an extra way in which to show their abilities," he says.

Over in the School of Building Technology, an applied research project on beams and slabs, part of the College's new Centre for Sustainable Energy & Environments, became the impetus for an amazing win. The Pre-cast/Pre-stressed Concrete Institute (PCI) of Chicago sponsors the annual Big Beam competition, where student teams have to design, build and test a pre-stressed concrete beam. Each team is judged on most efficient design and other factors. There were only two colleges entered – Manitoba's Red River College and Fanshawe. A Fanshawe team under faculty advisor and researcher Dr. Solomon Asantey took second place in the Zone 7 competition, right behind Red River. More than 50 American university civil engineering teams took part. Building technology chair Dan Douglas says team members Benjamin Cowley, Shane Brimsma, Andrew Okolisan, Jonathan Lampton and Ed Jolliffe "said it was one of the best experiences they'd ever had", and the fact that college engineering technology students could hold their own with university engineering students is a credit to the program.

Considering the few years in which student participation in applied research has been underway in a formal way at the College, both success stories speak to the experiential value of project-based learning.

Reading, 'riting, 'rithmetic and **research**, anyone?

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

researchfanshawe

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