of hydrogen-powered cars,” he says. But a major hurdle remains: the cost of platinum metal needed to make fuel cells efficient.

Fuel cells work by combining hydrogen gas with oxygen from the air to produce nothing but pure water as exhaust and clean electricity for power. At the heart of every fuel cell is an advanced plastic membrane coated with a platinum catalyst. That's where the production of electricity takes place. The membranes are arranged in a system of layers called stacks.

The Holy Grail for fuel cell technology is the reduction or even the elimination of platinum, which is very expensive. “We have to reduce platinum levels to values that are equivalent to those in existing catalytic converters in conventional cars,” says Holdcroft.

The new research network will determine if the amount of platinum can be reduced or eliminated completely. Comprised of nine universities, including 17 faculty, the Network engages a dozen industries and government labs across Canada, making it Canada’s premier network for polymer membrane-based fuel cell research.

Holdcroft is referring to several fuel cell manufacturing initiatives to be located in the City of Burnaby. These involve Daimler, Ford, and Ballard Power Systems in a partnership under the AFCC Automotive Fuel Cell Cooperation Corp.; Mercedes-Benz; and Ballard Power Systems, who will manufacture fuel cell engines for buses. “These are very important steps leading to commercialization of hydrogen-powered cars,” he says. But a major hurdle remains: the cost of platinum metal needed to make fuel cells efficient.

Fuel cells work by combining hydrogen gas with oxygen from the air to produce nothing but pure water as exhaust and clean electricity for power. At the heart of every fuel cell is an advanced plastic membrane coated with a platinum catalyst. That's where the production of electricity takes place. The membranes are arranged in a system of layers called stacks.

The Holy Grail for fuel cell technology is the reduction or even the elimination of platinum, which is very expensive. “We have to reduce platinum levels to values that are equivalent to those in existing catalytic converters in conventional cars,” says Holdcroft.

The new research network will determine if the amount of platinum can be reduced or eliminated completely. Comprised of nine universities, including 17 faculty, the Network engages a dozen industries and government labs across Canada, making it Canada’s premier network for polymer membrane-based fuel cell research.

“Reducing the platinum requirement would have a huge impact on the wide scale deployment of fuel cells, and thus on our ability to reduce our carbon footprint and our dependency on fossil fuels,” says Holdcroft. But solving this problem requires more than engineering. Ideally, the industry would like a completely new, less expensive catalyst, and this requires fundamental chemistry research at the molecular level. Holdcroft expects that advances in nanotechnology, the use of new platinum alloy materials, and new forms of carbon may be part of the solution. “The way to solve these issues is to work together as a team,” he says. With that in mind, Holdcroft has created a network within Canada and around the world to make a breakthrough. He believes the Network’s combined knowledge of the behaviour and properties of materials and molecules will lead to technological advances. SFU is well positioned for the challenge, due to in-house materials science expertise and the availability of advanced equipment in 4D Labs.
Adjusting to Canada’s changing research landscape

MESSAGE FROM THE VICE-PRESIDENT, RESEARCH

Canada’s research landscape continues to evolve in response to shifting national and international pressures. The current federal government is focused on stimulating innovation in key sectors, while eliminating redundancy in its science and technology programs and balancing its budget by 2015. This is a zero-sum game: new research initiatives must be supported through realizing and reallocating savings from existing research programs. While some feel that this shift towards applied team-based or industry-relevant research is a good strategic move for Canada, others warn that it will negatively affect fundamental research and hinder scientific discovery.

It is becoming clearer how the latest budget will be reflected within the granting councils. For example, facing cuts this year and next, the Natural Sciences and Engineering Research Council (NSERC) initially announced that it would phase out the Research Tools and Instruments (RTI) program after the 2012-13 competition and place a moratorium on its Major Resources Support (MRS) program. Several interest groups and individuals have demanded some redress, arguing that these programs have a huge impact on training new researchers and providing essential research resources.

NSERC President Dr. Suzanne Fortier has since announced that NSERC has formed a small committee to examine the possibility of continuing a reduced RTI program. Consultations with the scientific community are ongoing. For the MRS program, Dr. Fortier prefers other funding options through the Canada Foundation for Innovation (CFI), subject to additional monies being received.

The Social Sciences and Humanities Research Council (SSHRC) and the Canadian Institutes for Health Research (CIHR) have also made changes to their program architecture to adapt to the evolving research climate.

SFU researchers are more dependent on federal government sources for their research funding than the average Canadian university, where the private sector plays a larger role. I will continue to promote SFU’s unique research strengths, and to represent the needs of SFU’s researchers, at federal and provincial levels. Internally, we have allocated resources from our budget and the University Priorities Fund to provide bridging grants for NSERC- and CIHR-funded researchers in addition to the SSHRC 4A grants, small grants, and travel grants.

My office will continue to work with the SFU research community to identify and seize new avenues of funding. We will also continue to promote the high return that SFU researchers generate from investment. SFU stands in ReSearch Infosource’s spotlight for both the quantity and quality of its research publications, with the greatest publication impact of any Canadian comprehensive university. Internationally, SFU ranks among the top 25 world universities under 50 years of age, according to the QS (Quacquarelli Symonds Limited) ranking and in the top 30 according to the Times Higher Education ranking. SFU also holds a “Very High” classification for its research intensity, a measure of citations per faculty relative to institutional size and focus. Further, SFU’s faculty and students are garnering attention for research creativity and innovation. Indeed, knowledge mobilization with cultural, economic, and societal impact is a signature of SFU’s research. SFU holds its own against larger, older institutions with respect to the input, output, and impact of its research. As a young, engaged university, SFU can nimbly adapt to Canada’s changing research landscape.

SFU physicist on ATLAS executive

He will become chair in March 2013, when he will move to Geneva for one year. The PubCom is responsible for reviewing all papers and scientific notes published by ATLAS, an international collaboration of nearly 3,000 physicists and engineers studying the basic structure of Nature at the highest energy densities ever achieved in the laboratory. Mike says, “It’s like being on a thesis supervisory committee but you are interacting with more senior people so it’s more challenging.”

With this new appointment, Vetterli will join the Executive Board of ATLAS. He says, “As part of the executive, you are in on many high-level discussions and you get to express your opinions.” ATLAS is one of the largest experiments at the Large Hadron Collider at CERN and started recording data in 2010 with the aim to understand Nature’s deepest secrets.
Interdisciplinary math

A SYSTEMS APPROACH TO MULTIDISCIPLINARY RESEARCH

According to founder and director Peter Borwein, it's difficult to sum up IRMACS in a word. “Collaboration” might work. Or “innovation.” It's a big story,” says Borwein, a mathematics professor at SFU. “It doesn't lend itself to one-line encapsulations.” He admits that when he dreamed up the Interdisciplinary Research in the Mathematical and Computational Sciences (IRMACS) Centre, he didn't realize what a unique community he was building.

IRMACS was established in 2004 as a centre for interdisciplinary research with mathematics and computer expertise at its core. Researchers use IRMACS's state-of-the-art computational, visualization and communication resources to solve real-world problems.

“Our projects are tied to a practical reality,” says Sandy Rutherford, Scientific Director of the Complex Systems Modeling Group (CSMG) at IRMACS. CSMG works closely with provincial ministries to analyze healthcare and justice systems. Their computer models predict the impact of policy changes. “A lot of police work involves dealing with people with mental illness,” says Rutherford. “Changes in the health care system have significant impacts on the criminal justice system.” CSMG computer simulations often predict how change in one part of the system may have unexpected consequences in other areas, a valuable tool for those in charge of resource planning. For example, CSMG has developed models for the BC Ministry of Justice on the impact of the province's impaired driving legislation on case flow. Deputy Solicitor General of BC Lori Wanamaker cites this project as “just one example of the valuable opportunities that can be achieved using complex systems modelling and advanced computational technology... Such research parallels the effects of the British Columbia Justice Reform Initiative to address the current challenges of the province's criminal justice system.”

“This lets us manage the system rather than the system managing us,” says Helen Pedneault, Executive Advisor for Justice Process Reforms and Performance Measures in the Ministry of Justice.

But IRMACS isn't just for large-scale government projects. Meeting rooms, workspaces, video conferencing and computational clusters are available to researchers who apply to use them. “We currently support 50 research projects,” says IRMACS's Technical Director, Brian Corrie. “We’ve gone to great lengths to make this a place where researchers want to be.” Scientists from various disciplines work next to each other and learn from each other's research. “We facilitate collaborations that wouldn’t likely happen otherwise,” says Corrie.

One example is the Modelling of Complex Social Systems (MoCSSy) graduate program at IRMACS. It brings together experts in criminology, health sciences, and urban dynamics to model and study social issues such as crime, homelessness and addiction. Students receive interdisciplinary training and often the opportunity to work with industrial or government sponsors, to develop a better understanding of the complicated dynamics of social systems.

With seven years behind it, IRMACS has submitted a proposal to the Canada Foundation for Innovation for PRISM (Practical Research and Innovation through complex Systems Modelling). This next-generation research institute will focus on conservation and bioinformatic infrastructure for health research. It will also increase support for Aboriginal initiatives, and share graduate programs both within SFU and with international partners to become the premier collaborative interdisciplinary research centre in Canada and possibly the world.

AWARD WINNERS
The Office of the V-P., Research wishes to recognize and congratulate the following recent award winners:

- **Computing scientist Pavol Hell**, a world expert on graph theory was named a 2012 SIAM Fellow. Hell is one of 35 members of the Society for Industrial and Applied Mathematics (SIAM) selected by their peers for the 2012 Class of Fellows.

- **Vice-President, Research and professor of chemistry B. Mario Pinto** is the recipient of the 2012 Canadian Society for Chemistry R.U. Lemieux Award for research in organic chemistry, for his contributions in synthesis, conformational analysis, NMR and molecular modeling protocols.

- **Global health professor Craig Janes** received a medal from the Mongolian Government for his work on Mongolia’s public health system. Janes studies health reform, maternal health, climate change, and mining development. He is writing a book summarizing his work.

- **Charles Krieger of Biomedical Physiology and Kinesiology** is among a select group of 30 Canadians to receive the Queen Elizabeth II Diamond Jubilee Medal from the ALS Society of Canada. Krieger studies ALS, or Lou Gehrig’s disease, as well as Alzheimer’s.

- **Business professor Leyland Pitt** co-authored an article on luxury wine visibility in social media that received both the Outstanding Paper Award and best paper of the year in the publication *International Journal of Wine Business Research*.

- **SFU alumni Camilla Speller** and Bal Kang begin two-year Marie Curie Fellowships this year. Speller will be at the University of York in September where she will research the ancient DNA of whales. Kang is at Oxford developing his methods to create pharmaceutically relevant compounds.

- The **SFU Beedie School of Business** was ranked #54 out of 1,000 business schools surveyed around the world for its business and management research. The ranking is based on article downloads by institution, and is published by the US-based Social Science Research Network, a leading repository of business academic papers.

- **Physics graduate student Colin Truncik** won an NSERC Alexander Graham Bell Graduate Scholarship worth $105,000 for his PhD research. Working with David Broun, Truncik studies heavy fermion materials, which, at ultra low temperatures, behave as if they had 1,000 times more mass.

- **Alexandra Fedorova of the school of computing science** is among 126 outstanding Canadian and American researchers to receive a prestigious $50,000 Sloan Fellowship in 2012. Fedorova leads the Systems Research Group at SFU and co-founded the SyNAr (Systems, Networking and Architecture) lab. She is also a project leader in the GRAND NCE. Her research focuses on system design for multicore processors and on parallel computing.
Innovation Office news

SPINOFF WELICHEM BIOTECH SIGNS AGREEMENT
Steifel, a GSK company, has agreed to acquire exclusive development and commercialization rights from Welichem Biotech for their novel anti-inflammatory agent WBI-1001 currently in phase II clinical development for the treatment of psoriasis and atopic dermatitis. The drug arose from SFU biology professor John Webster's research on nematode worms. Welichem will receive $35M and is eligible for additional payments upon achievement of certain clinical development milestones and commercialization.

LOCAL START-UPS ADVANCE IN THE BCIC NEW VENTURES COMPETITION 2012
From a total of 146 entrants, 11 SFU-related companies have advanced to the semi-finals of the BC Innovation Council New Ventures Competition. They are: MobiSafe, NeuroMash, semiosBIO, Action Sports Concepts, New Heights Creative, Squeezease, Zellchip, Warranty Life, Contract Tailor, Secodix and Mazza Innovation. The three finalists in the competition share $235,000 in cash and service awards. Best wishes to all BCIC New Ventures participants. Details: www.newventuresbc.com/the-competition/

LUNGPACER WINS BCTIA TECHNOLOGY IMPACT AWARD
SFU spin-out company Lungpacer Medical Inc. received the Most Promising Pre-commercial Technology Impact Award from the BC Technology Industry Association at a ceremony in June. Lungpacer is an early stage medical device company based on the nerve cuff research of Biomedical Physiology professor Andy Hoffer. It helps get intensive care patients off mechanical ventilators. Secodix, a past participant in the SFU Technology Mentorship Program, was a finalist in the 2012 awards program. www.bctia.org/Community/Technology-Impact-Awards/

STUDENT COMPANY WINS NASA CONTRACT
SFU Beedie School of Business graduates Ben Sparrow and Joshua Zoshi are having a great year. Not only is their company Saltworks Technologies number two on BC Business Magazine’s list of BC’s 20 Most Innovative Companies, but they have also been contracted by NASA to develop a product that could be used to treat the water onboard the International Space Station. Saltworks develops and delivers solutions for solving complex water treatment challenges. www.saltworkstech.com

VENTURE CONNECTION CLIENT SCORING BIG TIME
CKM Management was named official sports management company for the Canada National Inline Hockey Team. More at: ckmsportsmanagement.com

VENTURE CONNECTION CLIENT HIRETHEWORLD MAKES BC BUSINESS TOP 20
HiretheWorld, a graduate of the SFU Venture Connection mentorship program for student entrepreneurs, has made BC Business Magazine’s list of BC’s 20 Most Innovative Companies. The company was cofounded by Beedie School of Business alumnus Terry Beech, his brother Doug, and School of Computing Science alumnus Arash Afrooze. HiretheWorld allows users to access graphic design talent from around the world through a competitive online contest.

READY TO ROCKET
BC management consulting firm Rocket Builders has published their list of companies with the greatest potential for revenue growth in computing, cleantech, and life sciences. Fourteen companies associated with SFU are named this year, including spinoffs Switch Materials, Bionic Power and Lungpacer Medical. Also making the list is emerging life sciences company Texts4Health, co-created by SFU Beedie School of Business alumnus Bella Hwang, and winner of the inaugural Coast Capital Savings Venture Prize. Other SFU-associated companies on the list are Clevest Solutions, Clio, D-Wave Systems, Optimo Technologies, V7 Entertainment, Awesense Wireless, Energy Aware Technology, Saltworks, Guard RFID Solutions and SemiosBIO Technologies.

SURREY BOARD OF TRADE TOP 25 UNDER 25
Michael Cheng, a Venture Connection client through his company WittyCookie has been named a Top 25 under 25 by the Surrey Board of Trade. Cheng was recognized for his work with TEDxSFU and his other entrepreneurial endeavours.

STUDENTS WIN BCNET DIGITAL MEDIA CHALLENGE
Vera Lukman of Computing Science is the 2012 winner of the BCNET Digital Media Challenge, a student competition recognizing technology innovation. Lukman’s project, BitNapkin, is a mobile drawing app for collaboration anywhere, visually and verbally, in real time. The 3rd place prize went to Interactive Arts and Technology student Winnie Chung, team leader for INAMOMENT, an interactive and collaborative performance combining dynamic movements with motion tracking and social media.

ACE 2012 REGIONAL CHAMP
Matias Marquez of online gift card business Buyatab.com is the latest Venture Connection client to be recognized at the annual Advancing Canadian Entrepreneurship (ACE) Awards. He received $1,000 as 2012 regional champion, and was a finalist at the national competition in May.

STARTUP CANADA YVR TOWN HALL EVENT
SFU, in collaboration with Startup Canada, BCIC, BCTI, ECUAD and UBC, will host a town hall dialogue on September 18, 2012. Speakers from across the local startup ecosystem will highlight themes such as mobilizing knowledge and the role of universities, researchers, and students in the innovation economy. Watch for event details on the V.-P., Research website.
Research park DNA

WHAT’S BEHIND THE SUCCESS OF RESEARCH PARKS LIKE STANFORD?

SFU Beedie School of Business professor Ian McCarthy has advice for anyone planning to develop a research park: “Imagine that it’s ten years in the future and the Wall Street Journal is writing about how amazing your park is—about all the things it has achieved. You should be driven by that long-term goal, instead of by short-term opportunities and revenue from renting space.”

Stanford University is famous for its immensely successful research park, but when universities across the world copied that model, the results varied considerably. McCarthy wanted to know why and he borrowed a technique from evolutionary biology to find the answer.

McCarthy started out studying engineering in England. One of his early research projects mapped the evolution of the automotive industry from craft production to mass production to lean production. While visiting his University of Sheffield PhD supervisor, McCarthy was inspired to investigate research parks using the same approach. “No one had looked into the DNA of research parks to understand what makes some parks succeed where others fail,” he says. His colleague Mark Collard, an SFU professor of archaeology and also a graduate of the University of Sheffield, suggested that McCarthy try cladistics, a method for mapping and describing the genesis, development and diversity of systems that evolve.

No stranger to outreach, McCarthy employs online and social media to share his work, which he feels strongly will provide strategic blueprints to engage university research park developers worldwide. One of his recent papers received the Business Horizons Best Article Award 2011 and has garnered a high number of citations within a few months. McCarthy has been described as one of the top business professors to follow on Twitter. In 2010, he won the TD Canada Trust Distinguished Teaching Award. His current research park investigation was initially funded by a collaborative Fulbright New Century scholarship. This research is part of the Human Evolutionary Studies Program that is funded by the SFU Community Trust Endowment Fund.

“The evolutionary model I’m focusing on has three processes: variation, selection, and retention,” says McCarthy. Variation creates many different strategies or “species” of university research parks across the world. Selection then deems some park strategies to be viable. Retention is the process whereby successful parks or their specific strategies are imitated by other parks around the world. “We want to understand the mechanisms that give rise to diversity and why some kinds of research parks are selected and others aren’t,” says McCarthy. Using interview data collected from managers at 15 parks in four different countries, McCarthy and colleagues have identified several management themes that create successful parks. These include:

- Specialization – single industry or multi-sector (both can work, depending on circumstances)
- Business development services – training, networking, community, and investment
- Governance – board diversity, including entrepreneurs and investors with administrators
- Growth strategies – acreage or building limitations, development potential
- The university context – park proximity to university, location (rural versus urban), private versus public, and research strengths.

McCarthy claims the most successful parks are those that concentrate on a single sector. “Parks are like gardens, so a garden with only one type of plant is going to require a less diverse set of expertise and resources,” he says. Multi-sector parks grow at varying rates, in different directions and have dissimilar resource and development needs which makes their management much more complex. Single sector parks are easier to run, but the number of potential tenant firms is smaller.

In addition, parks that actively promote community and personal networks are more likely to survive. Ever the Englishman, McCarthy advises putting a pub in the middle of every research park so as to facilitate the flow of knowledge and social capital needed to develop new ventures.

A supportive, altruistic environment generally increases the success rate of a park, prompting McCarthy to make a final surprising observation: non-profit parks are much more successful than those which focus on generating income from rental or business development services. He says, “A park’s success is found in a nurturing environment, which helps businesses thrive so they create wealth for the entire community.”

In addition to his role as a business professor, Ian McCarthy is an avid cyclist, British football fan (Everton FC), and a yo-yo collector.

“A park’s success is found in a nurturing environment, which helps businesses thrive so they create wealth for the entire community.”
Clean, quiet and fast, electric or hybrid vehicles are the future of automotive transportation. But today’s models could be even more efficient if improvements were made to their air conditioning systems. “It takes as much energy to run the air conditioning as it takes to push the car to 80 km/hr,” says Todd Pratt, CEO of Future Vehicle Technologies (FVT), maker of a high performance electric sports car in Maple Ridge, BC. FVT is an industrial partner in a $1.38M research collaboration led by SFU engineering science professor Majid Bahrami. This next-generation system will improve the efficiency of lithium/ion battery systems in electric vehicles. One idea is to use the low-grade heat generated by the batteries, power electronics and electric motors to power a new adsorption air conditioning system to cool the passenger compartment as well as the batteries themselves. Bahrami says, “A major problem with these electric vehicles is that as soon as you use the battery to drive a compressor in the air conditioning unit, you reduce the driving range of the vehicle by up to 38%.” By exploiting waste heat to power the air conditioner, Bahrami’s technology avoids this problem. “That’s why both NSERC and Automotive Partnership Canada has funded this project,” says Bahrami. The Canada Foundation for Innovation and Natural Sciences & Engineering Research Council of Canada are contributing $798,906. “Refrigeration and air conditioning research has been overlooked in Canada,” says Bahrami. He points out that 8% of the energy consumed by human society is related to refrigeration and air conditioning. Think of the storage and transport of milk, for instance. Virtually all refrigeration systems are based on a vapour compression cycle in which a compressor runs on electricity and ultimately from fossil fuels, so refrigeration has a significant greenhouse gas component. “We need to shift to low grade thermal energy sources, temperatures of 200°C or less, to create sustainable air conditioning systems,” says Bahrami. This is heat that is typically discarded, such as the exhaust from an internal combustion engine or car radiator. Adsorption cooling has been around for 150 years. It adsorbs a refrigerant (e.g. water or methanol) with no environmental impact because all the materials are benign. The key bottleneck is finding a way to enhance heat and mass transfer inside the adsorption beds, the heart of the system. “Our focus is a zeolite and water pair,” says Bahrami. His research team is working on reducing current bulky systems by employing microstructure porous media. “I’m very excited about this. It’s one of the hottest research areas in the world,” says Bahrami. “If we can do it, we’ll be one of the pioneers in this area.” Bahrami spent his undergraduate years at Sharif University of Technology in Tehran. He then worked for five years in the air conditioning industry as a researcher in Iran, Germany and Canada before completing a PhD at Waterloo University. He came to SFU in January 2009. Bahrami says, “We are very serious about alternative and sustainable energy conversion systems and we are open to collaboration. Our lab is one of the best in the country, when it comes to sustainable refrigeration research.”
Igniting BC’s creative economy

SFU RESEARCHERS ORGANIZE A CONFERENCE BRINGING TOGETHER GOVERNMENT, BUSINESS, THE CREATIVE SECTOR, AND RESEARCHERS TO STIMULATE THINKING, POLICY, AND ACTION

Early on a Friday morning in May, about 100 creative artists, academics and policy-makers filled a lecture hall at SFU Vancouver. They were there to watch Iain Black, President and CEO of the Vancouver Board of Trade, interview Ryan Holmes, the founder and CEO of Hootsuite, a wildly successful Vancouver-based social media management company. Topics ranged from venture capitalist financing to exit strategies. Holmes talked of “exiting” when Hootsuite is valued at a billion dollars, a fantastic thought for the start of a conference on creativity.

This event was part of the first annual BCreative conference, the brainchild of SFU Publishing professor Rowland Lorimer, who saw the need for British Columbia’s creative sector to attain a greater presence in the government’s economic and cultural policy. “It’s an attempt to engage in a different way than we traditionally have in getting these groups talking together,” says Lorimer. “For a book publisher to listen to Ryan Holmes throw around those numbers, it gives them a sense of the realities of digital industries. We want the creative sector to hear about building companies of that magnitude and thinking about what opportunities and collaborations might be built.” Lorimer is director of the Canadian Centre for Studies in Publishing at SFU. He points out that Canada’s creative sector accounts for 7.4% of GDP and 1.1 million jobs. “We need to understand the creative economy better to invest in it and try to move it forward,” he says.

The conference was organized by SFU Publishing workshop coordinator Suzanne Norman. “People are realizing the importance of working together at the grass roots as opposed to having government dictate to the sector how policy should be done,” she says. Presenter Mark Jamison, CEO of Magazines Canada, agrees: “The goal is to get collaboration among siloed cultural sectors. Then you can advance to what kind of infrastructure you might need.” BCreative is one way SFU can engage these communities.

The event was primarily an opportunity for people involved in creative business to meet. Most of the presentations were about money and business, not about art and culture. Participants learned how much money is being made in Ontario’s book publishing industry, or the movie industry in Paris, France. Presenter Karen Thorne-Stone, director of the Ontario Media Development Corporation, described the work of this crown agency reporting to the Ontario ministry of tourism culture and sport. “We are not an art council, we are an economic development agency focused on the creative sector,” she says. OMDC programs include tax credits, direct investment, a film commission, and international business development services. Lorimer would like to see a similar organization for BC.

Keynote speaker Edna dos Santos-Duisenberg (Chief, Creative Economy Programme United Nations) presented a certificate of cooperation to Cheryl Geisler, dean of the Faculty of Communication, Art and Technology at SFU. Program. The network is a platform to facilitate knowledge sharing, partnerships, and exchanges of information by building synergies among partner research institutions around the world. Duisenberg said, “It was great to learn about the recent initiatives and the determination of British Columbia to foster its creative economy.”

Rowland Lorimer, who saw the need for British Columbian’s creative economy to attain a greater presence in the government’s economic and cultural policy, said, “It was great to learn about the recent initiatives and the determination of British Columbia to foster its creative economy.” Duisenberg, an economist, is a cousin of the late Wim Duisenberg who, as the first president of the European Central Bank, launched the Euro in 2002.

Richard Smith, SFU communication professor and director of Vancouver’s new Centre for Digital Media says, “The days of looking at the demise of various cultural industries, like book publishing, are over. It’s exciting to see people embracing new digital models and engaging with new ways of doing things.” He cites as an example Louis CK, who put his comedy videos online for free, but with the option to buy them for $5. He made a million dollars overnight. In Canada, singer songwriters who put their music online with similar payment options are averaging $1.30 a song, more than what they could get by selling their music through iTunes. As another singer songwriter once said, “The times, they are a-changing.”

Process feedback helps learners

Imagine being a student and having to write an academic paper filled with arguments, such as “Global warming is a fiction.” Two SFU Faculty of Education professors, Phil Winne and John Nesbit, have developed an online learning tool called nStudy that helps students to research and write about such debatable claims. It offers a variety of study aids, including the ability to tag content, add notes, and create knowledge structures by linking related information.

Co-developed with Allyson Hadwin of the University of Victoria, nStudy is more than just a set of tools for students. It’s a sophisticated way for researchers to examine how learners go about tasks. “It traces learning events,” says Winne. As learners select and organize content, make notes, develop glossaries, and draft essays, nStudy tracks what they do. Each action is captured in a learner’s private database, and presents a picture of each cognitive “step” along the path toward learning goals. Researchers can then use that data to study the learning process.

Logs of the data for one student, or thousands, can be mined for patterns. “Using those patterns, we believe we can understand and accelerate how learners evolve from novices to experts,” says Nesbit. “For example, expert writers have cognitive structures they’ve built over years. Using the data nStudy collects, we hope to identify those structures, then design software tools students can use to develop expertise.”

Funded by Social Sciences and Humanities Research Council grants, their projects extend prior research on self-regulated learning, the actions learners choose after considering what helps or hinders them reach their goals. For instance, changing one’s approach to revising an academic paper or fine-tuning one’s studying skills.

A central topic of Winne and Nesbit’s research is process feedback and how it can help learners make better decisions. They will examine how factors such as motivation and beliefs about knowledge affect learners’ decisions, and how learners adapt in response to such feedback.

“NStudy, as hundreds or thousands of learners work away on assignments, data is flowing back to our servers. Those data can then be analyzed using tools we’re developing,” he says.

Winne and Nesbit are excited about scaling up nStudy for use in hundreds of classrooms. “That could have a huge impact,” says Winne. If every student at SFU used nStudy in just one course, that would exponentially accelerate research on learning theory. At the same time, it would help students develop practical, lifelong learning skills.

Nesbit will use nStudy and several new extensions in his own undergraduate course. He and Winne invite other SFU professors to join them as they dynamically blend teaching with research. Contact Phil Winne at winne@sfu.ca or John Nesbit at nesbit@sfu.ca.