

# KPU RESEARCH ACTIVITY 2018

## ACCESS TO CLEAN WATER

The purpose of this presentation is to share urgent information about the paramount human rights challenge of the 21st century, which is access to clean water. Ross Pink, a Political Science faculty member, noted that the disappearing Arctic ice will cause flooding in coastal cities and that chronic drought will cause food prices to skyrocket. Dr. Pink also described innovative solutions to the impending water shortage.

Supported by the 0.6% Faculty Professional Development Fund



## FROM WASTE TO CLEAN FOOD

A group of KPU and SFU researchers combined their expertise to work together on the recovery of waste energy and design of alternative energy systems and efficiencies which will contribute to fully closed and energy self-sufficient greenhouses in the future. Trials with medicinal herbs are also taking place as potential future greenhouse crops for these climate controlled GHG-free greenhouses.

Supported by the Natural Sciences and Engineering Research Council and three local companies



## SUSTAINABLE AGRICULTURE FOR WILDLIFE AT ALAKSEN NATIONAL WILDLIFE RESERVE

For the Alaksen National Wildlife Area (NWA) the Institute for Sustainable Food Systems at Kwantlen Polytechnic University, in partnership with the Sustainable Agricultural Landscapes Laboratory-University of British Columbia, will be investigating alternate agronomic practices that support and enhance wildlife habitat within the Alaksen NWA and the general function of the farming operations.

The research will provide guidance on a proposed strategic research agenda to provide necessary information to develop an agricultural management plan to enhance the habitat function of the refuge.

Supported by Environment Canada



## BUILDING UP ACADEMIC MOMENTUM THROUGH A LEARNER'S EYE

The aim of this research project is to study the benefits and challenges of online learning. Ultimately, Laurel Tien, a Health faculty member, wants to understand and generate the Living Theory on student experience in online education by delving into the learner experience of the process.

The findings of this project will be presented in multiple conferences, including the International Transformative Learning Conference taking place in November 2018.

Supported by the 0.6% Faculty Professional Development Fund



## VALIDATION OF GENE TEST RESULTS

The focus of this research led by Health Science student, Sydney Gloanec, is on the application of nutrigenomics, a newly emerging science which aims to study the continuous interactions that take place between one's genome and diet. The results from this study will add reliable evidence to the growing body of knowledge regarding nutrigenomics and the legitimacy of personalized nutrition.

This work may serve as a basis for the direction of future studies concerning diet quality improvement and advance personalized nutrition practice, optimizing individual and population health and creating efficiencies in health care expenditures.

Supported by KPU's Office of Research and Scholarship



## DIMINISHING SALT DAMAGED SOIL ON FIELD CROPS

Deborah Henderson, Director of the Institute for Sustainable Horticulture, is exploring a potential treatment to mitigate crop losses due to salt damaged soil by building on a 2016 field study which documented the benefits of adding micro-organisms to a potato crop in a salt damaged field located in Delta. The goal of this project is to study the effects of enhancing the microbial population in very poor soil and have an increased knowledge on how to use them effectively.

Supported by the Investment Agriculture Foundation of BC, Dhaliwal Farms Ltd., and KPU



## LIVING TO THE FULLEST

A Music faculty member, Jodi Proznick, created the music for the performance piece "Perfect Imperfections: The Art of a Messy Life". Through the combination of dance, voice, comedy, music and poems, this project aims to evoke what it means to live sensuously while utilizing video and photography to document the creative process leading up to the performance.

The goal is to impact faculty and students through workshops, performances and presentations at KPU in the 2018/2019 school year - offering a living example of the integration of theory, practice, process and product.

Supported by the 0.6% Faculty Professional Development Fund



## CULTIVATING A HEALTHY COMMUNITY

This research is a collaborative effort between the Institute for Sustainable Food Systems (ISFS) at KPU and the Tsawwassen First Nation (TFN) to build the Tsawwassen Farm School to support a new generation of First Nation farmers. Incubator plots give students access to a parcel of land on the farm to hone their crop production and skills using ISFS technical expertise for up to three years after graduation.

The long term vision is to establish the farm as a community hub with opportunities for members of the TFN to build a cultural connection to the land.

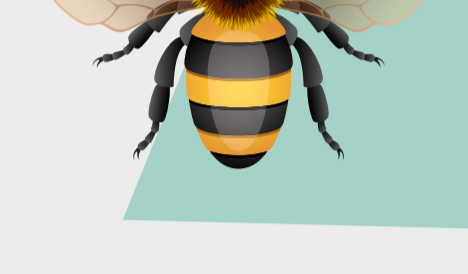
Supported by the G & F Financial Group



## HOW ANXIOUS AND CALM BUMBLEBEES ANALYZE DECISIONS

A group of Psychology students and a Psychology faculty member aim to test bumblebees' (Bombus impatiens) preferences for occupied flowers when the occupier is relatively larger than the workers that are foraging for the first time by comparing stressed workers' flower choices to those of non-stressed workers inside of a radical maze. While the phenomenon of Bombus impatiens visiting occupied flowers is well established, the reason for this preference is unclear. This proposed experiment seeks to fill this gap of knowledge by attempting to understand the dynamics of workers' preferences for occupied flowers.

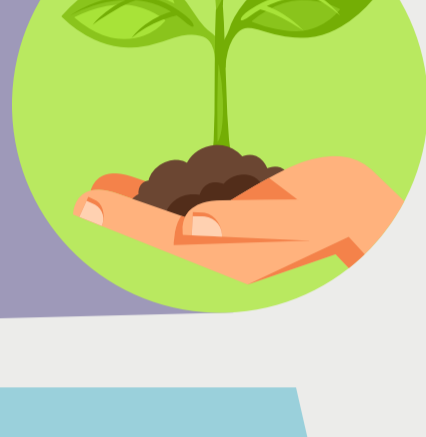
Supported by KPU's Office of Research and Scholarship



## INTERRELATION OF ENVIRONMENTAL AND CULTURAL CHANGE

Dr. Julia Murphy, an Anthropology faculty member and Alexander Stark, a student from Sustainable Agriculture and Food Systems, are conducting research on how environmental and cultural change are related in the Calakmul region of southern Mexico. This is an area where the effects of climate change are particularly acute. Mr. Stark is exploring how changing rainfall patterns are affecting agricultural practices and livelihoods of indigenous Maya campesino/as. Dr. Murphy is continuing research for a book describing two decades of cultural and environmental change in Maya communities in Calakmul.

Supported by the 0.6% Faculty Professional Development Fund, an Educational Leave and Student-Led Research Grant



## ARCHAEOLOGICAL EXPEDITION TO DOCUMENT THREATENED MONUMENT

Brian Pegg's research consisted of a field visit to Southeastern Utah to examine spectacular but remote archaeological sites belonging to Ancestral Puebloan peoples which are only accessible by long hikes or by paddling. The purpose of the visit was to document the condition of the sites, many of which were located within the former Bears Ears National Monument, a protected area rescinded by US President Trump very early in his term. The sites are currently threatened by vandalism, looting, and resource development.

The outcome of this research was a detailed photographic record of the sites and their current deteriorating condition to be used in multiple anthropology courses and in class discussions related to the management and protection of important heritage.

Supported by the 0.6% Faculty Professional Development Fund

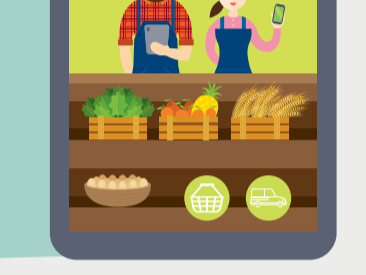


## BRIDGING THE GAP BETWEEN FARMERS, CONSUMERS, AND RESTAURANT BUSINESSES

The purpose of this research is to give Sustainable Agriculture students an opportunity to apply their degree program knowledge and answer real world questions: What types of vegetables or livestock are suitable to grow on a small parcel of land in the Township of Langley? Who will buy the products and for how much? What are ways to ensure a long term relationship between producers and buyers?

The outcome of the project is a report published at: [kpu.ca/isfs/langley-township-food-system](http://kpu.ca/isfs/langley-township-food-system) and a resource guide that will be published on the Institute for Sustainable Food Systems website by March 2019 and can be used to promote food production and increase economic viability of Township of Langley farmers.

Supported by KPU's Office of Research and Scholarship



## PLAYING VIDEO GAMES TO LEARN WELL

This research project seeks to investigate the connection between metacognition, academic performance, and videogame use. Shih-Chieh Chen, a Psychology student, wants to address a concern of educators of the effect of videogame use on learning through metacognition and becoming self-regulated learners.

This work will inform if the same cognitive improvements from playing videogames by employing problem solving skills, planning, resource management, and deliberate practice can be transferred to metacognition within the context of learning where students plan their studies, manage their resources and implement efficient study strategies and if that relationship is mediated by game complexity.

The results will be presented at 2018: NOWCAM and Connecting Minds. Furthermore, it will be submitted for publication in a journal titled Personality and Individual Differences.

Supported by KPU's Office of Research and Scholarship



## CONTEXTS OF SOCIALLY MEDIATED IMAGES OF THE BODY ONLINE

Faculty and student researchers from journalism are examining the uses, misuses, meanings, and miscommunication regarding everyday sharing of images of the body online, particularly via social media. The researchers aim to explore the detailed experiences and surmises associated with ethics applications on socially mediated images of the body. This paper will provide a handbook of methodologies and research ethics concepts that published researchers have experienced in conducting empirical studies on selfies.

The goal of the project is to summarize and write up the findings to present at conferences in the field of social media studies and publish the work in academic journals.

Supported by KPU's Office of Research and Scholarship



## TRACKING EYE MOVEMENTS...

A Psychology major student, Angela Giesbrecht, is leading an investigation on the cognitive processes that enable people to implicitly and explicitly understand others' beliefs. This research project investigates adults' ability to understand incorrect belief of others and whether adults act egocentrically by being biased by their own private knowledge.

Giesbrecht presented the preliminary results at the 2018 Northwest Cognition and Memory conference as well as Connecting Minds. The full findings will be written into a manuscript to be submitted for publication.

Supported by KPU's Office of Research and Scholarship



## FOOD SYSTEM DESIGN, POLICY AND STRATEGY

The Institution for Sustainable Food Systems aims to utilize food system design methods to the Okanagan and Township of Langley to advance community focused food systems, the use of agriculture lands and present a strategy for working to actualize local-regional food systems. The Township of Langley will use this information and recommendation for the imminent revision of their Official Community Plan.

This research will benefit the advancement of food system design methods across Canada.

Supported by the Real Estate Foundation of British Columbia



## USING DARK WEB CRAWLER TO UNCOVER HIDDEN WEBSITES

The objective of this research is to design a dark web crawler that uncovers any suspicious and malicious websites from TOR network (invisible web) which automatically updates itself and archives the previous versions and links. Led by Dr. Mandeep Pannu, a Computer Science and Information System faculty member, the proposed system database will give enforcement authorities the ability to search both the current TOR data and previous versions to detect and remove suspicious and malicious websites.

Supported by the 0.6% Faculty Professional Development Fund



## HOP FLOWERS' GENETIC AND ENVIRONMENTAL PARAMETERS IN BC

Dr. Mathias Schuetz, a Science and Horticulture faculty member, is utilizing a molecular biology approach to conclusively identify different Hop (*Humulus lupulus*) cultivars and use analytical chemistry techniques to document the impact of environmental factors and genetic differences that flavor/aroma profiles have when grown in different Hop farms around BC. This project will establish a Hop research program at KPU using the research infrastructure, creating opportunities for collaboration between a KPU Hop plant research program and the KPU brewing training team.

The findings will be presented at the Pacific Agricultural conference and the BC Growers Association annual general meeting in 2019 and 2020. Dr. Schuetz also aims to publish the results in a peer reviewed open access journal if sufficiently high quality data is obtained.

Supported by KPU's Office of Research and Scholarship



## ASSOCIATIONS BETWEEN DIMENSIONS OF WELLNESS AND INDICATORS OF DIET QUALITY

The purpose of this research is to explore the relationships of all dimensions of wellness and diet behaviours of college/university students associated with dietary intake that have not been previously studied. Rimi Afroz, a Biology major student, will take analyzed insights from health behavior data collected from students enrolled in an introductory level health science university course to identify better targets for comprehensive prevention programs and policies to improve overall health among emerging adults.

To disseminate the findings of this project, a poster was displayed at the 2018 KPU Teaching, Learning, Scholarship, and Research Symposium and an upcoming general presentation session will be organized through the Science in Action club of KPU.

Supported by KPU's Office of Research and Scholarship



## TRANSITIONING WITH COMPLEX LEARNING NEEDS TO KINDERGARTEN

A community collaboration between different school districts and KPU researcher, Dr. Nancy Norman, along with collaborator Mark Littlefield, are investigating the transition process and lived experiences during the transition to school from the perspective of parents, early intervention personnel, school-based personnel, and school administrators who oversee the shift of support from family-centered support in early intervention to child-centred in the K-12 school system using quantitative surveys and qualitative interview data.

The anticipated results of this study will be included in conference presentations, potentially a future KPU Arts Speakers Series, and publications with KPU student research assistants as co-authors. It may also be disseminated through written reports and presentations to the Ministry of Child and Family Development and the Ministry of Education.

Supported by KPU's Office of Research and Scholarship



## FROM FLAX TO FABRIC LINE

Dr. Kathy Dunster and Dr. Rebecca Harbut, Science and Horticulture faculty members, are aiming to re-establish a fiber flax cooperative industry on the South Coast, and to stimulate the use of locally and sustainably grown plant-based fabrics in fashion design and manufacturing: Local Fabric. Working with community organizations and farmers, they will trial and assess the performance of 18 fiber flax and document best practices. The fiber flax production will generate economic linkages forward through various processing steps, creating a value-added secondary industry which in turn will spin off into a Local Fabric industry available for fashion design and manufacturing.

Supported by KPU's Office of Research and Scholarship

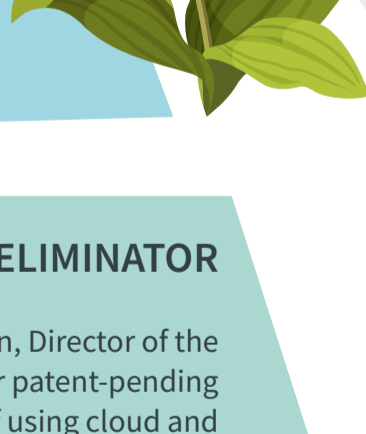


## CREATING A VIRTUAL REALITY FOR BUMBLEBEES

Dr. Levente Orban, a Psychology faculty member, is implementing a closed-loop Virtual Reality (VR) system at the Bee Cognition Lab to explore the fundamental questions in visual perception processed by bumblebees and other flying animals. This is part of a larger collaborative project with UBC and has the potential to lead to new discoveries in the visual neurosciences and enable the implementation of a small-scale VR system at KPU.

The research findings will be presented at international conferences, posted on public media, and published in peer-reviewed journals with open-access licensing.

Supported by KPU's Office of Research and Scholarship



## BUILDING A ROBOTIC CROP WEED ELIMINATOR

Mandeep Pannu, a Computer Science and Information Technology faculty member, and Deborah Henderson, Director of the Institute for Sustainable Horticulture, are working in partnership with Eleos Robotics Inc. to develop their patent-pending agricultural robot weeder: "Culture Bot". The robot will be built to negotiate uneven terrain, geo-locate itself using cloud and GPS technology, and monitor row crops for multiple purposes, including detecting, identifying and eliminating weeds.

Supported by the Natural Sciences and Engineering Research Council, Eleos Robotics Inc., and KPU



## DESIGNING FOR EXTREME ENVIRONMENTS

Wilson School of Design faculty member Sue Fairburn and Product Design students are working together to research, develop, and field-test a passive re-warming prototype for Polar conditions called the "Polar Burrito". It is the culmination of a 6-week project by a team of third-year design students from the Wilson School of Design. The goal is to design the Polar Burrito prototype to accompany the Sedna team of 2020 for field-testing in polar and indigenous waters at their two-year Northwest Passage Snorkel Relay taking place in 'seawomen'. Sedna Epic is a team of female scientists, divers and explorers, co-founded by Susan G. Eaton, who served as an expert user and advisor on this project. This project benefitted from prototype Polar Burrito developed by the 2017 cohort of Product Design Students and Instructor Stephanie Phillips.

The outcome will inform research in the emergent area of thermal performance of technical apparel and co-author a book on Design for Extreme Environments.

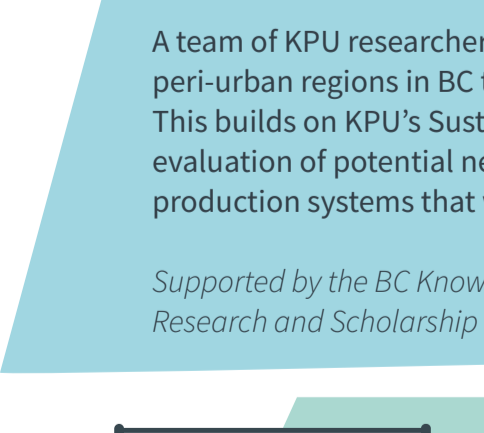
Supported by the 0.6% Faculty Professional Development Fund



## BICULTURALISM AND BELIEFS

In a student-led research project conducted by a Psychology Honours student, Jennifer Lingbaan, aims to observe how culture might impact one's sense of meaning in life and facilitate different aspects of the self amongst bicultural participants through cultural frame-switching methods. The results of this study suggest that context influenced personal meaning for the participants. This research can offer important insights for those working with, and providing services to, bicultural individuals. Moreover, the results of this study can further our understanding of the role culture may have in shaping our thoughts and perceptions and the intersection of cross-cultural and positive psychology research.

Supported by KPU's Office of Research and Scholarship



## POTENTIAL SUSTAINABLE AGRICULTURE AND REGIONAL FOOD SYSTEMS

A team of KPU researchers are working together to develop agricultural potential of the urban and peri-urban regions in BC through increased food production as well as fostering an emerging seed industry. This builds on KPU's Sustainable Agriculture program and aims to advance effective production practices, evaluation of potential new crops and cropping systems, and additional growers that are trained in organic production systems that will effectively supply the market.

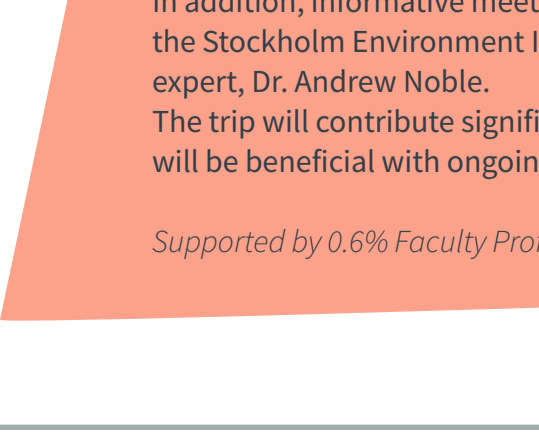
Supported by the BC Knowledge Development Fund, Canada Foundation for Innovation and KPU's Office of Research and Scholarship



## MOTIVATIONS FOR PHOTOGRAPHIC EXHIBITIONISM

The motives behind men sending unsolicited images of their genitals will be investigated by Psychology student, Alexander Lopes. This study will provide insight into personality and behavioral traits of men who send such images and add empirical evidence to a much-speculated-about popular phenomenon. Awareness could lead to the development of educational material that could aid men in making responsible and considerate choices before sending an unsolicited picture.

Supported by KPU's Office of Research and Scholarship



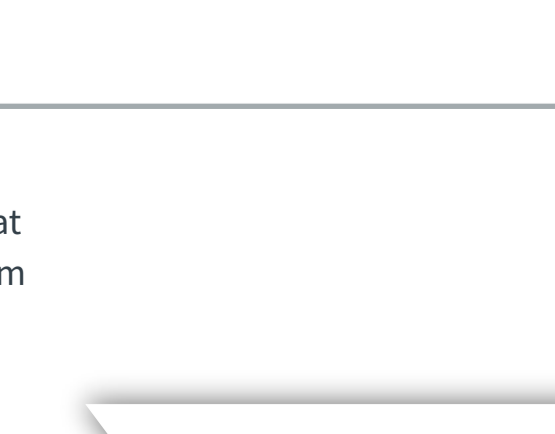
## LECTURE TOUR RESEARCH

Ross Michael Pink, a Political Science faculty member, presented in the Lecture Tour around the world, including the Climate Change Presentations at the University of Tokyo, The University of the Philippines Los Banos (UPLB), and the Thai Government Water Department before a meeting of senior managers and NGO leaders, including the foremost Thai environmental leader, Dr. Apichart.

In addition, informative meetings were held with senior managers at the Asia Biodiversity Center at UPLB, the Asia Director of the Stockholm Environment Institute (SEI), Niall O'Conner and the SEI Asia Agriculture and Sustainable Farming resident expert, Dr. Andrew Noble.

The trip will contribute significantly to academic teaching and research as well as numerous academic and NGO contacts that will be beneficial with ongoing research, writing and teaching.

Supported by 0.6% Faculty Professional Development Fund



Kwantlen Polytechnic University is committed to actively supporting innovative research and scholarship that informs authentic, relevant, and integrative learning communities. It is developing its cutting-edge curriculum and hands-on learning experiences to equip students with practical knowledge, skills and abilities.

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