



a place of mind
THE UNIVERSITY OF BRITISH COLUMBIA

UBC REPORTS

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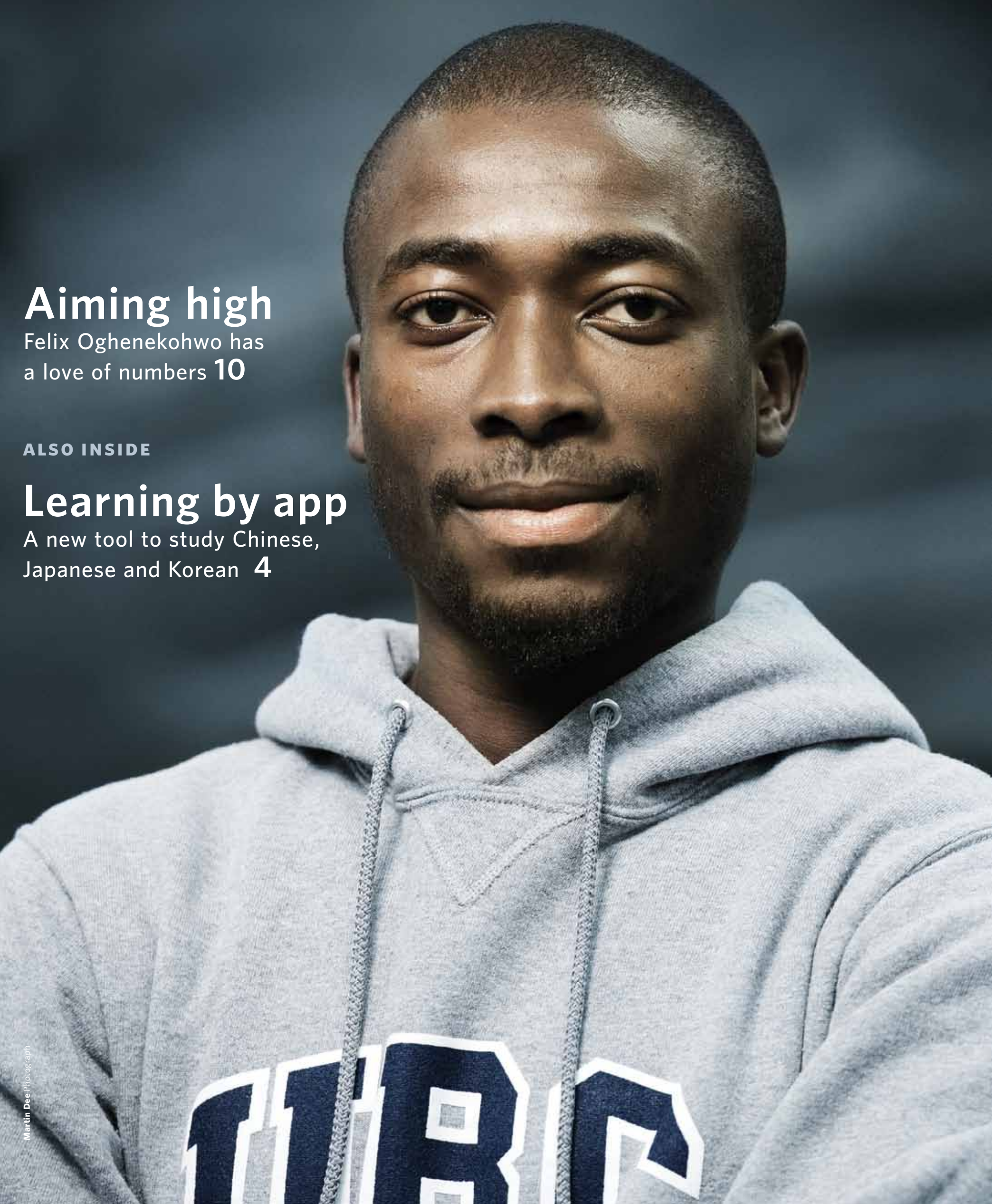
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Lorraine Chan with files from Terry Wintonyk



Rich Lam Photograph

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Highlights of UBC media coverage in March 2012

Heather Amos

UBC ATHLETICS

T-Birds win national titles

The UBC Thunderbirds made headlines in the *Globe and Mail*, *Canadian Press*, the *Vancouver Sun* and the *Province* this month after winning national championships.

UBC women and men's swim teams swept the Canadian Interuniversity Sport (CIS) championships at the end of February. Swimmers **Savannah King** and **Tommy Gossland** won the most valuable athlete awards. The Thunderbirds won their fifth-straight CIS women's volleyball title and player **Lisa Barclay** was named the tournament's most valuable player. **Kyla Richey** became the third consecutive women's volleyball player to win the CIS player of the year award in the sport. The women's basketball team took silver in the CIS championships after winning the Canada West conference title.

Men's hockey head coach **Milan Dragicevic** was named the Canada West Coach of the Year. **Hash Kanjee**, the head coach of the women's field hockey, announced he was retiring after 19 seasons.

UNIVERSITY NEWS

Jewellery by Bill Reid donated to UBC

Sydney Friedman and his late wife **Constance Livingstone-Friedman**, founding members of UBC's Faculty of Medicine, have donated an important collection of early works by Canadian Haida artist **Bill Reid** to UBC's Museum of Anthropology.

The works have been installed in MOA's **Bill Reid Rotunda**, reported the *Globe and Mail*, the *Vancouver Sun*, the *Province* and the *Georgia Straight*.

James Cook relic at MOA

A rare ceremonial club, given to Captain **James Cook** in 1778 from the Nuu-chah-nulth people of Vancouver Island's west coast, was donated to UBC's Museum of Anthropology by the Audain Foundation. The club is the last remaining object from Captain Cook's personal collection, reported the *CBC*, *Globe and Mail*, *Global*, *Vancouver Sun* and others.

Moving up

According to the 2012 Times Higher Education Reputation Rankings, UBC now ranks 25th among the top 100 universities on the planet. UBC jumped up six spots from last year's 31st, reported *Bloomberg Businessweek*, *Global*, the *Huffington Post*, the *Vancouver Sun*, and *Maclean's OnCampus*.

UBC RESEARCH

Youngest in class misdiagnosed with ADHD

The youngest children in a class are more likely to be diagnosed with attention deficit hyperactivity disorder (ADHD) and treated with medication than their older classmates, suggests a new UBC study, reported *Time*, the *Telegraph*, *CNN*, *CBS News*, the *Globe and Mail*, *CBC's The National*, and many others.

Lead author **Richard Morrow** and his colleagues found that children born in December were 39 per cent more likely to be diagnosed with ADHD and 48 per cent more likely to be taking medication to treat it than children in the same class born in January.

Medically prescribed heroin more effective, less costly than current methadone treatment

The Daily Mail, *CBS*, *Globe and Mail*, the *Canadian Press*, and many other media outlets reported on a UBC study, drawn from the North American Opiate Medication Initiative (NAOMI), that suggests it might be cheaper and more effective to treat heroin addicts with medically-prescribed heroin, known as diacetylmorphine, instead of methadone.

"Our model indicated that diacetylmorphine would decrease societal costs, largely by reducing costs associated with crime, and would increase both the duration and quality of life of treatment recipients," said **Dr. Aslam Anis**, professor at the UBC School of Population and Public Health who led the research.

"The question I get most about heroin-assisted therapy is whether we can afford the increased direct costs of the treatment," said study co-author **Dr. Martin Schechter**, a professor at UBC's School of Population and Public Health. "What this study shows is that the more appropriate question is whether we can afford not to."



Martin Dee Photograph

Dr. Chris Zed says approximately 30 per cent of the children in the school experience pain from tooth decay and oral disease.

Rebecca, age nine, looks happy as she exits the UBC-run dental clinic at Florence Nightingale Elementary School. Equally pleased is her mother, Josefina Romero.

The fact that Rebecca can get free dental care is a great weight off her shoulders, says Romero, who immigrated to Vancouver from Puerto Vallarta, Mexico with her husband and four children in 2006. "The clinic is very good for families who can't afford dentists. Vancouver is very expensive for dentists, especially when there are six of us."

This situation is not unique to the Romeros. Most of the 250 children at Florence Nightingale don't usually see a dentist. According to school principal **Jenny Chin Petersen**, dental care has been the missing element in the drive to improve the overall wellness of

the students in this Mount Pleasant neighbourhood.

The match was a natural. Last fall, the Faculty of Dentistry opened a dental clinic at Florence Nightingale as part of its *Adopt a School Program* to serve at-risk, inner city schools. Working with the Vancouver School Board, Vancouver Coastal Health Authority and Mount Pleasant Community Centre, the clinic is staffed by UBC general practice residents—licensed dentists who are doing advanced post-graduate training with the Faculty of Dentistry.

Chin Petersen says, "That means children from the most vulnerable families who don't have insurance coverage or a regular dentist can receive the care they need."

About 30 per cent of the children at Florence Nightingale experience pain

from tooth decay and oral disease, notes **Dr. Christopher Zed**, associate dean of strategic and external affairs with the faculty.

"By providing oral health treatment and education, we hope to reduce absenteeism, sleep deprivation and improve classroom attentiveness due to lack of oral pain", says Zed whose research looks at oral health disparities in under-served communities in Canada and internationally.

More than a "drill and fill relief program," says Zed, the *Adopt a School*

Program aims to improve overall oral health standards and knowledge among children and their families. Family members of children at Florence Nightingale can also get free oral health care from a UBC-led community volunteer dental clinic at the nearby Mount Pleasant Community Centre.

"The idea is to provide service to the entire family so there's an integrated approach and lasting change in both the children and their parents' health behaviour and attitudes," says Zed.

Open year-round, the one-chair clinic

at Florence Nightingale operates every second Thursday, between 1 p.m. and 8 p.m.

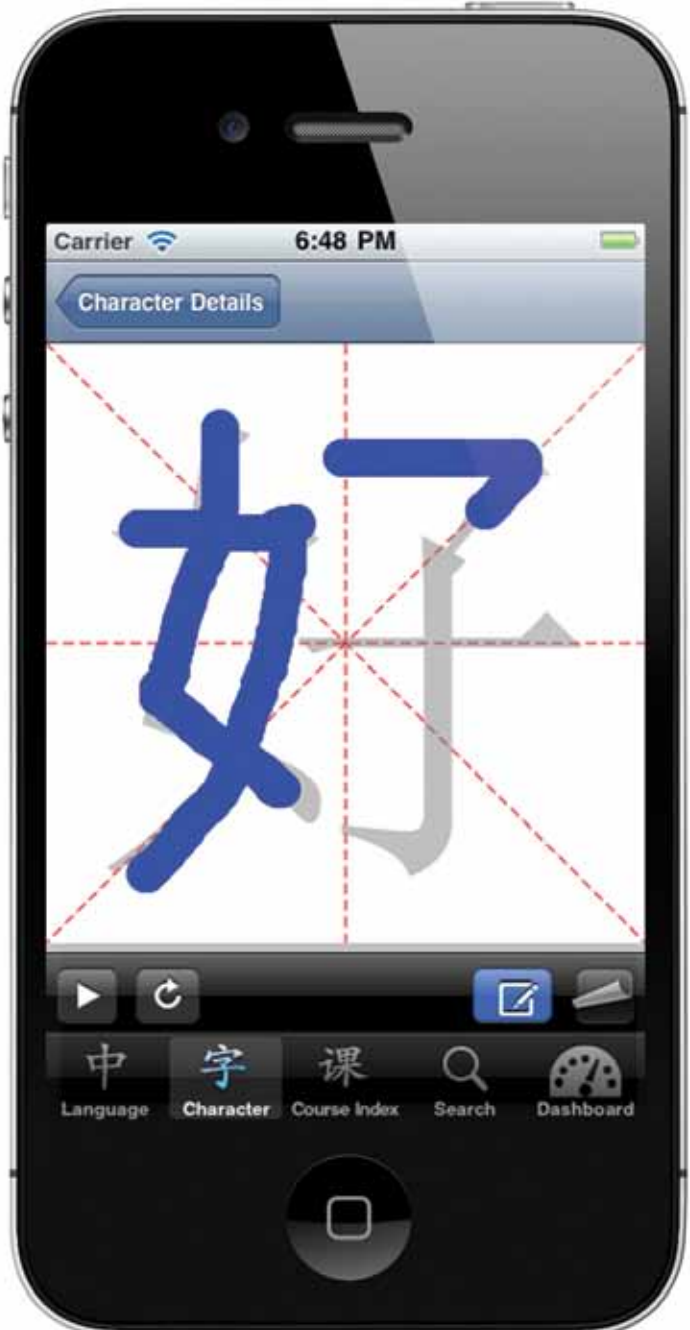
For the past two years, UBC's Doctor of Dental Medicine students have been coming to Florence Nightingale as part of their Professionalism and Community Service Program (PACS). Through games and exercises, the PACS students teach the children about oral health care, from proper brushing and flossing to smart food choices, for instance, crunchy apples versus sticky cupcakes.

"So when the dental clinic appeared, it wasn't a new or scary thing for the kids. They were really familiar with the idea of dentists and what they do," says Chin Petersen. ●

See video story at
www.publicaffairs.ubc.ca/ubc-reports

Want to learn Chinese characters? UBC has an app for that

Basil Waugh



Made-at-UBC animation software enables learners to practice characters with their fingers.

UBC offers China business program

Basil Waugh

This spring, movers and shakers of Canadian corporations, government and NGOs will visit UBC and Shanghai to learn best practices for doing business in China.

Working with UBC experts, participants of UBC's China Links will get a crash course on fundamentals for operating in China, including copyright protection, negotiation styles, navigating government, opening factories and hiring staff.

"As organizations rush to do business with China, it is crucial that they do their homework," says Prof. Alison Bailey, UBC Institute of Asian Research. "This program, which brings together the latest expertise on Chinese culture, business, law and government, is designed to help them do that."

The group will convene in Vancouver from April 12-14 for an intense weekend of case studies, role-playing, problem-solving and simulations. After that, participants will travel to Shanghai from May 7-11 to meet with Chinese officials and members of Canada's business and diplomatic community.

Learn more about the China Links program at: www.chinalinks.ubc.ca.

A new Asian language app by (left-right) faculty members **Ross King**, **Duanduan Li** and **Rebecca Chau** combines resources for Mandarin, Japanese and Korean.

The University of British Columbia has entered the smartphone app market with an innovative app targeting the global demand for Mandarin, Japanese and Korean language education.

The UBC Chinese Character Tool is the first ever university East Asian language mobile application. While most language acquisition apps focus on a single language, it is the only one on the market to combine Chinese character instruction resources for Mandarin, Japanese and Korean. And with 10,000 Chinese characters that animate digitally for users, it ranks among the most comprehensive apps of its kind.

"As Asia becomes a global centre of business and culture, more people than ever want to learn these languages," says Prof. Ross King, head of UBC's Dept. of Asian Studies, which developed

the app. "An app can't replace in-class instruction, but it can help to improve the educational experience for the 5,000 students studying these languages at UBC and self-learners in Canada and around the world."

The app includes thousands of words and characters, along with meanings, pronunciations, contextual phrases and sentences, and stroke animations. To help users practice and hone their skills, the app comes with built-in support for more than 30 different UBC language courses and their textbooks.

The app was developed by representatives of UBC's Chinese (Assoc. Prof. Duanduan Li), Japanese (Senior Instructor Rebecca Chau) and Korean (Prof. King) language programs, along with programmer Pan Luo of UBC's Centre for Teaching, Learning and

Technology. King says the three-language approach has many benefits for learners, especially those who already speak one East Asian language.

"These languages share many common words, so bringing them together in one app allows users to leverage any complementary language skills they have," says King, noting that 70 per cent of students learning Asian languages at UBC can already speak at least one other Asian language. "It allows users to jump between words they are familiar with and the language they are studying."

According to King, the most time-consuming aspect of East Asian language study is learning the characters, a task that requires years of practice since basic literacy requires the memorization of anywhere from 1800-3500 characters, depending on the language. Thanks to made-at-UBC animation software, which sidesteps the iPhone's incompatibility with Flash animation, the app shows users exactly how characters are written, letting them also practice with their fingers at a variety of speeds.

"The app makes it much easier to

practice, which is crucial," says King, whose department's waiting list for Chinese, Japanese and Korean classes is typically 1,000-people long. "Instead of being at a desk with a textbook, paper and a pen, you can practice characters with just using your finger, wherever you are," he says.

"We look forward to feedback so we can make it better and better," Ross adds, noting that future versions will incorporate audio and improve the search function, making it easier to employ as a multi-language dictionary and phrasebook. The department also plans to add more than 3,000 advanced words, characters and phrases, in addition to updating course content annually.

Although it's a non-profit venture, King says the app's modest price

of \$4.99 will support its creation and continued development. With single-language instruction apps ranging in price from free to \$9.99, King sees UBC's three-language app as a bargain, considering the quality of its content and animation capabilities.

"Like the app market generally, the quality of apps comparable to ours is extremely uneven—there are so many options that it can be difficult to know who to trust," he says. "So I think our pedigree, as a department with a 50-year reputation for excellence in teaching these languages, within one of the world's top universities, will provide a level of assurance to people."

King hopes the app will advance East Asian language education in Canada. "Despite the overwhelming demand for Mandarin language education in Canada,

there has been a spectacular lack of investment," he says. "This is especially true in B.C., which is lagging behind other provinces on this, despite our significant Asian populations."

"We believe this app can improve how our students learn, give self-learners outside UBC an important new resource—and ultimately, help to make Asian language instruction a greater priority in B.C. and Canada at all educational levels," says King.

Learn more about the UBC Chinese Character Tool app at: <http://m.ubcjk.com>.

It's the only app on the market to combine Chinese character instruction resources for Mandarin, Japanese and Korean.



Social capital and the great beyond

Canada Research Chair Barb Pesut investigates palliative support in rural areas

Chris Bowerman

First the good news: Palliative-care providers in rural and remote B.C. have a wholehearted champion in Barb Pesut, who's been immersed in exploratory fieldwork since 2008. Her approach to interdisciplinary end-of-life care considers comfort, dignity and individual aid for patients and families—no matter where they live.

Now the bad news: It's a sizeable challenge. The rate of elderly Canadians is growing exponentially, and almost one-fifth of B.C.'s population lives in rural areas. Geographically, culturally, or socially isolated from comprehensive healthcare services, more than 600,000 British Columbians reside beyond a 60-minute driving span to palliative-care beds.

"What's required is a mosaic of services that can adapt to different needs of rural individuals," says Pesut, Canada Research Chair in Health, Ethics and Diversity, and assistant professor with the School of Nursing at UBC's Okanagan campus.

"Patients and families really emphasize quality of life and how they can live well together in the time they have left. And for many rural people it's strongly connected to place—they really desire locations of death that work for them and according to their specific needs."

Pesut and colleagues recently received more than \$1.3 million in research grants, largely from the BC Nursing Research Initiative of the Michael Smith Foundation for Health Research, to investigate sustainable palliative-care delivery in B.C.

Pesut and her cohorts have interviewed more than 150 individuals involved with palliative care in rural areas of Interior and Northern B.C. Preliminary findings are not all rosy.

In rural communities, especially where hospitals have been closed or downsized, family caregivers and patients often have to go to great lengths to get palliative services, such as acute symptom and pain management. These caregivers commute from outlying areas with their terminally ill child, or with their elderly and infirm parent, over icy mountain passes or mud-choked logging roads to reach urban centres. Pesut has travelled



Marked for life

Barb Pesut's formative experience in palliative care was 30 years ago on Christmas Day.

She was a student, working as a nursing care assistant in a long-term residential facility, keeping vigil at night with an elderly patient in his final hours. In a darkened room, she sat with him over a few hours as he died. It was her first experience with death.

"Something happened to me in that moment," she says. "I remember having this profound and mysterious experience. I was deeply moved and became very interested in end-of-life issues from that moment on. I knew then, this is what nursing is really about for me." ●

Recent Grants

Barb Pesut, an assistant professor with the School of Nursing at UBC's Okanagan campus, was appointed Canada Research Chair in Health, Ethics and Diversity in 2010.

She was recently awarded two research grants:

- \$250,000 over two years from the Michael Smith Foundation for Health Research (MSFHR) through the BC Nursing Research Initiative as research co-leader, along with partners from Selkirk College, for *Enhancing Educational Capacity for a Palliative Approach in Rural Nursing: A Research Demonstration Project*.
- \$330,000 over three years from the Peter Wall Solutions Initiative—which includes partners MSFHR and Genome British Columbia, and research partners from the Communities of Trail and Castlegar—for *Trail-Castlegar Augmented Response: Enhancing Supportive Services for Persons and Family Living with Life-Limiting Chronic Illness (TCARE)*.

Announced in September 2011, Pesut is a key researcher in a newly created province-wide network called the *Initiative for a Palliative Approach in Nursing: Evidence and Leadership (IPANEL)*, a four-year initiative funded through an \$800,000 grant from MSFHR. The partnership includes the Interior Health Authority, universities and the BC Ministry of Health. ●

fine balance between an appropriate expectation of the community and what's provided by healthcare." ●

Watch UBCO-TV's video feature about Barb Pesut's palliative care research in rural areas:

<http://www.ubc.ca/okanagan/vod/?f=http://ubco.tv/movies/P1106RWBBarbMASTER.flv>

in the way things go, and having a little bit of control at a time when you don't have very much control."

The Greater Trail Hospice is, like most hospices in the Kootenays, an independent society backed by a small contract with the Interior Health Authority. "We rely on the community to really fund the lion's share of the services that we provide," Hooper says. "But we have a strong base of volunteers."

To build workable programs for rural palliative care, Pesut's research team aims to bridge amorphous gaps between professionals and volunteers, including: family caregivers, physicians and nurses, social workers, healthcare administrators, pharmacists, clergy, and funeral directors.

Overall, Pesut says, "There is a

Canada Research Chair **Barb Pesut** is a leader in rural palliative-care initiatives essential to an overall provincial health strategy.

and Nelson. "Unfortunately, there is no one-size-fits-all model."

Pesut and her colleagues Carole Robinson, Joan Bottorff and Richard Sawatzky are research teammates in Trail-Castlegar's TCARE program, which stems from a Peter Wall Solutions Initiative grant. The team is seeking a rural solution that best integrates all services to provide a coordinated, accessible system of support and education for palliative individuals and their families.

Palliative-care expert Brenda Hooper is part of TCARE's augmented response program to enhance support services for people affected by life-limiting chronic illness. Hooper, a registered nurse and vice chair of the Greater Trail Hospice Society, says "having good end-of-life care is really about having some choice

owned by, their community—and which are not necessarily subject to changing models of healthcare.

"In the communities that do have some level of palliative services, healthcare providers go above and beyond. In many cases, nurses and physicians work off-the-clock," Pesut says. "But what's difficult is they end up putting together a sort of patchwork of services often based on a strong spirit of volunteerism, which works in the moment.

"From a rural perspective, volunteering is very often a way to give back to their community. There's a synergy that creates belonging that is a huge amount of social capital toward healthcare. I don't think in the formalized system we can ever really hope to replace this."

Pesut's ethnographic findings, for example, show the import of certain beliefs and values at end of life for religious and ethnic sub-groups, and this plays out in unique ways in rural areas.

"There are lovely adaptations within rural hospitals to meet the needs of First Nations patients and families. Within some rural communities there's been a marvellous synergy between the generosity of the Sikh community to build facilities that meet their end-of-life needs, and they donate them back to the community to be used more broadly."

"But what everybody really wants is a rural hospice," she says, lauding major innovations in Williams Lake and pockets of developments being realized in other rural B.C. areas such as Quesnel

Tim Swanky Photograph

"What's required is a mosaic of services that can adapt to different needs of rural individuals."

similar routes, gaining a whole new respect for rural citizens and their barriers.

"Rural people really want 24/7 access to end-of-life care within their own community," says Pesut. "These communities want some stability. They hope for more systematic types of programs uniquely adapted to, and



Mark Musheer Photograph

UBC Prof. **Nassif Ghossoub** is leading UBC's Housing Action Plan.

UBC weighs affordable housing options

Basil Waugh

With housing prices skyrocketing in Vancouver, the University of British Columbia has released potential housing program options designed to help create more affordable housing on the Vancouver campus.

The options, which garnered significant feedback during recent community consultations, include the possibility of discounted property purchases and rentals to encourage faculty, staff and students to live on the Vancouver campus.

The effort will inform a UBC Housing Action Plan, which seeks to improve UBC's ability to compete with top universities and employers for the best and brightest minds, both globally and locally, while helping to build a more sustainable, vibrant residential community.

"If we are going to be one of the world's great universities, we must be able to attract and retain the absolute best people, and housing is a huge factor of that," says Prof. Nassif Ghossoub, chair of UBC's Community Planning Task Group and a member of UBC's Board of Governors. "The lack of affordable housing on or near campus makes it harder to attract top researchers and is forcing faculty, students and staff to live and commute farther from campus."

The team visited North American campuses such as New York University, Columbia, Harvard and UCLA to learn how other universities in expensive cities are tackling housing affordability. They explored how other jurisdictions and government bodies, such as the Resort Municipality of Whistler and BC Housing, offer affordable housing and choices to their constituents, and they consulted widely with campus groups.

"What we learned was that many of these great universities are ahead of us at integrating housing into their overall academic mission," says Ghossoub, a professor in UBC's Dept. of Mathematics and Distinguished University Scholar. He has seen competitor universities with large departments dedicated to outbidding other institutions for emerging

research stars, who can attract millions in research funding. "Seeing how others approach housing was truly eye-opening and helped to create consensus around the need to act," he says.

Affordability options for discussion

Highlights of the discussion paper, created by UBC Campus and Community Planning staff, include a capped appreciation program that would allow tenured or tenure-track faculty to buy (and sell) campus housing at 33 per cent below market prices. Another option sees faculty purchasing campus housing as joint owners with UBC for roughly 30 per cent of their pre-tax income.

Rental options include a proposed partnership with BC Housing that would make UBC the first university in North America to offer non-profit rental housing to eligible employees or faculty with an annual income of less than \$64,000. Other proposed rental programs include non-market rental cooperatives for faculty and staff.

While the housing proposals

more sizes and options, from one to four bedrooms," he says.

One of the largest problems facing planners was ensuring the benefits of affordable housing remain available to future generations, Ghossoub says. "Given our finite amount of space, we had to restrict these programs to full-time faculty, staff and students. As people retire, graduate or find new jobs, their units will become available for others."

While faculty and staff would be eligible for rentals, the proposed ownership options target tenured and tenure-track faculty. "Housing is a much greater barrier for attracting and retaining faculty, who are typically recruited from outside the Lower Mainland, than it is for staff, who tend to live in Vancouver and whose careers tend to span more employers," says Ghossoub, adding that peer institutions have similar restrictions on their ownership programs.

Once feedback from the March 20-April 2 consultation phase has been gathered, the team will conduct additional feasibility studies before

"We must be able to attract and retain the absolute best people, and housing is a huge factor."

for faculty and staff are still under consideration, the university is already moving forward on a major student housing plan. With more than 9,000 student residents, UBC's Vancouver campus already has more student housing than any other Canadian campus. The university has committed to housing 2,500 more students by 2016, including the 570 beds opened in Totem Park residence last fall.

Ghossoub says a greater range of housing size will be created for UBC's changing demographics also. "A generation ago, graduate students and new professors tended to be single, but now they are often married with two children. We heard a clear need for

preparing their recommendations for UBC's Housing Action Plan, which UBC's Board of Governors will consider this summer.

"Investing in affordable housing would mean significant trade-offs for the university," says Ghossoub. "But I strongly believe that these programs will offer far greater long-term net benefits, both financially and in terms of building a vibrant, sustainable community with a strong academic flavour," he says. ●

Read the UBC Housing Action Plan Discussion Paper at: <http://ubcvhousingactionplan.sites.olt.ubc.ca>



Martin Dee Photograph

Protecting our freshwater

Does leaving a buffer between waterways and logging still make sense?

Heather Amos

Freshwater streams and lakes are an important lifeline for the ecosystem and urban communities—providing drinking water, power, and habitats for species of all kinds including economically and culturally significant fish like salmon.

Since the 1970s, foresters have left about 30 metres of untouched forest around freshwater streams and lakes in an effort to protect waterways and aquatic ecosystems. But in the past 40 years, few studies have looked at the effectiveness of this practice.

Now the rules are changing; logging companies are cutting closer to waterways. UBC forestry professor John Richardson says the time has come to figure out exactly how wide the buffer should be, where it should be located in the watershed, and whether we should be trying a different strategy.

"Typically policies should be based on research and science. If not, policies should be evaluated after they are implemented," says Richardson, the head of the Department of Forest Sciences at UBC. "In the case of the 30-metre buffer, we implemented the policy but never tested it."

The 30-metre buffer used in most of North America, Australia and Europe, was implemented to reduce erosion of the stream-bank, shade the streams to keep temperatures down, protect fish habitats, prevent sediment from accumulating and increase the overall stability of the ecosystem.

In Ontario and Manitoba, foresters are starting to use a strategy called the 'emulation of natural disturbance,' where forests may be cut back to the waterline instead of being protected by the 30-metre buffer. Supporters of this new system argue that when a natural disturbance, like a fire, spreads through the landscape, almost nothing is left undisturbed. They believe forest practices should mimic this and this new standard could be adopted elsewhere.

Concerned by the shift in practice, Richardson began in 1998 to study the effectiveness of the 30-metre rule. He compared how streams reacted to various harvesting strategies: a 30-metre buffer, a 10-metre buffer, no trees harvested, every other tree harvested, or clear-cut to the waterline.

"Even after a decade, the stream with the 30-metre buffer was still showing impacts from the harvest when compared to the control stream where no trees were harvested," says Richardson. Water temperature is still higher and the amount and kinds of small aquatic organisms in the stream, like algae and bacteria, are still different today.

Richardson says, "even with large buffers there is a strong impact on aquatic ecosystems."

Richardson is not necessarily against using the strategy of emulation of natural disturbance. But in a series of studies published earlier this year with colleagues across Canada, Richardson argues there should be specific studies to test this new strategy before it is widely implemented.

"Even after a decade, the stream with the 30-metre buffer was still showing impacts from the harvest."

He also suggests that other options for protecting freshwater habitats and quality should be considered.

Some ideas include protecting certain essential river sections, such as areas where a tributary flows in, while leaving other segments less protected. Smaller streams that are more susceptible to landscape change and more easily heated by the sun could also be better protected, while rules for stable larger bodies of water could be more flexible.

Some of Richardson's colleagues and co-authors on the studies published earlier this year are supportive of the emulation of natural disturbances strategy. They suggest it could be incorporated into forest practices with appropriate guidelines. ●

Changes to streams can have large impacts on the ecosystem

Temperature increase

Even a two-degree increase in river temperature can be extremely stressful for salmon, causing some fish to die en route to their spawning area.


Sediment increase

With more sediment in the streams, fine particles travel long distances and can interfere with water treatment, forcing communities to add more chemicals to their drinking water.

Fewer nutrients

In streams that are blocked from the sun by big trees, up to 90 per cent of the food used by the algae and bacteria—the base of the foodweb—come from decomposing leaves, branches and trees in the river. By cutting down all the trees, there is no future supply of energy for those species. There is also no large wood to provide fish a place to hide in streams.

UBC Forestry Prof. **John Richardson** is trying to find the best way to protect freshwater streams in logging areas.



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Martin Deee Photograph

Felix Oghenekohwo is researching dynamic nonlinear optimization.

Aiming high

How mathematics is building bridges between Africa and UBC

Jill Lambert

When Felix Oghenekohwo graduated from the University of Ibadan in Nigeria in 2007, he had an undergraduate degree in Physics and ambitious plans to continue his academic pursuits at a higher level. Figuring out his next step in Africa was a challenge, until he learned about a unique program, the African Institute for Mathematical Sciences, or AIMS.

AIMS also has an ambitious goal: to develop mathematical and scientific talent across Africa. The Institute, founded in 2003, has centres in South Africa and Senegal and plans to open more in other African countries. AIMS offers students from all over Africa an extraordinary opportunity to study with professors from leading universities and earn credentials that are recognized around the world. By building knowledge, skills and capacity, AIMS develops local talent to solve the continent's problems.

Oghenekohwo began his studies at the AIMS Centre in Cape Town, South Africa in August 2007. The next ten months were transformational. "I built my math skills to the level where I knew I could participate in an international competitive research group," he says. After receiving his post-graduate diploma from AIMS, Oghenekohwo went on to complete a Masters in Geophysics at the University of Cape Town. By the time he graduated, he was already back at AIMS, working as a tutor. That's when he met UBC Earth and Ocean Sciences Professor Douw Steyn.

Steyn had gone to AIMS South Africa in October of 2010, with initial plans to stay only a short while and teach a course. He soon decided to extend his stay. Meanwhile, one of his UBC students wanted to follow in his footsteps. James Ferguson arrived in Cape Town in January 2011. Inspired by the goal of AIMS, and his own belief in the value of math, he signed up to be a tutor for a five-month stretch. Ferguson found that his time at AIMS more than repaid his efforts.

"I got more out of it than I gave to it, and I gave it my all," says Ferguson. He notes the remarkable learning process: "As the students go through the program, they take more ownership of their projects, learn to think critically and

independently, to solve problems. They gain confidence."

Steyn, Ferguson and Oghenekohwo are part of a global contingent of professors, students and researchers who have embraced the vision of AIMS and made their own contributions to the program. Their story does not end in Africa.

Oghenekohwo is now at UBC doing his PhD in Geophysics. Working under the supervision of Professor Felix Herrmann, he is a member of research group investigating dynamic nonlinear optimization for imaging in seismic exploration. He is pursuing his goals at a very great distance from his wife, Zubeida, and their infant son, Rukevwe, who remain in Cape Town. It's certainly not easy to be apart, but the prospect of a PhD from UBC drives him forward.

Steyn and Ferguson are back at UBC, but Africa, and AIMS, continue to beckon. Ferguson is considering another trip, possibly to AIMS Senegal, and Steyn has created a new link between UBC and AIMS: a partnership agreement, which provides scholarship funding for African students to study at AIMS Centres in Africa, and encourages them to apply to UBC for graduate studies. ●

The plight of orphan diseases

Jimi Galvão and Christopher Cook



Martin Deee Photograph

Pharmaceutical Science Prof. **Larry Lynd** is working to create cost-effective and sustainable policies to treat patients with rare diseases.

"Nobody has ever tried to look at what society's willingness to pay is, but I think we're willing to pay a premium on rarity."

They may be rare, but they affect a large number of us. One in 12 Canadians suffer from one of 7,000 different rare diseases. "One rare disease only affects a small portion of the population, but as a category these diseases affect a huge number," says Larry Lynd, associate professor in the Faculty of Pharmaceutical Sciences at UBC.

Lynd is leading a team of researchers that has just received a \$1.5 million grant from the Canadian Institutes of Health Research (CIHR) to investigate potential funding policies for treating rare diseases.

For the past several years, he has been part of the BC Ministry of Health Expensive Drugs for Rare Diseases Advisory Committee—the group that approves funding for treatment on a

patient-by-patient basis. "In determining treatment for rare diseases, we can't use the same decision-making structure that we use for common diseases," Lynd says.

Treatment options for rare diseases are limited and can cost more than \$850,000 per year for just one patient—far above average drug costs for common diseases. When reviewing cases, the committee is often faced with tough decisions, especially in cases when the drugs offer little certainty of patient benefit or improvement.

With their project, Lynd and his team of bioethicists, health policy specialists and other experts are asking the most provocative question: How much public funding should be spent on drugs for rare diseases? "Nobody has ever tried to look at what society's willingness to

pay is, but I think we're willing to pay a premium on rarity," Lynd says.

In addition to examining the budget that should be allocated to these drugs, the research team is working on sustainable drug payment policies and incentives for pharmaceutical firms to develop lower cost alternatives. "Ultimately, we're doing this to create a structure within Canada that will allow us to support treatments for these diseases," Lynd says.

Lynd is convinced of the relevance of this research, not only for provincial and national policy makers, but also at the international level. "Everyone will be watching to see how we can create cost-effective and sustainable policies to get these drugs to the people that need them," Lynd says. ●

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Rwandan mothers were consulted for their preferred look and feel for the packaging based on prototypes by Vancouver-based designer **Kara Pecknold**. They voted for the design at the top, with the tagline "Fortify with vitamins" in the Kinyarwanda language.



Judy McLean Photograph

Missing nutrients

UBC partners with Rwanda to fortify the children

Lorraine Chan with files from Jennifer Honeybourn

Think big and persevere. That's the message UBC Food, Nutrition and Health researcher Judy McLean wants to pass on to her students.

Visiting rural Rwanda eight years ago, McLean saw first hand the prevalence of childhood malnutrition and food insecurity. She immediately thought of a vitamin and mineral home fortification system Dr. Stan Zlotkin, a pediatrician at the University of Toronto's Sick Kids Hospital, had created. It sparked an idea to bring Zlotkin's micronutrient powders to the children of Rwanda.

McLean presented her idea to the Rwandan Minister of Health. As a result, starting in March 2012, 150,000 Rwandan children aged six to 23 months will begin to receive micronutrient powders. Each child will receive 10-12 free sachets per month through support from UN agencies, non-government organizations and the Rwandan government. At the cost of two cents each, these small sachets contain necessary vitamins, from A to E, and key minerals such as iron, zinc and iodine.

"Sixty per cent of Rwandan families live below the poverty line," says McLean, assistant professor in the Faculty of Land and Food Systems.

"The idea is to build capacity in those communities so the program carries on after we leave," says UBC researcher **Judy McLean**.

She says the Rwandan diet mainly consists of starchy foods such as bananas, cassava, sweet potatoes and maize. Consequently, there is a high prevalence of iron deficiency anemia among young growing children.

"It's almost impossible for these kids to get the nutrients they need," says McLean. "Adding micronutrient powders to their food will help give Rwandan children a similar opportunity for growth and health as kids in western countries who consume fortified cereals."

McLean and a group of UBC nutrition students worked with the Ministry of Health to pilot the program last fall with 60 Rwandan children, following several months of ground-level research that included focus groups and interviews with Rwandan mothers.

UNICEF has asked McLean to help implement the project in Zambia in 2012.

"It was important to get the mothers involved. Their attitudes and perceptions helped us create appealing packaging and key messages," says McLean. "At the end of the day, Rwandan mothers are like mothers everywhere—they just want the best for their kids."

McLean and her team of LFS undergraduates worked with Rwandan university students to train community health workers, who then trained the mothers. "The idea is to build capacity in those communities so the program carries on after we leave." The community health workers led

nutrition education workshops and also walked the mothers through the best way to use the micronutrient powders. "The iron is covered with a thin coating of soy lipid to mask its strong metallic taste so mothers are taught to mix it into food that's warm but not hot enough to melt the lipids," says McLean.

To demonstrate the project's effectiveness, McLean and her team will be gathering data over the next 12 months at six-month intervals. "We'll be checking children hemoglobin levels, measuring their growth, plus interviewing the mothers about changes they see in their child's health,

behaviour and food intake." The project has received funding from UNICEF, World Vision, Care, Concern and the World Food Program. UNICEF has asked McLean to help implement the project in Zambia in 2012, with other countries to follow. ●

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Martin Dee Photograph

Education Prof. **Ryuko Kubota** is one of 220 UBC students and researchers presenting at the 2012 American Educational Research Association conference.

Language, race and social change

Hot button issues surface when 12,000 education researchers get together

Heather Amos

In 2011, Vancouver school-age students began to enroll in a new bilingual Mandarin English program. As the details for this program were being sorted out, debate and controversy erupted over whether students who already speak Mandarin should be allowed to enroll.

For Ryuko Kubota, this debate was the perfect case study of second language education and issues of race in multicultural Canada. Along with PhD candidate Ai Mizuta, Kubota will be presenting a paper on the controversy at the upcoming 2012 American Educational Research Association (AERA) conference.

AERA is one of the largest professional organizations for education researchers; its annual education conference attracts more than 12,000 participants from around the world. Running from April 13 to 17, and for the first time in Vancouver, the AERA annual conference has drawn over 220 UBC scholars.

Kubota, a professor in the Department of Language and Literacy Education in UBC's Faculty of Education, has organized a session on race and language learning in multicultural Canada. "Issues of race have long been part

of the discussion on education," says Kubota. "But it hasn't been an issue in second language education."

"We, as second language professionals, assume that by trying to promote diversity in teaching new languages, we are inherently more aware of culture differences and inequalities. This isn't always the case."

Kubota began paying attention to the issue in the late 1990s when language researchers often discussed the differences between native English-speaking students and English as a Second Language (ESL) students.

"Many ESL students were from Asia so we ended up creating a conversation that separated students into two groups—Asians and North Americans," says Kubota. "I argued that creating this type of division was a legacy of colonialism and that we were perpetuating racial stereotypes. I was critiqued for regarding ESL teachers as racist."

Kubota learned from this experience that racism is a difficult idea for people to understand—it can often be embedded in social structures. Her goal is to get educators to think about how education works and be more critical

about issues of race, culture and diversity in our systems.

"The AERA meeting is an opportunity for me to have a dialogue with my colleagues who study this topic. But it is also an opportunity to disseminate these ideas to people who aren't interested or not aware."

For Kubota's colleague Bonny Norton, the conference is not just about research. She will be inducted as an AERA Fellow—one of the highest awards bestowed on members of the organization. In 2011, AERA presented Norton with the inaugural Senior Researcher Award for the study of language and learning across diverse sites.

At this year's conference, Norton, a professor in the Department of Language and Literacy Education, will present findings from a program that began in east Africa in 2003. UBC researchers and graduate students and African scholars have been investigating ways in which digital innovations and hybrid technologies, such as digital libraries, digital recorders, and digital cameras, might help to address educational challenges in the region, particularly with learning English—an official language in most sub-Saharan African countries.

Norton's interest in language and social change includes Canadian communities. She has also organized an AERA panel on literacy and language revitalization in an aboriginal community in Canada's Northwest Territories. ●

For more information about the Faculty of Education's involvement in AERA, visit: <http://aera.educ.ubc.ca>

outtakes

Behind the scenes with a MOA curator

Karen Duffek



UBC Museum of Anthropology Photographs

Recently, UBC's Museum of Anthropology received major donations of significant Northwest Coast artworks: the Friedman collection of early works by renowned contemporary Haida artist Bill Reid, and a ceremonial club received by Captain James Cook from B.C.'s Nuu-chah-nulth people 234 years ago.

Karen Duffek, MOA Curator of Contemporary Visual Art/Pacific Northwest, gives an insider's view of what it's like to handle and care for such precious objects.

How did it feel when you saw the gifts for the first time?

Both of these donations were surprises for us: out-of-the-blue offers by extremely generous donors. In the collection of Bill Reid artworks donated by Dr. Sydney Friedman, a gold bracelet in the shape of a raven (pictured above) really made our jaws drop, since this piece was unknown to us, and had never before been exhibited or published.

Bill Reid made that bracelet in the 1950s using his full bag of goldsmithing tricks, and you can really see the joy he took in creating this gold raven in the round, with individual feathers cut out and reinforced from behind, and a beautiful, almost hidden hinge with which the bracelet can be opened and closed for wearing.


With regard to the carved club (pictured below) collected among the Nuu-chah-nulth people by Captain James Cook in 1778, and recently donated by the Audain Foundation for the Visual Arts, it's amazing to contemplate its journey. The image that it presents, of a hand grasping a sphere, has connections to some other carved clubs from the Northwest Coast, but it also carries many questions with it, and I think people will continue to speculate about its meaning for years to come.

What is it like getting the opportunity to handle such pieces?

It's a privilege to be able to hold special pieces like these in your hands—gloved hands, that is! It gives you a better understanding of a piece if you can feel the weight of it in your hands and try out the hinge or examine the underside, since this is, of course, how they were meant to be seen.

Both of these gifts were major ones for the university, and involved celebrations to unveil the works and to publicly acknowledge the donors. Numerous staff members worked hard to create the displays, write labels and press releases, design special mounts, and involve community members and family. ●



A photograph of an elderly couple standing on a balcony with a black wrought-iron railing, looking out over a vast blue ocean under a clear sky. The balcony is part of a building with a terracotta tiled roof. The scene is bright and sunny, suggesting a peaceful retirement lifestyle.

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