LEARNING MATTERS

SYMPOSIUM 2008

RESEARCH MATTERS AT VICTORIA UNIVERSITY

Research Matters at VU will be held on Tuesday 9 December from 9.00 am to 4.30 pm as part of Learning Matters 2008 in Room M001 at Footscray Park campus.

The DVC (Research & Region), Professor Linda Rosenman, will open Research Matters session at the Footscray Park Campus on 9 December at 9.00 am. During the symposium, researchers from each of the University's faculties will present the findings from their research projects funded by the University's Researcher Development Grants Scheme.

All University staff, especially those who focus on research, are invited to attend. Please feel free to attend for part of the day if you are unable to attend the whole day.

Full details of the program and an online registration form will soon be available on this website. Bookings are essential for catering purposes.


SHARED ARC LINKAGE INFRASTRUCTURE, EQUIPMENT & FACILITIES (LIEF) SUCCESS

Project Title: High-speed, three-dimensional, x-ray fluoroscopy for accurate measurement of human joint motion.

Funding in 2009: $233,000

Partner Organisations & Collaborating Organisations
- The University of Melbourne
- Victoria University
- La Trobe University
- National ICT Australia

Administering Organisation: The University of Melbourne

Project Summary:
This proposal addresses one of the most difficult and long-standing problems in the field of biomechanics: How can human joint motion be measured accurately and non-invasively during common activities such as walking, stair ambulation and running? Low-dose, high-speed, three-dimensional, x-ray fluoroscopy provides an excellent solution to this problem and, in so doing, can play a pivotal role in healthcare, through clinical gait analysis and gait rehabilitation (diagnosis, prevention and treatment of movement disorders); in sports, through the development of personalized training programs for elite athletes; and in entertainment, through the creation of physics-based animations for the video/digital games industry.

SHARED ARC LINKAGE INFRASTRUCTURE, EQUIPMENT & FACILITIES (LIEF) SUCCESS

Project ID: LE0989384

Applicants: Prof MG Pandy; Prof IM Mareels; Prof R Kotagiri; A/Prof RK Begg; Dr KM Crosseley; Dr KE Webster; A/Prof JA Feller; Dr JW Fernandez.
VICE-CHANCELLOR’S PEAK AWARD FOR EXCELLENCE IN RESEARCH AND RESEARCH TRAINING 2008

The Office for Postgraduate Research is also very pleased to congratulate Dr Thuy-Huong Truong on receiving the Vice-Chancellor’s PEAK AWARD for Excellence in Research and Research Training 2008. This award is “in recognition of an exceptional contribution to Scholarly knowledge in the field of Marketing and Tourism and for an Exemplary Achievement in publishing of the research outcomes”.

INDUSTRY WORKS ON LOGISTICS EDUCATION

Victoria University and Linfox Australia are working together to improve and enhance the skills of people working in logistics and supply chain management.

The university’s Institute for Logistics & Supply Chain Management (ILSCM) has signed an agreement to collaborate with Linfox Australia to provide logistics and supply chain management education and associated research.

The partnership gives Linfox access to logistics education from a vocational level through to Master’s degree level and both organisations will work together on relevant research projects.

“...the most appropriate discipline groups. In order to do this we will be asking all academic staff to register their main area of research interest with the Office for Research in early 2009.

ERA DISCIPLINE GROUPS

There will be separate ERA submissions for 8 discipline groups

- PHYSICAL, CHEMICAL AND EARTH SCIENCES*
- HUMANITIES AND CREATIVE ARTS (note this grouping includes LAW)
- ENGINEERING AND ENVIRONMENTAL SCIENCES,
- SOCIAL, BEHAVIOURAL AND ECONOMIC SCIENCES,
- MATHEMATICS, INFORMATION AND COMMUNICATION SCIENCES,
- BIOLOGICAL SCIENCES AND BIOTECHNOLOGY,
- BIOMEDICAL AND CLINICAL RESEARCH, AND
- PUBLIC AND ALLIED HEALTH AND HEALTH SERVICES.

The FOR codes included in each of these groups is available from [http://research.vu.edu.au/era.php](http://research.vu.edu.au/era.php).

DISCIPLINE GROUP SUBMISSIONS

The ARC has indicated that the first two ERA discipline group submissions will occur in 2009 and will be the ‘Physical, Chemical and Earth Sciences’ group, followed by the ‘Humanities and Creative Arts’ group. The complete requirements for submissions for these groups are yet to be announced. The ARC has setup an Indicators Development Group to advise on the most appropriate quality indicators for different research disciplines. More information on this is available from [http://www.arc.gov.au/era/IDG.htm](http://www.arc.gov.au/era/IDG.htm).

RANKED OUTLETS

The consultation period for the ERA Journal rankings list closed in August 2008. The revised ranking list has yet to be released, although the ARC have committed to releasing the sections of the list related to the first two discipline groups scheduled for submission (Physical, Chemical and Earth Sciences, and Humanities and Creative Arts) in 2008. The ARC page on ranked outlets is [http://www.arc.gov.au/era/consultation_ranking.htm](http://www.arc.gov.au/era/consultation_ranking.htm).

RESEARCH SUPPORT FUND: 2009 DISTRIBUTION

The Office for Research will distribute research support funds, based on 2007 research outputs, early in 2009. Staff are encouraged to check their 2007 data that will be used for this distribution by logging on to the Research Data Portal (RDP) ([http://research.vu.edu.au/rdp/rdp.php](http://research.vu.edu.au/rdp/rdp.php)) and selecting the most appropriate discipline groups.
the ‘RSF Data 2007’ button. The login for the RDP system is your LDAP login. The RDP now also includes information on Human Research Ethics applications as well as Research Students and Grants.

A NEW DEVICE FOR EMPTYING SILOS AND HOPPERS – A SUCCESSFUL COLLABORATIVE RESEARCH PROJECT

SILOS AND HOPPERS CAN BE DIFFICULT TO EMPTY

Farmers need to make sure that they can empty their silos completely. If they do not then they not only lose money because grain remains in their silos, but residual grain can harbour unwanted pests. These insects continue to breed and infest the following year’s harvest, and if these insects are detected the grain is rejected by grain dealers and the farmer must pay to disinfect the grain.

Many grain silos presently in use on farms have hopper bottoms that are very shallow and this makes it difficult to remove the last few hundred kilograms of grain. As a result farmers resort to striking the hoppers with anything to hand, and they can be tempted to enter silos to sweep them out. The results can be disastrous because farmers can be killed by the augers used to empty the silos.

One solution to the problem is for farmers to use a conventional silo shaker, but these have problems. Conventional devices usually operate at only mains frequency and they are likely to be ineffective because the energy they supply ‘fights’ the structure and it is resonance that avoids the pitfalls of existing vibrators, and the invention automatically seeks the resonant frequency of the silo and vibrates at this frequency. The computer programming for this vibrator was carried out by Associate Professor Michael Sek, and the program is stored on a memory card like those used in cameras. The inventors have been granted a provisional patent.

An operational device has been built and tested in the field with good results. The next step is to develop a rugged system that can be easily transported around farms and easily fixed to silos. The researchers also need to test the system on a wider range of silos, and to this end they have applied to the Grains Research and Development Corporation for funding to take the invention closer to commercialisation.

The project has been successful in terms of the Collaborative Research Grants Scheme because it has formed a bridge with industry, and it has an excellent chance of generating further research income.

The prototype silo vibrator control system fits into a neat box – it is envisaged that the commercial device will be simplified even further and it will have only one on/off switch. An auger used to empty the silo can be seen in the background.

IN MATHEMATICS, THINGS ARE OFTEN NOT EQUAL!

One can hardly graduate from high school without at least remotely comprehending that in mathematics, equations and their solutions are important. What most don’t realize, however, is that inequations, or as they are more commonly called, inequalities, are also very important. The eminent Researcher & Philosopher of Mathematics, Professor A. M. Fink of Iowa State University, stated [in his influential article, An Essay on the History of Inequalities, Journal of Mathematical Analysis and Applications 249, 118–134 (2000)], “Every mathematician loves an inequality”.

The work of the “Research Group in Mathematical Inequalities & Applications” (RGMIA), located in the School of Engineering & Science at Victoria University, has become influential in the broad field of mathematical inequalities by building on this premise, not only cultivating mathematical interest but demonstrating applications.

This it has done firstly through the internationally edited peer reviewed “Journal of Inequalities in Pure & Applied Mathematics” (JIPAM) that the group established almost ten years ago and which is now regarded as one of the leading publications in the field.

Secondly, by the establishment of the worldwide Research Group in Mathematical Inequalities and Applications consisting of over a thousand mathematicians and centred at Victoria University. This has as its logo:
symbolically supporting the adage,

“The value of the group is greater than the sum of the values of its members”.

Through research and the fostering of interest in mathematical inequalities the group has extended the applications of inequalities to a growing number of disciplines.

A number of the founding group members at Victoria University are pleased to inform the VU Research Community about their recently published book:

**Inequalities for Distributions on a Finite Interval**


This is the first of its kind, providing, as it does, a primer on the use of Inequalities in Applied Probability Theory & Statistics. It presents largely the trio’s research results in the context of other research work and is aimed at graduate students and established researchers working in Probability Theory & Statistics and those working in Analytic Integral Inequalities with interests in applications to Demography, Economics, Physics, Biology and other scientific areas.

In collaboration with numerous international luminaries in Mathematical Inequalities and their Applications, the leading members of the RGMIA have also published the following edited books this year:

- **Advances in Inequalities from Probability Theory and Statistics**
  Edited by: Neil S. Barnett and Sever S. Dragomir

- **Advances in Inequalities for Special Functions**
  Edited by: Pietro Cerone and Sever S. Dragomir

- **Advances in Inequalities for Series**
  Edited by: Sever S. Dragomir and Anthony Sofo

The focus of the first of these is on research, development and the use of inequalities in Probability and Statistics, while the second presents recent research, development and use of Mathematical Inequalities for Special Functions. The third book deals with identities and inequalities relating to Series and their applications in Computing, Numerical Analysis & Approximation Theory.

The above research monographs are the first in the book series, “Advances in Inequalities & Applications” from Nova Publishers, edited by the RGMIA.

**2008 SERLE AWARD**

Dr Robert Bollard, a recent PhD graduate of VU’s School of Social Science in the Faculty of Arts, Education and Human Development, has received a special commendation as a runner-up for the 2008 Serle Award, awarded by the Australian Historical Association. The Serle Award honours the legacy of one of Australia’s leading historians, Geoffrey Serle and recognises outstanding achievement in postgraduate theses in the field of history and historical studies.

Dr Bollard’s doctorate, “The Active Chorus”: The Mass Strike of 1917 in Eastern Australia’, was supervised by Professor Phillip Deery.

In awarding Dr Bollard his commendation, the judges noted that ‘this strongly revisionist history of the mass strike in eastern Australia in 1917 situates the event in a long period of labour militancy from 1916 to 1919. In a lively narrative Robert Bollard convincingly demonstrates the crucial role played in the strike by the rank and file and is genuinely revisionist in its “history from below” perspective on the causes and course of the strike, the reasons for its defeat, and the inevitability and totality of that defeat. The “rank and filist” explanation draws effectively on that historiographical debate and brings its theoretical insights to bear on a case study of one of the key events in Australian labour history. The provocative thesis argues principally that it was not the undisciplined militancy of the mass “active chorus” which doomed the strike but the failures of union leadership, and further that the strike’s defeat was not, as most historians would have it, even close to inevitable. This is an original and successful thesis, which should find a wider readership.’

Applicants D. McCallum, M. Minchinton, and C. Sonn have been successful in obtaining a grant for $10,000 from the Australian Research Alliance for Children and Youth, project titled ‘Encouragement’ Grant, ‘Interventions in Aboriginal child removal in Melbourne’s West.

HOMOEROTICISM IN IMPERIAL CHINA: A SOURCEBOOK

Dr Mark Stevenson (Social Sciences and Psychology, VU) and Dr Wu Cuncun (Univ. of New England) have received news that Routledge will publish their book, Homosexualism in Imperial China: A Sourcebook, in 2010. It will be the first sourcebook in a western language to provide access to the rich primary sources of homosexual writing from imperial China (fifth century BCE to the early twentieth century CE.). This fundamental research aims to provide a reliable guide to an area that has become a minefield of misdefinition, misunderstanding, oversight and ignorance, thereby facilitating cross-disciplinary research in non-Western sexualities.

NEW LEARNING WON MICROSOFT SUPPORT

How do kids feel like learning? Many of them consider classroom study a boring activity. Mathematics is often the least popular subject. A survey shows that 84% students would rather do one of the following: clean their rooms, eat their vegetables, take out the garbage or go to the dentist than sit down with their mathematics homework.

Then what about outdoor activities? What about game playing? Obviously, these are their favorites. A dream of many educators is to turn learning into a favorite activity for kids. Dr. Xuehong Tao from the School of Education, Associate Professor Yuan Miao form the School of Computer Science and Mathematics, now the School of Engineering and Science, Professor Nicola Yelland from the School of Education, and their collaborators in Nanyang Technological University Singapore are conducting innovative research on a new learning model in the area of edutainment. They research on intelligent software agent models and game environment in the context of education. In simple words, they organize young learners play with virtual characters in the game environment where mathematics learning is associated.

A recent design of the research team was an M star venture where a group of learners will collaboratively compete with alien bugs. The “weapon” used in the game is operated with math questions. The game is targeted on tablet computers connected wirelessly, which can be played either indoor or outdoor. Though their study, young learners will no longer feel the learning content boring but eagerly acquire the knowledge for better performance in the game. This proposal has won the Microsoft research grant support for Mobile Computing in Education, 2008.

The research outcome of the game is not limited in math education. It can also be used for public health education, like helping young people to form a healthier life style. Some research also applied game playing in hospitals to reduce the pain awareness. The team’s further plan also includes a GPS component, which will enable games be immersed in the real world.

OUTSTANDING PHD EXAMINERS REPORTS

The Office for Postgraduate Research would like to warmly congratulate:

- Robert Bozinovski, whose PhD thesis was recently passed by all examiners without further corrections. His thesis title is The Communist Party of Australia and Proletarian Internationalism, 1926-1945.
- Adrian Threlfall’s thesis title is “The Development of Australian Army Jungle Doctrine and Training 1941-1945”. Two examiners recommended the thesis be passed without further correction; one subject to minor corrections.

Professor Phillip Deery supervised both students and they were enrolled in the School of Social Sciences.

RESEARCH SCHOLARSHIP APPLICATION ROUND 2009

Applications have now closed for research scholarships for 2009. VU received 46 applications for international scholarships and 59 applications for local scholarships which are now being assessed by the Faculties in the first round of ranking. Applicants will be informed of the outcome after 15 December 2008.

THANK YOU to all who contributed to the content of the Research Matters bulletin.