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RESEARCH

CENTRAL COAST & PORT MACQUARIE

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RESEARCH AND HIGHER
DEGREE STUDENT ISSUE

Welcome to the second of this series, reporting on staff and student research at the University of Newcastle - Central Coast. This is an exciting place to work and to learn with the outcomes of the studies reported on the following pages informing lectures and laboratory work to provide quality teaching as well as community engagement.

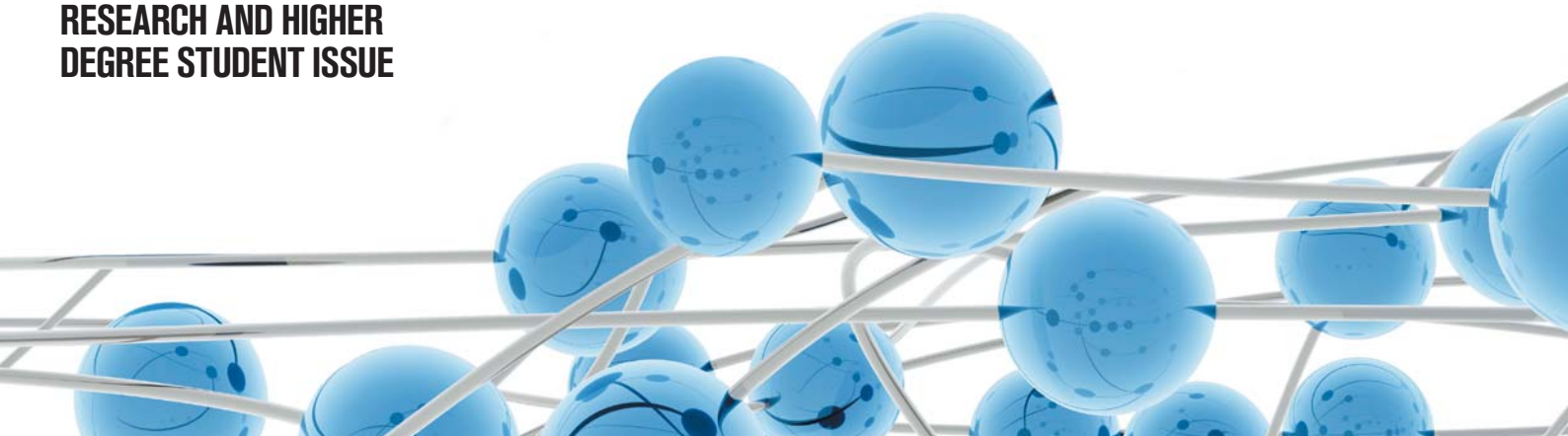
Professor Stephen Crump
Pro Vice-Chancellor and Director
Central Coast campuses

The current issue of *Research Central Coast & Port Macquarie* profiles the work of 9 research and higher degree students who are studying on the Central Coast campuses in 2010.

The scope and content of their projects is both wide-ranging and impressive, covering everything from environmental science, to text-mining and storytelling. Three faculties are represented in the current issue; Science and Information Technology, Health, and Education and Arts.

Research and higher degree students represent the future of their disciplines. It is the training and development they attain that ultimately prepares students on the University of Newcastle, Central Coast campuses, for outstanding careers in their chosen fields.

Professor Derek R Smith
Deputy Director (Research)
Central Coast campuses



SM ZOBAIDUL KABIR

A review of the effectiveness of environmental impact assessment in Bangladesh

Project Overview

The objective of this research is to understand how Environmental Impact Assessment (EIA) is working in the context of Bangladesh. EIA as an environmental management tool has been applied in more than 100 countries and in international organisations to ensure sustainable resource management. There have been many studies on EIA in both developed and developing countries to improve the practice of EIA. While EIA has been in place in Bangladesh since 1995, no comprehensive study has yet been conducted. The current study fills this gap and a holistic approach has been developed and successfully applied. Methods used for data collection are interviews, site visits, observations, and document analysis. NVivo7 software was used to analyse interview data. It is expected that this study will contribute to improve the effectiveness of EIA practice in Bangladesh. Research findings will be useful to other countries of similar context.

Biography

SM Zobaidul Kabir obtained a Master of Environmental Management and a Master of Diplomacy from the Australian National University under the AusAID scholarship program.

SM Zobaidul Kabir, MEMgt, MDip.

Supervisor

Dr Salim Momtaz, BSc (Hons), MSc, PhD.
School of Environmental and Life Sciences
Faculty of Science and Information Technology

ELIZABETH BEMBRIDGE

University versus reality: the transferability of new graduates nurses' Information and Communication Technology (ICT) skills from university to the workplace

Project Overview

Whilst universities have attempted to integrate Information and Communication Technology (ICT) into nursing curricular, it is not known whether the skills developed for educational purposes are relevant or transferable to clinical contexts. A qualitative descriptive study explored the perspectives of a group of new graduate nurses working in Central Coast healthcare facilities to investigate whether the ICT skills they acquired at university are relevant and transferable to contemporary nursing practice environments. Semi-structured interviews were used and the data was thematically analysed. The transferability of ICT skills from university to the workplace is impacted by a range of educational, individual, organisational and contextual factors. Access to adequate ICT and the necessary training opportunities influences new graduate's work satisfaction and their future employment decisions. The ability to effectively use ICT was viewed as essential to the provision of quality patient care. The findings of the current study provide nursing academics and clinicians with new knowledge to incorporate ICT competencies essential for nursing practice and for the progressive development of ICT competence.

Biography

Elizabeth Bembridge completed a Bachelor of Nursing in 2008 at the University of Newcastle's Ourimbah campus and graduated with a Bachelor of Nursing (Honours) Degree in 2010. She currently works at Wyong Hospital as a registered nurse.

Elizabeth Bembridge, RN, BN (Hons).

Supervisors

Dr Sarah Yeun-Sim Jeong, RN, BN, MN (Research), PhD.
Dr Tracy Levett-Jones, RN, BN, DipAppSc (Nursing), MEd & Work, PhD.
School of Nursing and Midwifery
Faculty of Health

RYAN JAMES

Custom-made foot orthoses for the treatment of foot pain

Project Overview

Honours student Ryan James is updating a Cochrane Systematic Review of the effectiveness of custom made foot orthoses for the treatment of foot pain. This update involves searching for new evidence, critically appraising included studies, merging data in meta-analysis and discussing implications for clinical practice and future research. The review will enable health care providers, recipients and policy makers to make better informed decisions about the use of custom made foot orthoses to treat foot pain. If systematic reviews are not updated as new evidence is available in the literature, they can potentially provide false or misleading information. By completing this update, Ryan hopes to improve the decisions that stakeholder's of health care make and improve the quality of care received by all people experiencing foot pain. Ryan's research is supervised by PhD Candidate Fiona Hawke and Dr Vivienne Chuter.

Biography

Ryan James was one of the first graduates of the Bachelor of Podiatry Program at the University of Newcastle, Central Coast campus (Class of 2009). He is currently completing postgraduate Honours research and working clinically as a Podiatrist in Hornsby.

Ryan James, BPod.

Supervisors

Ms Fiona Hawke, BAppSci (Pod) (Hons).
Dr Vivienne Chuter, BPod (Hons), PhD.
School of Health Sciences
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CARLOS ALBERTO BOHORQUEZ RUEDA

Tracking the origin of *Caulerpa taxifolia* in South East Australia using morphological and genetic approaches

Project Overview

Caulerpa taxifolia is a seaweed native to tropical Australia, first described in 1860 in Queensland, and which has since been used as a decorative plant in marine aquaria. In 1984, it was found in temperate waters in the Mediterranean Sea and has spread quickly across the Mediterranean. It is considered a noxious weed because it is fast growing, covers large areas, can potentially displace seagrass, and is toxic to the majority of herbivores. In 2000, *C. taxifolia* was discovered off the coasts of Australia (around the cities of Sydney and Adelaide) and the United States. It was declared a marine pest in New South Wales in 2000. The origin of *C. taxifolia* has not been clear. It has been shown that *C. taxifolia* from different New South Wales estuaries had different morphologies. It raised the question of whether these differences are enough to tell us if there is more than one morphologic "form" of *C. taxifolia* and if these forms match any other "forms" previously described. The main aim of this study is to determine if the morphological differences are sufficient to distinguish populations from different localities and to describe how those "forms" differ in the morphometric features. This information can

then be used to help understand its origin and source in temperate waters and also help track its spread. The next step in the study will involve testing whether based on genetic differences, algae from different estuaries will form similar groupings based on morphology. Finally, comparisons with *C. taxifolia* from other parts of the world will allow us to trace the origin of this invasive species.

Biography

Carlos Alberto Bohorquez Rueda obtained his undergraduate degree in marine biology in Colombia, South America in the Universidad Jorge Tadeo Lozano. He completed an equivalent to a research Master's degree with the thesis titled "Restoration and mangrove management in the National Natural Park Corales del Rosario at central Colombian Caribbean". Prior to beginning studies in Australia, Carlos worked as a teacher at the vocational and University level in Colombia. Carlos's study is partly funded by a grant from The Tom Farrell Institute for the Environment.

Carlos Alberto Bohorquez Rueda, BSc, MSc.

Supervisor

Dr Maria Schreider, MSc, PhD.
School of Environmental and Life Sciences
Faculty of Science and Information Technology

WAI LOK YIU

Investigation and validation of a novel text mining methodology for accident analysis

Project Overview

This research investigates the applicability of text mining techniques for occupational accident analysis. Accident reports contain valuable information to explain how and why an accident occurred. As the volume of text-based safety data increases, there is an emerging need for a software-driven tool capable of analysing large amounts of OHS textual data semi-autonomously, quickly, in a reliable and credible way. Text mining refers to the analysis of (usually large amounts of) textual data to detect previously unknown relationships and to summarise results in novel ways which are both understandable and useful to the database owner. To assess the applicability of text mining techniques, this research extracts textual descriptions regarding management failures in relation to the use of scaffolding from Australian legal court cases and analyses them using text mining software.

Biography

Wai Lok Yiu (Lokie) completed his Bachelor of Occupational Health and Safety and Bachelor of Health Sciences (Honours) degrees at the University of Newcastle. He worked as a safety engineer in the shipbuilding industry in China for 3 years before returning to the University to undertake a PhD.

Wai Lok Yiu, BOHS, BHSc (Hons).

Supervisors

Professor Derek R. Smith, BSc, BEd, MHSc, MPH, MSc, PhD, DrMedSc.
Dr Lynette Guy, Dip Phy, GCScMed, MAppSc, PhD.
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Faculty of Health

Dr Benjamin Brooks, BSc, BBehvSc (Hons), PhD.
National Centre for Ports and Shipping
Australian Maritime College, Tasmania

LYNETTE FLETCHER

Population dynamics, food availability and foraging ecology of the platypus (*Ornithorhynchus anatinus*) on the Central Coast of New South Wales, Australia

Project Overview

A study of the ecology of the Platypus in the Wyong River catchment is being conducted to understand its status and to relate this to the health of the river ecosystem. Because the platypus is very secretive in its behaviour and is rarely seen, a biologist from the Ourimbah campus of the University of Newcastle is employing special methods to study the population. Platypus are known to eat aquatic insects, worms, shrimp and crayfish, but just how much of these food items are available in coastal catchments such as the Wyong River is not known. Seasonal quantitative sampling of macroinvertebrates (the platypus' food) will determine river productivity indicating the type and quantity of macroinvertebrates available to the platypus. As little is known how the platypus selects and processes its prey, a number of captive feeding studies are to be undertaken at the Australian Reptile Park, Somersby with their four resident platypuses. Fish populations are also being monitored in Wyong River as the result of bycatch in the platypus nets. To relate the availability of sufficient dietary resources to the status of the Platypus population, the study is collecting information on the size of the Platypus population and on the health of the individuals.

Biography

Lynette completed her Bachelor of Science degree at the Central Coast campus of the University of Newcastle in 2005 majoring in Sustainable Resource Management and Marine Science. She then went on to complete her Bachelor of Science (Honours) receiving First class Honours in 2007 and is now undertaking her PhD.

Lynette Fletcher, BSc (Hons).

Supervisors

Associate Professor Michael Mahony, BA, DipEd, PhD.
Professor Wayne Erskine, BSc (Hons), PhD.
School of Environmental and Life Sciences
Faculty of Science and Information Technology

WILLIAM VICKERY

Physiological and perceptual responses and movement characteristics of cricket players during 'battlezone'

Project Overview

Recently, small sided games have been used by coaches to develop the technical abilities of team sports players (such as soccer, rugby league, volleyball and hockey) and are increasingly being used for aerobic fitness development. Previous research has demonstrated that small sided games can produce similar physiological and perceptual responses to traditional training and conditioning approaches as well as enhanced skill development. In the sport of cricket a new training technique known as 'Battlezone' is now being used in the elite setting. This training technique is similar to the small-sided soccer games in that field size, player numbers and rules are manipulated to elicit specific responses during a simulated match. However, at the current point in time, no research has been published regarding the physiological and perceptual responses and movement characteristics of small sided cricket games (Battlezone). The aim of the study is to examine the physiological and perceptual responses and movement characteristics associated with Battlezone using a range of different scenarios using both elite cricket players from the Cricket Australia Centre of Excellence Training Squad and local district players. These results will be compared to those



taken from more conventional training drills such as net sessions and intermittent conditioning programs. It is envisioned that conditioning coaches may use the results of this study to plan game-specific conditioning programs for cricket players. The conditioning coaches can use this technique to simulate the specific movement patterns and intermittent nature of cricket, whilst ensuring an adequate training stimulus is provided to all players.

Biography

William Vickery completed a Bachelor of Science (Honours) degree and is currently completing a PhD (Exercise and Sport Science) at the University of Newcastle.

William Vickery, BSc (Hons).

Supervisor

Dr Ben Dascombe, BHMSc (Hons), PhD.
School of Environmental and Life Sciences
Faculty of Science and Information Technology

TERESA ROSE

Channel recovery processes, rates and pathways in the Snowy River downstream of Jindabyne Dam

Project Overview

Vegetation, sediment and flow all interact to shape river channel morphology. In natural systems these interactions are dynamic but in regulated systems, such as downstream of large dams, interactions are limited by flow and sediment reduction. Low flow and sediment immobility can allow vegetation to encroach the river channel and choke it. Changes in Snowy River bio-geomorphology are being assessed using GIS and rectified aerial photography across six periods from 1944 to 2011. Three scales are studied to pick up a range of signals marking bio-geomorphic change. First, the whole of river (within NSW) assessment determines what part of the river channel willows invaded. Second, selected sites and suitable signals obtained from the whole of river assessment are used to measure and analyse bio-geomorphic change and 3) a former willow gallery is used to assess bio-geomorphic change in more detail. While the emphasis is on the geomorphic effect of willows, this research study measures them within the context of four vegetation structures (trees, shrubs, reeds and grasses). Historical channel processes, rates and pathways of adjustment following hydrological disturbances and massive willow removal are determined from the results of this study, and bio-geomorphic recovery models developed using the Brierley and Fryirs (2005) approach. Predictive recovery models are then developed based on the river's capacity to adjust, catchment constraints and future environmental flow release regimes. This research will improve current river recovery models in the literature, build on a growing body of research into the dynamics of hydro-bio-geomorphic interactions, provide evidence of the effects of a massive willow eradication program and provide river recovery models for Snowy River managers under a range of flow release scenarios.

Biography

Teresa Rose obtained a Bachelor of Applied Science and Master of Applied Science-Natural Resource Management from the University of Canberra. She is currently undertaking her PhD in Applied Science (Natural Resource Management) at the University of Newcastle's Ourimbah Campus.

Teresa Rose, BAppSc.

Supervisors

Professor Wayne Erskine, BSc (Hons), PhD.
School of Environmental and Life Sciences
Faculty of Science and Information Technology

Mr Brett Miners
Southern Rivers Catchment Management Authority
Cooma, New South Wales

Dr Ivars Reinfelds, BSc (Hons), PhD.
New South Wales Office of Water
Wollongong, New South Wales

JULIE MUNDY-TAYLOR

Indicators of storytelling engagement among school children

Project Overview

For professional storytellers, many issues exist when performing in schools, universities and community venues and, according to virtual forums, in the minds of storytellers across the globe. When every story takes months to perfect, it is necessary to establish which type of story will have the most impact. Research on this topic has revealed only anecdotal evidence from academics and storytellers about what stories worked best for their audiences. No structured studies have yet examined how children engage with different types of stories. The current study involves an analysis of data from primary school children who have heard stories involving music, drama and props, as well as traditionally told tales. Children's responses were filmed and the footage viewed to capture individual facial expressions and body movements. Software is being used to code their different responses and these codes are then used as indicators of engagement. Patterns are emerging that reveal what kinds of stories regularly elicit the strongest response and how those responses changed as levels of engagement developed. By placing a long-term program of storytelling under systematic scrutiny, a method of reliably analysing responses to storytelling is being developed that will enable storytellers, educators and business people to measure the level of engagement that listeners show as they hear a story.

Biography

Julie Mundy-Taylor is a Client Services Librarian with responsibility for the Faculties of Applied Science and IT, Health and TAFE Primary Industries. Julie is also the Post Graduate Liaison Librarian at Ourimbah. She has previously been a Children's Librarian in Victoria and NSW. A Professional storyteller for 20+ years, Julie is now an Accredited Teller with the Australian Storytelling Guild.

Julie Mundy-Taylor, BA, GDipIM(Lib), GDipChildLit.

Supervisors

Dr Josephine May, BA (Hons), DipEd, PhD.
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Faculty of Education and Arts

Dr Ruth Reynolds, BA (Hons), BSocSc, DipEd, PhD.
School of Education
Faculty of Education and Arts