

RESEARCH BULLETIN



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Wintec
WAIKATO INSTITUTE OF TECHNOLOGY
Te Kuratini o Waikato

*“A community that is rich with knowledge
and technology will prosper.”*

Taking practical steps



DR SURYA PANDEY

Welcome to the first edition of Wintec's new research publication, one of several changes we will be implementing this year as we continually strive to advance our applied research potential.

Research is a strategic priority for Wintec. Firstly the Tertiary Education Strategy outlines technology transfer as an emerging role for the ITP sector, and secondly our ongoing growth in higher level qualifications requires that research plays a bigger role in teaching and learning activities.

It is our goal to optimise our distinctive research contribution to the region. This requires us to continually review our performance to enhance research capability and the transfer of knowledge and technologies to business and the community.

Research, development and technology transfer are not new to Wintec. A good example of a successful research project leading to funding and the transfer of intellectual property within the community is the Centre for Creative Industries (CCI) and the collaboration with Hamilton City Council to develop the country's first business incubator for the creative industries, SODA Inc.

In this magazine we are pleased to showcase some examples of our applied research which benefits business and makes a difference to our community. The magazine complements the Wintec Research online repository – a huge step forward in placing Wintec on the global research stage and facilitating knowledge and technology transfer.

Research that is focused on solving real world problems requires the research to be relevant to community and business needs. Wintec's Employer Partnership Groups, which include key stakeholders from industry and the community, have played an important part in developing research priorities. We intend to build on this platform to ensure that the focus of our research remains grounded in the realities of industry and community needs, is relevant and that our knowledge and technologies are flowing back into the business community.

A community that is rich with knowledge and technology will prosper, and we look to being part of building that community. Wintec is committed to contributing to the region's economic, social and environmental outcomes. Our goal over the coming months is to address this challenge head on. We will create a platform to enhance Wintec's research capability, with an infrastructure that enables industry to shape research priorities and allows developments and knowledge to be transferred into our business community.

I trust you will enjoy reading some of our research stories, and I would be more than happy to receive any feedback you may have to help make this a valuable publication for you.

DR SURYA PANDEY, Wintec Research Director

>> For more information on our research, www.wintec.ac.nz/research

“We’re trying to develop a method where, by looking at a sample of saliva, you can determine whether the disease is in an active or passive phase.”

Strength in numbers

Collaboration is central to physiologist Kevin Stewart’s work at Wintec. The research leader at the School of Science and Primary Industries is working on a number of research projects, two of which are with AgResearch.

“Such associations are increasingly valuable, bringing insights from different perspectives and sharing expertise,” he says.

Kevin uses the laboratories at both Wintec and AgResearch – “AgResearch has equipment that we don’t have and it’s good being able to discuss ideas with their staff.”

There is also benefit for the AgResearch researchers as Kevin’s involvement, which has been funded by the Wintec Research Office, allows them to be involved with projects that would be outside their normal business.

With Brendan Haig from Ruakura, he is looking at protein changes in saliva, and whether that is diagnostic of various conditions such as periodontitis, or gum disease.

“We’re trying to develop a method where, by looking at a sample of saliva, you can determine whether the disease is in an active or passive phase. At the moment a number of indicators are used but none are especially reliable.”

The identification of salivary biomarkers for periodontal disease would be valuable to dentists, who could use them to decide on appropriate treatment. The study also involves Auckland orthodontist John Whelan, who has supplied samples for the pair to work on, as well as important feedback.

Kevin and the team also hope to learn how localised inflammation may influence immune responses in the mouth.

Poster presentations at conferences have been made on the work, which is now nearing completion.

Kevin’s other project follows on from his PhD looking at the ways that cells in various parts of the body receive information from the gut about recent food intake.

He has been separating intracellular proteins from mammary tissue to determine which ones are affected by hormones released from the gut when food is eaten.

“The aim is to learn how different food groups can stimulate the production of gut hormones which may help with milk production. Eating certain foods may stimulate release of particular hormones which may in turn promote metabolic activity in other parts of the body more effectively than other foods.”

The work may assist in the dairy industry by furthering understanding of milk production pathways. He is also interested in the effects on muscle cells, which may provide insight into exercise and fitness. “The experimentation part is nearing completion and I’ll start analysing the data soon.”

In the meantime, he has an Ako Aotearoa-funded teaching best-practice project due at the end of the month – “that will keep me out of trouble until then.”

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DR KEVIN STEWART

"I used a small work to initiate conversation, and create dialogue. This was not about holding an audience hostage; it was a very subtle intervention."

To Sarajevo with art

School of Media Arts lecturer and well known Waikato artist Lisa Benson has recently returned from a second stint in Bosnia and Herzegovina, after again being invited to exhibit at the Sarajevo Winter Festival. The visit, funded by Wintec, saw Benson rubbing shoulders with 26 other artists from around the world – something she describes as a “fantastic opportunity, and very exciting”.

Benson has an impressive resume, including numerous solo exhibitions, group shows, performances and collaborations. But high on her list of honours was being named the recipient of the 2008 Meritorious Research Award, a Wintec Staff award. Benson was nominated by her colleagues and was clearly very pleasantly surprised by the honour. “I work really hard on my research, and it was amazing to have that acknowledgement from my institution. The calibre of the other nominees made this award very flattering.”

Perhaps it was this impressive list of achievements that caught the eye of Korean curator Park Byoung Uk, who discovered Benson’s work via New Zealand curator Ali Bramwell. Park has invited Benson for the past two years to exhibit with the artist group ‘Nine Dragon Heads’ at the Sarajevo Winter Festival.

Benson had a full schedule in Bosnia and Herzegovina, exhibiting work made during her first visit, engaging in a contemporary arts performance project, and creating a new set of work which,

unusually for Benson, saw her taking people’s portraits.

“The work I make focuses on ideas about photography – but I don’t usually use a camera. So for me to want to take a portrait was quite wacky,” she laughs.

It was Benson’s performance piece, however, that was the main focus of her trip. She describes it as “quiet and subtle”. Before leaving New Zealand she had credit card-sized works made from perspex, with a colloquial Bosnian saying on them. Benson handed the works out everywhere she went, using them as a ‘catalyst for contact’. “I used a small work to initiate conversation, and create dialogue. This was not about holding an audience hostage; it was a very subtle intervention. I probably gave out about 500 works, and they will continue to be talked about without me. The reactions were very intriguing, and there was some very playful conversation,” she says.

Back in Hamilton, Benson reflects on the benefits of her trip for herself and her students. “The experience of meeting artists from all over the planet is exciting, and really extends your professional network. That networking is also great for my students, because I can facilitate connections that put them in touch with the wider art world. For them to know Wintec staff are engaged actively in international projects is always positive, because it opens their minds to the big possibilities and experiences that are out there.”

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LISA BENSON

“This increased visibility will help enhance Wintec’s reputation and its ability to attract high-quality researchers and funds.”

Optimising research

Wintec has got itself sorted with the completion of the Wintec Research Archive last year.

“It’s a digital repository that collects the intellectual and scholarly outputs of staff and post-graduate students,” says Learning Hub manager Sarah-Jane Saravani, who oversaw the library-led project. “Simply, the repository maintains and makes more visible the research that goes on here, it shouldn’t be our best kept secret.”

Up until now, current and past research has been on people’s hard drives, in conference proceedings, filing cabinets, offices. “It was even in cardboard boxes in garages. When they left the institution, such work often went with them. Now it is in one central place accessible to anyone in the world.”

The repository links to sites such as the Kiwi Research Information Service (KRIS), hosted by the National Library of New Zealand.

“They harvest the metadata from our repository along with other tertiary institutions in New Zealand. We also link with mega repository sites overseas, which have just about every major university and research institute in the world with them.”

This increased visibility will help enhance Wintec’s reputation and its ability to attract high-quality researchers and funds, Sarah-Jane says. “It will allow our business and industry partners to see what’s going on here with a view to building upon it or possible collaboration across their areas of expertise.”

For students, the repository means their research is held in perpetuity. “They can add new work if they wish, and even direct future employers to our site, where they can see presentations and URLs.”

Previously research would be compiled at the end of the year in the Research Register. “This was always retrospective, whereas the repository is in real time. It gives researchers the opportunity of being constantly up-to-date.”

She believes libraries should have a close tie-in with research, and in maintaining collections securely. “Over time I imagine the repository will develop into other digital collections.”

The repository was launched last September to coincide with the presentation of the first Master of Nursing theses to the library.

After a period of testing and tweaking, the repository is now robust and being maintained by Systems Librarian Ellis Gatchalian, with editing being undertaken by Electronic Resources Librarian Theresa Ball. Submissions are being accepted and the results look promising, Sarah-Jane says.

“I was at a Ministry of Education conference last week and someone from KRIS was giving their presentation. And right there on the screen was one of our researchers, in amongst University of Auckland research. It shows the research going on at a polytechnic is just as important, or weighty, as work going on anywhere.”

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SARAH-JANE SARAVANI & ELLIS GATCHALIAN

“It has been very complex, and it keeps changing and growing and lingering.”

Designer perspectives

Andrea Wilkinson and David Gardener have their fingers crossed. The Wintec Media Arts design lecturers are hoping their work will feature at this year’s International Council of Graphic Design Associations conference in China.

The two collaborated on a project intended to bring international design perspectives to the local New Zealand community.

“It has been very complex,” says Andrea, “and it keeps changing and growing and lingering. More than 3000 design educators worldwide will be attending the ICOGRADA conference in October, that’s the audience we were wanting to reach. It would be the icing on the cake if our project has some presence there.”

The Means by Which we Find our Way: Observations on Design is the culmination of two years’ work, and is more than just a design book; it is a source for new collaborations and initiatives, she says. “We now have connections with a wider network of international designers which bring new opportunities for our students.”

It began when the pair was asked to prepare a show in Wintec’s Ramp Gallery in 2007. “This in itself was rare, because design is seen as being on the fringe, in terms of having gallery space.”

She and David wanted to use the opportunity to come up with a project that would be of value to their students.

“We decided we’d get our design peers around the world to reconceptualise the local landscape here, so we took images

from around Hamilton and asked how they would interpret them.”

Andrea emailed thousands of her colleagues in more than 20 countries and sent images to 120 keen to take part. “They were from all over, the United States, Germany, Iceland and Lebanon.”

The pair realised they had a unique opportunity to further extend the scope of the project. “We asked them to describe an experience which had changed the way they thought about design, to give personal reflections.”

The response, she says, was absolutely amazing, and they felt a book was needed to give the texts a home.

The book took more than two months to edit – “we’re both full-time teachers” – and offers readers 248 pages investigating how graphic designers and educators navigate both the visual and the printed landscape, showcasing more than 70 design educators.

Since its first viewing at the Ramp Gallery, the project has toured internationally, with stops in both Kansas (Kansas State University, Manhattan) and South Carolina (Winthrop University, Rock Hill). It was also featured in the European design and typography journal TYPO. “The texts and essays provide fertile ground for further exploration into usability, cultural artifacts, design-experience and design education,” she says.

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DAVID GARDNER & ANDREA WILKINSON

“We saw the need for a professional body that would promote the films and filmmakers of the Waikato.”



JOE CITIZEN

Out of the mainstream

After completing his masters degree in MediaArts, Joe Citizen – his real name – set up a charitable trust last year to support Waikato filmmakers.

“We saw the need for a professional body that would promote the films and filmmakers of the Waikato. We knew that the arts and film are not well supported, for the region employment in this sector is down 40 per cent.”

He speaks from experience. “I had travelled extensively, and came back to this country and threw away a previous career in mental health to do an arts degree. I then spent five years on the dole before studying for my honours and masters at Wintec.”

The Waikato Moving Image Trust is a self-help group and aims to attract funding to the region.

“There’s an explosion of creativity happening here, but it’s still at grassroots level. I think we have a very dark sense of humour and I also think that because we’ve existed in an environment where we’ve been on the fringe, we are deeply independent.”

The trust created *It Came From the Swamp*, a compilation DVD of seven short films by Waikato filmmakers, most of whom graduated from Wintec’s MediaArts programme. Late summer they went on a ‘Blerta’-style tour, screening the 69-minute DVD nationwide.

“It was much better received in the small towns like Te Anau and Karamea; people can be a bit spoilt for choice in the cities. But overall, it was a success and, as the projectionist at the

Wellington Film Archive said to me, the first time anyone had done anything like this.”

It is important to promote films like this outside the region – raising the awareness of national funders and creating links between practitioners and business, he says.

“Film making communities are starting to communicate with each other, and artistic institutions are realising, hey, there’s something going on in the Waikato.”

There are calls for another tour and Dunedin is including the DVD as part of its film society screenings this year.

“A lot of making films is about asking people for things, making outrageous requests. A lot of mental health – what I was doing before – is about discovering what makes people tick. It’s about communication and bridging different camps. Often business has looked at art and said, ‘would like to invest, but want you to speak business language’ and arts people have looked at business, ‘would like you to invest but you don’t appreciate that this is not unit based.’ This is the challenge.”

He feels hopeful for Hamilton’s artistic future. “I have faith in the Wintec system, the people who go through the media arts course are astounding and this was brought home to me when touring and meeting other groups from throughout the country. I believe we’re producing well-informed film makers. And many artists here don’t care if people are investing in them or not – they have a youthful optimism and charge ahead anyway.”

>> For a copy of *It Came From the Swamp*, email waikatomovingimage@gmail.com

The study highlights the difficulty in getting children active.

Pushing play with kids

Wintec sport and exercise graduate Soroya McGall had two surprises in store when researching New Zealand children's activity levels.

The first was that hardly any of the children in her study group met the exercise guidelines set down by Recreation New Zealand (SPARC).

"The current recommendation is for children to perform 60 minutes of moderate to vigorous physical activity daily. Only two accumulated the required 60 minutes over two days, and no children could do that for any longer than two days," she said.

The second surprise was that this included her eight-year-old son, Lochlainn.

"I had thought he was really active, and he would easily clock up an hour's exercise. But he didn't."

The study, which was for her Bachelor of Sports and Exercise Science, highlights the difficulty in getting children active.

"It's very hard. Teachers are well aware of the need for children to be more active, but the curriculum is too full for any extra physical activity. Ultimately I believe it comes down to parents who need to promote physical activity more at home. And I think the only way it's going to happen is if parents get outside with their kids and join in. Again, I know from my own experience that it can be hard to find the time to do this."

She conducted the research from February to June last year,

working with year three and four students from two primary schools in Hamilton. From a potential study population of 200, 54 students volunteered to participate.

"We accessed 25 accelerometers. These are a little like a pedometer, but measure all movement rather than just steps. The students simply had to wear one for a week."

While the main purpose of the work was to look at children's physical activity patterns to see whether they were reaching the daily guidelines, she was also interested in the comparison between home and school.

"They were more active at school playtime than at home, which was interesting. I would have thought they would have more time for play at home but it wasn't the case."

While many students were quite active, they did not achieve the moderate to vigorous levels needed to result in health benefits.

Soroya is waiting to hear if her study will be published in the British Journal of Sports Medicine – it has been reviewed – and she is hopeful of finding work in this area.

"I have been involved in early childhood education since leaving school; it's my background and a real interest. Ideally I'd like to work with obese children, and carry on research."

She also intends to get out and about more with her son Lochlainn.

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SOROYA MCGALL

"I thought, no, I'm sure we can come up with something better."



DR TIM HUNT

Online and child-safe

Wintec's Tim Hunt is working on a project to ensure emailing is a safe process for children.

The Information Technology tutor says he started thinking about it because he wanted his two children, now eight and 10, to be able to email him and his wife.

"Because of our jobs, we're away from home a fair bit and obviously it's good if they can email us. But I was concerned about them receiving objectionable spam, as a parent the last thing I want to hear my child say is 'what's this, Daddy?'"

While there are already products that safeguard what emails get through, they have a number of limitations. "Such as having to pay an ongoing monthly fee. I thought, no, I'm sure we can come up with something better."

In collaboration with Wintec, he set up a company, Mifrenz, a year and a half ago.

He explains the process involves working with the white list. "That's just a list of all your contacts. You can tell it to only accept emails from addresses on that list, nothing else will get through. You also want to restrict who emails are sent to."

His solution is an application which is downloaded once and installed. "And from then on there's no cost. It just uses an email account that you might have on, say, gmail."

Progress is going well, but slowly.

"I developed an early version which works, but it needed to be accessed from different physical locations. Some friends

were testing it and they were separated, so dad was in one house, and mum another. The way my software was working meant it downloaded emails just to one place. It needed to be server-based."

He overcame this problem to be faced with another. "It's now a bit too slow. So I'm in the process of fixing the speed."

Originally from the UK, he has a PhD in electronic engineering from Surrey University, where he worked at Plessey researching semiconductor devices. "They were like silicon chips, but different."

Then he changed career into IT. His first job in New Zealand was in computer support at Waikato University where he was sent out to connect the vice-chancellor's home computer.

"I'd just come from England, Bryan Gould was always on the news over there; he could have been the next prime minister. And then a few months later I'm having a cup of tea at his house in Hamilton."

He has spent the last nine years at Wintec.

"It's a great job, I'm using the latest software techniques and can indulge my love of computers. And I get to talk about it all to students."

"Research at Wintec is not about pushing theoretical barriers so much as about informing your teaching and finding real world examples for students."

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“You don’t teach authentic leadership; it’s a learning process where triggers and experiences people have had matter.”



Finding the right stuff

Wintec Business tutor Maree Roche teaches leadership and organisational behaviour. While much research is focused on what leaders and organisations do poorly, her own experience in the workforce led her to focus her area of study on what was being done well and how this can be developed and enhanced for the benefit of both employee and organisation.

Maree says her work-life choices were supported by Wintec, with flexible working hours and other solutions that enhanced both her work and her life. This experience led her to find out more about leadership, organisations and how these can be enhanced to make workers feel more motivated in both their work and their lives.

Previous research by Maree showed that perceived organisational support was a major factor in employee wellbeing and commitment. She has since been looking more deeply into how leadership also enhances this.

Organisations which have authentic leaders tend to do better, not just in terms of how their workers perform and levels of trust, but also in the economic bottom line, she says.

“I wanted to know more about organisational wellbeing, and how to build on what’s good. My own experience had me focus on enhancing these strengths and looking at how organisations can develop positive attributes.

“When you have excellent leaders in an organisation, who have a number of attributes they can call on, their staff are more engaged and motivated, and have a good intersect of work and life. ‘Authentic’ leaders have a high level of self awareness,

they provide consistency and because of this engender trust. They know themselves and are true to themselves.”

American business investor and philanthropist Warren Buffett says the three qualities he looks for in an employee are integrity, intelligence and high energy. But he also says ‘if you don’t have the first, the second two don’t matter’. International research suggests that honesty is more highly prized than any other leadership attribute.

Maree’s most recent research paper, on learning authentic leadership, is to take her to Philadelphia later this year to present at a symposium as part of the first World Congress on Positive Psychology, with fellow researchers Hannah Barton of Ireland and American Neil Lutsky.

So can authenticity be taught?

“You don’t teach authentic leadership; it’s a learning process where triggers and experiences people have had matter, it’s about finding a way to capture those experiences to develop authenticity in leaders.”

Maree is preparing to take the research further. She says each individual has the potential to demonstrate leadership, and authentic leadership is necessary at all levels of an organisation. Her next step is to interview business leaders about their own experiences and triggers.

“I want to take this further. A lot of people are teaching authentic leadership because it’s rather trendy and topical and people are hungry for new ideas. I want to dig deeper into the what and why of authentic leadership.”

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“The key is to have such behaviour a part of normal workplace training.”

Insights curb power use

John Clayton didn't turn his lights off for Earth Hour in March, the initiative to raise awareness of environmental issues – he was part of the crowd of 80,000 at Waikato University marking the world-wide occasion.

The Emerging Technology Centre manager said it was a brilliant evening and helped underline the importance of being more energy efficient.

“At home people are driven to make energy savings, but sometimes in their workplace this is not continued.”

Last year he headed a report providing an overview of energy efficiency training in workplaces, both in New Zealand and overseas. Commissioned by the Energy Efficiency and Conservation Authority, the report took six weeks to complete and involved researchers Sarah-Jane Saravani and Richard Elliot.

Workplace training works best when customised and firm-specific, and geared to local issues rather than a generalised programme, he said.

“Communication is important. We found that communicating the benefits throughout the workplace was crucial. Staff needed to know why it was beneficial; that by increasing the firm's bottom line they were more competitive on world markets and, as a result, a more stable employer.”

While some large companies had put energy efficient practices in place often this was not long lasting.

“One of the problems with some workplace training is that it is a one-off. It might work for a day, a week or a month but long-term the commitment is fairly poor. We suggested ongoing strategies that make such practices more permanent, embedding them in the company culture.”

These included updates in staff newsletters, competitions and giving awards for ideas that helped save energy. “There also had to be commitment from management; they had to prove they were taking it seriously and would not only report results but reward good practice.”

Small to moderate-sized businesses were more difficult because often they didn't have a complex organisational structure. With this group, the best solution to spread the energy efficiency message was to use existing communication channels. “So, if you're talking about a motor mechanic in Frankton, they will go to the Chamber of Commerce, or to Small Business Enterprise Centres or similar groups, which themselves will reinforce the message and distribute information.”

The authors also found that strategies for large companies would work for smaller ones – “which means showing that authentic savings can be made and will be rewarded.”

Strategies were provided that meant companies would not need to revisit the report in future years. “The key is to have such behaviour a part of normal workplace training. It's simple to do, they can see benefits and make sure they continue.”

Wintec was chosen to undertake the report because it has a track record of investigating work-based workplace learning. And findings from the research are being applied to the institution itself.

“I took the initiative and passed on the large enterprise model to our support services, who are working on it at the moment. They'll look at the strategies and it will inform our future practice.”

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DR JOHN CLAYTON

