Lessons from the mining boom

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At ECU, our research not only extends knowledge, but aims to improve the quality of life for Australians and people around the world. We provide a high quality research training environment characterised by highly qualified research supervisors, outstanding facilities, a stimulating intellectual environment and helpful administrative support and services. We also offer scholarships, like the $40,000 Inspiring Minds scholarship to support our researchers. So they can help transform lives, make a positive impact and change the world for the better.

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- Ecology, Environmental Science and Management
- Education
- Engineering
- Human Movement and Sports Science, Neuroscience
- Indigenous Culture, Education and Health
- Innovation, Management and Service, Law
- Performing Arts, Creative Writing, Visual Arts and Crafts, and Design

Welcome

There’s no doubting the transformative impact the mining boom has had on Australia, particularly in the mining states like Western Australia. In a few short years it has brought massive changes to our economy, society and environment.

We explore this subject in the first edition of Edith, the new Edith Cowan University magazine. Universities like ECU have a vital role in analysing big issues such as the mining boom. The resulting research helps policymakers, businesses and individuals make sense of our changing world.

In this edition we also look at technology in schools, the modern university campus and the perils of diagnosis by ‘Google Doctor’. Happy reading.

Professor Kerry Cox
Vice-Chancellor

Edith

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10 Mining the tail end of the boom: Western Australia’s resources boom may be tailing off, but the transformational impact on the state is still being realised. As WA looks ahead to the next surge in resources activity, Narelle Towie examines the lessons that can be learned from the boom – and the questions we still need to answer.

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Happiness project

ECU students are teaming up with the City of Fremantle to add a little extra happiness to the port town. Using their graphic design or environmental and spatial design skills, they will solve challenges through human-centred design, which might include wayfinding, art, festivals, or innovative use of public space. Proposed designs may be considered by The City of Fremantle for development into actual facilities in the near future.

South West writers awarded

South West Campus creative writing students swept the field at the annual Margaret River Short Story competition with Rachelle Rechichi winning the South West prize for her work My House. Leanne Browning and Leslie Thiele were highly commended in the same section for their works Woman on a Wire and Catching Trains to Frankston respectively.

In Brief

Spotlight on film school

ECU’s WA Screen Academy has been named as one of the top film schools in the world by industry magazine Reelshow International. It was voted number two after the London Film School and is one of only two Australian film schools in the top ten list.

Home hospital

Home hospital School of Medical Sciences Head Professor Moira Sim received a $345,000 grant from the Target Research Fund to investigate how to reduce hospitalisation rates of aged care facility residents.

The two-and-a-half year study will look at how to educate health professionals about alternatives to hospitalisation.

New director

Professor Neil Drew has been appointed as the new Director of Australian Indigenous HealthInfoNet. Professor Drew brings with him more than 30 years’ experience working with a diverse range of Aboriginal and Torres Strait Islander communities and groups, initially in Queensland and more recently in WA. Australian Indigenous HealthInfoNet is an Internet resource that informs practice and policy in Indigenous health by making research and other knowledge readily accessible.

Targeting cancer

Dr Elin Gray has been awarded a five-year, $750,000 research fellowship by the Cancer Research Trust to investigate if circulating cancer cells in the bloodstream of melanoma patients can be used to identify more effective, targeted treatments. Dr Gray is the first researcher to receive the fellowship grant from the WA-based Cancer Research Trust. The Trust was established in 2009 to support world-leading cancer researchers.

Speech study

A research project is aiming to shed light on the experiences of Aboriginal people who have speech and communication disorders. Stroke and traumatic brain injuries are two of the leading causes of these disorders, but Aboriginal Australians are less likely to be properly diagnosed and have less access to treatment and support services. The project, led by Head of School of Psychology and Social Sciences Professor Beth Armstrong, is targeting six sites in Kalgoorlie, Albany, Perth, Geraldton and the Kimberley. It aims to develop a culturally-sensitive screening tool to identify those with communications disorders.

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Ancient diet study

School of Exercise and Health Sciences researchers are investigating whether eating like a caveman can help protect against diabetes and heart disease. The paleolithic diet (paleo-diet) attempts to mimic the food eaten by pre-agricultural humans. It includes no grains, minimal dairy products, and is high in meat, fruit, vegetables and nuts. Forty women will be involved in the study, with half being assigned to the paleo-diet and the others to a diet based on the Australian Guide to Healthy Eating. Changes in participants’ risk of heart disease and diabetes will be assessed by measuring their blood glucose and cholesterol levels at the beginning and end of the four-week period.

Seagrass publication

School of Natural Science researchers Professor Paul Lavery and Dr Kathryn McMahon have had their book, A Guide to Southern Temperate Seagrasses, published by CSIRO Publishing with colleague Professor Michelle Waycott. The book describes in detail the diverse seagrasses found in the temperate parts of the Southern Hemisphere.

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What is the next big breakthrough?

A ‘real’ artificial brain

The next big thing is an artificial brain made of neurons in silicon that operates with electric pulses, like the human brain does. An artificial brain would learn very much like a biological brain does. The more it is exposed to an environment, the better it will behave over time. Robots, for example, are today operated by computer programs anticipating known parameters and using sensors. If a parameter is out of range or a sensor fails then the robot program could lead to erratic behaviour. A robot based on an artificial brain will adapt and learn in new situations. This is a massive paradigm shift in today’s world of automation and intelligent systems, which by the way are not intelligent, as they just follow instructions. The road is still long before we can see a Wall-E or an iRobot but this will be a fascinating journey.

Associate Professor Adam Osseiran
School of Engineering

Exercise as medicine

Physical exercise is currently the most effective medicine available for preventing all chronic diseases simultaneously. For people with cancer, exercise reduces mortality by 30 to 60 per cent which is of similar magnitude of benefit to other cancer treatments such as chemotherapy. However, we have little understanding of the mechanisms by which these amazing benefits are produced. There are at least 10 recognised mechanisms by which exercise inhibits cancer progression and the next big thing is to determine the specifics of these pathways and how we can manipulate exercise type and dosage to optimise these effects with other treatments.

Foundation Professor of Exercise and Sports Science Rob Newton
School of Exercise and Health Sciences

Wearable technology

We are starting to see a few gadgets appear on the market, but expect to see this turn into a flood in the next few years. Wearable technology is mainly focused around health, wellness and fitness, measuring everything from your level of physical activity to sleep patterns. Basically, you will get to choose from an array of small, wearable hardware devices that monitor every aspect of your daily routine, and which interact with your smartphone or tablet. Although they didn’t invent the technology, expect to see a big announcement from Apple sometime this year in the wearable technology area.

Associate Professor Andrew Woodward
School of Computing and Security Science

The terms ‘business’ and ‘ethics’ may be a misnomer to many people, but Dr Julie Crews finds it fascinating how corporate leaders make decisions.

Imagine the next difficult decision you make at work is splashed across the front pages of the morning papers and on the evening television news. How comfortable would you be with that information being shared with the general public? What would your friends and family think?

That’s one of the tasks Dr Julie Crews, a lecturer in ECU’s School of Business, believes should be placed on decisions we make at work — not just so to ensure we look good if reporters come calling, she says, but to help us make the right ethical decision.

“The study of ethics is often looking at deciding between two right answers.”

“Unless you’re a complete psychopath with no sympathy whatsoever, you can differentiate right from wrong,” she says.

“But the study of ethics is often looking at deciding between two right answers.”

Research in this area came of age in the 1970s, tied in part to the rise of corporate social responsibility but it’s not just about keeping executives off the front pages of newspapers.

Unethical behaviour can have wider ramifications, from the collapse of companies to disasters such as the Global Financial Crisis.

“Look back to the GFC, it was about the integrity of leadership and the decisions they made which were on very shaky moral grounds,” Crews says.

The GFC provided her with a rich field of study. However, she is pessimistic about whether hauling a group of stockbrokers into a business ethics course would prevent future financial collapses.

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“Looking at past cases of corporate collapse, what’s highlighted for me is not that they didn’t have all the right systems in place,” she says.

“It’s a collapse of integrity of the leaders that ends up being a significant factor in the demise of the company.”

Can a leader’s ethics, or lack of, have such a significant impact on a company? Crews believes so.
Putting a price on the Leschenault Inlet

There’s no doubt that a badly-designed website can be frustrating. But for the 20 per cent of Australians with a disability, that poor design can be the difference between accessing vital information and remaining in the dark.

PHD candidate Vivienne Conway has made it her specialty to identify the errors which limit access by people with visual, physical and mental disabilities.

Ms Conway says these errors can range from low-contrast fonts that are hard to read by the vision-impaired to websites with major issues that make it impossible for screen readers to function properly.

“In addition organisations can be liable to be sued if their website is deemed inaccessible and no action is taken to remedy the situation,”

The Disability Services Commission provides, as you’d expect, a good example of an accessible website. Ms Conway explains why.

1. Skip links are visible to everyone who uses a keyboard. Many sites only make them available to screen reader users who hear them. It is important they be available visually so that keyboard users can take advantage of them too.

2. Other Languages. There is a link provided to take the user to a selection of other languages. When another language is chosen, the page refreshes and the content is in that language.

3. Warning that content will open in a new window. Non-visual users can become disorientated when links open in a new window without warning. DSC has provided alternative text that alerts their users to what will happen when they select these links.

4. Colour contrast. All text on the site has been checked for sufficient colour contrast between text and background. All main content text achieves AAA compliance for contrast.

5. Slideshow. Many slideshows start automatically when a page is loaded and continue to run without user control. The changing images can be difficult to comprehend for people with low vision as they change before they have been able to take in the content. DSC has provided a button that toggles between Pause and Play.

The researchers found most residents “cherish” the river and aspire to improve its ecological health.

“The highest value that the population have for the place is natural open space.”

ECU Regional Professional Studies associate professor Sandra Wooltorton says the complex project allowed the university to work closely with the community, including high school children, the Wardandi Noongar people and local businesses.

“The highest value that the population have for the place is natural open space and everyone wants improved ecosystem health,” Professor Wooltorton says.

“It’s quite clear that the population today wishes for natural values to be maintained and enhanced and for the river to have high ecological value.”

The team spent 18 months reviewing literature on the region, interviewing experts and surveying more than 750 people using questionnaires, focus groups and interviews.

The researchers found most residents use the estuary for recreation. Half described it as a place for walking dogs, crabbing, meditating and taking part in outdoor sports.

While forest and open space has diminished in the past 50 years, the estuary’s ecology remains highly significant. It is home to the southernmost mangroves in Australia – 700km south of the nearest mangrove forest.

It also supports 60 species of waterfowl, birds on its open waters, with up to 5000 present at any one time.

But with the system under threat, Wooltorton says the community is worried.

The report found signs of stress such as fish, dolphin and swan deaths, macro-algal blooms and reduction in fish, prawn and crab stocks over time, with 95 per cent of respondents wanting the environment considered in all decision-making.

Wooltorton says solutions offered by those surveyed varied, however. Some sought engineering solutions, such as linking the Preston, the Inner Harbour and the Inlet.

“On the other hand, a number of people argued that the solutions include only policy, legislation and education,” she says.

“They want no further major engineering works to be undertaken because of the risks and the issues connected with past efforts.”
Western Australia’s resources boom may be tailing off, but the transformational impact on the state is still being realised. As WA looks ahead to the next surge in resources activity, Narelle Towie examines the lessons that can be learned from the boom – and the questions we still need to answer.

The boom may be over, but it’s certainly not bust for WA mining. After a tumultuous few years for the state and its economy – accompanied by surges in population, the migration of thousands to and from the North West, and shifts in the way Western Australians live and work – there are clear signs of the slowing pace.

Less than three years ago, 1400 engineering jobs were being advertised on job-advertising website SEEK each week. That number has plummeted to 600 by 2015 and the state needs to find new ways to support its workforce. The boom may be over, but it’s certainly not over. So when a lot of people were talking about the mining boom, yes, it was on a once-in-history set of events. From here to there and back again.

The impact of that demand has been seen in WA’s powerhouse economy. Over the past decade it has grown by more than 5 per cent on average each year – outstripping the national economy. But the economic transformation has meant a social transformation as well.

The stressful nature of the work and the family manage the FIFO schedule and those who are struggling may be less likely to find the time or inclination to participate. However, the findings indicate 73 per cent of adolescents are sad when the FIFO parent returns to work, 43 per cent feel nervous or anxious, and 46 per cent worry about safety at work. Men are generally less likely to seek support because of a fear of being seen as weak, as FIFO employees in teams which may provide some social support, men are generally less likely to seek support because of a fear of being seen as weak, as FIFO employees in teams which may provide some social support, men are generally less likely to seek support because of a fear of being seen as weak. Some families basically have two lives: one when the worker is away, and one when they are at home. How the family manages those two periods of time can set two different strategies of how families deal with, says Watson. Overall, FIFO doesn’t appear to have a particularly negative impact on children in most families, and in some ways the lifestyle offers more of an ability to be more resilient.

“We’ve seen levels of iron ore exports to China from WA pretty much triple or quadruple just in the space of four years and there is no sign that’s likely to decrease any time soon,” he says.

In 2003, China’s thirst for raw materials became insatiable and the price of WA’s peak commodity, iron ore, leapt by 1000 per cent. The opportunity meant that while Western economies across the world struggled with debt and poor economies, Australia avoided a recession. And, the economic joyride isn’t over yet, says Buckland.

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“The knock-on effect of that lifestyle is felt by their families,” Watson says. “Before now, little attention has been paid to the impact of regular parental absences on a teenager’s coping mechanisms. Watson warns that a problem with this type of survey is that only a small percentage of the FIFO workforce was surveyed, and those who are struggling may be less likely to find the time or inclination to participate. However, the findings indicate 73 per cent of adolescents are sad when the FIFO parent returns to work, 43 per cent feel nervous or anxious, and 46 per cent worry about safety at work. Men are generally less likely to seek support because of a fear of being seen as weak, as FIFO employees in teams which may provide some social support, men are generally less likely to seek support because of a fear of being seen as weak. Some families basically have two lives: one when the worker is away, and one when they are at home. How the family manages those two periods of time can set two different strategies of how families deal with, says Watson. Overall, FIFO doesn’t appear to have a particularly negative impact on children in most families, and in some ways the lifestyle offers more of an ability to be more resilient.

“While many FIFO employees work in teams which may provide some social support, men are generally less likely to seek support because of a fear of being seen as weak or not masculine,” she says.

One of the significant shifts to WA’s workforce in the past decade has been the rise in FIFO work. According to the 2011 census, Perth was home to about a quarter of all Australia’s mining workers — but two out of five reported travelling hundreds if not thousands of kilometres to work.

One key lesson for educators is that they need to start training the next generation of resources jobs — but two out of five reported travelling hundreds if not thousands of kilometres to work.

The WA Chamber of Minerals and Industry spokesman Bruce Campbell-Fraser says technically skilled graduates hold the future in their hands. “It’s much more about automation now.”

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Edith Cowan University PhD candidate Philippa Vojnovic says Australian FIFO workers kill themselves at almost five times the rate of the rest of the population. The stressful nature of the work and isolation gives rise to high rates of depression that cost the industry $5.9 billion last year, according to Vojnovic.

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**Once mine, now everyone’s**

It is a lesson learned the hard way in just about every region rich with resources— that mines have a significant impact on the environment long after their minerals are exhausted. But thanks to the work of Edith Cowan University researchers, the future of many of Western Australia’s mine pits is a bright one, returned to the community as assets not eyesores.

Aquatic ecologist Professor Mark Lund and his team have been working with the WA Government and mining companies in the hope of rehabilitating up to 10 abandoned pit lakes once used for open-cut coal mining in the South West near Collie.

“Potential end uses for these pit lakes include conservation areas or for the largest lake, use as a water ski area,” Lund says.

While many are too dangerous to swim in, such as in Collie, it can be relatively clean.

When mining operations finish, the pits gradually fill with groundwater and usually devoid of life.

Meanwhile, the FIFO phenomenon has not just altered the way Western Australians live, but where they live too.

The newly mobile workforce has caused a population explosion in previously sparse areas, and although rents have come off their peak, homes in once dusty outback towns can still cost as much as a property in blue-chip Sydney suburbs.

In Karratha, where the average annual income is $87,000, compared with the typical Australian income of about $44,000, the asking price for a standard four–by–two rental is $1600 a week. At the height of the boom, it was $2500.

Addressing the impact of the property bubble on key workers is another area experts feel needs to be tackled in preparing for any future uptick in activity as is getting the infrastructure in place to support the change.

Besides the demand for air transport, roads are congested and traffic snarled. Campbell–Fraser says WA’s population has grown so rapidly it has put pressure on ports and rail, at times delaying works.

“We have not coped with that as well as we could,” he says.

“We need to make sure we need to get the operating environment right and getting costs under control.”

**They’re taking our jobs: How has WA’s workforce changed?**

In the midst of the boom there were fears thousands of foreign workers heading to Western Australia would take jobs away from Australians—but new research has found the opposite to be true.

Instead, foreign workers safeguarded local jobs during the resources boom, according to a two–year Edith Cowan University study.

Despite fear and rhetoric that workers moving to WA on temporary skilled migration permits—the much–maligned 457 visas—were being employed in favour of locals, researchers at ECU’s Centre for Innovative Practice found companies would have gone bust without them.

**“What we found was that smaller firms said without the 457 visas they would have gone broke.”** Bahn says.

Bahn and the team surveyed 50 smaller firms that service the mining industry, such as engineering companies and machine operators.

“Overall, business representatives interviewed reported a positive experience of employing workers on 457 visas and valued this much–needed source of labour,” the study concluded.

**“This places the resources sector in Australia at the forefront of innovation and technology.”** the study said.

Meanwhile, the team found foreign workers increased WA’s stable population and that half those who came under 457 visas wanted to settle permanently.

“Firms that service the mining industry, such as engineering companies and machine operators, reported a positive experience of employing workers on 457 visas,” Bahn says.

“We found that the 457 visa was a mechanism firms could use to respond quickly to a skills shortage. It worked for smaller firms. But now with a slow down in the sector and with more domestic workers available businesses have a pick of the domestic workers and so visa use is receding,” Bahn says.

“It’s doing what it’s supposed to do.”

**“What we found was that smaller firms said without the 457 visas they would have gone broke.”**
A thousand years after the first universities were designed, campuses worldwide have strikingly similar built forms. There are halls where hundreds of scholars can hear a single lecturer. There are classrooms with desks and libraries with study nooks. There are impressive buildings for administrators, corner offices for professors and less salubrious quarters for untenured staff.

But with technological changes and growing student demand for flexible learning, what does it take to design a modern university?

Director of Facilities and Services Brian Yearwood is the man working to the Master Plan for Edith Cowan University, a document that could guide the expansion of the Joondalup campus footprint from 100,000 sq m to something three times that size.

It is a big undertaking, but one Yearwood says is likely to be necessary given the trajectory of growth in the northern suburbs of Perth.

“We start planning with a clear understanding of what our drivers are — and our key drivers are student numbers and research,” he says.

“We are up around 24,000 students at the moment. By 2020 it could be 30,000. Research is a big driver and we are looking to the future on that as well. The key message is that we are planning for growth and that’s what the construction is for.”

This year, ECU will mark the completion of a significant building round, including the landmark ‘Ngoolark’ Building 34 project, which will bring student facilities under one roof while connecting via a bridge to the award-winning Joondalup Library.

An Engineering Pavilion is under construction behind the recently completed Engineering and Technology Building, the ECU Health Centre is nearing completion in Wanneroo, and the University is working with private partners Campus Living Villages to build another 127 beds of student accommodation at Joondalup.
“Every building that we do, whether it is a library, the School of Education or Building 14, is designed as a big shell with as few columns and risers as possible, which means you can reconfigure the building whenever you like,” she says.

“All the ceiling spaces and areas like that are easily modified to allow things to change. Every building can eventually be stripped down to nothing and started again without having to affect the outside.”

Guj says many organisations face challenges to the idea that people need to congregate in one place to work well.

“Every building that we do, whether it is a library, the School of Education or Building 14, is designed as a big shell with as few columns and risers as possible, which means you can reconfigure the building whenever you like,” she says.

“All the ceiling spaces and areas like that are easily modified to allow things to change. Every building can eventually be stripped down to nothing and started again without having to affect the outside.”

Guj says many organisations face challenges to the idea that people need to congregate in one place to work well.

“Where I think design is settling is on the need for diversity. If you have can deliver information in mass in an electronic way and it suits the discipline then a large lecture theatre is no longer part of things,” she says.

“But there are quite a lot of disciplines where delivery might be in mass but then you move into breakout sessions with other students.

“It is a dynamic process and everyone needs to understand that while there might be significant requirements they want right now, the design of the building is for the future, for users you haven’t even met yet.”

What makes a university?

Many of Europe’s oldest universities have histories – and buildings – that date back centuries, and while their physical forms may change, they often evolve for surprising reasons.

Oxford University can date back its teaching to 1096, but its ancient halls and colleges were developed from the 13th and 14th century as a way of separating students from townsfolk.

The regular clashes between ‘town and gown’ were so bad that they culminated in riots on Oct 9th. The riot took students usually to study Buddhism but at times taught subjects as diverse as military science and elephant lore. Runes have also been found of Buddhist mahavasara being built as early as the 3rd Century AD in what is now modern day India and Pakistan.

But one of the earliest places for higher learning probably had few buildings, though it is known to have featured a gymnasium and running track.

In 387BC the Greek teacher Plato inherited land near a sacred grove of olive trees outside the walls of Athens.

The plan did not initially meet enthusiasm. One anonymous letter writer to the Sydney Morning Herald declared the idea would not engage as teachers as ‘evidence of the low moral feeling that prevails among us’, pointing to the ‘godless academies in France as a warning.’

I greatly fear that this much lauded University of Sydney will be no better, but like a deadly upas-tree, planted in the midst of our capital, will produce a blighting and ruinous effect upon those immortal minds which may come within the sphere of its influence.”

Australia’s first university was the University of Sydney.

Australia’s first university was the University of Sydney.

Societies of students from different countries banded together in ‘nations’, usually for legal protection and to spread the cost of fees, and eventually the nations joined forces to form a ‘university’.

What makes a university?
Photography student Deedee Noon investigates the many shades of pink in a series of portraits featuring 34 WA females showcasing their favourite colour. Pinkification, the result of Ms Noon’s honours research at ECU, considers how different generations are adopting, adapting and reacting to pink.

Those who sat for Ms Noon range in age from 4 to 88 and include a mayor, an adult waitress, a German Idol contestant, and a Marilyn Monroe impersonator. Each gave themselves a pseudonym of their choice, which has become the title of their portrait.

At the time of shooting, Deadly Pink was employed as an adult waitress while attending art school at the Central Institute of Technology. A pink-hater when growing up, Deadly Pink claims her Japanese-inspired pink usage expresses an undertow of rebellion. When working as an adult waitress in metropolitan Perth bars, diminutive Deadly Pink was paid extra by men wanting her to take off her only remaining item of clothing, her pink platform shoes.

Many pink milestones mark the life of Pink Relief – pink childhood bedroom, pink Datsun car, pink golf clubs – but after being diagnosed with breast cancer, pink shifted from being fun to more serious associations. When sick from breast cancer treatments, pink became a lifeline and a connection to other women who have also suffered. In time pink has come to signify life, hope, and future. While Pink Relief cuts a serious corporate figure in her professional life as the Mayor of Wanneroo, her outfits still sport a hint of pink.

My Shabby Pink Palace is fanatical about pink. Her entire home is decked out in pink with the exception of her son’s black bedroom. She has been a serious collector of all things pink for almost a decade.

Pucker Pink came to Perth from Germany in 2011 to undertake media studies at ECU on an exchange program. Pink is not a gender-specific colour for Pucker Pink. Instead, she uses pink playfully as an attention-seeking visual device – decisive, look-at-me pink – a strategy which is currently serving her well as a contestant in Germany’s Idol singing competition.
Technology has an important role to play in not only educating school students, but training our teachers, writes Katherine Powell.

When the first computers appeared in Australian schools in the 1980s, they started a revolution — even if the clunky boxes with black screens and green type now best belong in a museum.

Thirty years on, that revolution continues, with seemingly every kindergarten pupil adept at using Mum’s phone and every primary-scholar a whizz on the family tablet.

But with a technological landscape that is changing so dramatically and so fast, it can be a challenge for teacher education to keep pace.

Edith Cowan University Head of School of Education Chris Brook says universities Australia-wide have had to change the way they operate to ensure they give students the best chance of success.

To keep up with the speed of change, ECU has evolved its education program so that rather than teach students how to manipulate the latest app or how to use a new device, they understand how to incorporate technology in all its forms into every aspect of teaching.

Brook says ECU also practises what it preaches, embedding technology into its degree program, giving pre-service teachers the opportunity to use technology firsthand to support their own learning and modelling ways in which they might support the learning of their students in the future.

What’s more, Brook says, technology removes some of the constraints — and lack of connection — that were inherent when trying to teach new teachers in the traditional classroom setting.

“Technology is enabling us to teach the way we have always wanted to in the past,” Brook says. “It’s creating a strong social environment that supports the learning of our students.”

Brook believes technology allows the class to become multidimensional, creating additional learning spaces and enabling students to learn in different ways at different times.

“This meets more needs than the traditional classroom model of (students at the) same age, same location and same time, which only meets some of the students needs, some of the time,” he says.

“Technology can create a completely new learning space that helps to bridge the gap between students.”

CONTINUED 22
WORKING WITH THE IGENERATION

While today’s education students may seem young and technologically adept – many of them only in their 20s – the generation they will teach are even more immersed in the technological world.

“They were born in the information era where the Internet has always been readily available to them.”

Senior lecturer Dr Jenny Lane says primary and high school-aged children have grown up in the digital age, constantly surrounded by technology.

“They have never known a time without technology,” she says.

“They were born in the information era where the Internet has always been readily available to them. They use laptops and tablets. Even primary school-age children have iPads and use interactive whiteboards.”

“Children are using these devices mainly for their recreation time so it seems a logical progression to incorporate that technology into their learning to ensure students are engaged.”

With the push to what are known as one-to-one programs, when there is one laptop or internet-enabled device per child, Lane says students also have the most up-to-date research at their fingertips.

“Previously you would have had students looking at encyclopedias or books, which could take days to gather information to do their assignments,” she says.

“Now they can have access to the most accurate and up-to-date information at the touch of a button.”

The same applies for teaching students.

While pre-service or in-service teachers returning to study might once have relied exclusively on textbooks or the uni library, technology has connected them to the world.

Lane says many education students complete whole units online, using wikis, blogs and digital portfolios to log their coursework and receive feedback. One of the benefits of this, she says, is the ability to create a personal learning network.

“We’re creating open forums for our students,” she says.

“Practitioners are working together, sharing resources between pre-service teachers, teachers in classrooms, academics and even pre-service teachers in other countries like Israel and South Africa. They’re doing it all using technology as the medium.”

For ECU, the decision to model the use of technology throughout the education course is not only necessary when preparing the teachers of tomorrow, but reflects a growing awareness by education authorities of the need to produce teachers with excellent technology skills.

Lane says technology outcomes are now a major part of the professional standards set for Australian teachers.

“Pre-service teachers need to demonstrate that they can meet these standards along with specific technology outcomes,” she says.

“It is important in teacher education that we train our future teachers to ensure they can meet these outcomes.”

BEHIND THE GLASS

One example of how technology has transformed the education program can be seen in the use of observational classrooms.

In 2006 and 2007, ECU conducted research at one of the first observational classrooms to be set up in Ballarat in Victoria, allowing teaching researchers, teachers and students to watch classroom interaction without intruding.

Brook says the feedback received at the time from in-service teachers was extremely positive.

“Teachers said to us, ‘this is the professional development that we’ve been looking for. It makes a difference to how we teach.’” he says.

ECU has gone on to develop two observational locations in WA, at Ashdale Secondary College and Roseworth Primary School, that use video and audio technology.

It has not only revolutionised the way pre-service teachers are taught, says Brook, but it is a very effective tool for in-service teachers to continue their own learning.

“It has helped us create a common language around teaching and learning and allows us to see what looks like,” he says. “It gives us the opportunity to explain it and discuss it.”

While those reluctant to embrace technology would have worried us before believe computers will one day replace traditional face-to-face teaching, Brook says he believes this couldn’t be further from the truth. “Learning is a social experience and humans are social beings,” he says.

“We like to be together and a computer will never be able to replace that face-to-face learning environment.”

Lane says technology isn’t a substitute for traditional methods of learning but has changed the dynamic by allowing for collaboration and idea sharing.

“Learning used to be very hierarchical,” she says.

“The professor would sit at the front of the room and teach the students and that’s where it would end.”

“Technology has allowed the process to become more horizontal. Ideas can now be shared between pre-service teachers, researchers, professors and teachers in schools. Everyone can contribute to the discussion.”

Case Study One

ASHDALE SECONDARY COLLEGE

ECU’s collaborative partnership with Ashdale Secondary College exemplifies how video technology can be used as a teaching and learning tool.

The school has two specialised classrooms equipped with video and audio equipment enabling pre-service and in-service teachers to record, analyse and discuss their teaching techniques with their peers.

Dr Jenny Lane says this has been a fantastic tool for those teachers who have been in the classroom for many years but have never had the opportunity to see themselves in action.

“We use video as a tool to help teachers with their own learning,” she says.

“It becomes part of their normal practice. There are a lot of collaborative aspects that come with using video technology.”

The video technology can be used to gain feedback, from colleagues in collaborative groups or shared around the world using online blogs. This means teachers can engage in an open forum accessible from anywhere in the world.

“We are developing a community of practice model,” Lane says.

“Practitioners are working together and sharing resources between pre-service teachers, teachers in classrooms and academics in other countries around the world.”

Lane has implemented the use of robotic mobile technology with motion sensors in her research.

This allows a remote mobile phone to be plugged into a base station that moves as it tracks a teacher’s movements around the classroom as well as being connected to a microphone. The footage can be used to record the practice of in-service teachers.

Case Study Two

NUMBEAT APP

With a fall in numeracy skills among Australian children, ECU Professor of Psychology Craig Speelman looked for a solution that could increase problem-solving skills and increase the speed children could acquire knowledge in arithmetic.

“Children are taught at a standard that’s where it would end. If it would be possible to create a game that, after repeated use, would improve a child’s mathematical problem solving skills it is not simply a mathematics app with flashing lights and colours but is designed as a fully functioning game. Speelman says his research showed that children were motivated to play the game consistently.

Speelman designed the game using the premise that lower skill levels needed to be acquired and mastered before moving on to higher skill levels.

The result is creation of Numbeat, an app that Speelman hopes will help educate children and address low numeracy levels, in a way that engages students.

“Problems with poor numeracy begin early in life,” Speelman says.

“Because students learn at different rates and require different amounts of practical to master a particular skill it is difficult for a teacher with 20 to 30 students to pace their instructions to keep every child at the same point in the curriculum.”

While the intention of the app is to assist in increasing a child’s mathematical ability, it is unique in that it integrates both educational and game elements.

It is not simply a mathematics app with flashing lights and colours but is designed as a fully functioning game. Speelman says his research showed that children were motivated to play the game consistently.

Speelman designed the game using the premise that lower skill levels needed to be acquired and mastered before moving on to higher skill levels.

Throughout the game players solve problems using their mathematical knowledge in order to defeat bad characters.

As the game advances, with more than one hundred levels and five different worlds, the problems increase in difficulty, facilitating the development and retention of automatic maths skills.

Speelman says his research showed that an app like Numbeat allowed children the opportunity to practise solving problems over a period of time and only advance when they were ready.

Children could also work through the game at their own pace – something a classroom environment is not always able to provide.

Numbeat was tested in several primary schools and results showed most children increased in speed and accuracy when solving general mathematical problems, after having played the game for as little as a few hours.

Numbeat is available to download from the Apple App Store.

“The results show that educational games have a role to play in complementing traditional classroom lessons.” Speelman says.

“If students don’t master the basic skills it will often result in them being turned off maths for life.”
MAY
PINKIFICATION
Spectrum Project Space, Mount Lawley Campus
21 May – 7 June
Photography honours student DeeDee Noon investigates the many shades of pink in her exhibition at Spectrum. It features photos of 34 females, ranging in age from four to 81, in their personal pink-infused world.

JUNE
WEST SIDE STORY
Regal Theatre, Perth
14 – 21 June
West Side Story is the Academy’s students take on their biggest production of the year in Arthur Laurents’ classic tale of star-crossed lovers.

BUNBURY OPEN DAY
South West Campus, ECU, Bunbury 24 June
ECU’s South West Campus opens its doors to prospective students to ask questions about courses, careers or what life’s really like at uni. Meet our highly-qualified staff and check out world-class facilities.

JULY
ATSE EMINENT SPEAKER SERIES
Joondalup Campus, ECU
1 July
The Western Australian Division of ATSE holds an annual Eminent Speakers Seminar to provide a forum for the study and discussion of issues relevant to the formulation of public policy for technological sciences and engineering based activities, and the communication of expert advice to Government and the community.

ECU NAIDOC WEEK
Kureungkarr Khatiny Gallery, Mount Lawley Campus
4 July
NAIDOC Week is an opportunity for Indigenous and non-Indigenous Australians to join together to recognise the valuable contribution Indigenous people have made to this country. The theme for this year is ‘Serving Country: Continuity & Beyond’.

AUGUST
MOUNT LAWLEY OPEN DAY
Mount Lawley Campus, ECU
22 – 25 August
This exciting new adaptation of Dickens’ most well-loved novel, in collaboration and continuous learning, presents the themes of individualism. When lecturing at the annual event, Joyce was also struck by the humility of the Chinese athletes. Joyce was also struck by the humility of the Chinese athletes.

THREE MINUTE THESIS FINAL
Joondalup Campus, ECU
13 August
The Three Minute Thesis competition challenges ECU PhD and Masters students to present their thesis topic and its significance in an exciting and engaging way in just three minutes.

GREAT EXPECTATIONS
Geoff Gibbs Theatre, Mount Lawley Campus
22 – 28 August
This exciting new adaptation of Dickens’ classic sentimental love story performed by WAAPA third year acting students lays bare a tissue of lies and guilt while tackling big questions of identity.

SEPTEMBER
ECU RESEARCH WEEK
All ECU campuses
15 – 21 September
Bringing together staff, students and researchers, Research Week aims to strengthen ECU’s research culture by sharing ideas, knowledge and inspiration.

LABRATS
Joondalup Campus, ECU
22 – 24 September 2014
This annual event provides an opportunity for students in Years 10 and 11 to visit ECU and participate in hands-on science workshops led by the Faculty of Health, Engineering and Science.

WA SCREEN ACADEMY GALA SCREENING
Luna Leederville, Perth
25 September
A screening of short films created by the 2014 WA Screen Academy graduating class of producers, writers, directors, cinematographers, production design, sound and editors collaborating with a range of WAAPA students.

NOVEMBER
SCHOOL OF COMMUNICATIONS AND ARTS GRADUATE SHOW
Mount Lawley Campus, ECU
27 November
The School of Communications and Arts Graduate Show is an annual event showcasing the works of our graduating students from areas including Design, Visual Arts, Photomedia and Film and Video. Open to the public, this free event is an opportunity for graduating students to celebrate their time at university by displaying their best work to parents, fellow students, industry professionals and potential employers.

For more information on ECU events, visit www.ecu.edu.au/events

Fitter, healthier, more productive
David Joyce is Head of Athletic Performance at Western Force and has a career that spans football clubs, soccer stars and the Chinese Olympic team. He talks to Nicola Anderson about his path back to Australia.

David Joyce works in a world of winners and losers. He knows the pressure of being in seven cities in a week, sometimes three cities a day, to manage athlete performance across every sport in China’s Olympic team.

He knows the ecstasy of seeing China’s gold medal tally reach 38 at the London 2012 Olympic Games.

But he also knows what it’s like to suffer defeat with one of the world’s biggest football clubs and to navigate the streets of Istanbul as bricks are hurled at your team bus – ‘by the fans’.

And yet, David Joyce is not driven solely by victory or defeat.

‘In the end you just love seeing humans do great things, irrespective of whether they’re wearing an Aussie gold or a Chinese red.’

‘At the last Olympics I think I lost a little bit of my parochialism,’ he says. ‘In the end you just love seeing humans do great things, irrespective of whether they’re wearing an Aussie gold or a Chinese red.’

‘You’re nourishing relationships.’

‘You’re always surrounding yourself with great people,’ he says.

‘I need to look at the longer-term vision of what we’re trying to create.’

‘I just have to stay the course,’ he says. ‘I need to look at the longer-term vision of what we’re trying to create.’

David Joyce is working on two textbooks to be released this year: Sports Injury Prevention and Rehabilitation, along with co-editor and ECU alumni Dan Leudin, and High Performance Training for Sport.

If you’re an ECU graduate, you can take advantage of a range of benefits available to the ECU alumni community. Ensure your details are up to date at www.ecu.edu.au/alumni
Google Doctor
it’s popular but is it accurate?

When people’s health is an issue – and it almost always is – they want information that is accurate and they can trust. Today, that means many turn to Dr Google before their GP, writes Associate Professor Trevor Cullen.

The interest in online health information has witnessed an explosive increase in the past 15 years. Pew Research Centre says that in 2000 an internet search with the keywords ‘online health information’ would have retrieved nearly 70,000 related websites. Today, the same search leads to more than 54 million related websites.

In Australia, searching for health and medical information was among the top 10 internet activities for online Australians over 16 years of age in 2011, mostly through search engines Google, Bing or Yahoo.

“They are making serious health decisions based on what they view and read online.”

They are not just searching, either. Instead, they are making serious health decisions based on what they view and read online.

Last year the Health Online 2013 study revealed that 81 per cent of American adults used the internet and 59 per cent said they searched online for health information in the past year. Six out of 10 said the information they found online affected their decision about how to treat an illness or a medical condition.

But among the millions of websites that offer health-related information, there are many that present myths and half-truths as if they are facts. It seems that nearly every week there is a new theory on whether, for instance, the daily use of aspirin is effective or detrimental, or whether broccoli is a way to slow the spread of certain cancers. And even if health professionals and patients are becoming more efficient at sourcing health-related information, there are many that present myths and half-truths as if they are facts.

The criteria used by the MLA to test whether websites offer reliable health information include four key basic questions that each consumer should ask when surfing the net.

Where did this information come from? Any website that provides health-related information should tell you the source of the information.

How current is the information? Look for dates on documents and possible broken links.

Is it peer-reviewed and evidence-based? Rely on medical research and not opinions.

Any website that provides health-related information should ask when surfing the net.

It’s safer to use what we find on the net as part of an ongoing investigation and conversation rather than make a final decision just on what we read or see.

Associate Professor Trevor Cullen lectures in health journalism in the School of Communications and Arts.

Useful evidence-based health websites as rated by the MLA:

- www.familydoctor.org is operated by the American Academy of Family Physicians (AAFP), a national medical organisation. www.kidshealth.org provides doctor-approved health information about children from before birth through adolescence.
- www.nhsinform.org.uk makes ageing related health information easily accessible for family members and friends seeking reliable, easy to understand online health information.
- www.medlineplus.org is the National Library of Medicine’s website for consumer health information.

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