Reflections on rethinking the classroom: Interactive teaching and learning

He kohinga whakaaro mō te ako

THE UNIVERSITY OF AUCKLAND
NEW ZEALAND
Te Whare Wānanga o Tāmaki Makaurau

Reflections on rethinking the classroom: Interactive teaching and learning

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A collection of teaching cases from the 2014 CLeaR Fellows and colleagues

Editors

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Centre for Learning and Research in Higher Education (CLeaR),

The University of Auckland

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Associate Professor Cathy Gunn

Context: Introducing the CLeaR Fellowship Programme

The Teaching Fellowship Programme was one of a number of new initiatives for the recently formed Centre for Learning and Research in Higher Education (CLeaR). Planned in 2013 and launched in 2014, the CLeaR Fellows formed a multi-disciplinary community of practice to promote scholarship around key teaching and learning priorities for the University. The theme for 2014 was *Re-thinking the classroom: Interactive teaching and learning*. Each faculty nominated an academic staff member to participate in the programme, which aims to:

- Proactively acknowledge teaching and learning leadership and development within the University.
- Improve teaching, learning and assessment practices aligned to University strategic priorities.
- Facilitate inclusive teaching.
- Support the growth and dissemination of internationally significant teaching and learning developments.

This collection of reflective teaching cases is one product of the first cohort's aim to support the growth and dissemination of teaching experience with colleagues across the University. Teaching cases are brief descriptions of a teaching strategy, written to encourage colleagues to try out a similar approach. They 'open the classroom door' so others can observe and learn from what is happening inside. As well as telling their own interactive teaching and learning stories, CLeaR Fellows identified colleagues with experience to share. So while there were only seven CLeaR Fellows in the first year, this collection includes a larger number of cases.

There was much debate within the group about what defines 'a classroom' and 'interactivity'. Rather than trying to summarise that rich discussion here, I'll let the cases speak for themselves by presenting a range of valid interpretations. I invite readers to reflect on what these terms currently mean in their own professional practice context.

Why teaching cases?

"...significant teacher change comes from professional learning based around teachers

sharing their insights... derived from everyday classroom practice." (Lindsay, 2007, p.3)

From their central location, staff in CLeaR have come to recognise the value of teachers sharing insights into their practice. It is particularly productive when it occurs across the disciplines that are sometimes described as 'silos'. The silo effect is not deliberate, but a product of what Becher and Trowler (2001) described as 'academic tribes and territories', i.e. disciplines with their own distinctive discourses, cultures and rules of engagement.

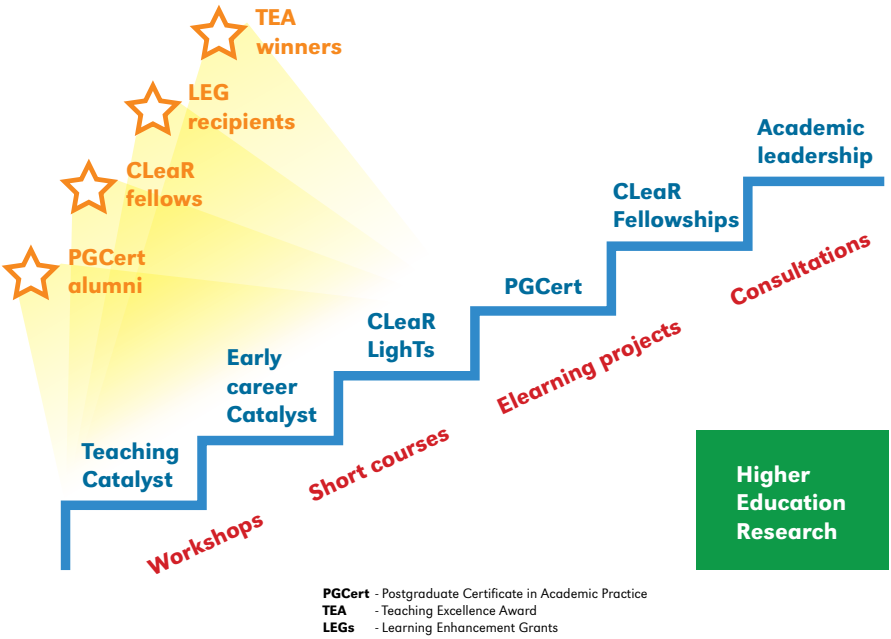
There is no shortage of examples of innovative and effective teaching practices that could be easily adapted for use in contexts other than the one in which they originate. Opportunities to share insights and experience across disciplines are harder to come by. Sometimes these opportunities occur spontaneously. More often they are purposefully designed and facilitated. However they arise, there is often a steep learning curve between observation and adoption. It is known that the work of 'early adopters' of teaching innovations can be hard to disseminate and sustain. The reasons for this have been fairly extensively researched, and lead some to conclude that these innovators should not be encouraged. Others, including myself, prefer the more supportive response of sharing creative teaching strategies in an accessible format that may encourage others to engage with them. With this aim in mind, the CLeaR Fellowship Programme created a space for inter-disciplinary dialogue on interactive teaching and learning, and channelled collective effort into promoting awareness and adoption of similar principles and ideas by colleagues.

Growing a culture of teaching excellence

Deeply rooted cultures do not change in a year, and it would be disingenuous to suggest that the first year of the CLeaR Fellowship Programme was free from all the common challenges of academic life. Limited time, persistent change and competing priorities were all part of the experience. However, the participants were strongly mutually supportive, and their choice to prioritise Fellows' events in busy schedules points to the value they found in those activities.

Support from the Deans, Associate Deans Academic, and the Director of Learning and Teaching as well as the CLeaR Director and staff all contributed to the success of the inaugural year. At the time of publication, a second cohort of Fellows was working on an impressive range of initiatives, with the addition of a colleague from Libraries and Learning Services to the group. The first cohort of Fellows presented their work, at CLeaR's Learning and Teaching Symposium in November 2014, and at various faculty-based events. There will be further opportunities to engage with Fellows throughout each year.

The Fellowship Programme is a high step on CLeaR's 'staircase to leadership' in teaching and learning. If evidence of the University's commitment to excellent teaching is required, this investment in academic staff career development is one excellent example.



To pre-empt any questions about the choice to produce this collection of teaching cases in print format in an era when everything is going digital, I'm sure I am not alone in welcoming a break from reading on-screen, and the cost involved was not excessive. The print version is only one of the available options to access this collection, which is also on CLeaR's website at http://www.clear.auckland.ac.nz/app/clear-fellows.

Associate Professor Cathy Gunn
Deputy Director and Head of Elearning
The Centre for Learning and Research in Higher Education (CLeaR)
February 2015

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Foreword from the Director of Learning and Teaching

Dr Kevin Morris, Director of Learning and Teaching

One of my highlights in 2014 was the opportunity at various times during the year to engage with an interdisciplinary group of experienced teachers. I was just an observer, but was fortunate to see the inaugural cohort of CLeaR Fellows working together and sharing their projects and stories. What became most obvious was the trust and openness they formed as a group, allowing each person the support and the freedom to explore and share some fascinating ideas about teaching (as evidenced in this publication).

The CLeaR Fellowship Programme has certainly caused me to think a lot more about what teachers might need at different stages of their career. Clearly, having the luxury of time and this kind of year-long forum opens a door for change and innovation. A process of this type might not appeal to all educators, but there appears to be something powerful about stepping outside one's daily context and the opportunity to draw on the support of people who contribute an entirely different lens. The common bonds that brought the Fellows together were simply a love of teaching and a desire for student success.

Experienced teachers, through years of refining their craft, may forget how hard they once struggled. As we all know, the sense of isolation in teaching — particularly for a novice educator — can be crippling. But having survived that rite of passage and the emotional rollercoaster often associated with one's early career, the seasoned educator has the perspective and the capacity to absorb new challenges. It is likely to take a level of experience to participate fully in a semi-formalised network like the CLeaR Fellows. The challenge is how we can support a person at the right time and in the right way.

What appeared to work well for the inaugural group was having enough of a facilitated structure (thank you Cathy Gunn) to allow an ecosystem to function and grow. For all involved, the process of reflection, adaptation and experimentation comes with 'safety' and an automated feedback system. Some reach out actively for a guiding hand, while others simply want the opportunity to validate some thinking. Anything goes and whatever you bring to the group is accepted and respected. For the Fellows, a teaching mode is something shaped or refined by small but important ideas, which ultimately have a large impact for students.

I congratulate everyone involved (particularly the pioneers of the 2014 Fellows group)

and look forward to seeing many more cohorts embrace the opportunity in future. This is an exciting new initiative that shows great promise for our teaching community.

The (day)dream classroom

Dr Anna Boswell, English Drama and Writing Studies, Faculty of Arts

"'Your mind is a brilliant thing', the comic strip begins. Its story follows a little robot who is having difficulty grasping ideas — in the form of clouds — which scud above his head, beyond reach. The bot decides to upgrade his operating system with #EnglishPatch121/121G.exe. Once the patch is in place, the bot acquires superpowers. He is able to lasso and wrangle passing ideas with ease and eventually floats away on a pillow of ideas of his own. 'Your eyes will be opened to the world', runs the caption for the final frame, 'And the world will be open to you'."

— Description of student assignment response, English.121/121G: Reading/Writing/Text

"I haven't learned anything in this course that I couldn't have thought in a daydream".

— Student feedback, English.263/354: Writing Selves

"NOTHING IS HERE

Nothing was EVER HERE"

— Chalk message on concrete wall outside Arts 1, at entrance to Symonds St Underpass, popularly attributed to an anonymous Writing Studies student

Concrete dreams

Students frequently identify a nebulous or dream-like quality to courses in the University of Auckland Writing Studies programme. The programme itself sits, somewhat nebulously and tenuously, between the disciplinary areas of English, Drama and Writing Studies, Applied Languages and Linguistics, and Media, Film and Television. It attracts large numbers of students from all faculties across the university, a challenge which those of us who teach inside the programme work to retool as an asset and strength. The majority of our students turn up expecting to receive basic instruction in how-to-read and how-to-write — which turns out to be part (but by no means all) of the business of these courses, since there is more to literacy than the formalities of spelling and punctuation

and thesis statements. Being an effective and skilled writer or communicator is (or is also) a matter of awareness of context, audience and purpose. It is a matter, too, of awareness of the concrete or material aspects of an act of communication, such as the elements and structures (type-font, paragraphing, referencing and so on) that mediate an essay's reception, making it recognisably essay-shaped or essay-like.

As this suggests, effective communication requires attunement to particularised forms of literacy that pertain to the cultural, digital, workplace, social media and/or pedagogical worlds in which one is operating or seeking to operate. Attunement, understood as an ability to read the atmosphere in order to sense what is called for in a given situation, is one of the core competencies or reflexivities that we seek to develop both in our students and ourselves. Ideally, for this very reason, it is a prevailing quality of the experience and method of a Writing Studies course. The Writing Studies classroom is a world of literacy which calls attention to itself as a world of literacy. It invites analysis of its own constructedness, and it strives to be responsive to its people and its surroundings — and to encourage their ongoing responsiveness in return (this is the 'openness' invoked in the comic strip described above). Whatever happens in this classroom is shaped as much by the interests and expertise and desires of those who turn up as it is by the programming intents that control what must transpire: a syllabus, weekly classes, assessment tasks, the assigning of grades, the mapping of goals and aims and so on. More often than not, the programming intents themselves, and the boxes and bullet-points that deliver them, are objects of inquiry, contestation, repurposing, reimagining.

Rather than working on the basis of a deficit model which posits students as lacking skills or knowledge, Writing Studies courses seek to draw upon and expand the sophisticated forms of literacy that students already possess. Whatever students bring to the class — observations, certainties, ambivalences, problems, hunches — is what the class will turn out to be 'about' and what it will ask them to address. Frequently, too, the classroom itself — its architecture, furniture, design, technology, operative script, relationship to a wider set of pedagogical processes and objectives — offers the material basis for the questions and concerns that will be fielded or perhaps overturned by the class. Through fieldtrips to parts of campus or scenes of public or civic instruction (alleyways, corridors, lobbies, libraries, galleries, archives, Albert Park, the Albert Barracks wall, Waipapa Marae, the Owen Glenn Building, Arts 1), the formal classroom may in fact be dissolved or dispersed. A class might simply be a procedure printed on A4 paper or emailed via Cecil: select a site or an object, visit it or attend to it, produce something out of it, come back prepared to discuss it. The work of the class might take the form of constructing a game or an installation, a reading or history or archaeology. It might take the form of devising or asking after the instructions that guide such an activity, or dreaming up a more useful set of instructions, or considering where and how teaching and learning are 'located' in all of this (in the room? in the people? in the instructions that underpin a class? in the object of inquiry? on Cecil, or in the HTML that produces it? on an exam paper or in an essay grade or a student transcript or a course evaluation report? in

spaces or experiences between or elsewhere?). Among other things, what such fieldwork begins to reveal is the nature and extent of the programming and environmental and behavioural coding which underpin our social, working and learning worlds, and the practical applications of the concerns that surface in the microcosm of a course.

Disorientation, estrangement and a sense of eerie or perhaps exhilarating gravitationlessness are frequently reported as sensations experienced by Writing Studies students and teachers alike. Students are welcome, for instance, to develop essays that critically discuss the nature and purpose of academic essays, to use the platform of an assignment to re-write the criteria against which such an assignment will be judged, to produce exam answers that deal directly with the purpose and embodied experience of sitting exams. They might fashion something concrete from the ephemera of campus life (its graffiti, detritus, psycho-geographic dimensions, affective surges and flattenings), or re/conceive the campus in metaphorical or literal terms (as a termite mound, a gameworld, a zombie-scape, a wound or scar or scab, a black hole or black box). It isn't so much that the classroom is unhinged from itself, or from other classrooms and classroom practices that students experience, but rather that it invites students and teachers to examine these hinges up close. What holds the world of a course or a class or an institution together, a Writing Studies course might ask, and why does this matter? What reading and writing practices are called for here, and how does recognising this enable one to navigate such an environment with greater confidence or purpose?

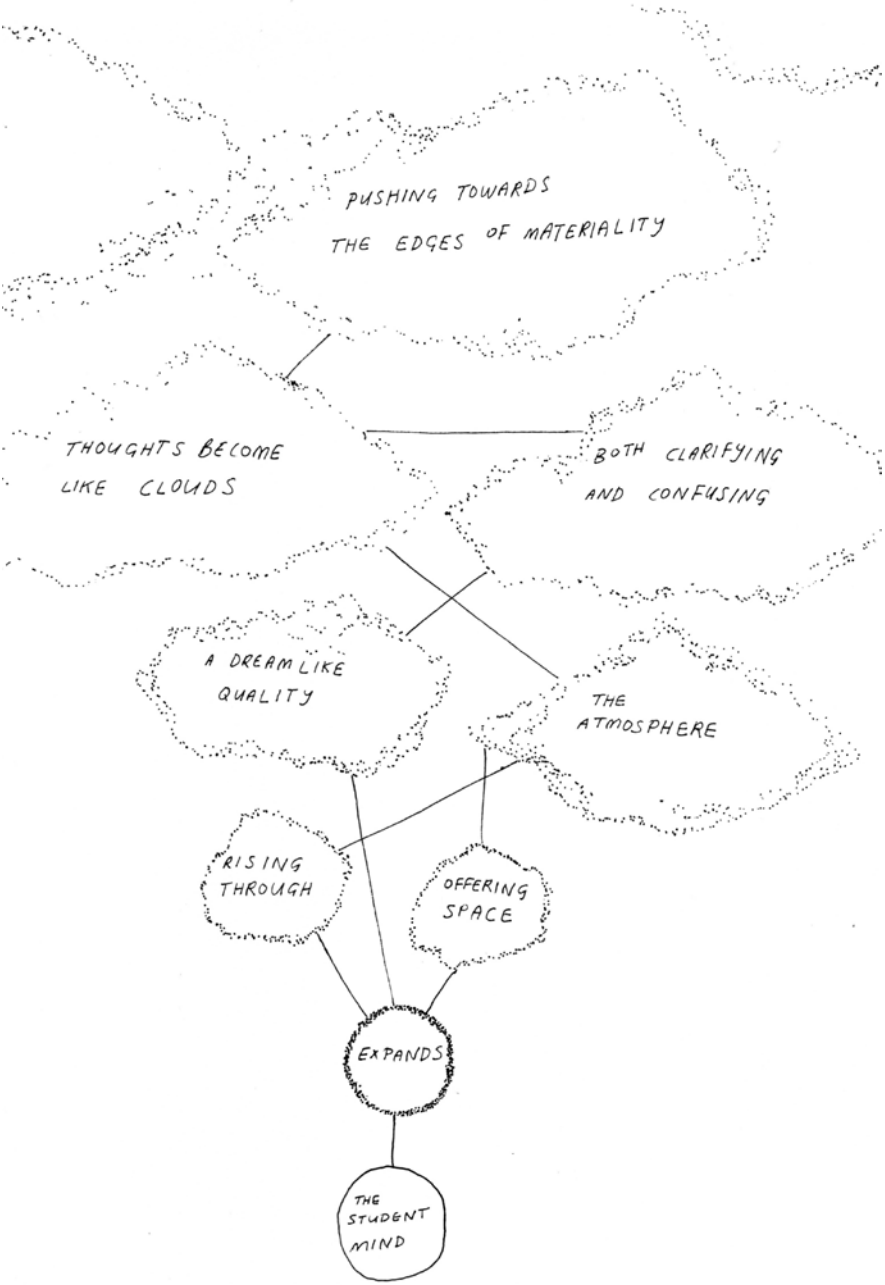
The comic strip described above was produced in response to an end-of-semester assignment asking students to use an image-text format and fewer than 75 words to re-articulate the aims and goals of a large stage one course. The experience of taking a course, students widely reflected in completing this critical-creative activity, is subject to chance and jeopardy as much as it is to prescription and preparedness and planning. Some of the outcomes that are promised may indeed 'happen', and others won't at all, or will take longer than the 6- or 12-week span of a semester to become fledged — but unanticipated or surprise outcomes are liable to arise too. The robot's story offers just one means of accessing the nature of this experience. In a neatly compressed way, the bot problematises creative clichés embodied in the representation of ideas-as-clouds and knowledge as something lofty, sky-borne, requiring heavenward extension or exertion. Caricaturing the 'blue skies' thinking that underwrites the world of the University of Auckland and is materialised in the institution's own corporate branding, the comic strip points towards the pervasiveness of the language of advertising (how to write about anything without 'promoting' it?). It also makes strange the institutional programming intents that operate on students and teachers, inducing consideration of the lived, messy, unpredictable, human side of teaching and learning. In what ways are students and teachers like robots, or unlike robots? How passive or active is learning as a process, and how closed or open or inadvertent is it? To what extent is what happens inside a course programmed or unprogrammable, calculated or incalculable?

Through its sequence of frames, the comic strip demarcates a world within which the bot's actions occur and in terms of which these actions make sense. What the bot 'learns' is how to become a more skilled and effective operator within this world. The comic strip itself is hand-drawn, a nostalgic throwback to a pre-digital era of writing and communication. In bringing daydreaming and doodling together, it is both whimsical and resolutely material (its diagrammatic nature seems to instantiate doodling-with-intent, or dreaming-with-intent). Spatialising the shapes and figures of its tale, it sets these out in relation to one another in ways that echo and adapt the bounded, rectilinear surface of a page. Because of this, the comic doesn't so much invite a reader to enter this world and experience immersion in it as it asks them to 'see' the use of a technical platform (pen, page, grid), to engage in multimodal reading practices, to respond to the spaces between and behind the frames as well as the codework instantiated in the characters, lines and marks.

'Dream on'

The act of dreaming or daydreaming might variously be construed as an imaginative capacity, a worthy or vital undertaking, a wasteful or counterproductive or escapist pastime, a mistake, a joke. In the context of a university whose teaching and learning practices are subject to ever-increasing levels of risk-reduction, constructive alignment and utilitarian consumerism, however, bloom spaces or open loopholes for dreaming anything or for imagining things 'otherwise' are in ever-shorter supply. The compounding genericisation of higher education on the basis of templates imported from overseas also threatens to obscure what is local, special, most relevant here. In such conditions, dreaming takes on new purpose and new urgency. One of its principal values might be that it can look down rather than up — to the waters of Horotiu which flow under the University of Auckland campus, for instance — in order to point towards or ask after the grounds of knowledge in this place.

To be clear: It isn't that the Writing Studies classroom doesn't produce anything (it is subject to the same metrics and e/valuations as any other Arts-based paper), and it isn't as if it operates in an abstract realm untethered from objects, experiences and processes (it is strongly motivated by practical concerns and real-world examples, interventions and stakes). It isn't as if the Writing Studies classroom stands as the perfected realisation of any kind of utopian pedagogical dream, either. The deep enculturation of students within embedded institutional conventions can pose ongoing difficulties ('The lack of lecture slides helped me to write more notes during the lectures', one student recently commented as part of a formal feedback process, politely or valiantly trying to recast a 'negative' as its own obverse.). Anxieties about what methodologically-driven or 'content-less' courses are asking for, and how they work in practice, are perennial. 'What the hell/ on earth is going to be in the exam?' is a recurrent refrain, and some students need intensive coaxing and coaching to feel confident and secure in establishing parameters for their own inquiries.



THE DAYDREAM CLASSROOM

Daydreaming isn't always dreamy, either — or, to put it another way, dreams, ideas and clouds may have more in common than is commonly realised. Cloudiness — in the sense of something that's murky, half-formed, opaque — is often a quality or by-product of dreamwork. Dreams also have the potential to go bad or to get away on people, and they aren't the sort of thing that can be programmed or prescribed, however conducive the conditions. My own daydreams, teaching-wise, are at once modest and extreme. They include more time (to care for and support students, and to learn from and with them) and longer lab- or studio-like blocks of time (to spend with students) — rather than disjointed 50-minute segments snatched here and there. They also include classroom spaces that are more open to metastatic or improvisational teaching and learning practices; curriculum and timetabling arrangements that permit greater collaboration between courses and individuals, and that recognise styles and modes of learning which aren't strictly for-credit; more dedicated resource (in the form of colleagues-in-the-flesh) to enable richer and riskier programme development; relaxation of outdated restrictions which constrain students in tailoring their own programmes of study.

In spite of these impediments and limitations (some major, some minor, many mundane), what the Writing Studies classroom provisionally and tentatively seems to offer at present is a space for lucid dreaming. It is a place of superfluity and generativeness, vision and revision, where students can experiment, try things out, take risks, make mistakes, succeed through 'failure', push towards the edges of course-programmed materiality. There is boldness, flair, delicacy and nuance to whatever is produced in such a classroom. On pragmatic and practical levels, students develop resourcefulness and versatility through reading and responding to a given situation and repurposing materials or objects that are to hand. On a conceptual level, they 'think' and unthink or re-think the university (along with other institutions and other spaces and scenes of writing), accessing and materialising the unconscious of these spaces in particularised yet highly transferrable ways. At base, the Writing Studies classroom tries to work with and for whatever might be produced in the minds of students themselves — whatever is possible there. A mind, these students' own teaching reminds us, 'is a brilliant thing', and its workings are what give us the worlds that we inhabit and enact.

Stage II Pacific Literature

Dr Selina Tusitala Marsh, English Drama and Writing Studies, Faculty of Arts

This course commences with the introductory lecture being held in the *wharenui* at the University *marae* where I always see the level of discomfort of the students who arrive with the attitude "we signed up for a literature course, what are we doing sitting in a circle, barefoot in the *wharenui*." Twelve weeks later, at the end of the course we return to the *marae*, this time as a cohort, or a crew, having completed the journey.

There are currently three courses where I am working with different teacher/student pedagogies, but here I want to focus on my Stage II Pacific Literature course which has around 30 students who come from a wide variety of backgrounds. Many of those enrolled are taking this paper out of personal interest, taking English or Writing Studies as a major, or are Engineering students who have a Gen Ed requirement as part of their degree. However, in the main, the majority are enrolled as English majors.

The learning objective of this course is, in the words of the Greek aphorism; 'to know thyself'. However, I have substituted this with 'to know thy place', that is to know Aotearoa/New Zealand, to know that it is a Pacific Island nation, to be aware that we are in the South Pacific and that there are literary histories in our country and on our borders, which we know little or nothing about. We know more about American or English literature than we do about our own literature and to me this is irksome, as we live in Auckland, the largest Polynesian city in the world. We are so proud of hailing this, but in terms of the amount of literature that is taught in our schools and universities, our knowledge is really scant. So the primary learning idea would be to 'know thy place' and know that you have a right to connect with that place, allowing a wider appreciation of its diversity.

I have been developing this course for four years, but over the last two I have added a creative component, expanding on my pedagogy of reflective practice, first on behalf of myself as teacher and also along with my response to students' needs and what works for them. I don't necessarily back away from what they might feel challenged by. Instead I want to do more of my type of teaching to avoid the 'glassy-eyed' syndrome that is so often the result of more traditional methods; expanding upon the teaching paradigm, or thinking about pedagogy in an embodied way that speaks to a Pacific epistemology, where traditionally the knowers are the doers. It makes absolute sense that we learn, that we get to know about our literature so the idea is to get the students to embrace a

holistic environment. For this it is important that we have a collaborative learning environment. I use Teaiwa's 2005 analogy of the *waka* as a metaphor, where the teacher, as the navigator, steers, but the whole crew needs to be moving in the same direction with each person using their own power so everybody reaches new places together.

Until now we have been using one anthology of Pacific writing, *Mauri Ola*, but now with the publication of *Puna Wai Kōrero*, an anthology of Māori poetry has just been added. As many of these new poets have not yet published their first collection of poetry, there is a lack of critical work available. This is the context for the long assignment that follows the study of these texts in class. So in this assignment the student is the editor or anthologist of their work, and decides which poems they would use and how they would introduce the collection. Basically the student gets to play the role of an editor. Questions that have to be answered include: What is this poet about? What is their work about? In what ways does it connect with your world? Which works would speak to a particular argument? How are you going to shape the public's perception of this poet and their work? I have found this approach produces much more active engagement, where the students are not just going into a passive critique of a literary mode, but instead they are actually doing important things that need to be heard out there in the public domain. Through this they have to locate one poem or poet from the anthology that really appeals to them then they seek other sources of publication such as, online, print journals, articles and additional material from this poet, thereby actively archiving or collecting poems that are not formally taught on the course. They then have to create an argument for their choices and string them all together so this can be used as a springboard for the future. Throughout this process I position myself as a learner alongside the student so that the whole process becomes a collaborative learning environment. I often use the metaphor for this process as being 'an all-you-can-eat banquet, where you can only eat as much as everyone brings to the table'.

Another component of the course is one short, close reading. Close reading skills are a must, allowing students to articulate an idea, just as knowing how to research an unknown topic is a must, making skills utilised in this course the same as those required for most of the students' other courses.

The one area of difference is the mystery component of this paper, entitled "Take it to the People". Since we have a very clear pathway throughout the course, when we arrive at this juncture, the students have been given enough security and freedom to explore the areas where they want to learn, expand and create. "Take it to the People" is where the students take a piece of their 1500 word close reading, where they dealt with a text or a poem very closely, unpacked the language and the technique and gave some context to it. They take the best, most exciting idea from their close reading out into the public domain so that it can be accessed by anybody. As well as being intimidated by the idea, they also love the challenge. This work is also assessed. The text of their poem has to be 'injected in' somehow, helping to raise awareness about their chosen poet or text, and it

also requires the most exciting ideas of the poem to be recognised.

Examples of the diversity of work that can be produced range from a poster which was displayed in the University Quad to a magic show taken to a variety of audiences. In the first example, the student watched as people read the poster and then interviewed them on their thoughts about it. The second example is an absolute favourite. A Chinese student — who had been incredibly quiet all semester, said nothing, was really very shy — tackled a poem that talked about hidden meanings. In other words, what you see is not always what you get; there can be surprises if only you dig deep enough. He filmed a self-conducted magic show, firstly taking it into Burger King Downtown, then Albert Park and, finally, under Grafton Bridge where he performed for the homeless community. He integrated the lines of the poem into magic tricks, getting his audience to read out the lines of the poem whilst he performed. They were in awe as he proved to be an excellent magician. Then he would get the people to talk about what those lines meant and relate that back to their own lives. The whole performance was filmed and edited into a beautiful six minute insight of his chosen poem. Through this process we get the most amazing and stunning work from students who might not do as well in conventional kinds of coursework. This component has the potential to turn an 'average' student into a student who learns beyond the genre boundaries and produces some striking, innovative, original and invested work.

I cannot over-emphasise the importance of giving the student the 'right to know', because the kinds of students that I come into contact with are very politically correct and dare not cross the cultural terrain in terms of literature because they feel they are not expert enough. They believe that this is someone else's domain. From the outset, I reiterate that you are in this *waka*, you have enrolled in this paper and we all need to have a voice, we all need to position ourselves in relation to this material. Therefore, all students, regardless of ethnic background have as much right to voice their position on Samoan literature as I do, allowing connections to begin. One of the challenges of this course is when the students arrive, intimidated by the subject area but also curious and interested. The opposite also occurs where students arrive thinking they know everything about Tongan or Samoan literature because they are Tongan or Samoan and feel "you can't tell me any different". Then suddenly they are surprised to find that like any other literature, it is full of contradictions. Getting students to embrace the contradictions rather than trying to hide them provides challenges, but the biggest underlying challenge is that there is very little available in this subject area that can be used widely.

On my other courses, together with other lecturers in the writing studies area, we have open, collaborative learning environments. I teach in other papers which use more traditional lecturing models. I have adapted these by moving to a more informal model, away from PowerPoint with bullet points and text to using a picture that will evoke meaning so that students are encouraged to think for themselves rather than just copy and regurgitate.

This course is evaluated through the standard University evaluation system and the comments are often brilliant because people want to respond very positively. It is because of the more interpersonal nature that students come back or continue on to other courses that are taught in the same framework. Also, students keep in touch as they feel they have an on-going relationship with me. Now this course is starting to settle into something of a pattern, it would be great to monitor a sense of on-going engagement. Apart from these evaluations and my own personal connections, I don't know how best to do that at this stage, or how this might be done. The tone of the feedback tends to go along the lines of "my eyes have been opened", "I wish I had known", "I had never known" and "my children will know". This 'glassy-eyed' feedback gives a sense of being part of a multi-cultural nation and a sense of fitting in because often through this writing nobody truly feels as though they fit in. Everybody is searching and everyone is trying to find their spiritual home, their own *turangawaewae* and claiming a belonging to something, somewhere, I guess. It's delightful to hear students' responses when they surprise themselves about how they view themselves and their place and their fellow citizens. One of the great pleasures in teaching creative writing is that there is a certain kind of transparency required of the instructor or practitioner if they are to share the process with the students so that both share the learning journey.

On reflection, I wish I could have played more when I was an undergraduate student. Everyone is so nervous about 'getting it right'. I guess teaching creative writing has helped me see the students as creative beings in themselves. I realise that they are at a University and we have to assess them, but to me creative writing is the hardest paper to assess, because everyone is so invested in what they are giving you and I have to grade it. The department has come up with a very tight rubric for marking so that everyone is very clear about what they are being assessed on. However, this still doesn't really help in the long run. Despite the pressures of this kind of environment, it is the student's journey. They can get as much, or as little, out of it as they choose, but if a high grade is the end point of their education, then they are going to miss out on a whole lot of other learning opportunities that they can have in class with their peers, and with me. I do invest time and energy into setting up those opportunities and with creative writing it is easy to play and if you like playing it does help free the spirit.

We can transfer that energy over to our interactions with Pacific literature because of the incredibly vibrant performance-oriented communication that already exists across Pacific cultures. It doesn't make sense to be in a still body and only value the skills of reading and writing. I believe we are all kinaesthetic learners at heart so walking through Albert Park to discuss a poem that talks about the environment is to me a 'no-brainer', and with a group of 30 it is quite easy to walk across to Auckland Art Gallery. Many of the poets we study on this course are also artists, so if they are exhibiting we are able to use our two hours of lecture time in that space discussing their work.

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~~Teacher~~-centricity, a collage

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ST: Having been asked to describe a successful or effective instance of teaching in my experience, I found it difficult to talk about teaching in this way. On reflection, this might be because such an account is inevitably teacher-centred. I do think such cases are valuable, and help teachers to reflect upon and revise their teaching in the light of the values and practices of others. Here, however, I want to make the somewhat counterintuitive claim that the value and practice of teaching might also involve removing the focus on the teacher, or what she does, thereby decentring the classroom and foregrounding the capacity of students to teach themselves. Presumably, the classroom needs a teacher in order for it to be a classroom and not, say, a reading group or some other kind of gathering, but the teacher, I would argue, is simply the embodiment of a capacity that lies in the learner. The teacher does not so much authorise learning as model, or figure, this capacity for students. To do so, however, the teacher might best allow herself to be thrown by the learning power of students, to become, in some sense, the students' student. After all, what 'students' have to tell me might be something I don't know … or don't know I don't know.

DDS: There is, in discussing the role of the teacher, great difficulty in locating the teacher's position with regards to the graduate student.

SC: I have been a student at the University of Auckland for the past six years. In all that time, I don't think I have ever been satisfied with a piece of work I have produced. Instead, I get a sense of having 'learned something' from looking back at past essays and understanding their flaws, the holes in what I knew then. I get a sense of excitement from looking forward to the next project, the next chance to formulate something, which will inevitably bring up feelings of frustration, disappointment, and confusion, accompanied with the joy of working through, the relief of finding the appropriate piece of supporting evidence and the excitement of everything finally coming together, although inevitably with too much more I could have said, if only time/word count allowed it.

DDS: When you reach graduate level and start doing more creative research, in most instances the role is not that of a teacher in any spatially significant determining manner (and spatial dynamics are super significant in the establishment of teacher/pupil

dynamics, even when, or perhaps even especially when, they are controverted), but rather more advisory or supervisory. This role is not the surrogate parental caregiver of the primary teacher, nor the authoritarian/moral guide/instructor of secondary school, nor even the charismatic (or enigmatic) performer of the undergraduate lecture theatre (though it must be acknowledged that in many instances this not such a distant memory for this relationship, indeed, it can frequently be its origin ...).

GK: Take an honours level research project, for example ...

CN: The term 'research' has always proved problematic in my experience, as I have found that what constitutes research and what does not is quite narrowly defined.

GK: It required a strict series of deadlines be met within a very short amount of time (only a semester for a 10,000 word project) — we were required to have an exact quantity of words by this time, a complete first draft by that time; we were even recommended weekly planners, which delineated what we should be doing every hour of every day. While these were helpful in ensuring the work was being produced, they were also restrictive ways of measuring learning — creating the only learning environment that the institution could (or would) recognise. It did not account for the productivity of our 'unproductivity' ...

CN: Thus, for the honours research paper, I was interested in exploring the value of the creative arts and process based research methods as manifest in a university setting. This proved both incredibly interesting and incredibly difficult. This is because these areas of inquiry do not fit seamlessly or easily into the parameters of a skills-oriented research project. My experience also proved paradoxical as I was researching research itself, and research that was alternative to what is considered research at that. But this very difficulty was the most valuable part of my experience of the paper. The problems that I faced in adequately representing my areas of inquiry in the final product, which was then assessed, exhibited in itself how the creative arts and process-based research are absent from the University.

SC: The promise of the future in the institution rests on these two golden resources: more time, more space. For an honours student, that takes the form of the research project. 9,000 words, and a semester in which to write them. It quickly became apparent in our course, however, that this is not enough time or enough space, just as in undergrad. A masters beckons: 50,000 words and a year! It seems there can never been enough time or enough space for what lies outside of the parameters of this type of paper (or any paper). But what lies outside is indicative of student experience — which is what we discovered over the course of the research project.

ST: The four projects of the students in the cluster I taught on the course constituted a larger and more singular project, greater than the sum of its parts, which the course, for all its more orthodox virtues, was not able to contain. This was most obvious in the

compulsory presentation of individual projects, which worked to exclude the work that the same students had contributed to each other's projects, the relation between the student projects and their relation to the larger project constituted by the individual projects, none of which could be taken into account by the assessment as written. The greater or real value of the work that the group had done by virtue of their collaboration could not be recognised or acknowledged in the course itself. This was because the course was premised on the teacher-centred pedagogy of research supervision that is the norm in the humanities and does not account for collaborative research or research projects.

SC: Being a student is to be together and to be alone. Students run in parallel. Studying the same material, sharing the same space, yet the manner in which students are together is outside of the assessable university, while the way in which students are alone is what counts in the framework.

GK: For me, learning, which includes researching and the writing process, cannot be particularised, measured or confined to fixed systems of representation. To do so is to abstract the meshwork, that is, the complexity and immeasurable nature that is lived social space and our experience as wayfarers of the world.

DDS: The intensity of this force becomes a crucial factor when you embark on any kind of creative research project (if only for the simple matter that it will be assessed and graded). The creative research project exists, then, in a kind of paradox. It asks you for a response, commonly in a prose essay form, a dissertation or a thesis, that exhibits some kind of creativity, yet it simultaneously obliges conformity so that it can exist within the confines of pre-existing criteria, which automatically somewhat limits the scope of what you can do. It is the creative aspect that exposes these lines of limitation, the parameters of criteria (what can count and what cannot falling either inside or outside these parameters), time (i.e. deadlines) and space (i.e. word limits) being but two examples. From a very early stage in the process, you find yourself presented with a degree of excess: so much of what could count and indeed much of what you might like to count won't. This means that your research takes on a duality, no longer solely focused on your original lines of investigation, but a secondary field, into the criteria itself and in how to make your response 'count' emerges as simultaneous area of research.

CN: To adequately source and collate research materials, one has to roam beyond the scope of established categorical boundaries. In a sense, you wander through archives of knowledge, funnelling and sifting to locate the relevant. In my methodology, I was interested in integrating creative processes of adaptation, intuition and imagination — a sense of critical practices as poiesis drawn from Australian academic and art critic Paul Carter. I found in my research that often these creative processes of knowledge production are secondary and immaterial, if not irrelevant, to systems of measurement and accountability that are driven by the output- and object-oriented interests of goal/product-oriented projects. As an alternative to this, I offered a reconceived idea of the

university in which its inhabitants might be immersed in creative works and creative processes, prompting a revaluing of the interactive, experimental, shifting, ambiguous and open-ended, as against the linear, homogeneous, measurable or countable.

DDS: There is presumed, in the case of the graduate student, a degree of auto-didacticism or at least autonomy. That is to say that you are expected to take (more) responsibility for your own learning-research-progress-writing-etc. And yet it is not entirely intrinsically motivated: the desire to please 'teacher' is still always present. The relationship is, in Jane Gallop's terms, an erotic relationship. That is not to say 'erotic' in some sense of physical lust, of course, but rather in the sense of a force, a charge or a drive; an object of desire, perhaps, in the Deleuzian-Guattarian productive sense. That kaleidoscope film of all your previous teacher relationships, becoming a useful literary analogy, is what, when this relationship is a positively functioning one, gives the object that beatific aura, while when the relationship is otherwise, deforms it into something grotesque, monstrous (for nothing is more monstrous than an expected erotic object that fails to excite!).

ST: The capacity of a classroom to disrupt the existing teacher-centred human-technical apparatus and for its occupants to determine criteria of judgement makes the supposed students the greater teacher and the teacher of that classroom the student's student. The 'students' engaged in this determination of criteria of relevance become student-teachers. The student-teacher reveals a teacher to be the students' student, an ideal student of the students' imagining. This helps to explain the transformational capacity of the classroom as an act of love, with its attendant affects. The student-teacher is a passional construction, without which learning is not possible. Because learning is self-given, it involves self-love — not strictly the love of the self that I am, but the desire for the self that I might become (a self I seek, or the self as something always sought after), for which the teacher, momentarily, serves as a portal (the teacher-student too seeks this self-love of learning). The classroom, then, is the space for the identification of the student with and as a teacher, that is, the person whom the teacher should be for me (my teacher, not anybody else's). This identification will inevitably be disappointing because someone else is not oneself. Nevertheless, the experience of this disappointment is the basis on which the actual teacher standing at the front of the classroom will be displaced by the student, who finds the teacher to be embodied by the knowledge and self she has herself generated that the classroom and actual teacher cannot possibly contain.

DDS: At least, this has been my experience. I find an emerging concern here, in that it appears to foster a relationship that can easily become a dependent one. The concern is unavoidable. Sometimes I worry that I cannot truly become any kind of writer until I have thrown off this need to please, discarded this now internalised audience, surpassed the need for this relationship. At other times the worry is rather that without it, I simply would not write at all ...

SC: Sometimes, despite itself, the university fosters community. In the research paper I took, we were allocated 'clusters' through a process that felt something like auditioning. I got put in my second choice, which turned out to be the best thing that could have happened to me. This is an example of the structure of the university creating some sort of alchemy with our otherwise lives.

GK: During the writing process of my research project, a great deal of it, arguably, was realised in discussion with my peers smoking on the wall outside the HSB building. These were the days where we all spent most of our time in the grad labs. In order to break up the monotony of staring at our Word documents, to interrupt our stationary sitting positions, hunched over our keyboards, we'd interrupt the inward battle that is writing and wrestling with one's own thoughts with cigarette breaks. Every few hours, one of us would give the signal with silent smoking gestures from across the desk, and we'd all file into the lift where we'd immediately voice our fears and uncertainties. This was our excuse to talk about our current problems out loud, combined with the chance to do something 'unproductive' — unproductive in that it was a learning process that could not be recorded by systems of measurement, which are privileged in the institutional setting of the university.

SC: The structure of the paper in this case brought four students together who, instead of working in parallel lines, came together to form a circle, and the result was that instead of what would normally remain outside of the experience of creating a piece of work, we fed into and through each other, making all of our writing and research stronger as a result.

GK: Much of my research project came into being through unproductive activity, namely walking, which is synonymous with thinking, learning and demonstrative of our connection to the meshwork — the social fabric of the life-world. The act of walking, an everyday activity that cannot be considered merely as a method in which to get to and from places, is aimless, divergent, meandering, unmappable and infinite. In contrast, the conception of the Learning Quarter (LQ), a strategic plan created by the university and its partners in order to increase revenue for Auckland's knowledge economy, became the object of opposition to life as a wayfarer. What I found problematic with the LQ was its abstraction of the meshwork and how this abstraction became real in practice, in that its abstraction can appear to distort the way in which we perceive our existence in the world.

SC: Unfortunately, there is currently no way to assess a circle, and instead of being seen as rhizomatic, each of us was looked at as a straight line, an individual facet, unrelated to each other.

CN: A university is often judged only in terms of the products it creates, not what the students learn or their development and experience. In attempting to highlight these aspects as valuable and important, I sought to change the balance of who gets to be

heard in the assessment of learning and teaching. The experience of the student in the transaction of education is not as easily assessed as what that student then produces, but this experience and what the student takes from it is the most valuable part of what a university can provide.

GK: Perhaps it is better that these unproductive activities never become subjected to the metrics of formal education, but rather, the university should allow space for necessary meandering and divergent paths of learning. The activities we perform outside of scheduled time frames are just as important as the time spent writing, even the final product that is submitted, as these moments are the 'gaps' where learning happens, where bonds are formed and where anxieties and ideas can be shared.

DDS: It seems fair to say that it is the creative research itself and the troubling of the notion and potential validity of these parameters that make them and the criteria underpinning them visible. If they do not become readily apparent, then it seems equally fair to say that either you are simply following the criteria blindly (and thereby your creative engagement is questionable), or you are so far off piste that the parameters have long since receded into the horizon of your rear-view mirror (thereby showing too much creativity!).

ST: Such teacher-centricity suggests the possibility of an alternate course, in which students co-construct assignments, criteria and assessments with the development of their collaboratively-driven but individual projects in view. This is the 'lesson' of the student-teacher. It follows from this lesson, more radically, that any course is potentially open to transformation by its learners. That said, the environment of prescription, in which one is obliged to pre-establish course settings, then to demonstrate via course review and evaluation that such settings have been met, makes the co-construction of learning particularly difficult.

SC: I felt the anxiety of knowing I would have to be assessed in this way, that my future would be affected by my grade. Towards the end, I shut my project off from the rest of my group to a certain extent, and I wonder how it would have changed if I had allowed myself not to worry so much and continued to benefit from their input.

DDS: Of course, none of these factors are entirely absent either; you have been so conditioned over years of formal education that these connections are still present on some affective, emotional level at least — a faint kaleidoscope of shifting shapes and colours that form over the top of the whole exchange. While institutionally formalised, in real world (a contentious separation), operational terms it is far less so, where you may meet to discuss your work in a café or a bar and a relationship much more like a friendship of some kind can develop, though could never be said to be entirely that, or indeed, entirely collegial either, for there is always the matter of hierarchy between you. The role remains, in many ways, mildly nebulous, or ill-defined, but you have a sense when it works, and doubly so when it doesn't.

SC: While the structure of the university might accidentally create alchemical moments that allow for these sorts of relationships, it also conditions competition and distrust, especially as you move into the post-grad world of more words and more time. Even with the expanse of territory, it is hard to feel as though there is space for everybody.

GK: Our smoking breaks helped us grapple with and work through problems that we would otherwise keep to ourselves: without the input of each other's opinions, without breaks for unproductive thinking, we may never have been able to 'progress' our ideas.

DDS: Hence, the importance of this relationship again: either through some strategic opposition, direct exchange, and even intervention, or in some cases of long standing relationships, a manifested internal voice, the relationship with the supervisor is what enables the synthesis of your creative response, unbounded, straying out of bounds, with criteria, the boundaries that you have necessarily uncovered and exposed, ie, for it still to count and yet operate as a creative and critical response.

SC: The instinct is to defend your turf, rather than share it. Only, to share, to not feel so alone, to see someone else growing their ideas next to you, helping to water your plants, feels good. Amongst the anxiety of academia, it is a nice place to be.

Marketing 305: Services Marketing and Management – Innovate the service experience through design thinking

Dr Charlotta Windahl, Marketing, Faculty of Business & Economics

Background

The course described in this conversation is the elective Stage III 'Services Marketing and Management' paper (Marketing 305) in the Faculty of Business and Economics. The changes made in this course throughout the last five years have been inspired by Charlotta's research activities, industry interactions and teaching experience. From a research perspective, a so-called service perspective emphasises the importance of a relational approach to marketing, compared to the more traditional transactional '4-Ps-approach' (product, position, process and price), arguing that the customers and their experience should be the focus of marketing activities in any type of company. Through industry collaboration, initially with Air NZ, Charlotta discovered how design thinking puts this 'new' service perspective on marketing into practice. Design thinking emphasises the human experience and provides processes (tools and activities) and a way of thinking useful for marketers facing challenges linked to the increasing importance of creating and maintaining relationships with customers in an experience-based economy. Consequently, the development and use of the design-thinking framework started.

In mid-2012, Charlotta found herself at a cross roads with MKTG 305 (usually between 70-110 enrolled students), receiving polarised student evaluations. It seemed like a number of students did not get the essence of the course. Instead of reverting to the less fuzzy option (demanded by some of the students) with traditional lectures and tutorials, she decided to implement some radical changes and continue on the road she had started two years earlier, where the focus was on experience-based learning; i.e. integrating theory and content with practice and process through a real-life design-thinking challenge in cooperation with industry. With support and encouragement from students, colleagues and industry partners, Charlotta further developed and strengthened the course. At the beginning of 2015, the course (a) engages students in a positive team-work experience, (b) creates a mutually meaningful interaction between academia and industry, (c) balances analytical and creative thinking (the latter traditionally not emphasised in business education), and (d) captures both content and process. The following teaching conversation briefly discusses the course itself and some of the key insights drawn from Charlotta's ongoing journey.

The course

The goals of the course are to provide students with a theoretical and practical understanding of current service marketing issues. By the end of the course, students should have a clear understanding of marketing and management issues faced by organisations developing service offerings using a design-thinking methodology. Students should also have had a hands-on experience of the challenging, complex and iterative process of service design. To achieve this, the course, its readings and activities, is divided into five blocks. The first block provides the background and rationale to service marketing (making up the content part of the course) and design thinking (used for the process part of the course). The last block concludes the course and provides an opportunity for the students to discuss organisational challenges and opportunities as well as reflect upon their personal perspective on design thinking and service marketing. The three mid-blocks are the core and heart of the course; here the students are challenged to (1) comprehend and discover the service experience, (2) ideate and create the service innovation and finally (3) experiment with and deliver the service concept. The course runs weekly in a four-hour workshop.

In the content part of these blocks, the students read relevant literature and summarise, discuss and reflect upon key insights and how they can use these learnings in the design challenge and/or future and current careers. In the process part of these blocks, the students get to experience (through individual and teamwork and through interaction with the industry partner and design mentors) working with a so called 'wicked' problem, i.e. the design challenge. In short, they are presented a design challenge by the industry partner and go through the process of first identifying insights about the challenge (comprehend and discover phase); second they need to make these insights actionable and frame opportunity areas (ideate and create phase); third the students turn their idea into a concept and discuss its desirability, viability and feasibility (experiment and deliver phase). After each one of these phases, the teams present to and receive feedback and guidance from Charlotta and Jenny (Charlotta's teaching assistant), the design mentors and the industry partner. A big 'aha-moment' in the course is when the students realise that it is actually more important to identify an important problem to solve than to 'just' solve a problem being presented to them. Traditionally, many of the students are accustomed to the latter.

The design-thinking framework has been designed to help and guide the students through this rather fuzzy process. Charlotta points out that it is important to note that the process should be fuzzy; it is part of the learning experience. In the course, the students explore the practical activities and tools linked to the process of design thinking, as well as its epistemological and cognitive foundations. The process dimension includes using activities and tools such as observations, ethnography, early and fast prototyping, visualisation and interdisciplinary teams; it emphasises the importance of working iteratively, combining abstract and concrete activities as well as divergent and convergent approaches. The cognitive dimension provides a deeper understanding of

how knowledge is created; firms (and individuals) need to make sure they balance analytical and intuitive thinking to achieve both reliability and validity.

This course takes service marketing theory further than more traditional courses and also provides students with a completely new set of tools for approaching their customers. The course model has been inspired by activities, materials, tools and methods developed by IDEO (http://www.ideo.com/) and the D-school at Stanford (http://dschool.stanford.edu/), and refined during the years of iterations of the course. For example, the students work on physical boards with post-it notes, blue tack and printed material. The boards form a crucial part of the process and working with the boards 'mirrors' the way the design-thinking process is carried out in industry. Using the boards, the teams are able to visualise and organise their discussions, categorise, move findings around and present and get feedback on their findings. Interactive presentations to design mentors take place three times throughout the semester around the boards. One of the strengths of the developed design-thinking framework is that it is not linear; rather it is iterative. The students need to move between abstract and concrete as well as diverging and converging activities.

Insights

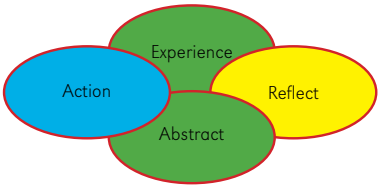
Explicitly, the course addresses service design and innovation for the future; implicitly, it also addresses the students' learning experience. Charlotta explains that throughout the four years of course development and her own MKTG 305 journey, four key insights or concepts emerged (closely related to Kolb's experiential learning theory): 'theory-in-use', iteration, action and reflection. Consequently, it became important that all the activities inside and outside class as well as the assessments supported these key concepts, as illustrated in figure 1 opposite.

An ongoing challenge is to get the balance between content and process right. In the course, the students are encouraged to interpret theory and use parts of it throughout the various stages of the design challenge. This understanding of theory-in-use (how to use rather than 'just' apply theory) is closely related to the importance of action. Through presentations and written submissions, the students act out their interpretations, insights and ideas, giving rise to new experiences. Through reflecting upon what this all means and how it could possibly be used next time or in other scenarios, the students develop a deeper understanding of both content and process. Finally, supported by the assessment structure, these learnings are iterated and reinforced or changed at least three times throughout the course.

In addition to designing the assessment structure around these insights, Charlotta emphasises the importance of the teamwork component and the industry interaction in the course. First, in regards to industry interaction, the continuous interaction with the design mentors and the industry partner ensures that the process is connected to real life and the students are working with relevant content and processes. The industry

Figure 1: Overview of course insights and activities with coloured links to the learning experience

	ASSESSMENTS and ACTIVITIES		
	Inidividual		Teamwork
Key concepts supporting the learning experience	Reflection and Summaries of Readings	Individual Contributions to Design Challenge	Team Contributions to Design Challenge (presentations and journey document)
Theory-in-use	Balancing the Concrete Experience with Abstract Conceptualisation.		
Reflection	Emphasising the need for Reflective Observation.		
Action	Submissions/Contributions/Presentations assessed and feedback given, encouraging improvement and Active Experimentation for next iteration.		
Iteration	Allowing failure - three or four submissions increasingly important!		



connection also helps with giving the students relevant feedback on both content and process, and ensures that Charlotta continuously learns and the course evolves. A network of industry partners and design mentors has formed around the course; so far, a total of six organisations (figuring as industry partners and guest lecturers) and nine design mentors have participated in the course, and most of these organisations and mentors have been involved for at least three years. It is clear that the industry partners appreciate the students' fresh perspective on their businesses, and some of the student concepts have been further developed by the industry partners.

Second, in regards to teamwork, Charlotta emphasises that key to succeeding with a design challenge is to have a team that is diverse and works well together. In the course, she has built on her previous experience of teaching team dynamics and project management when trying to achieve efficient and happy teamwork. For example, the students are made aware of different learning styles and how they complement one another. Teams are based on their learning style, and they spend the first two weeks getting to know each other through various exercises. Charlotta points out that in the course, she emphasises that based on our knowledge about an efficient learning process we can practice our individual shortcomings (once we know about them) and become better learners. Additionally, the team activities have been brought into the class room,

and an iterative peer-assessment structure has been implemented; students are responsible for bringing their individual, outside-class activities into the class room and contribute these to their team.

Ultimately, Charlotta's so called teaching mission is to "inspire and encourage students to think and act without telling them what to think and how to act". Reflecting on the students' feedback throughout the last years, she can happily conclude that this course is definitely progressing in the right direction. The journey is, however, ongoing; currently, she is developing the materials and class activities to strengthen and support the students' creative confidence.

Advancing software engineering: Technology roadmapping in Management 714, Computer Science 704 and Software Engineering 711

Dr Peter Smith, Management and International Business, Faculty of Business & Economics

Technology roadmapping (TRM) is used during a multidisciplinary course that prepares Software Engineering, Computer Science and Business students to develop and facilitate TRM workshops. These workshops are run with client firms looking to develop the second generation of their high-tech product or service. The course has a strong practical element, where multidisciplinary teams facilitate development of a TRM in fast-growth IT organisations, supported by industry mentors. It provides rich learning opportunities of the core principles of TRM using team skills in a multidisciplinary context; consultancy and communication skills, understanding the discourse of other professionals and practical observation of senior managers in hi-tech environments (Hosking, et.al. 2011).

This is an unusual course which I taught with John Hosking who is now Dean of Science. We created multi-disciplinary teams from Management students, Computer Science students and Software Engineering students. The overall goal was develop roadmapping capabilities in the client companies by having the teams take them through a TRM process. The term client has been used as these companies pay for having our students assist them. Client companies also receive partial funding from the Government toward the cost of participating in the programme. TRM is a fun and interesting process. The TRM process used we used is T-Plan; this was developed at the University of Cambridge. The process comprises an introductory workshop and four further workshops with the client. The people from the client that are involved with the workshops are senior managers. So, not only are the companies spending money, they are also committing the time of four to six members of their senior executives who typically come together four times for about three hours. This makes it an expensive exercise on the client's part, so they — and we — see it as a high-risk programme.

The course was first run in 2008 and had run twice before I became involved with it. The first two iterations hadn't really worked well so there needed to be some improvements. Client companies wanted a functioning roadmap, and it often fell to the industry mentor (who was there to support the team) to do most of the facilitation. The students often became passive observers because they didn't actually have the skills to do the work themselves.

At this point I set about redesigning the course to get students who usually had no

experience of facilitating a complex process like TRM and who don't necessarily understand how to do it, involved in the process. In my research I draw on the literature and theory of social practice. My epistemology and ontology are based on social practices, so when faced with the challenge of restructuring the course, I drew on my understanding of how people acquire and become better at social practices. One of the best ways to do this is to show people the 'practice' (in this case facilitating roadmapping) in action and to have them reflect on both what they have seen and on their own attempts at roadmapping.

Consequently, I restructured the course into four blocks; one block for each of the four workshops that made up the T-plan TRM process. At the start of a block, we test the students to ensure that they have a theoretical 'framework' upon which to hang their learning about TRM and its facilitation. This was effectively a flipped classroom. The material was not taught, *per se*; rather the students read the material ahead of the class in which they were tested. This phase is constructed not only to be a test but also to foster a discussion about the material, to help them understand the material of which they are unsure. Thus, we know that they have a theoretical understanding of what is meant to be happening.

In the next part of the block, we then have the students watch an experienced facilitator 'do' a live TRM workshop that is specifically associated with that block. For example, in the first block the workshop is about market drives, in the second it is about product features, and so on. The facilitation is done in-the-round so the students can see everything that the facilitator and his client do. This makes the four workshops very structured and the students get to observe. At the end of the observation the students write up their reflection on what they've seen and what they've learnt. In doing so they are connecting the theory to an expert's practice.

The next part of the block sees the students delivering the same type of workshop to their own client. This is preceded by them meeting with their industry mentor where they explain their plan, allowing the industry mentor to give them feedback on it. After they deliver the workshop, the students debrief with the industry mentor who gives them feedback on their performance in the workshop.

Through this process they learn the theory, they see it applied and they reflect upon it; they figure out their plan, do it themselves in a 'live' situation, re-reflect and learn. We have structured this process as four overlapping blocks and at the end of the complete process the students are able to deliver the workshop with a reasonable degree of confidence and knowledge. As a result, the industry mentors are only really there now as an emergency backup if anything should get out of control.

The whole course is predicated on the students reflecting on what they have learnt: in terms of theory, in terms of an expert's practice, and in terms of their own practice. Students also learn from thinking about the practice of their peers. The Management

students come away saying "I have learnt a lot about Computer Science and Software Engineering", the Software Engineering students gain invaluable knowledge about Management, and so on. All the students are learning from one another. At the end of the course they reflect on their overall learning, and this is what is assessed.

TRM is about balancing two things; market pull and technology. As a result, in the early TRM workshops, the Computer Science and the Software Engineering students tend sit on one side, and the Management students take the lead. The value of this is that at the start of the course the Management students act as a resource for the team and towards the end, the hard science students are the resource. They are all learning from each other, and it is really very interactive because they are all working with each other and not just sitting in a classroom. Even in the testing phase of the block it is a guided discussion about the subtleties of what is going on, with me asking probing questions. Even when the students are observing the workshop the first time they get feedback; it is about them engaging with the initial workshop as they are later going to have to conduct one. At this point, there is always a discussion to help them with the process. They work as a team, setting up their project, working with their industry mentor, getting feedback from the client as well, at the end making the whole process all about actively engaging with the process and not being a passive observer.

On completion of this course the best students could go out and do TRM as a business. They might not be perfect, but they would be competent, regardless of which of the three disciplines they are from. The programme is working well and is predicated on my understanding of how people learn. People are capable of learning complex scenarios by seeing how other people tackle them. People are very skilled at learning through observing others. What we see as they go through this workshop process is that when they first do it they are largely copying the facilitator, but as they progress they are operating more in their own style; they develop their own facilitation style.

On the one hand, TRM requires being able to synthesise a lot about the technology that is going to be used in the future, but on the other hand it is the area of management, that is, being able to relate with the client. TRM evolved in the technology side of industries not in the management side, and is really about plotting the future course of a company, making the TRM process useful in integrating technology management with strategic business planning. Most of the firms that join this project at present have had a successful product and they are thinking about how they make their next product equally successful. They are trying to figure out what technical resources are needed, what technical competencies they need to be building to be able to deliver that in three to four years' time, so it really is a way of stopping the technology getting away from them. Several of these firms are driven by people who are technically quite sophisticated, who enjoy technology and who may not always think about the customer, so by involving Management students it helps the technically-driven parties to think about the customer as well as the business implications. This process also addresses a number of relevant

issues, such as what the funders, the stakeholders and the customers want out of the company, so the process really changes the views of the students from all three disciplines.

An interesting observation about the commencement of the course is that quite often the Management students who come onto the course are the extroverts, whilst those from Software Engineering and Computer Science tend to be more introverted, so at the beginning, the Management students tend to lead the client engagement, but further into the interaction the others students take on a more leading role and do a very good job with engagement.

Before the programme was restructured, the big challenge was that the students didn't really know enough to do anything; they could only be passive observers. This programme now forces them into engaging with the process. The programme is 'front-loaded'; it is a high risk programme with paying clients who are investing significant amounts of expensive time, and in many ways the time involved is more worrying to them than the money. By front-loading the course it allows us to accept those applying who have high GPA's (grade point averages), so this provides the programme with a definite bias which has limited both the number of clients and students. Typically we would take no more than 6–10 students from each discipline. Therefore we are working with a small cohort and it is intensive because for each team we need to find a client company and industry mentors. Having said that we tend to find that the best students tend to come back and act as mentors the following year, as having been through it already they know what they are doing. This allows the programme to evolve. It also manages to keep its 'freshness' as each year we work with new clients, in different business areas, all with different requirements.

In *Learning at the Elbows of Experts: Technology Roadmapping with Software Students*, Hosking et.al (p. 143) list the learning outcomes as being able to:

- Understand environment scanning and opportunity recognition/creation processes in general and in high technology organisations.
- Identify business and technology strategies in the context of new product opportunity in the participating it organisation they team with.
- Examine alignment of business and technology strategy in the participating it organisation.
- Identify innovation drivers in the participating it organisation.
- Analyse technology roadmapping processes in high technology firms and engage in technology roadmapping in the participating it organisation.
- Evaluate new product development opportunity paths in the participating it

organisation with respect to commercial value and technology capability. Synthesize the same with TRM.

The programme is currently considering the idea of moving into non-IT areas, for example, in materials management where we could do roadmapping for them, in which case we could change the mix of students and have students from different science areas. The variety of clients is what makes this programme interesting and keeps it fresh for the teaching staff. As you see 'Next Windows' or 'Sentinel Software' appearing, you have to be on your toes keeping you connected to industry. Also, this programme is an excellent way of getting students connected to industry before the commencement of their careers.

Course feedback has undergone a lot of analysis and student evaluations have been incredibly positive. Being a course that requires departmental approval for all students seeking admission, it makes the evaluation process extremely relevant. Working in this scenario is really a case of 'cream in, cream out', so it is very difficult to increase numbers. The students enjoy it and the teaching staff involved also enjoy it.

There have been approaches to increase student numbers in this particular programme. This is one of the few programmes that charges the client for student time and it is agreed that they could charge more for their time, but at the end of the day they want to send out the signal that it is not a business. It would be difficult to upscale this model, unless it were possible to get more of the people who have completed the programme coming back as mentors, but then you still have the problem of tracking down enough clients, and every year it's already difficult enough to find them.

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Hosking, J., Smith, P., Krull, E., & Jones, N. (2011). Learning at the elbows of experts: Technology roadmapping with software engineering students. *Software Engineering Education and Training (CSEE&T), 2011 24th IEEE-CS Conference on*, pp. 139-148.

Encouraging interactivity across courses

Dr Ross McDonald, Management and International Business, Faculty of Business & Economics

I was recently reading about the phenomenon of emergence and the evidence coming to light of the intelligence of living social systems. Much of this fascinating area considers colony-behaviours whereby social collectives exhibit a quite stunning group intelligence. Thus for example, there is a meta-perspective at work in bee colonies which have the ability to predict changing locations of food – a feat well beyond the ken of any individual member. In human terms, this has many parallels made apparent in studies which show that although few individuals can guess the correct weight of a car or the number of jelly-beans in a jar, the average of a reasonably-sized group's guess is almost always uncannily accurate.

To my mind, emergence in the context of teaching resonates strongly and I have been aware for many years that a group of several score students contains a remarkable perspective when the individual parts are combined and refined and I am often humbled by the insights that emerge as we share and build consensual insights. The essential pre-requisite for group insight to emerge is an open interaction as this exposes the breadth and diversity of ideas and works these towards essential understandings. The critical role of the teacher in such a framework is to resist restraining interaction and preventing the emergence of new ideas by dominating the space and repressing expression. Accordingly, working with group intelligence and with emergence requires a radical re-thinking of what it means to teach well.

As I have experimented with interactivity over the years, I have worked to undo many of the restraints conventional curricular arrangements impose upon open exchange in the classroom, but it is a continual unfolding as the limitations of rigid course designs, physical space, competitive assessment and other barriers are countered. In the past year I have been further extending these explorations not only within the classes I work with but across them too, as I open up channels of communication so that physically separate classes might build larger synergies and learn from one another's deliberations. The aim of this writing is to try and convey some of the deeper learning that such a broadening collaboration can bring.

Three classes in ethics and social responsibility

I teach primarily in the areas of ethics and social responsibility so the domain is

characterised by a good deal of subjectivity, a fact that makes teaching in this area different from more purely empirically-based disciplines. Accordingly, I work in ways that centre on learners making conscious their own subjective values, assumptions, defences and insights so that they can be tested in a series of real world exercises, reflective writings and open discussions with peers. Much of classroom time is thus driven by the flow of student conversation as themes emerge, are added to, amended and refined. My own role is often more akin to that of a conductor making sure that the added strings of thinking build towards a harmonious and useful whole. As these classes proceed through each term, they develop distinct insights that are of deep significance to the group present, but typically invisible to others in other courses. Seeing the limitation in this, last year I worked with three classes, a third year undergraduate class of 65 students, a post-graduate class of 10 and an executive class of 14, each looking at issues of sustainability and ethics but each in its own unique way. Allowing conclusions and concerns to flow between these three groups led to the emergence of some remarkably useful learning as the explanation below will hopefully show.

1) The undergraduates

This class was made up of young people with an average age of around 19 who were working as part of an open-process approach to learning called Education *for* Responsibility. This model is based on constant discussion in groups varying in size from 4 to 65 with intense interactions taking up the majority of in-class time. Discussions focus on the emerging confusions, conclusions, disconnections, defences and insights exposed through engaging with widely varied resource materials, mini-lectures, reflective writings and practical exercises. At the start of the course the group worked to establish a common grounding in a set of clearly articulated and consensually agreed-to ideals and values. Over several weeks these came to cohere around wanting to be a part of a world that was more sustainable, equal, inclusive, wise, innovative, compassionate, generous and free.

As the course progressed, these shared values provided the frame through which the economic, political, cultural and ecological trends of the contemporary world were analysed and integrated into a coherent moral understanding. The group became particularly interested in how the larger systems of media, governance, climate and money worked to compromise the better world the group had clearly identified as being desirable. As we co-constructed a programme of exercises in engaging social media, controlling our own consumption, writing letters from the future and collecting funds for philanthropic causes, a sense of despondency remained strongly present in the room as this group of caring young people, with their lives before them, faced up to the challenges their generation are unfortunately being left to resolve. This despondency was deepened by explorations into the nature of power systems, corporatised media and the economics of inter-generational debt. As we approached the final weeks of the semester, the general mood was summed up by one student who after a lengthy and thoughtful

pause in the conversation blurted out the emerging sense that "We are all so totally screwed".

2) The postgraduates

Running parallel to the above group was another much smaller group of 10 Masters level students, a significant number of whom has been previous participants in the undergraduate course outlined above. Being in general a bit older (mid/late-twenties on average) and more knowledgeable about the larger patterns at play in the world, they had already worked through some of the initial deflation that comes with recognising the problems of the bigger picture for the first time. What emerged as a result was a much more targeted learning context where the class became particularly interested in finding empowering interventions that would shift things towards the more sustainable, inclusive and compassionate world that they agreed was an ethical imperative. Accordingly, we worked to co-create resources of important changes (such as cutting-edge innovations in technology, new models of collaborative consumption, social entrepreneurship and so on) and many were shared with the undergraduate group greatly enriching their learning in the process. This post-graduate class was also thoroughly discussion based and we regularly debated the more important barriers to change emerging from the undergraduate group's discussions in order to prompt deeper reflection in both groups as the lines of communication between them were opened up..

With this generally more resilient group, less time was spent on the nature of current problems and more on solutions. As exercises, these students wrote to, and met with their members of parliament to ask about current free trade negotiations and why these ignored their collective values and were being conducted in secret. They searched for the most deserving social causes, raised money and distributed this to people and groups and worked throughout with a spirit of no problem being too large to solve. As one put it "All of these issues are human creations and can be changed for the better." As the semester progressed, their hopefulness became a valuable counter-balance to the increasing despair of the undergraduate group and insights and challenges from each were carried regularly into the context of the other with this moderation in mind.

3) The executives

As the semester during which I was teaching the above two classes headed towards a conclusion, I was also engaged to work with a group of 14 high-level executives from the corporate sector and had been specifically asked to "challenge their complacency" and talk about environmental issues. The timing was good in that the other two groups, who had been working increasingly on the same themes in parallel, both approached the question of climate change in detail. This overarching theme then became active in all three groups simultaneously.

The executive group of senior managers (several from New Zealand's most polluting

industries) was not impressed on learning that the topics set for them were to cover ethics and sustainability, and in testing the waters as I always do in meeting new groups, they showed themselves to be highly defensive. As we started broadly talking about the future and people's aspirations for that, I asked the least engaged (at that point looking out the window, arms crossed and sighing pointedly) what he thought the world would be like in ten years' time. "I don't know and I don't care" came the immediate response. (I then asked him to text his 14 year-old daughter there and then to tell her that he didn't care about what the world will be like for her future). Although extreme, his general sense of not wanting to know anything about all of these irksome issues seemed to be shared by the majority, although a few did engage with curiosity and seriousness. The group mind was summed up by one member claiming to general agreement that "In the real world, we don't have time to care about things like climate change."

Overall then, these classes represented varied and complimentary reactions to the big picture of a worrying future — one despairing, another hopeful and a third seemingly in denial. With each group's permission I then began fully explaining the logic of each to the others in an attempt to see what larger understandings could emerge as these various parts of the puzzle were integrated by us all thinking as one very large and varied group.

Facilitating interaction between classes

Over the course of the two weeks of sharing between these groups, the classes met in the order outlined above, beginning the week with the undergraduates and ending with the executives. In the undergraduate group, discussion over change reached the point where many of the 'wicked' hurdles that have to be overcome to ensure a better world were fully appreciated. The lineaments of change were apparent (we need to change energy systems, reduce consumption, liberate democracy, eat more sustainably etc.) but how this could be translated into workable strategies for adaptation remained elusive. The dynamics of personal ethics, protest, education and the ballot-box had all been thoroughly examined and the general tenor of the discussion was increasingly settled on this being a fundamentally inter-generational problem. A strong sense that the younger generation would have to completely re-write the rules of current economic conduct was clearly emerging and as the group cyclically raised and then doused an emerging hopefulness, they walked a fine line between hope and naiveté. At the end of the first week's discussions, things were left hanging on a final point made by one particularly influential participant. "So we will just have to wait for this older generation to die and then we can change things". As this class concluded I set them the task of talking with at least three of their peers to explore how widely this "wait and change" strategy was shared.

I took this concluding inter-generational solution and the general temper of the discussion to the post-graduate group, who were disappointed with what they saw as an evasive conclusion. So I set them the challenge of developing a robust response that

would help the undergraduate group better discern other constructive ways forward. "How", I asked "will all these changes that both you and the other group want to see actually be facilitated here and now?" The question of how we would make positive progress was framed to avoid simple re-iterations of the obvious (change energy systems, better education etc.). What will it take to create the force for change that will allow all of these specific alterations to lifestyle happen?

I left them to it and although I returned on a couple of occasions to co-ordinate the process, my presence was unnecessary as they were in full and focussed flight for three hours. At the end of the session they explained their thinking and what they saw as being the most critical avenues for shifting to a more hopeful trajectory. Primary among these, and standing out as a key insight, was the need to start challenging conversations and particularly with those who occupy current positions of responsibility. In light of this, I challenged them to go in pairs to an electronics outlet, a clothes store and a café, and when in these businesses, to allow a salesperson to engage them over a TV, a shirt and a menu item. In each case they were then asked to start conversations of the type they had advocated. Get eye contact and ask which TV is best for the environment, which shirt is made under the most respectful working conditions and which food items contain most local ingredients. A reflective writing task was set to bring clear articulations to bear.

The major themes that were emerging in both of these classes (despondency, hope, generational divides and the power of focused conversation) were in turn taken to the executive group for their consideration. When we met for a second time, their initial defensiveness had been mollified and a much greater openness reigned. As we discussed the despondency of the younger generation and the question of how change might be aided by honest value-based conversations, the discussion deepened. Stories began to flow of sons and daughters and how this executive group saw a new generation in the workplace. As the conversation continued, many spoke of how the younger generation currently at university and entering the workforce are different from the elders currently holding the reins of power. Young people now, they concluded, are more inter-connected, media-savvy and seem genuinely interested in contributing to causes that are grounded in ecological and social concerns. The discussion led through several examples of younger employees insisting on ecological improvements at work, demanding more social accountability and questioning the propriety of executive privilege. This led eventually to a summarising point where one high-powered individual explained how he directs all of his top managers to approach their work as if they were preparing the organisation for the next generation. "I tell them that we will not be here in 10 years' time and our role is to prepare this organisation so that it will be easier for the next generation to make the changes that they will have to make". The point led to a strongly felt affirmation by the group as a whole and we concluded the interaction with this reverberating insight to the fore.

In the following week of teaching I took this discussion and the written reflections of the

post-graduates (which had been submitted and read by this point) to the undergraduate class. The importance of standing our ground in value-based conversations and the willingness of the older generation in current positions of power to change were enormously impactful as new insights to work with and much spirited conversation resulted. The inter-generational need to change had been generally supported in discussions with their broader networks of peers, and the group was challenged to begin their own conversations on the need for more immediate change. As with the post-graduate group, the undergraduates were asked to start conversations on the unsustainable impacts of products and services in retail outlets and to ask their elders how they could help the shift towards a better world. The group was clearly buoyed by seeing a new hope and a clear course of immediate action emerge. The broad consensus by the end of our discussions was that confrontation was of little value but sincere conversation where help is asked for from people who do actually care (behind all of those defences) could be of enormous value. "Imagine," said one student "how disturbing it would be for a retailer to have fifteen people raise these concerns over the course of a few weeks. They would have to start taking our values much more seriously". It was an emergent conclusion of huge value and one that could not have happened without opening up to the complementary thinking of the other two groups.

These dynamics were then taken to the post-graduate class who were feeling strongly affirmed by their own experiences in starting new conversations, and by the fact that this idea was being taken up by others who, by engaging these would enhance their value and impact. We spent most of our time dissecting the reactions of the salespeople they talked with, which revealed a host of dynamics including what approaches work best in particular situations, adding layers of nuance to an activity that could in turn be passed onto the undergraduates. By the end of this class we had developed a concise list of what to do, and what not to do, in order to make the most of value-based conversations.

The executive group meanwhile had met for the last time, but the thinking of the other two groups and the importance of their own input into a larger dynamic was explained and recognised, and they were sincerely thanked for their part in it. In response I received several notes of appreciation for the nature of the learning we had pursued and requests to pass on thanks to the other classes they had been sharing insights with.

Conclusion

There is a very simple point here which is how effective interaction can be when we want to get perspective on complex or wicked problems such as how we are going to practically build a better world. In the above case there was a constant integration between the members of each class as they shared and refined ideas in concert with the teacher. The perspective co-created through this careful balancing of diversity and distillation was profound and empowering for all concerned. Yet each class had its own characteristics and dynamics and as evidenced above, these can be made to produce empowering synergies if the channels of interaction are opened between them. For

considering issues like climate change, allowing groups to follow their own lines of thinking (to a moderated degree of course) can allow diverse but complimentary reactions to emerge. Despondency, hope and denial are all common sentiments as we face a troubling future. Interaction across groups allows these emerging themes to be integrated and balanced. In this case, the integrative conversations across groups were enormously beneficial in allowing us all to identify more empowering and hopeful ways of acting for a better world, which all concerned about the future can usefully begin to adopt – i.e. breaking the conversational silence around the need for change by pursuing collaborative conversations around how we can all help to build a more positive future.

Although space limitations allow for only the most surface description, the interactive conclusion outlined above countered the despondency of one class, reinforced the optimism of another and drew a third group in that would otherwise have remained largely unengaged. For those who believe, as I do, that there is a greater wisdom in larger groups than in any sub-group, it makes sense to extend the principle of interactivity as widely as possible. I have long been working with this within the confines of the individual classes I teach but more and more I am discovering the deeper potential of extending dialogue to connect with other constituencies (including friends, family, organisation and the broader public); however, it has taken me a long time to see the obvious value of connecting across different classes being taught at the same time.

To build truly interactive classrooms involves a constant undoing of traditional expectations and an abandoning of the all too common tendency to endlessly talk at learners. If we can learn to talk *with*, rather than *at*, and encourage a talking among our students at all levels, then will we open the door to a much richer form of learning that allows deeper insights to emerge. Opening interaction up so that it can transcend the limitations of single class exploration has great potential in many areas of the academy, and particularly for those wrestling with complexity, subjectivity and the need for collective solutions to pressing problems. I believe that the students in the above classes would join me in recommending it as a practice well-worth exploring.

Scenario based learning using digital technology

Chris Swanwick, CreATE, Faculty of Education

This teaching conversation focuses on workshops delivered to different groups of staff and students, namely, the librarians from the Faculty of Education, and students from the Physical Education and Technology Graduate Diploma of Teaching (Secondary).

The first iteration of the workshops was a general 'Introduction to Google Apps for Education'. These took place in the computer labs and followed a format where the lecturer talked through some of the key issues around the University's Google domain, introduced the connectivist learning theory which underpins the use of collaborative cloud tools, gave a detailed exposition of what tools were included in the Google Apps suite, and followed this with a step by step demonstration of some of the key features of the tools and how they worked. This was interspersed with breakout time for attendees to work in pairs or small groups on reproducing what they had seen the lecturer previously demonstrate on the screen at the front of the lab.

Feedback during the sessions and a review of the participants' workshop evaluations led to the understanding that the sessions were rather didactic, or teacher-centred and needed to be rethought.

A review of the literature revealed that much of the educational theory and research around 'Web 2.0', 'social media', 'the cloud', and 'collaborative tools' draws on the constructivist school of thought. Key sentiments from constructivist theorists include:

"Every time one prematurely teaches a child something that s/he could have discovered by themselves, that child is kept from inventing it and consequently from understanding it completely."

(Jean Piaget, 1964.)

and...

"The only kind of learning which significantly influences behaviour, and therefore education is self-discovered."

(Carl Rogers, 1969.)

As a result of the review, a constructivist approach was selected as the basis to redesign the workshop programme. A scenario-based approach was judged to offer particular advantages for the expected audiences.

Although the field of constructivism for learning with web and mobile technology is well developed and offers many choices of strategies and models, a key reference was selected to guide the redesign of the 'Introduction to Google Apps' workshops, namely Jonassen, (1999), who suggests a number of values that should underpin a constructivist approach to learning design. These are:

- Adopting a problem or learning goal that is owned by the learner.
- Instruction that consists of experiences that facilitate knowledge construction (meaning making).
- Learning that is active and authentic.

With these values in mind, Jonassen (1999) proposed a model to support constructivist style learning, which emphasises the role of *modelling, coaching and feedback*. The lecturer and learning designer began reworking the session format to align with this model and these values. They wrote learning outcomes to share with participants at the start of the session to clearly communicate the expected outcome of digital skills to be developed.

The focal point for the sessions was four scenarios, each involving a specific tool from the Google Apps suite that a group of learners could focus on (in this case Docs, Slides, Sheets and Forms). The learning designer and course lecturer collaborated to develop the scenarios, and then delivered the sessions jointly. This ensured the scenarios were sufficiently rich and relevant for each of the curriculum areas.

For example, the Survey Tool scenario for the librarians focussed on production of a feedback function for students to help them evaluate and improve referencing and library information sessions. This contrasted with scenarios designed for physical education teacher trainees, who produced a quiz tool for formative assessment of student knowledge of exercise physiology. The quiz included multimedia elements from YouTube and photographs embedded in the questions.

The front-loading aspect of the original workshops was reduced considerably, with only a brief time slot allocated at the start of the session to model the core functions of the platform, share the learning outcomes, and outline the activity.

Time was allowed at the end of the session for groups to report back, demonstrate their product and reflect/engage in metacognitive dialogue on what was learnt and what strategies would be carried forward.

There was an issue with the constraints of delivering the session in a conventional computer lab or BYOD classroom. To support an alternative to the instructor-led 'transmission' model of delivery, the Collaborative, Active Learning Spaces (CALS) at the Faculty of Education were used for later sessions. The CALS, through a dual Apple TV

setup, allow AirPlay devices to mirror their displays to a series of six wall mounted flat screen TVs and a projector screen distributed around a room. The furniture is arranged in group 'pods' of six seats around hexagonal tables. This arrangement allows the participants to be outward facing, viewing the screens as support and feedback whilst the session is in progress, rather than being fixated on a screen at the front of the room. The CALS are configured to support learning with mobile devices and iPads, which frees the facilitators from the front of the room and allows them to circulate round the groups while the session is in progress, to work in the *coaching* mode described in Jonassen (1999).

Librarians attended the first iteration of the workshops prior to development of the scenario-based approach, and a second session that used it and was written specifically for them. Their feedback is revealing. Comments from the first iteration include:

"An interesting session. I think you covered a lot of ground - maybe too much for me - I'm a slow processor! On the other hand it did mean I could go away and have a play."

and...

"I found the workshop very useful, engaging presentation style, small numbers to allow for individual support. The timeframe of 90 mins was perfect - as my brain became too full & I would have struggled if I had to assimilate any more information."

Comments on the scenario-based session reveal the scope of the change:

"I found this course very helpful and Chris was very helpful also. I have learned new skills in a short time. I would be interested to attend more courses like this."

"I thought the scenario activities that we did were very useful."

As feedback continues to be positive, further iterations are planned of the scenario based workshop series using the collaborative teaching model of lecturer and learning designer.

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Taking a leap

Professor Christine Rubie-Davies, Learning, Development and Professional Practice, Faculty of Education

This year, Dr Jason Stephens, Dr Penny Watson and Professor Christine Rubie-Davies instituted a new postgraduate course, The Social Psychology of the Classroom. Christine researches in the area of Educational Psychology and admits that she is passionate about the subject, and therefore was very excited about teaching in this new course. However, she was overseas when the course was setup and returned to find that it had been designed for Moodle delivery. She was concerned that it would be a technology disaster for her.

In re-thinking the classroom, the lecturers decided that the students would be given a reading each week, which they needed to engage with before they came to class. They would then pose questions to each other, in the style of a discussion board that they could engage in together. After the lecture, the students were encouraged to answer these questions based on the content that had been covered in the lecture. Christine decided to take that activity one step further.

Despite her extensive teaching experience, Christine admits that in the past her teaching style had been to completely fill the lecture time with content so that she didn't have to engage in too much discussion. She feared that the students might know something that she didn't and that she ran the risk of being made to look foolish. However, on reflection she realised that this was an area of content she felt totally confident about, and decided to 'take a leap' whereby the students set their questions before the lecture. Christine downloaded all of the questions in advance and integrated them into the lecture. This meant spending only half of the lecture time 'doing the teaching stuff' and devoting the second half to student discussion.

She also gave the students readings that related to their questions, so that once they had completed the class discussion they could go online and look further into whatever particular topic they were interested in. This had the payoff of getting the students to search online, which was beneficial for their learning as many of them were new to postgraduate study. One thing Christine found was that the level of discussion that was happening, and the level of understanding that came through was far, far deeper than she had ever had in a postgraduate course before. "It was just superb!" she said.

Using transformative pedagogies

Associate Professor Katie Fitzpatrick, School of Curriculum and Pedagogy, Faculty of Education

Cummins & Sayers (1995) describe transformative pedagogy as an orientation that draws on collaborative critical inquiry to relate curricular content to students' lives, and to focus on the analysis and transformation of social realities. The term is sometimes used interchangeably with critical pedagogy (Wink, 2005). Irrespective of how transformative pedagogy is defined, it is an orientation that is firmly rooted in Freirean, critical, and feminist theories that, for its advocates, *seeks* to be grounded in the lives of students. It is participatory, activist, culturally sensitive, academically rigorous, hopeful and critical. Transformative pedagogy is not a 'model' that can be easily transplanted from one context to another. It is "the outcome of particular struggles and is always related to the specificity of particular contexts, students, communities, and available resources" (Giroux, 2011, p. 4).

In this short article, Associate Professor Katie Fitzpatrick reflects on her teaching and how she uses transformative approaches to health and physical education. This example occurs in the context of challenging narrow norms and stereotypes related to discrimination on the basis of gender and sexuality.

Katie teaches a course called Curriculum Issues in Health and Physical Education. Students on the course are all studying to be teachers of health and PE in secondary schools. The course is completed in the final year of a four-year programme. Students are required to read bell hooks' account of her experiences in her book *Teaching Critical Thinking: Practical Wisdom* (2010). hooks begins the book with an account of growing up and attending university amid racially segregated communities in the USA in the middle of the 20th century. She talks directly about the racism and sexism she experienced in educational contexts, but she also highlights the importance of the teachers who humanised and attended to the experiences and struggles of students.

hooks (2010) argues that critical approaches to issues of power in education begin with personal experiences. One approach to transformative pedagogies is through personal biographies. These can help to name and expose the norms of cultural practice we live. Bourdieu understands this via the metaphor of a fish in water. He explains that "the fish cannot see the water, the cultural norms, it is swimming in". Using this metaphor in undergraduate teaching encourages students to name the 'water' in their own lives.

After reading hooks' (2010) account, the students write personal biographies of their experiences at the intersection of gender, sexuality, ethnicity, culture and social class. They can represent these in creative ways via story, narrative and poetry. Following this task, the lecturer and students explore a range of issues in the fields of health and physical education, and draw on a range of literature which questions gender sexuality, ability, racialisation, body size, health and so forth (for example: Gard, 2004b; Hokowhitu, 2008; Rich, Holroyd & Evans, 2008; Sykes &McPhail, 2008; Burrows & Wright, 2004).

For the next assignment, students each form what Dr Fitzpatrick calls a 'bold statement'. This statement is an argument for something they would like to change, or advocate for or against. It must be related to health and physical education and is a kind of 'moot' that they argue for and defend orally in front of the class. They must draw on research evidence to support their argument.

One student from the class of 2014 presented his argument to the class, and then submitted his bold statement as an opinion piece to the *Journal of Physical Education New Zealand*. This publication is sent to all schools and is a mixture of practice-based and research articles. Therein, he argued that girls and boys should not be separated for physical education lessons, as is the case in some schools. He drew on the literature to argue that:

"The messages we send about the reasons why we would separate female students from males says something in itself. The arguments for single sex PE often include one that says females are intimidated by males. This is often construed as meaning that females are less dominant at sport than males, and thus it serves to reinforce the power relationships which privilege males over females.

What's more, by separating classes based on their observable physical attributes, we are alienating those students who may appear male or female based on the way they look, but actually identify with other genders. In doing so, we would reinforce the idea of heteronormativity.

I argue that many of the issues which single sex PE claim to remedy are not actually remedies at all, they are just pushing the issues to one side, rather than confronting them in classes. Additionally I believe that arguments for single sex PE often cite girls' non participation as an issue. I believe this issue is perhaps more of a reflection on a teacher's pedagogy in that they have created a class environment which is not inclusive."

(Elliot, 2014)

What is significant about Elliot's argument is that, while he was undoubtedly influenced by the readings and discussions in class, and the perspectives of other students, his bold statement, like those of other students, came from his own concerns about gender sexuality practice in schools. He was drawing on praxis to argue for change and

transformation in schools in a specific way that linked directly to the practice of schools. Transformative pedagogy could hardly be better exemplified.[1]

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1 [1]An extended version of this discussion can be found in the following publication: FITZPATRICK, K. ENRIGHT, E. (In Press). Gender, sexuality and physical education. In C. Ennis (Ed), *Routledge Handbook of Physical Education*. New York: Routledge.

Substitution to transformation

Margot Bowes, School of Curriculum and Pedagogy, Faculty of Education

This case reflects the development of a teaching innovation over a period of years. It demonstrates progress through stages of the SAMR model (Substitution, Augmentation, Modification, Redefinition) on a pathway that teachers often follow as they move towards transformation of teaching and learning through technology.

2010: Technology as a substitute

The students arrive in the lecture theatre. They take out their folders and pens and wait for the PowerPoint on Skill Acquisition to begin. The lecturer works through the theoretical concepts of biomechanical principles and major muscle groups that affect skill technique. The lecturer has little expectation that the students will have engaged with this material before the lecture, but she does a quick brainstorm to find out what the students know about the topics, and provides a reading for after the lecture to support the students' learning. The lecturer teaches the theory and hands out a photocopied assignment on skill acquisition. All the students analyse the same skill from a description in a Word document, which provides space for them to write up a frame by frame analysis of movement in each of the major joints of the body- ankle, knee, hip etc. The lecturer tells students that they will get a chance to put this into practice on their next practicum, and that she will check back in after the practicum to see how it has gone. This is a one-off lecture that relates to one of the end of term assignments.

In another course, students are learning about assessment for teaching and learning. They cover the theory and then apply it to analysis of a teaching case constructed by the lecturer, describing a young teacher making a number of professional judgement errors about the validity and reliability of their marking. There are course readings about the theory of summative assessment for the students to make sense of, and apply to their analysis of the teaching case. The students don't recognise any links between the two courses.

2012 Augmentation for functional improvement

The students arrive in the lecture theatre. Some take out folders, others take out their laptops and open a copy of the PowerPoint lecture notes and brainstorming questions posted in advance of the lecture on the Learning Management System (LMS). The lecturer asks the students to discuss the brainstorming questions to establish if they have

engaged with the relevant concepts. This time, the skill pictures are coloured, but still two-dimensional. The lecturer tries to cut to an Internet clip to illustrate a concept, but the link won't load so she talks them through it instead. The students move to the gym and shoot baskets waiting for the lecturer to start the practical session. The lecturer has planned to take a set of portable iPads into the gym to run the skill acquisition session. She needs to collect these from IT but when she goes to collect the set at 8.15am she sees the notice indicating that IT equipment can only be collected from 10-3pm. Not to be stumped, she flies up to the 6th floor to take a set from the interactive classroom down to the gym. What's the security code for the cupboard? Success! Laden with 16 iPads she heads for the gym. What no WiFi there! Damn! Resort to plan B.

Students are asked to choose a skill to analyse frame by frame. The lecturer takes them outside and in groups they select a skill and use large pieces of chalk to draw on the tennis courts, tracing around a student frame by frame and identifying the movement, the main biomechanical principle and the main muscle groups. As each group finishes they shoot some more baskets until the lecturer calls them all in to circulate for presentations of each group's work. The lecturer suggests that what they are doing is using formative assessment to learn from others, and relates this to the learning that the students are doing in another course with her on assessment for teaching and learning. The lecturer talks about how the chalk drawings could be photographed by a teacher as another piece of evidence to support her grading of assignments. The students realise that this might relate to a teaching case on validity and reliability that they have to analyse for their other course. The lecturer considers that, as the formative learning in groups has been successful, she will bring a case for them to analyse in groups before they complete their individual analysis of a teaching case for the assessment.

As she returns the set of iPads to the interactive teaching space, she is met by the IT man and told under no circumstances are the iPads to be taken out of the interactive room. There doesn't seem to be any understanding of the gymnasium as a classroom that requires the same learning affordances as the lecture spaces.

2014 Part A: Modification through significant task redesign

The students arrive in the gym. One of the students connects their phone to the sound system to download music of choice from the Cloud. Some students grab the 6m long pieces of paper and chalk and head outside, others grab mini-tablets and others decide to use their smart phones. The students have engaged with the skill acquisition and assessment content online as a 'flipped classroom' prior to the lecture, and know that that they are simulating an 'interactive' skill acquisition for Senior School Physical Education (SSPE). The students select their own contexts to work in and establish groups of 2 or more. They have started an extra branch of the blog the lecturer set up to introduce herself to the group and to get to know her students before the course began. The student blog shows that they set up groups based on what context they want to work on. One suggests that they could also use the groups as a chance to interact with

students they haven't worked with before.

The expectation is that students will compare and contrast different ways of completing interactive skill analysis that are meaningful and manageable for SSPE in the different situations they will find in the schools they will teach. Some students head outside with large pieces of chalk and complete the analysis frame by frame on the concrete by drawing around the outline shape of one of the students in their group for each frame of the movement. Others use their tablet to photograph frames, drop these into a movie platform and add a voice over for their analysis. One group decides not to use digital technology and chooses to use the large 6m pieces of paper to complete the life-sized drawing activity. Others move outside to use the *Ubersense* analysis tool that the lecturer showcased in the flipped classroom. As explained at the time, *Ubersense* is a free analysis tool available on the web and for tablets so students can photograph or video the skill performance. The software has drawing tools to measure angle of release, and the ability to run frames of two identical performances side by side, e.g. one by an expert, the other by a student. The video function allows the frames to be run at half or quarter speed for analysis, while recording a voice over at the same time. Two students suggest a platform called *Coach's Eye* that they think may make the skill analysis more effective. The lecturer goes over and works with this group to check out the possibility.

2014 Part B: Redefinition with the creation of new tasks

Yet another group question the relevance of doing skill analysis in PE. What's the value of applying biomechanical principles and functional anatomy to improve skills? Coaches don't do this, so is it relevant to talk to students about force summation and angle of inertia? They decide to set up a Google survey to ask teachers about the value of learning skill analysis. Another group creates a Google survey to get feedback from the students on the value of this activity for their learning. They are not constrained by the use of a student survey tool, which they feel restricts what they want to say.

As groups finish they return to the gym. Each group is able to project their multiple solutions onto the large interactive screen that reveals from behind a Perspex cover in the gym wall. This provides a useful way for the online expert and their teacher to provide feedback in real time. Two students who are away from the site contribute via Google Hangouts. The lecture time is over, but a group of students grab a coffee and move to the informal learning space in the library. They display their project on the large interactive screen available in the case rooms there. Each group can interact with the online feedback and then post it as a Google Doc for each group member to edit and comment on at any time, 24/7, before the next lecture.

The groups now turn their attention to interactive problem solving in lectures. They have been learning about assessment practices for teaching: 'Assessment of learning (summative)' and 'Assessment for learning (formative)'. They have been exploring the conditions for high validity and reliability of high stakes assessment results. Real teachers

visit from real schools and co-construct the learning around assessment with the students and the lecturer. Students report that the presence of a practising teacher makes the learning more realistic.

Each student develops a teaching case that exemplifies teaching practices with high and low validity and reliability. They post these for a peer to view on Moodle 2 as a flipped classroom video. The lecturer and peer each provide verbal feedback as formative assessment before the student submits their teaching case online. The lecturer and student negotiate the final grade, using evidence provided by the student and the peer assessor. The lecturer provides verbal feedback to students by emailing a voice file to their university email address. The students report that they find this form of feedback highly effective for their learning.

The students and lecturer make an iMovie that plays as a café talk for other lecturers and students to view while they are waiting for their coffee. The lecturer talks freely about a lack of confidence that she first experienced handing over the lecture time to student-led problem solving. The students talk about the value of team teaching with a practicing teacher. The lecturer talks about taking risks and being a learner herself. Working with the Centre for Creative Application of Technology in Education (CreATE) learning designers has increased her working knowledge of the affordances of digital technologies in higher education. She considers making a MOOC next year and extending the learning to the web. Other lecturers viewing the café talk consider how they might re-think their classrooms to make them more interactive.

Discussion

This teaching case traces a transition, a shift, from teacher directed learning to increased student personal and social interaction. It describes the way the lecturer has re-thought the classroom over a number of years. The case challenges traditional notions of 'the classroom' and the lecturer's role within it. It exemplifies the notions of student choice, the use of self and peer assessment, both formative and summative, with a shift from active teacher / passive student in the 2010 description to active student / responsive teacher in 2014. In this interactive space the case discusses the use of mobile and digital platforms to increase student engagement and productivity through 24/7 accessibility, and the increased student choice in how to complete course activities and assessments afforded by technology. It also shows how the lecturer and the students are re-thinking the university teaching space and together, re-constructing knowledge, space and systems in the digital world.

Ngā Kākano, the planting of seeds

Dr Maureen Legge, School of Curriculum and Pedagogy, Faculty of Education

Kia ora. This teaching case is about the course Edcurric 230, Physical Education Ngā Kākano. *Ngā Kākano* refers to the planting of seeds. The course is designed to give second year Physical Education students an experience of *tikanga Māori* and to do that primarily through a four-day *noho marae* stay. The *marae* stay is followed up by course work and assessment where the students take responsibility for a topic of *Māori* culture related to Physical Education, Outdoor Education or Health, which they present to their peers.

The course aims to immerse the students in *Māori* culture in the belief that it will support cross-cultural understanding to promote and support *Māori* identity. The course is in three parts. The first two weeks are spent preparing for the *marae* experience when the students learn about their role as *manuhiri*- visitor. The students prepare for that role by learning about the *pōwhiri* and what that means as an introduction to the *marae*. During that process they do some bookwork learning and a role-play of being at the *marae* and going through the *pōwhiri* ritual where the students act as the speakers or call the karanga and practice welcome speeches. The two weeks are very pressured. During that time the students take on responsibilities for planning the trip as an Outdoor Education experience. They have to organise safety, transport, collection and payment of fees, medical information and dietary requirements. They are supervised by the lecturer, but work interactively through committees.

The lecturer and students spend four days on the *marae* in a lived experience. It takes half a day to get to the *marae* that is situated in the Bay of Islands, usually at *Te Rawhiti*. The visit is often based there because the local *iwi* have led the programme many times before, and have people to support the *noho marae*. The course has also been situated on other *marae* including *Ngaiatonga* and *Matapouri*. The group travel a long way together in a convoy of cars to arrive at the *marae*. Along the way they stop to practice risk management for outdoor education, joining up at specific points along the journey. The journey to the *marae* is part of the process because it involves taking students out of the city (Auckland) and into what is a pretty remote area in Northland. Many of the students have never been to the Bay of Islands or onto a *marae*.

Once the students arrive they are dressed for the *pōwhiri*. (The women wear skirts and the men wear long trousers to show respect.) The students proceed through the *pōwhiri*

with the female students who learned this part responding to the *karanga* (call onto the marae by the *Māori* women). The group then sit on the *marae* and speakers from among the males in the course respond to the welcome. The students prepare their speeches with encouragement for any *Māori* students to take the speaker role, but if they don't feel confident, then other people volunteer or take on that responsibility.

From the moment the students arrive on the *marae* the process is interactive. They follow the *pōwhiri* ritual and the group become the *tangata whenua* for the period of time that they are there. So the role is changed, once welcomed, from being visitors to being *tangata whenua* alongside the *tangata whenua* from the *marae*. The course is very intense and requires the students to listen a lot to other peoples' points of view, to talk to one another and share their understanding, so that they are developing new knowledge from what they already know. It is surprising what some of the students do already know, but equally many of them are shocked at what they don't. Certainly the *Māori* students from the class take a significant leadership role with their classmates' support and encouragement. Mutual support is a noticeable feature.

Each day the elders and the lecturer take the students through a sequence of activities that they know will bring forward the type of *kōrero* that they want them to experience and be challenged by. A lot of the students are challenged by ideas such as colonisation, which they may never have thought about. One example is a role-play the students experience about colonisation. It is called *Uma Uma/ Yaka Yaka* and the students are in either one of those two groups. Without realising it, they re-enact the first contact that Captain Cook had with *Māori* and similarly with Abel Tasman, who arrived much earlier. That effectively puts the students into the position of either the *Māori* people or the colonisers and so they come to realise the impact of colonisation. The students often get upset. The role-play goes through three phases and in the lecturer's experience, each phase gets more and more pressured and demanding.

Activities after dinner may be entertainment where the students are required to show their understanding of a concept such as *aroha* or *pono* or *tika*. They need to find that out from the *tangata whenua*, or by asking Howard, the key facilitator, or any of the other people who support the *kaupapa* of the *marae*. These are always entertaining and the students are encouraged to use song and dance, mime or other creative ways of expressing their understanding of those concepts.

To support *Māori* identity, there is often an evening activity, outside in the dark where *Māori* students and others who are selected are hidden. With the support of an expert in *Māori* musical instruments they play *kōauau* (flutes) or various other instruments in a way that conjures up the past. It is very haunting for those listening, sitting in the dark, and very engaging and enlightening for those who participate as the *Māori* people. It is difficult to describe the impact of this experience, but it definitely opens student's eyes to what being *Māori* might be about. The purpose of the *marae* visit is that it's experiential and puts the students into the shoes of *Māori*.

On the last day of the visit the *marae* is turned over to the students and it is their task, as a class, to organise a final *hākari* - feast - where they collect and prepare the food and decorate the *wharekai*, and do all those tasks to finish off the four days they have been there. They organise a programme and welcome onto the *marae* for visitors, both *Māori* and *Pākehā*, and acknowledge their contribution and the contribution of the local community to the *noho marae* experience. There is quite a lot of speech making and singing and joke telling. It's a fun time, but also a serious acknowledgement of the students' learning and of their role as *tangata whenua*. There is a *poroporoaki* or farewell linked to an activity that runs throughout the week called 'Secret Friend'. This is where students select the name of a person from the class who becomes their secret friend and who the students are encouraged to acknowledge throughout the week with little acts of kindness, culminating in making a special gift to honour that person. Students are encouraged to describe what the gift means metaphorically; for example it might be a gift of four white shells to represent the four days of the experience. Other people make flowers from flax or carve sticks. A lot of creativity goes into the making of the gifts and that again supports *kaupapa Māori* where the arts are predominant.

On their return from the marae there is a debrief process where students, in their *māngai* groups, make a large poster to depict key points of learning from the *noho marae*. The posters are drawn or made as a collage of magazine pictures. The use of *Māori* language is visible on the posters. Each *māngai* group is required to *mihi*, speak to their poster and explain its meaning to the rest of the class. The *mihi* concludes with a *waiata*. The students are required to complete a journal of their experience and respond to set questions within it, to share their knowledge and understanding and something about the impact of *noho marae*.

The course now turns to focus on the contemporary physical education setting and how to include *tikanga Māori*. Each student is required to select a topic related to physical education, outdoor education or health, which they research and present as an 'active seminar' to members of another *māngai* group. Topics vary but can range from learning about stilt walking – *pouturu* - to *Māori* medicine, hunting techniques or *haka*. The lecturer encourages the students to choose topics that interest them so they can take ownership of the experience and become an 'expert'. Their work is presented actively in the sense that their teaching must include practical hands on content. This feature encourages the students to develop their pedagogy so that their peers, draw, play games, role play or make articles in relation to the chosen topic. Making *rēwana* bread is an example. This task is quite difficult for the 'teacher' as they have to think of how their class will prepare, cook and learn about *rēwana* bread. The active seminars require the students to think outside the square when teaching their content. The interactive nature can include use of electronic technology. They are also required to include *te reo* and relevant *tikanga* - protocols - for the topic they are teaching. Obviously their expertise is still limited but this assessment allows the students to learn about a range of topics from *Māori* culture; to experience their role as researcher and teacher; and to learn from their

peers in a *tuakana-teina*, older teaching younger, manner.

Overcoming learning obstacles

Associate Professor Gerard Rowe, Electrical and Computer Engineering, Faculty of Engineering

Reasonably early in my teaching career, I realised that there were some topics that students really struggled with and others they could easily master on their own. In my class room teaching I concentrated on those difficult topics, which I initially referred to as *learning obstacles*. I devised various delivery approaches to help students overcome these. Over time I found that there was a body of research literature dealing with *student misconceptions*, which seemed to be an alternative name for what I had hitherto referred to as learning obstacles. The most obstinate of these learning obstacles/ student misconceptions seem now to be referred to as *threshold concepts*. Mastery of such concepts is often likened to passing through a portal after which the student acquires a fuller, more integrated view of a subject. The experience is sometimes described as transformative. The time required to make this transition varies widely and some students never succeed. Such students develop only fragmented (as opposed to integrated) knowledge of a subject, and most likely rely on shallow learning strategies to pass course milestones – with all the subsequent issues that are well known to arise from such a learning strategy.

My early explorations of student conceptual misunderstandings were made using an action research methodology with a small group of colleagues interested in improving the transition from high school to first year tertiary study. This research was centred on a compulsory first year engineering course – ELECTENG 101 (Electrical and Digital Systems). This is a concept-rich course which some students find particularly difficult. This difficulty is compounded by the different entry routes into first year engineering (principally NCEA, CIE and IB) and the different curricula associated with these various routes leading to differing levels of academic preparedness.

We were aware of a growing body of research, principally funded by the National Science Foundation (NSF), which was systematically developing (and verifying) course concept inventories. Such inventories, centred on Science, Technology, Engineering and Mathematics (STEM) subjects, consisted of multiple choice questions which typically took about 30-60 minutes to answer. The questions were usually developed via a Delphi study involving disciplinary experts, and concentrated on the most significant conceptual misunderstandings exhibited by students. For each question, the incorrect multiple choice answers were distracters chosen to align with common misconceptions exhibited by students. We developed a diagnostic test, which we administered in the second lecture of

the course, and used for several years to gauge students' misconceptions. Our selection of diagnostic test questions was informed by existing concept inventories, by a North American diagnostic test – the Basic Electricity and Magnetism Assessment (BEMA), and by the experiences of one of the research team who had taught Senior High School Physics for 27 years. Repeated applications of this diagnostic test allowed us to identify misconceptions related to basic dc circuit theory and to introductory electromagnetism, and to conclude that these were the same as those observed internationally. In other words, the problem was the concepts rather than any particular school curriculum.

In our action research in ELECTENG 101 we modified lecture material and tutorial problems to concentrate attention on these truly troublesome concepts. We also introduced peer marking for assessment in tutorials – in part to deal with the learning problem and in part to produce more engagement in tutorial settings and to help students better internalise tutorial material. A portion of the ELECTENG 101 class (currently about 150 out of 860 students) continues on to related second year subjects taught by some of the same lecturers. This allowed us to continue our research by also experimenting in some second year subjects with Supplementary Instruction. Here academically at-risk students, identified by performance in key gate-keeper first year subjects, performance in an early diagnostic test and performance in early coursework, were invited to attend extra (supplementary) tutorials. These tutorials were mostly run by senior PhD students and were designed to concentrate on learning obstacles such as these conceptual misunderstandings as well as to try to break down the very passive approach to learning that many of the students exhibited. Our analysis of subsequent performance showed that those who regularly attended benefitted considerably. However, perhaps predictably, a significant number of students either attended only sporadically or ignored all attempts to attract them to this additional academic support.

We were aware of a body of research which highlighted just how important rapid feedback on performance is for keeping students engaged. Earlier, some of our colleagues had developed a bespoke software tool (OASIS), which was motivated by a desire to encourage students to engage in the sort of repetitive practice that various research studies had shown was necessary to move understanding from working memory to deep memory, thereby leading to increased retention of key material. In its early stages, the question data-bank used by OASIS concentrated on key quantitative skills where repetitive practice led to mastery. In the courses of interest to us, we began to populate the question data-bank with items that targeted common conceptual misunderstandings. A small number of questions were selected to be particularly difficult, and to involve integration of more than one concept. This was included as we had observed that while our students (who typically have high entry rank scores) were very competent at handling neatly compartmentalised problems, they struggled with any that required integration of more than one concept.

These multi-concept problems have proved particularly troublesome for our students.

However, they are very important because they are representative of the type of complex problem our graduates must master. As part of our action research we have, of course, made appropriate adjustments to course-book content, delivery style and self-study problems but still see this as a work-in-progress with much yet to be achieved. In particular we see a need to embrace a different style of teaching where we broaden our definition of the classroom to include interactive online learning and teaching supported by social media tools such as Piazza. The success of OASIS as a self-study practice tool has led us to begin investigating the possibility of enhancing the software to form an intelligent tutoring system (ITS).

Intelligent tutoring systems are not new and a considerable volume of research publications already exist. However, despite extensive research, few such systems have received widespread adoption in classrooms. One particular problem is the steep learning curve required of a busy academic in order to create resources and a suitable question data-bank. The development of suitable authoring tools seems to be an obstacle to the more widespread adoption of intelligent tutoring systems.

An intelligent tutoring system could use OASIS to create and deliver the question data-bank, provide the student interface and manage back-end record keeping. One key feature that would need to be added is the one-to-one scaffolding (especially including targeted feedback) that would be provided by an instructor if class sizes were small enough to permit this style of interaction. Massification of education increasingly makes this less and less feasible, especially in the first and second years of tertiary study.

Another obstacle is that the use of such on-line systems requires students to possess well developed self-regulated learning (SRL) skills. These don't necessarily develop by themselves and if we are serious about producing life-long learners, as most university graduate profiles proclaim, we have an obligation to help students develop their SRL skills. That begs the question – how well do we really understand the strategies that students use to learn? This, in turn, raises the possibility of embracing current research on learning analytics to develop an ITS that mines the student log records as they interact with the ITS system and adapts its interaction with students dependent on their approach to learning and their disciplinary knowledge.

Summary

Diagnostic testing conducted over several years has resulted in academic staff forming a clear understanding of students' misconceptions at entry. The supplementary instruction produced clear benefits for students who attended regularly. Persuading students to accept they are academically at-risk remains a problem. Students appreciate the skills-based practice and instant feedback provided by OASIS. They comment frequently on the benefits of OASIS in course surveys. An increasing number of staff are aware of the academic diversity of our entry cohort. There is growing acceptance of the desirability of scaffolding adapted to individual's needs. However, not all staff accept the

need to change, with some rigidly locked into a ‘weeding out’ mentality.

There is quantitative evidence (from exam results) showing the initiatives described earlier improve academic performance. These initiatives (i.e. diagnostic testing, concept-focussed delivery, supplementary instruction and skills practice via OASIS) are in essence add-ons to a traditional teacher-centred delivery approach with delivery fixed in space (i.e. the lecture theatre) and time (i.e. the timetable). The development of adaptive tutorials delivered via an intelligent tutoring system (ITS) would offer student-centred instruction unconstrained by space and time. Introduction of any educational change requires consideration of long-term sustainability. A fully-flipped classroom seems unlikely given the prevailing academic culture in my department. By contrast, a blended approach mixing reduced traditional delivery with adaptive tutorials delivered via an ITS is a realistic goal. I look forward to extending these ideas beyond the preliminary studies conducted so far to ‘rethink the classroom’ and to further improvements in academic performance as a result.

Real world experiences – Engineering

Dr Rob Kirkpatrick, Professor Keith Robinson, Colin Nicholas, Dr Keith Adams, Systems Thinking, Faculty of Engineering

Reinventing Engineering Education

In 2011, the Faculty of Engineering started out on a bold new approach to Engineering Education with a project-based learning approach- effectively Rethinking the Classroom.

The new model is designed to enhance the students' technical knowledge and experience by applying it to the 'real' world. It also develops essential leadership, teamwork and interpersonal skills before graduates enter the workforce. This part of the programme redefines the teaching and learning methodologies of the faculty. It takes students from a large lecture theatre experience and places them into groups, where they undertake a major project that replicates the complexities of the 'real' world.

In the fourth year, what is now known as 'Systems Week' has become an established part of the faculty's curriculum. All lectures and tutorials are suspended for the week so that all 600 Part 4 students can participate in a multidisciplinary project based learning, environment.

The change to a project-based learning approach was brought about by the systems team - a group of practitioners in the faculty. Their experience as executives provides an insight into what employers need from new graduates. Their aim throughout has been to produce graduates who can 'lead' and 'integrate' as well as 'engineer'. With the broader professional development material which the faculty is now providing through the system team, the faculty expects its graduates to have much brighter futures ahead of them – leading industry and making a major contribution to wealth creation and NZ's economy.

One of the challenges in the implementation of this project-based learning approach is how best to accommodate over 600 students in groups of approximately 25 students. They need proper multimedia 'syndicate' space to allow each group to work together efficiently. This presents something of a logistical nightmare, and it's only just recently that the team has been able to allocate rooms to each of the teams. It's taken dedicated effort, and a lot of coaxing and a 'can-do' attitude to achieve the current roll out. But even now it's far from perfect and there is scope for improvement in terms of quality and quantity. This form of teaching is now an established part of the faculty and presents a new requirement for Rethinking the Classroom. As the engineering intake continues to rise to 800, the need to build this into the forward load for resources and facilities

becomes more acute.

Systems Week was first introduced in 2011 and has been successfully repeated with a different topic each year. Each project scenario is based on a complex, multidisciplinary challenge of national proportions. In 2011, the systems scenario was 'The Reconstruction of Christchurch' following the February earthquake. This unique event was a real game changer in the acceptance of the programme and gave the systems team an opportunity to accelerate the change process and implement Systems Week. This real-life event presented the opportunity to achieve the required outcomes in a way that no 'artificial' scenario could. It added impetus to the students willingness to take part, knowing they were working on a project where their finished portfolios could provide worthwhile outcomes in the reconstruction process.

The success of each systems scenario depends on:

- A well-developed scenario containing a mix of politics, economics and the business case, an overview of likely stakeholders and their agendas, health and safety, ethics, sustainability and cultural diversity.
- Deliverables based on each stage of the 'systems-thinking' approach.
- A supporting lecture series describing the scenario application and the implementation of the systems thinking approach.
- Briefings on leadership and teamwork.
- Briefings on advocacy and advanced communication skills - all aimed at an executive audience.
- Support and reflective guidance throughout systems week.
- A dedicated final afternoon such that all 25 teams can present their solution to a surrogate "Prime Minister" – an external VIP. Each team has just three minutes to get their case across!
- A special reception afterwards so that students learn the value of celebrating success.
- A peer assessment process so that the contribution of each member of the team is understood and marks distributed accordingly.

Lecture theatres and laboratories provide the classic university environment. There is also a focus on technical specialisation. All this is essential but a little different from industry. Here the focus is on a multidisciplinary project approach — working with people you don't necessarily know on a task which is completely new and outside your comfort zone. Furthermore, the client brief can be imprecise and the required outcomes somewhat fuzzy compared to normal teaching objectives. The 'real world' challenge is as

much about understanding the problem space as it is about the solution.

In this environment, Auckland students 'learn by doing'. We provide an opportunity for them to put classroom learning into practice. There are no 'rules': they are entirely responsible for their approach, their solution and their report. There is no model answer. They are marked on their approach and the quality of their thinking. Inevitably, this also means they have to work as a team to complete the scenario within the time available.

Although we select the composition of each team (based on ability, ethnicity, gender and technical discipline), each team selects their own project manager, leadership team, technical experts and a final presentation spokesperson. They are responsible for planning and organising the work and for allocating tasks and tracking progress — no mean feat when there are 25 students in the team.

Although 2011 provided a real-life scenario, in 2012, we reverted to a more artificial scenario, albeit following the same guidelines as the previous year. The Part 4 students had to report on what action should be taken by Auckland Council and Government after a cruise ship accidentally drifts into Auckland's Harbour Bridge thereby rendering it 'unsafe for traffic'. Students had to look at all the implications of closing the Bridge particularly the economic and social impact on life in New Zealand's major city.

In 2013, the systems scenario became 'a Resilience Architecture for Auckland'.

A group of major infrastructure providers has identified a number of potential 'hotspots' where adverse natural or manmade events could cause the simultaneous loss of several major pieces of critical infrastructure (power, water, wastewater, transportation, communications and data links). This group needs the funds and resources to improve Auckland resilience capability before, during and after a major 'event'.

What is the 'best fit' proposal to put forward to the Prime Minister for funding?

In the real world, a project of this magnitude could take up to two years to undertake, but within the part 4 course time is compressed and students have just one week to work through it, working out where the funding would come from and how money could be saved in other parts of the National Budget.

The National Budget is not something that would normally interest engineering students in a lecture, but learning is now incentivised by 'doing' and 'achieving'. 'Discovery' becomes part of the natural learning process! The main emphasis continues to be practical experience — working alongside peers through the various challenges. Students from different disciplines learn from each other by discussing a wider range of options and issues. They gain confidence from challenging ideas within their group, before reaching a decision through consultation and collaboration. This mirrors a 'real world' mode of operating.

In each of the scenarios, the learning outcomes are:

- Practical experience of how to apply systems techniques to a complex, real world problem involving a number of disciplines.
- Gain a better understanding of leadership style and teamworking and its critical importance in managing major projects and business as a whole.
- Begin to understand the social, economic, environmental and political drivers which form the working environment for every engineering project.
- Experience a sense of excitement, achievement and self-satisfaction which only comes through working successfully together as an organised group. This unique and fulfilling result can only be achieved through scenario-based learning.

The results of this style of teaching are astonishing. The quality of their reports and their presentations are simply amazing. They are very, very professional and show flair, imagination, originality and a sound knowledge of the scenario application and all the system thinking processes involved. Perhaps more importantly, they all learn the value of communicating, teamwork and leadership.

The enthusiasm and energy of the students during systems week is overwhelming and everyone involved is caught up in the excitement and spirit of adventure. The momentum builds throughout the five days and the atmosphere at the final presentations is always electric, making it clear that the students had been through a very special, very unique, very memorable learning experience.

What have we learned from all this in the last four years? There are some applications and themes which will always be hard to get across in a classroom and lecture environment especially where there are over 600 students. Here there is little opportunity for discussion and interaction. Themes such as leadership and teamwork, project management and the means of solving complex multidisciplinary problems can only be learnt by 'doing'. By linking the classroom lecture series to systems scenario practice via project based learning, it becomes eminently possible to transfer a practitioner's knowledge and wisdom to students.

The experience of being involved in these System Weeks has only increased the Systems team's belief that the classroom can be linked to practice, making the experience incredibly beneficial to both staff and students.

Indeed, students add their project experience to their CVs, and evidence says that it has helped some Auckland graduates win top jobs against fierce competition.

Feedback from students during the transition period has been mixed while they get used to a new way of doing things, but now that things have settled down feedback is

overwhelmingly positive.

The following represent some typical comments:

"This [scenario] is the most worthwhile thing I've done in four years at Uni."

"We had fun, worked hard, pulled together an awesome project. Almost everyone got into this project and worked very hard. We even managed to have fun at the same time."

"This was one of the best group experiences I have had. All the sub-groups are extremely self-driven, motivated and diligent."

"The group dynamics – will miss working together!"

A poverty simulation for second year Bachelor of Pharmacy students

Dr Trudi Aspden, Pharmacy, Faculty of Medical & Health Sciences

Background

Cultural competence has been defined in a variety of ways. However it is generally understood to consist of a set of values, behaviours, attitudes, and practices within a system, organisation, programme or among individuals, and which enables them to work effectively across different cultures. It refers to the ability of an individual or organisation to respect the beliefs, language, interpersonal styles and behaviours of individuals receiving services and staff who provide the services. Cultural competence is an open-ended, evolving process requiring a long-term awareness and commitment. (Denboba, 1993)

Since 2012 pharmacists in New Zealand have been required to practice in a culturally competent manner. The definition of cultural competence from the Pharmacy Council of New Zealand (PCNZ) is, "The ability to interact respectfully and effectively with persons from a background that is different to one's own" (Pharmacy Council of New Zealand, 2011).

Individuals tend to be positively biased towards the social groups to which they belong and research has shown that healthcare professionals often provide a better service to patients with whom they share some similarities (Bigler, Brown, & Markell, 2001; Tajfel & Billic, 1974; Woods, Kurtz-Costes, & Rowley, 2005). Socioeconomic status is explicitly mentioned in the PCNZ's range statement for culture and, according to university records, many of our students come from schools where few students from the lowest of socioeconomic backgrounds were part of the roll.

Being able to manage the "dynamics of difference" (Cross, Bazron, & Isaacs, 1989) is a beneficial attribute in many professions and jobs. However, it is a concept that is often considered by students to be either a soft or a dry subject. Therefore the task we faced was to find an effective teaching intervention to challenge common stereotypical beliefs around poverty, and those living in it, that was engaging, non-threatening and safe for those students from backgrounds where poverty had been experienced (Carroll, Casswell, & Huakau, 2011).

Following a literature search, The Community Action Poverty Simulation (CAPS) was purchased from the Missouri Association for Community Action (MACA). The simulation is designed to increase the awareness of those participating to some aspects of living life on a low income, and involves authentic learning. Authentic learning has been described

as a participant centred, active learning experience, incorporating genuine tasks and a context based on reality (Carlson, 2002).

Kolb's Experiential Learning Theory (Kolb, 1984) describes knowledge creation through experiences, where an experience is followed by observation and reflection on the experience. This then facilitates the formation of abstract concepts, to be tested in new situations.

Simulations are a form of experiential learning. They portray aspects of the real world and involve active learning where participants, in part, construct their own learning, from their experiences during the simulation and their subsequent reflection. Simulations have been shown to improve the understanding of concepts by encouraging participants to interpret and construct meanings (Prescott & Garside, 2009). Of particular relevance to this situation is that simulations have been shown to increase student engagement and enjoyment of learning (de Freitas, 2006). Shelton and Wiley propose criteria for effective instructional simulations which focus on pedagogy and participant engagement (Shelton & Wiley, 2006). They include the need for simulations to address a complex learning issue, the presence of learning objectives or goals, rules and a requirement for activity from participants, rules for the environment and having non-random outcomes for participants (Shelton & Wiley, 2006).

The CAPS simulation, which is designed to cater for up to 80 active participants, contains all the criteria described above and was adapted to accommodate 112 students, role playing individuals in thirty five fictional families facing poverty. The thirty five different fictional families comprise six types of family structures including those with a member who has recently suffered a job loss, those with a parent in prison, grandparents bringing up grandchildren and retired people living alone. Each family is given a large envelope at the beginning of the simulation which contains information about their family (names, ages, work details etc), their weekly outgoings such as rent/mortgage payments, food bills and electricity charges. The pack also contains pencils and note pads, money, social security cards and cards indicating possessions such as fridges, cookers, and televisions which are available to pawn during the simulation. The task of each family is to purchase the basic necessities detailed on their instruction card such as food, prescription items and clothing, and provide shelter over the course of the simulation, which includes paying their rent/mortgage and utility bills. School children are expected to attend school during the week and those with jobs are expected to turn up to work for their allotted time in order to get paid. The simulation duration is one 'month', with each working week being 15 minutes with a three minute weekend where all the community services are closed and the families re-group to plan their strategy for surviving another week. In reality the whole simulation lasts for 3 hours (not including pack down time). A more expansive description of the simulation can be found in the methods section of this article (West Steck, Engler, Ligon, Druen, & Cosgrove, 2011).

The CAPS simulation reflects the American environment and so the props supplied were

adapted to give the simulation more relevance for New Zealand participants. Each participant received a sheet explaining the welfare terms used during the simulation, and explaining the New Zealand equivalents where they exist. The worksheets of questions, which all school aged children are required to complete when attending weeks one and two of school, used current poverty statistics for New Zealand as their answers. An information sheet, containing quotations, links to reports relating to various aspects of poverty in New Zealand, and details of various organisations working in the areas of poverty awareness and alleviation, was also created for the students to access electronically after the simulation.

The simulation's community services include a bank, a supermarket, a transport agency, a policeman and a jail, social services including social workers, a childcare centre, a pawnbroker, a general employer, mortgage/rent and utility collectors.

The simulation event begins with an introductory briefing where participants find their families and examine their packet of instructions and possessions, and are oriented to where the services around the room are and what they do. The rules and goals of the simulation are explained and there is a chance for participants to ask questions. Once the initial briefing has been completed, then the simulation itself begins and runs for approximately 90 minutes. This is followed by a structured debriefing session, where participants in six groups, corresponding to the different family groups, share their experiences of the simulation with each other with the help of a question guide. Participants are given roughly ten minutes for this activity and then a nominated spokesperson has three minutes to share their main discussion points with the rest of the simulation participants. The discussions focus on what participants did during the simulation, what happened to them and what they learned about the lives of people living on low incomes. Next, the individuals who staffed the resources and services around the room, including the practising social workers from Auckland City Mission, are given an opportunity to share their observations about the students' behaviours, the coping strategies that they observed during the simulation, and how they relate to what they see when they are at work. The session is then summarised and brought to a close with details of how to access the electronic information sheet.

In keeping with Kolb's Experiential Learning Theory the following week all participating BPharm students are asked to complete the following series of reflective questions in class:

- What did you learn from participation in the poverty simulation?
- How has it changed how you view people living in poverty?
- How could the simulation be improved?
- As a pharmacist what could you do to provide a more effective service to patients/customers facing poverty?

- Do you think we should keep this simulation in the BPharm curriculum? Why?
- Any other comments that you would like to make about the simulation?

Towards the end of the semester, a follow up lecture created by researchers at Auckland City Mission is given which focuses on the experiences of financially struggling families in Auckland. At this lecture, in an attempt to reinforce the learning from the simulation, students are again asked to reflect on how their views align with the views expressed during the lecture and how as pharmacists, they could better assist those living on low incomes. Students are also given access to hand outs detailing budgeting services and other services in Auckland for those who are struggling financially.

The School of Pharmacy designed post CAPS activities and resources to align the exercise with the Pharmacy Council of New Zealand's Competence Standards (Pharmacy Council of New Zealand, 2011). However, activities and resources could be designed to suit the needs of other courses, disciplines and professions.

Each year, students are asked how the simulation could be improved and some of the suggestions are incorporated into the following year's simulation. Examples of suggestions actioned include the addition of a casino to the simulation, and allowing those in child roles to swap with those in adult roles after week two of the simulation.

Schank states that "Simulations that evoke real emotions become real memories" (Schank, 2001). However whether any changes in attitudes occurring as a result of this teaching intervention actually do influence the behaviours of students once they are in practice as pharmacists will depend, in part, on the key messages from the simulation being reinforced during later parts of the BPharm programme (Beagan, 2003). In addition, many of our students also have part time jobs in pharmacies and other places during their time at university. According to Kolb, these jobs will also serve as an opportunity to test and evaluate what they learnt during the poverty simulation, in actual work situations (Kolb, 1984). The attitudes and behaviours modelled by university teaching staff and health care workers observed by the students will also be influential (Beagan, 2003).

To ensure authenticity, the simulation requires co-operation with Auckland City Mission. Each year so far, Auckland City Mission have kindly allowed six of their workers to play the roles of simulation's social workers, pawnbroker, receptionist, community action worker and inter-faith services worker. In addition, they provide valuable guidance and the follow up lecture. In recognition of their support the School of Pharmacy makes an annual donation to the Auckland City Mission. The simulation also requires approximately 20 additional volunteers to staff the other resources. All volunteers need to be trained, which takes around 20 minutes for each person. In addition the props used need to be wiped clean and the simulation packs need to be put back together at the end of the simulation, which is extremely time consuming.

However, the results of the student evaluations completed each year have been overwhelmingly positive and the School of Pharmacy is committed to maintaining the relationship with Auckland City Mission and keeping the CAPS in the BPharm curriculum.

A selection of comments from students about what they learnt from participating in the 2012 simulation:

"There is a lot of stereotyping that poor people don't try as hard. After the simulation I realise they try just as hard to get through the day."

"It definitely made me learn first-hand the struggles faced every day by families - and one in poverty, at that. It helped me put things into perspective about the lifestyles that people are living in. Lifestyles that would be otherwise be foreign in the context of university (where everyone is relatively well-off), against the 'real world'."

"Drastically changed my view as I sometimes thought that it was only due to the choices made that people were living in poverty but there were some scenarios in which families were living in poverty due to unforeseen circumstances."

Other student participant comments included:

"Gave me an emotional experience and understanding of the situation, much more effective than just a lecture or list of facts."

"The simulation was awesome! It was also very much needed in order to educate my fellow BPharm Part 2 students in something other than Facebook. Thank you for allowing me to be a part of it."

"I really enjoyed this simulation. I come from a background where these living situations are very common, particularly being a Pacific Islander and Māori. I feel sad when I see children living in poverty and families who try to make ends meet. I think if people understood more about people living in poverty and that it's a problem, we can all make

a difference."

Volunteer staff comments:

"Fun dealing with the students. Interesting simulation that made me think, and made the students think. A worthwhile exercise all around."

"Important message; engaging activity helped to promote empathy; fun."

"Overall, it seemed to achieve its purpose and I think that both the volunteers and the students made a few interesting discoveries about managing poverty."

Sustainability of the simulation

The CAPS experience has been evaluated thoroughly and is recognised by the School of Pharmacy as being a worthwhile learning exercise for students. However, offering the simulation each year is very labour and time intensive. It also requires careful management of relationships with organisations and staff to ensure their engagement and continued willingness to be involved. Over the three years that the simulation has been run, the net to catch enough volunteers has had to be cast successively wider to ensure sufficient volunteers for the simulation to run. Currently we recruit staff mainly from the Schools of Pharmacy and Population Health in the Faculty of Medical and Health Sciences and Counselling, Human Services and Social Work in the Faculty of Education. Careful forward planning is also needed as there is a requirement for a time period during a week day where all the students are free for three and a half hours at the same time as suitable rooms are available. In addition it requires a champion willing to spend time checking various poverty statistics to update the resources on an annual basis, recruiting volunteers from inside and outside the University to help on the day, to generally managing the simulation including training and arranging for people to clean and pack down the simulation packages afterwards and replace damaged or missing pieces. The detailed CAPS instructions include a Director's Manual, which recommends using an organising committee to manage the simulation. However experience has shown even if such a committee was convened, a determined and committed individual is needed to direct and drive the simulation forward, as adapting processes by learning from previous experiences has proved invaluable to becoming more resource efficient.

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Health and Wellbeing Curriculum

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The Faculty of Medical Health Sciences runs a longitudinal Health and Wellbeing Curriculum (SAFE-DRS©) between years two and six of the Medical programme as part of the personal and professional skills (PPS) domain. The SAFE-DRS© curriculum allows students to explore skills that will be beneficial to both themselves and their patients. This conversation will focus on a one day initiative in year four which is part of this curriculum.

SAFE-DRS©:

Self-care and skills; nutrition, time-management, exercise, sleep
Access help; if one needs it
Focussed attention; mindfulness training, focusing where to put your attention
Emotional intelligence
Doctor as patient; learning how to be a patient, how not to self-prescribe and how to be a doctor for other doctors
Reflective practice
Stress-resistance

These topics are covered at various stages throughout their course, but in year four we have organised a face-to-face day with the students, in groups of forty, over six days, allowing us to cover all year four students.

The reason that health and wellbeing is really important stems from the evidence which shows that doctors have a higher risk of stress, suicide, and addictive behaviours etc., issues that are rarely addressed in medical curricula, either in New Zealand or other countries. Recent evidence shows two alarming trends where sick or stressed doctors make more mistakes: In Britain a large study of non-depressed doctors vs. depressed doctors showed that depressed doctors made six times the number of medication errors, and a Canadian study showed that doctors own self-care affects their interactions with their patients. This study surveyed thousands of doctors on areas like breast examinations where women doctors who didn't do self-examinations were less likely to examine a patient's breasts. Also, for example, if a doctor doesn't exercise it can easily affect the advice they give their patients. With increasing evidence on issues like these, Medical Schools are now starting to add self-care practices into their curriculum.

This initiative was first presented in 2013, so whilst still in its infancy, recognition is starting to grow around its usefulness. This year, we brought 260 students together in groups of approximately 40, over six different days. The major constraint with this initiative being run in small groups on several different days is budgetary. Last year we both ran all the sessions, which wasn't sustainable long-term, so this year (2014) we had an additional facilitator. In addition, we now have the students do a prior reading consisting of six articles that will be covered during the day. To test whether the students have read the articles we have a quiz with health and well-being related prizes. This helps get the day started in a fun and interactive way. The quiz portion is multiple choice with a couple of very close answers, which gets the groups debating, sometimes quite heatedly - medical students can be very competitive!

Learning outcomes have been defined for each of the PPS themes. The Year 4 PPS learning outcomes are listed below. The Health and Wellbeing learning outcomes are covered in the Year 4 training day.

Professionalism and Reflective Practice

- Demonstrate the desirable attributes and characteristics of a professional.
- Examine professional practice issues, to include power relations, uncertainty and conflict.
- Reflect on educational and clinical experiences.
- Assess effective means of prioritising and time management in clinical and personal contexts.

Ethics and the Law

- Identify ethical and legal principles and issues arising in the clinical environment and use these to engage in peer discussion.
- Apply the relationship between law and ethics to patient safety, rights and consent.
- Discuss professional dilemmas with respect to managing health information.

Health and Well-being (SAFE-DRS)

- Assess the impact of stress on health and self.
- Evaluate evidence based strategies for prevention and management of stress and burnout.
- Demonstrate self-awareness and impact on others of acceptance of difference and diversity.

- Identify appropriate help-seeking behaviours for self and others.

Cultural Competence

- Critically reflect on own and other cultural biases and their impact on patient care.
- Critically reflect on how cross-cultural differences affect communication, consultation and diagnoses.

Learning and Teaching

- Apply effective teaching, learning and study techniques in educational and clinical environments.
- Critically discuss the impact of the hidden curriculum on academic and clinical practice.
- Identify and analyse learning opportunities in the clinical environment.

Another challenge is that this is one of the few reflective small group activities that students are exposed to. In Year 4 there is some cognitive learning in large lecture theatres, and some bedside clinical teaching on the wards. This day is one of the few times that medical students can learn different types of skills and can reflect on their attitudes and feelings about topics. Therefore, we always get the occasional 'eye roller' who sits at the back of the class muttering "what am I doing this for?", but over time we are certain there will be less of this. With personal health and well-being in the curriculum being perceived as 'fluffy', students sometimes comment "what has my personal life got to do with you? Stop forcing me to think about myself". We did have a Year 2 student tell us this concept was quite narcissistic, as all they needed to worry about was their patients and it made no difference what they thought about themselves. As the initiative expands and runs through the complete medical programme from years two to six, we are certain we will see much greater interest and engagement with it.

As we have only one day, we have to allocate time and resources very carefully. At the beginning of the day we divide the students into small groups of 12-13 for the quiz and again for the afternoon session of Mind-body Medicine. This year, for the first time we offered a series of four workshops where the students had a chance to attend one of two in each session. The first session offered the choice between: *Emotional intelligence and self-awareness and Learning through clinical attachments*, with the second session offering the choice of *Time Management or Patient death, reactions and coping*. This change to the programme came about from student feedback that asked for a choice of sessions to attend, instead of being forced to attend all sessions, some of which may not be as interesting or as worthwhile to some individuals. From implementing these optional sessions the reverse feedback happened where students felt they were missing out. From this we implemented a small time-slot later in the afternoon, FOMO (fear of missing out)

where we allocated around 20 minutes to summarising the main learning points from these sessions. Feedback on this change was positive. The students like the choice, as they don't feel they have missed a session that in hindsight may have been interesting. Also in response to feedback, the optional session *Patient death, reactions and coping* was added in 2014. There has been an ongoing request from students to be exposed to strategies that will assist them.

We also have a session on *Burnout: Awareness, Prevention and Management*, (where we have managed to introduce wonderful exercises with cushions, which may sound rather silly, but we make each of the eight cushions on display a problem that a doctor might have - relationship, workload or any other ailment. For example, it may be back pain, so we get everyone to link the cushion to the problem, delving further into the issue and find that back pain may be causing them to drink more, so we link the cushion to alcohol abuse, starting a process of problem solving together by looking at strategies gleaned from discussions and handouts to find out, "If it is an alcohol-based problem how would you treat it and where would you go for help?". We can also highlight relevant evidence and bring it into the discussion. . Following on from this, we get the students to think about all the various cushions they may pick up throughout their life, discuss the evidence more carefully then discuss strategies for problem-solving their various cushions.

For *Mind-Body Medicine* we have various scenarios where we unpack the whole issue. We give each group a real life scenario from a text book, get them to read and discuss what everyone in their group thinks of this scenario, how they would handle it and then resolve it, and bring in their own personal mind/body interactions around an issue that may be pertinent to them. With Medical students, the mind-body interactions that they experience as part of exam stress is a common issue and leads to interesting discussion.

In terms of evaluating the impact of the course, there are two ways in which we do this: On the day, the standard evaluation is completed. At this time the students are still absorbing and evaluating whether the day was interesting rather than the overall value of it. This can be brought about by the perception of the day before they arrive. What has been very interesting and valuable is the feedback that we get in the students' end of year portfolios. The portfolios are a new concept right across the programme from entry at year two. This year's group have been exposed to these before and the feedback has been enlightening. They have been able to reflect on the day and what they have done since, and suddenly realise the value of the topics, which they have been spontaneously adding to their portfolios. In these portfolios we are starting to read over and over again, comments like "I really got so much out of the time management portion" or "emotional intelligence", and they include these in their reflections of the year. Also we can see they may adjust their thinking to incorporate ideas from the initiative with "I used to think something and now ever since I attended the initiative I have started doing this", or "on reflection in year two I was really sceptical about

mindfulness, but now in year 4 I really need it on the wards".

When we get them to do an evaluation at the end of the day they all put something in the comments because they have to, but with the end of year portfolios all the writing and comments are completely unsolicited, so what is in the portfolio has been put there by the students. With the on-the-day evaluations, a global score out of 10 is normally between 7 and 8, but there is always one person out of 40 who will score it at 2, which is normally someone who doesn't like that sort of teaching/interaction. As with everything it can take time to change a culture, but on reflection we are very pleased with the overall score.

It's of interest that an important lesson for us is that we stress the evidence base of topics that are often seen as not important by the students - those 'fluffy' issues, and use valid studies to highlight the relevance and significance of the topic. . We also remind them on the day that they are people as well as doctors and stress the importance of recognising this. For this we have optional creative slots where we encourage them to show the group another side to their personality, not just their highly competitive, highly functioning and intelligent side. We have had artists, guitarists, poets, jugglers and singers all participating, surprising their peers with abilities they didn't know they possessed. Also, we are starting to find this side of students creeping into their portfolios as part of their health and wellbeing. It's something that helps them relax and is an integral part of their personal and professional development.

Māori Health Intensive (MHI)

Dr Elana Curtis, Population Health, Faculty of Medical & Health Sciences

Māori Health Intensive (MHI) is a four day teaching programme targeted specifically to all year two Nursing, Pharmacy and Medical students and is an inter-professional teaching activity engaging nearly 500 students over four days. The stated aim of MHI is to reinforce and extend the opportunities students have throughout their programmes to develop the skills, knowledge and insight necessary to improve Māori health outcomes. The learning experiences provide an opportunity for students to learn together in order to reflect on Māori health, how Māori health issues are addressed by health services and the role and impact of health professionals on Māori health outcomes. This initiative is the only major intervention that students receive in Māori health issues across their courses, except for Medicine where there is another day-and-a-half allocated in their fourth year.

I was responsible for coordinating the programme in 2014, reviewing the learning objectives, looking at the whole format of the initiative and the way in which the course was being delivered. The first challenge was to be able to instigate an interactive programme that targeted nearly 500 students, a very large cohort, which necessitated very close scrutiny of the learning outcomes and modes of delivery. The first step was to undertake constructive alignment of the learning outcomes, looking at what had been done in previous years. Others have developed the course over time, and when we looked at the learning outcomes we matched those to the graduate profile for Māori health which this faculty signed up for (Te ARA) allowing us to see where it was and wasn't aligned. In doing so each learning outcome had to be matched to the broader outcomes that we were trying to achieve in Māori heath. We found some mismatch, or at least some lack of alignment, which needed changing. Using constructive alignment, we started to rethink the ways we deliver each teaching and learning activity, adjusting the delivery to help achieve the learning outcomes. We also had to re-think the ways we could assess them. By repeating this process for each of the learning outcomes, we redesigned and overhauled the initiative and created several new learning and teaching activities. These were based on small group work, thus creating a more interactive learning experience.

In 2014 we delivered the revamped programme, achieving some excellent results utilising interactive teaching methodologies with a very large cohort of students from different faculties within Health Sciences. These students are not normally taught

together.

In revamping the programme the learning outcomes of this four day initiative have been defined as follows:

"Māori Health Intensive (MHI) will reinforce and extend the opportunities you have throughout your programme to develop the skills, knowledge and insight necessary to improve Māori health outcomes. The learning experiences provide an opportunity for students from the medical, nursing and pharmacy programmes to learn together in order to reflect on Māori health, how Māori health issues are addressed by health services and the role and impact of health professionals on Māori health outcomes" (Hauora Māori, p.6).

From this overview there are 12 learning outcomes for MHI:

1. Engage in a Māori *pōwhiri* and describe its purpose.
2. Deliver a personalised *pepeha* (saying or motto) in Māori and describe its purpose.
3. Pronounce basic Māori words correctly.
4. Be able to make the links between colonisation and how it impacts on contemporary health status.
5. Explain the links between basic causes of health, the distribution of health determinants and health status by ethnicity.
6. Define racism and how racism impacts on health outcomes.
7. Develop interventions at the level of social determinants, access to care and quality of care to reduce ethnic inequalities in health.
8. Describe the concepts of ethnicity and ancestry and how the concepts relate to healthcare.
9. Describe your own personal identity in relation to a Māori *pepeha* framework.
10. Explain the context that led to the signing of the Treaty of Waitangi and differences in translations of the Treaty of Waitangi texts.
11. Analyse how the Treaty of Waitangi relates to Māori health status.
12. Engage in effective inter-professional team communication and problem solving.

The major challenge in being able to achieve the learning objectives came from the previous traditional mode of delivery where the students were overloaded with information. By the time they were asked to display their understanding of the learning

objectives through an e-poster, they were unable to produce a structural, basic determinants analysis of Māori health issues. Responses still very much reflected a victim-blaming, culturally deficient deficit viewpoint, which showed that we were not teaching, or interacting with the students, or the students were not engaging with the content. Hence we redesigned the initiative in order that they would be able to apply the knowledge that is being imparted so they can clearly demonstrate their engagement with the learning outcomes.

The design of the initiative centres on the above learning outcomes. It engages the students on all levels throughout the four days and fosters interactive learning experiences between the lecturers, facilitators and students. The first two take place at the City Campus and then we move to Tāmaki Campus for the remainder. Lectures, group work and team-based learning make up the face-to-face component of the course, but we also bring other resources to the course to assist with achievement of the learning outcomes. The additional resources are in the form of an eKete, a pre-loaded USB with key resources designed for the MHI, which allows the students to collect a personal library of topics of interest to them. Along with the eKete a number of additional resources have been made available via the MHI Library page.

The first day commences with a more traditional form of lecturing with a *mihimihi* (introduction) and then two case studies are presented relating to Māori health in the context of Ngāti Whātua o Ōrākei, their history, and its relationship with their current health and wellbeing. We have introduced interaction into this lecture in the form of a quiz, allowing the students to engage with this part of the day. Rather than using PowerPoint and teaching to this large group, we have broken down this part of the day by creating multiple sessions within the timeslot, using a combination of multi-media to create small vignettes; interviews with people of Ngāti Whātua; footage of the Bastion Point protests and the arrests that were made. This is rather moving for the students, most of whom were born after this event. From this two hour time-slot the cohort is then divided into two groups of approximately 250 students per group, with one group attending a pōwhiri at Waipapa Marae and the remainder being taken through an overview of MHI, followed by a session with their *whānau* group and a facilitator. The groups then swap and engage in the other session. The *whānau* groups consist of approximately ten students who remain together throughout the four days. The groups are randomly assigned along with a peer facilitator who is usually a student who has previously been through the initiative, returning to assist by providing guidance and interaction in helping students to achieve the learning outcomes.

Day two has one cohort of students of around 250 participating in a seminar centred on the Treaty of Waitangi and a session on Māori interventions looking at an example of an intervention that has worked positively for Māori health contexts. This is particularly important as the students within their groups are required to produce an e-Poster which is assessed on the final day. This seminar is interspersed with active exercises where we

revert to a team based learning (TBL) model, even in a lecture theatre setting, by getting the students to work in small groups, where they are seated, working on summaries and worksheets with facilitated discussions around the outcomes. This helps in keeping the focus on interaction and counteracts the notion that it is possible to lecture for half a day, and keep everyone's attention.

The remaining cohort works in *whānau* groups of ten and attends four workshops of 45 minutes per session. These four workshops were created from scratch for the 2014 initiative with interaction the sole focus, moving away from mini-lecturing and requiring the students to partake in hands-on activities. The first is in *te reo*, and is important as the students have no Māori language, and as part of the assessment they are required to write their own *pepeha* in *te reo*. Through different activities we also get them to label parts of the body in te reo. In the second workshop we tackle issues of racism and to introduce this topic we use a video with a comedian which allows us to lighten up the topic. This is important so that we create a safe space for discussion, which can prove challenging. Once again we use activities to produce a model of the different issues around racism to show how we can challenge or talk to those issues. The third workshop revolves around identity, ancestry and ethnicity. We use a TBL approach where the students address issues themselves and then discuss them within their group. The fourth workshop looks at clinical situations which are relevant to the students and by carrying out a root cause analysis of the issues in their group we are able to apply it to the models of health inequities that have been discussed. So throughout these sessions the students are actively working, questioning their own actions and discussing/questioning their ideologies in small groups.

On day three the students move to Tāmaki Campus where the day is spent preparing an e-Poster on a health issue they have been given. For assessment the e-Poster must contain four components:

1. An outline of a health issue and a summary of key inequities for Māori.

2. Application of the Williams Model detailing how inequities in health outcomes have occurred for a health issue at every level of the model.

3. Choice of a determinant of health identified on the Williams Model and linking this to a breach of the Treaty of Waitangi.

4. Presentation of an intervention designed to address key inequities for Māori associated with social determinants, access to health care and/or quality of care. Students must aim to include specific activities that can be led by a nurse, pharmacist and doctor within the intervention.

The e-Poster should align with guidelines for scientific poster presentation.

The final day of the initiative is spent with the *whānau* groups presenting their e-Posters

to a number of groups from different *hapū*. In 2014, for the first time we moved the provided meal from the first day to a *Hāngi* lunch on the final day, along with a performance by a *kapa haka* group. This created an excellent finale to the four days.

This initiative is a major departure from the other areas in which Health Science students are working. Students see Māori health as a 'fluffy' topic, something to get through that is unimportant in comparison to other areas of their curriculum. There are therefore negative reactions to teaching Māori health prior to their attendance. One is that Māori health is framed from a deficit, Māori are to blame for their health, because they smoke and drink, are poor and there is nothing that we can do to change that. This programme is also held in what is perceived to be a semester break at University. Being a health professional programme the breaks do vary from the rest of the University, but the students arrive feeling robbed of what they perceive should be a break. So to begin with, the initiative is very much set up for failure, and to get around this initial block, high quality teaching and learning along with meaningful interaction has to be provided. If the initiative is boring and non-engaging it is doomed!

Course evaluation as per standard practice is incorporated into the final day of the initiative and has been positive, which is pleasing, particularly in view of the negative reaction to interaction with Māori health issues. Also, on the final day, looking at the e-Posters there has been a really marked improvement from previous years, which to us shows that students are achieving the stated learning outcomes. We asked the facilitators to provide specific feedback as to how they felt the course had progressed since they themselves had undertaken it and this proved to be an overwhelmingly positive insight into the changes we had made. We received very few complaints around administration issues and the running of the group aspects of the course, which to me is a sign that the course is working as per our design. Most of the complaints, again, centre on issues of duration i.e. the course could be extended, but the timeframe is governed by using the only four days in the course curriculum when we can bring everybody together. The last major issue was the requirement of having to travel between the City Campus and Tāmaki Campus, which is not ideal. However, some feedback was quite profound. Many students had never had any exposure to these issues and wished they had been exposed to them earlier. This made the experience quite transformative.

The idea of moving the initiative from a lecture theatre and into a Marae setting to make the experience more interactive has been considered, but unfortunately there is no available Marae in Auckland that is big enough for nearly 500 students at the time that this initiative is held. Waipapa Marae at Auckland University is not large enough. Ōrākei was considered, but there are cost issues surrounding an offsite venue and also the Marae is used over this period for its own secondary school students. Being able to use a Marae would expand the transformative learning experience, as living on a Marae for four days would be a completely new experience for most students.

Dancers and Non-Dancers - Dance 101G Introduction to dance and creative processes

Dr Alys Longley, Dance Studies Programme, National Institute of Creative Arts & Industries

Through participation in Dance 101G, students develop an understanding of our moving bodies through movement awareness, dance improvisation and choreography, along with creative and analytic writing, with a mixture of both practical and theoretical classes. Relationships between dance and other artistic disciplines allows us to focus on a range of practices that dancers and movement practitioners use to facilitate kinaesthetic awareness, experimentation, play, communication and choreography. Somatic theory, 'Knowing oneself from the inside out', improvisation scores, contact improvisation and dance analysis round out the course structure.

The course operates according to the following structure: each week there is a lecture, which is one hour long and a two hour practical class — the focus of this is conversation. The size of the dance studios necessitates limiting the number of enrolments each semester. Each of the dance studios allows us to work with 30 students, therefore a maximum number of 60 can undertake this programme per semester. The makeup of students is very diverse, coming from a mixture of faculties: Engineering, Education, Science and the Arts; as expected the gender mix is weighted toward women, with normally 5-10 males in comparison to 20-25 women. The males do often stick together but overall gender is unimportant as the dance vocabularies taught on this course are deliberately inclusive of diverse body types.

There have only been minor shifts in the learning objectives of Dance 101G since its inception in 2006, but staffing has changed quite a bit since then as the course has grown. I was given the opportunity to create Dance 101G. It is based on my Master's Thesis entitled "Inclusion and diversity in our choreographies in classrooms", about how you can open up a teaching space and invite a diverse group of people to work together in creative practice. One of the avenues I explored was encouraging participants to dance through feeling the initiation of movement from differing stimuli in their own bodies rather than copying someone else. Therefore, if you are teaching somatically, you don't say "here is the movement, do it the same as me as I am the master and expert", but actually say "you are the expert of your body, it is your responsibility to understand what's right for you and I can't tell you how to do this movement, as only you can feel what's right." This can be very destabilising for students at first as we are conditioned to being told what is right and therefore safe, being able to copy everyone else in the class.

Somatics works differently; it's a different way of teaching, where you get the students to listen to their own bodies, making the whole process both an independent and a communal experience, as we work through the same task with the same music at the same time, with everyone creating an individual response to a task.

At the start of the programme the course outline lists the objectives within this paper as follows:

- Experience a range of approaches to dance as a practice that is accessible for anybody.
- Develop movement awareness through listening in to your body and working with others in the class.
- Develop movement awareness by practising ways to extend the exploration of movement ideas onto the page through reflective writing.
- Explore a range of starting points for dance improvisation using scores and practising developing improvisation texts in the moment.
- Practice the fundamentals of Contact improvisation dancing and history.
- Review selected academic journal articles and study specific historical contexts and events.
- Explore the relationship between dance and other artistic disciplines.

The course objectives for this paper are very different to those outlined in other University courses and strong advocacy was required to get this course accepted into the General Education programme. Having dance accepted as a form of knowledge that is academically rigorous on all levels at the University of Auckland, owes a real debt to the tireless work of Ralph Buck, our HOD, who was excellent at advocating for the course being promoted and grown to the level at which we operate today.

This course was the first Gen Ed paper that had a practical studio component; the assessments expanded the course work into creative practice, with choreography and interdisciplinary art projects valued as highly as writing work. We had to do some defending in order to enlighten people that creativity is valued knowledge; being able to construct a choreographed piece and then talk and write about the process is as valuable as being able to write about a theoretical construct.

By its very nature the whole dance programme is very interactive as students have to work together, create and trust each other. Firstly, we have to create a community within the class. In the very first class I get the students to sit in a circle and make eye contact with each other, making sure we know everyone's name, and also deal with vulnerabilities that we will all feel throughout the course. I always make it known that I

have had lots of failures. I make myself look silly on more than one occasion, to create a space where we will support each other, be generous and un-judgemental, therefore creating a safe space for everyone to experiment.

For students in their first year at University, there can be an overwhelming sense of isolation from their fellow students. Coming from high school and being streamed into first year papers with large numbers of students makes them feel as though they are just 'a cog in this huge wheel'. Therefore, one of the highlights in Dance 101/G is seeing the friendships students make in this paper, seeing them together on campus and continuing to spend time together after the course is completed.

The design of this course can provide unique challenges for all students who undertake it. There are those who arrive with previous experience, thinking that dance is applied moves, copying the teacher and using their background knowledge, where they think of themselves almost as experts who are going to excel in this paper. Then there are those who have had no experience and fear they are going to struggle. After a few classes everyone comes to realise that it is going to be a level playing field and as long as you remain open-minded you have the same opportunities to experience, enjoy and excel. Those with technical experience may be more comfortable with the movement, but when it comes to taking a somatic approach or conceptual approach, listening to and working with their individual body and ideas, they can find it quite destabilising, never having been asked to do so previously.

Throughout the course, whenever I am working in the studio with the students I share in the experiences of the class. I feel that it is important that I participate in creative practices, moving with them to lead from within. I find it is better if I am participating with the students, talking them through the exercises as we are doing them and showing them that I am also taking risks and feeling the same as they do. With improvisation I like to start by showing the students how to undertake the task, before I step back, giving ownership of the movement to them and allowing them to grow individually and as a group with the dance they are creating. The particular risk for me is that while we are working, the students are watching and judging me and I do often feel that judgement. It can make me nervous because sometimes the way I dance might not impress the students, especially if they expect dance to be about spectacular bodies. This paper aims to show dance as an ordinary, everyday well of creativity, rather than a virtuosic form. Sometimes it takes awhile for students to appreciate this if they want hip-hop tricks or ballet pirouettes. Even though I have done the exercises and movements we are working on many times, the movement always feels different depending on the time of the day and also what your body is telling you, which can vary significantly throughout the semester. I always feel that I am learning anew and not just repeating a task as part of the course teaching.

Returning to the origins of this particular Gen Ed paper, the focus on encouraging diversity amongst the students came from research during my masters degree. I found

the participants for this research through disseminating fliers around the University saying "Would you like to dance but think you are not a dancer? This workshop is open to anyone, but particularly those who have little experience in dance classes".

I managed to find a group of people, very diverse in their backgrounds, who thought dance was interesting, but had always assumed it was for 'skinny, coordinated girls and boys'. I ran a series of workshops with them that explored a range of different starting points for inclusive dance teaching. I then reflected on the kind of experience the students' had and that research became the foundation of this paper. I am not particularly interested in dance as a technically virtuosic form. My interest in dance is based on the premise that anybody who has a heartbeat can do it. I think the stereotype of a dancer as feminine, youthful, graceful, coordinated, flexible and virtuosic – traits that a lot of us feel we lack - is a guilty party in preventing a lot of people from having an experience that could be meaningful and enriching for their lives.

At the City Campus students tend to be younger, but the paper is also available at Manukau Campus and there I have found a community of people who are coming back to do their degrees later on, after devoting a lot of time to their families. Here I find students with an age range of between 45 and 75, particularly women who are investing in themselves, undertaking study for the love of it. They make amazing students as they see the 'big picture' of why this could be useful, understanding their bodies, being creative and experiencing the joy of movement. They are intelligent, display wonderful humour and bring their rich personal experiences to a paper that gives me so much pleasure as a teacher. At Manukau we do have a much greater diversity of age, and often gender and ethnicity as the makeup is more weighted to Māori and Pacific students.

I am really proud of this paper as it often initiates a paradigm shift in how students on this course come to understand and feel 'more at home' with their bodies. One area in particular that has been of interest is in the area of touch in dance. In our culture touch is relegated to feelings of intimacy, whereas this course uses touch as a form of investigation. An exercise may start with placing your hands on a person's ribs, noticing how breath works, another exercise with seeing and feeling how specific body parts may move, e.g. the knee. All these exercises are not about intimacy or wanting to be close to a dance partner, but are part of a scientific investigation into how the body functions through movement. By listening to other people's movement through touch you are also tuning in to yourself. This quality of touch allows you to have an expert use of your hands, for example, like a physiotherapist who is an expert in being able to place their hands on someone's body and understand what is happening internally with that person.

My experience with this course to date has taught me that to achieve the course outcome requirements, awareness of timing is really important. The taught material might be teaching specific skills such as partnering in dance, understanding their bodies, improvising or choreography, but to be able to achieve this I need to create the right

environment from the moment students walk into the room.

It needs to be a place where everyone is really safe, beginning with tasks that are really simple, then getting just a bit more complex over time. The whole process is incremental until suddenly they are engaged in dance tasks that might be complex and also quite risky. For this to happen, there is very clear scaffolding throughout the course so they can't get it wrong. The course is directed throughout, with clear instructions and a suitable space to work in.

Assessment criteria for this course are spread over "Short Writing" and "Dancing Assignments", along with an "Artistic Project" before the final exam. The "Artistic Project" is one that the students are quite surprised by, but I think it is an innovative and valuable project. The students initially find it very destabilising, but afterwards the feedback has been that they have learnt a lot from it. The task is to "Create a performance or a portfolio of creative work that expands your knowledge, engagement, and understanding of an element of our class work. Some examples of cross-disciplinary creative work are as follows: a music composition, a visual art work, a sculpture, a film, a folio of poems or drawings, models, a photographic exploration of craft work". All artistic folios must include a written discussion of a minimum of 500 words.

For this assessment we are saying to the students that they can choose what they create, but it has to follow key criteria - it must emerge out of interrogating an element of the course work in depth, it must integrate and cite research and it must articulate its process in relation to the skill-base taught on the course. At the beginning the challenge is to get the students over their initial reaction of 'I don't know what to do!' To do this, we ask them to think about what they find interesting or enjoy and how this project could relate to what they have learnt as we explored the four areas of:

- The relationship between dance and everyday life.
- Somatics; the internal sense of your body
- Improvisation and contact improvisation
- Choreography

As an assignment, it's very open so there is a lot space for confusion, but it also means the students are able to own their individual creative process. Should they become totally lost in the beginning, I will give them directions, but as much as possible I just ask them questions which can often lead them to giving me the answers and the direction they will take.

This has lead to a diverse range of work including design and creation of robots, engineering models, spatial designs, theatrical performances, hip-hop performances, photography, sculpture projects and creative writing. Each class will generate between

25 and 30 completely different projects, guided by the same criteria and assessment standards. The students inspire each other and in the last class we view all the works, often surprising each other with the creativity and mastery in the works. Once again, I am clearly directing and scaffolding the process but at the same time passing ideas for the content over to the students, allowing them to generate the process whereby they achieve their final outcome. The question I ask is "How might you respond creatively and independently to the material we have explored in this class? How can you develop in a way specific to your own interests?" A major learning in this project is in asking the students to start work on an idea and see where it leads them, rather than having an idea of the endpoint when they start. It is very process oriented; once the students begin to focus on an idea and start the trial and error process, they generally find a focus and firm sense of what they want to create, but that initial process of developing something can be challenging.

Through having created this community of learning in twelve weeks and interacting with each other, students still feel the work they create is never to the standard of the work they imagine they should have created. Artists always feel they wanted to create something better.

Both written and verbal feedback from students and their interaction with this course have been exciting. We keep up a rigorous evaluation process and pay attention to what the students tell us. From those that tell us "it was the highlight of their week" to finding the environment "positive and uplifting" to others saying "it helped me build confidence in myself".

Flipping difficult

Dr Andrew Luxton-Reilly, Computer Science, Faculty of Science

Biggs (1999) describes three common theories of teaching: learning is due to individual differences between students; learning is the result of appropriate teaching, and learning is the result of student's learning-focused activities. Traditionally, academic professional development has focused on the second of these theories of learning: techniques that improve teachers and teaching. More recently, the focus has shifted from techniques that help lecturers deliver better lectures to student-centric learning design (King, 1993). In other words, it is now commonly held that "what the student does is actually more important in determining what is learned than what the teacher does" (Shuell 1986, p. 429).

The peer instruction pedagogy developed by Mazur (1996) is one such student-centric approach in which classroom activities focused on student misunderstandings and the use of peer discussions to correct these misunderstandings. Key elements of this approach were that students had to be prepared before they came to class, and that class time was spent on activities that helped students to come to new understanding of the concepts they acquired outside class (Crouch and Mazur, 2001).

Lage, Platt and Treglia (2000) describe a similar approach that they called "inverting the classroom", in which "events that have traditionally taken place inside the classroom now take place outside the classroom and vice versa" (pg 32).

In their model, students watched videos, accessed PowerPoint slides and read a textbook to learn a given topic outside the classroom. They were expected to come to class prepared to discuss the relevant material. They were encouraged to ask questions and were given activities, worksheets and review questions to complete during class time. Students often worked in groups to solve problems. A brief evaluation suggested that students preferred the inverted classroom to a traditional lecture, and the teachers considered the inverted classroom to be successful.

This inverted model has gained popularity recently under the name "the flipped classroom" (Bergmann & Sams, 2012). There are numerous websites, books and articles advocating the use of the flipped classroom at all levels of education (e.g. http://flippedclassroom.org/, http://flippedlearning.org/, http://flippedinstitute.org/how-to-flip).

Since Computer Science is a subject that requires the development of practical, problem-solving skills, flipping the classroom appears to be a promising approach to enhance

student learning. Furthermore, there are numerous case studies of flipped classrooms in Computer Science that appear to be successful (e.g. Gehringer and Peddycord III, 2013; Rutherfoord and Rutherfoord, 2013; Simon, 2013), and a keynote in the leading CS Education conference in 2012 (Brooks, 2012) advocated the use of flipped classrooms.

The ideal opportunity to experiment with the flipped classroom arose when I had the chance to teach a second-year software engineering course. Engineering has more restricted entry than Computer Science, so the students are generally considered to be more motivated and capable, and perhaps more amenable to adapting to a new learning approach.

Many of the reports in the Computer Science Education literature suggested that the use of 'clickers' was a valuable part of peer instruction that helped to focus students on problem solving (e.g. Simon, 2013), so I decided to investigate the feasibility of clickers. This led me to the first major obstacle on the way to rethinking the classroom.

Unfortunately, 'clickers' are a physical device, and there are only a limited number available. As more teachers decide to experiment with clickers in the classroom, there is increased demand for the limited resource, so I was told that it was impossible to guarantee that there would be enough clickers for each student to receive one and they would be distributed on a 'first-come, first-served' basis. This made planning for using clickers precarious at best, but I wanted to at least see if it were possible in principle. I obtained the instructor device and set about installing the appropriate software to receive the clicker input. However, I discovered that the Qwizdom Actionpoint software required to use the clickers acted as a Microsoft PowerPoint plugin while I used a different slideshow application for teaching programming since PowerPoint provides poor support for displaying programming languages. In this case, both the hardware and the software support acted as a barrier to adopting the clickers.

A former Software Engineering student project, QuickClick (https://qc.auckland.ac.nz/) appeared to provide a solution to the problem. The QuickClick system is designed as an alternative to clickers, replicating similar functionality through a web-based interface. Students are expected to use smartphones to access the quiz rather than using propriety 'clicker' hardware. This appeared to be sufficient, so I designed the classroom activities assuming the use of QuickClick

In the first lecture, I explained the learning approach and the reasons why flipped classrooms could be used to make more effective use of student time. Students were provided to the lecture recordings from the previous year, and to a free electronic textbook (in PDF format) that they could read on any electronic device or print out and read in hardcopy. Previous overheads and lecture notes were also made available and students were encouraged to find and share other appropriate resources using the online forum.

Every lecture started with a multiple-choice question to test the content that students had learned prior to the class. Students would first attempt the MCQ question by themselves, and then they were encouraged to discuss the answer with their neighbours and commit to a consensus answer before the solutions were revealed. After the problem was solved, a short discussion occurred in which any unresolved questions were answered. If it appeared that students needed more practice on a given topic, a mini-lecture was delivered and another problem was set for students to work on. This resulted in lively class discussions in which most of the students appeared to be highly animated and engaged. Once students were responding confidently and no more questions were forthcoming, we moved to another topic, which began again with a MCQ and subsequently followed the pattern of question, discussion, mini-lecture if required, questions and more discussion until misconceptions were resolved.

It quickly became obvious that the QuickClick system was inadequate - only half the class would respond to the quiz. Many of the students claimed that they did not have smartphones, or were unwilling to use them. The web interface appeared too small to easily choose the correct option on some phones, and wireless access was intermittent and problematic for some students. Too much class time ended up being spent overcoming technical details, so I decided that a show of hands was ultimately a faster and more reliable method of selecting an option.

The first few classes were positive and lively. Students appeared to be highly engaged and seemed to enjoy the overall approach. However, as the classes progressed, fewer students appeared to be engaged in the problem solving, the responses to the quizzes were less certain, and the discussion less lively. Students were honest and forthcoming that they hadn't prepared for the class by reading the text or watching the recordings. We persisted with the classes, but the mini-lectures began to play a more significant part of the class than the problem-solving.

The central problem with the flipped learning design became obvious in the fourth week of the semester. In the previous class, I had warned students that this was a particularly important topic and it was critical that they came to class prepared. However, at the beginning of the class, few students knew how to solve the problem that I had set, and nobody appeared willing to engage in discussion. I asked how many students had actually prepared by reading the relevant textbook section (3 pages) and I was genuinely surprised to discover that only 4 out of the 81 students in the class had prepared. After some further discussion and reflection, I came to understand that students were busy with assignments in their other courses. Students were willing and able to prepare for class when they had spare time, but once time became a scarce resource, they strategically focused on the activities that would directly contribute to their grades.

Although I persisted in continuing the model of the flipped classroom, I found that the mini-lectures were playing a much more significant role than I would have liked, and that classroom problem solving was no longer the primary focus. In the end, students enjoyed

the course and learned the prescribed content, but it was not flipped!

Flipping the classroom is an activity that only works when students are willing to spend time preparing for each class. Since the biggest driver for most students is assessment, when student time is placed under pressure, then it is unsurprising that tasks which do not contribute directly to final grades will be the tasks that are delayed or ignored.

Rethinking the classroom takes time and preparation by teachers. It requires the technical resources to support the activity, and an institutional infrastructure that allows innovation to occur. But most importantly, it relies on an understanding of what drives students in the current academic climate.

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Team-based Learning in Mathematics (TBL)

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The course that I wish to talk about is MATHS 302 (Introduction to Mathematics Education), a third-year course for students who have at least 45 points in previous Mathematics papers. Historically, this paper was for people who were thinking about going into teaching, but now it is for anyone who is interested in teaching mathematics, learning mathematics, or *how* people learn mathematics. Therefore, it is not a mathematics content paper. Its goal is to introduce students to some of the key ideas in mathematics education, for example, learning theories, how you get different curricula around the world, some history of mathematics education, some of the philosophy and a background to why different types of mathematics students were taught in a particular way. For many students, it is an eye-opener that not everyone is taught mathematics in the same way, and that not everyone learns mathematics in the same way. This is where I think in a more theoretical way as opposed to, for example, *he/she learns more quickly/slowly than I do, or I can do it/they can't do it scenarios*.

Maths 302 does not have a large cohort of students; since moving to a TBL approach, the number of students has been between 35 and 40. The TBL literature shows that it works just as well with a small number of students as with a large cohort of 200, but even with a small cohort one has to still be very organised in one's approach.

I became interested in TBL as a teaching methodology in 2008, quite by accident. I thought I was going to a seminar on team teaching, as at that time I was working in adult numeracy and we were going to be teaching in twos, but the seminar was about team learning, not team teaching. I found it incredibly interesting but was unable to see how I could transfer those skills into teaching mathematics. TBL has two key phases. Firstly, the students have to read a text in preparation for a series of five to six lectures so they are actually better prepared for the lectures and can have a much better, more informed discussion around the topic. Secondly, the students are tested to assess whether they have completed the task adequately.

The second phase is the 'readiness assurance process' (RAP), in which at the beginning of a set of lectures where a reading has been assigned to the students, you test them to see whether they have done the reading. This is through multiple choice questions in the form of an individual 'readiness assessment test' (RAT), which typically consists of 18-20 questions covering the pre-assigned reading. This test is first done individually, and then

as a group.

TBL is a pedagogical approach that shifts the responsibility for learning onto students. The composition of the teams of students is key to this approach. The greatest inhibitors to the development of group cohesiveness are previously established relationships (e.g. partners, close friends, etc.), as I find that these 'muddy the water'. So, for TBL to work, teams must not be built around friendship groupings, but resemble the types of teams that businesses construct in order to maximise productivity. I construct the teams to distribute, as fairly as possible, the skills, knowledge and attributes needed to solve problems in the context of the course. These groups remain together for the duration of the course and work together on all team tests and tasks. This motivates students to prepare for class and increasingly they hold each other accountable for doing so. It also encourages participation and critical thinking, and impacts positively on learning outcomes for lower-achieving students.

TBL literature recommends teams of between five and seven students, but I find five to be the optimal number. Also, I distribute language abilities evenly, as there are often EAL students. Where students share other mathematics courses, I try to place them together to provide the beginnings of a network in their other courses. For example, if three people are doing MATHS 320, I will place those students in the same group, so they have the opportunity to work together over both papers. As time goes on, they take the group dynamics from this course into other courses.

The other big plus for me is that I manage to do much of the creative thinking beforehand. I have to find relevant materials, and then create multiple choice questions, along with relevant tasks, but there is also some lecturing in the traditional style. As a lot of the work is done beforehand, it allows me to see how the students are interacting with the concepts that I am trying to get them to understand. This gives me the time to observe how they are engaging with the tasks.

The TBL design in this course has been set by somebody else and is therefore not mathematics-specific so we have to think about how mathematics fits with standard TBL design. With standard TBL, students are asked to make a choice, for example, medical students may get a task where there is a range of symptoms and from this they are given choices as to what the ailment might be. We have to do things differently in mathematics because students believe that there is only one right answer and only one way to arrive at that answer, and that the answer is always at the back of the textbook. In TBL, we want them to think of different ways of working, so we have to frame our tasks quite carefully.

In TBL, there are four 'Ss' that apply to the development of a task: Significant, Single choice, Simultaneous and Structured. Tasks have to be *significant*. They can't be irrelevant; therefore you have to ask something that is important. The students have to perform the task *simultaneously*. The answer is single choice, which we have struggled

with. What we have tried to build into our tasks is that they cannot be divided up in order to be completed; the students must work on the question collaboratively. The group is required to come to a conclusion about the process; therefore, if there are three parts to a question, the group has to reach a decision regarding part (a) in order to move on to part (b) and repeat the process to get to part (c). Therefore, it is impossible for one member to complete part (a), another part (b) etc., because that approach wouldn't contribute to the group discussion. All questions have to be structured to maximise discussion and explanation of them, for example, why we do it; what we do; what approach we take. Students recognise who is better at drawing, who is really great at programming, who calculates really carefully, and quite often they use this information in complimentary ways, which is the same way it would be in a work team, where you would utilise all the various skills to get a good product. Now that is very different from saying "you do part x, I'll do part y" to bring a combined effort to each individual part.

TBL relates significantly to other courses as it is premised on prioritising student interaction, but in tandem you are also prioritising the interactions between the lecturer and the students. This allows lecturers to learn more about their students' abilities, particularly their ability to focus on a task, which can't be done when presenting in lecture mode then marking their completed work. TBL allows the lecturer to work with students in class, so in many ways we are giving the students a chance to behave as mathematicians would. Nowadays, it is more the norm to collaborate with others, rather than work in isolation. This idea of collaboration is also particularly noticeable in the area of published journal articles where very few single-authored papers are published.

The learning objectives of this course include students getting actively involved with some of the key ideas in mathematics education, then discussing them and using them in their own mathematics learning, comparing them with key ideas. This is why the essay focuses on the question "In the light of what you have learnt in Maths 302, discuss your own learning of mathematics". This assessment is often very revealing for the students, as they are writing about their own learning experiences and interactions throughout this course. Also, it is impossible to plagiarise because it is their own reflection, and the question does not lend itself to allowing students to go onto the internet and find an answer.

Students receive grades for coursework in two different ways. Firstly, they prepare for each section of the course by reading carefully selected pre-readings and take a multiple choice test on this reading twice, once individually and once in their teams. These are the readiness assurance tests (RATs). When doing the test for the second time, the students receive immediate feedback on their answers through the use of the Immediate Feedback Assessment Technique. These group tests are administered using cards, on which four options are shown with the correct answer indicated by a star when the covering is scratched off. If they are not correct the first time, they return to their discussion to gain part marks for being correct the second or even the third time they

'scratch and win'. This immediate feedback means that they always know the correct answers by the end of the RAPs. Secondly, they complete a team task that involves applying the ideas, concepts and skills learnt in the section. The structure of these tasks requires that all teams do the same task at the same time and that they submit one solution per team.

I am able to evaluate the influence and impact of the course by watching how the students work, as instead of delivering from the front of a lecture theatre I move amongst them. This allows me to see how they are processing what they are discussing and learning. With exams, I ask questions that require them to write about how they learnt in relation to a theory, through this mode the students write about the manner in which they have learnt throughout the course. Groupwork and on-going assessment contribute to their final grade, which means they have to attend lectures - a perennial problem with the traditional method of delivery, where there is a decline in attendance.

The challenges are that TBL can be quite hard work to get up and running. Firstly, I had to persuade the academic committee that TBL is a good model, but I found them very supportive. The use of TBL methodology in the area of mathematics is still in its infancy but slowly growing into other mathematics courses. Secondly, TBL takes a lot of forward planning and you have to think very carefully about the key ideas you want discussed in class. Thirdly, structuring tasks to do in teams, along with finding suitable readings, and then creating the questions to go with these can be a challenge. As in all courses, I find some of the questions work better than others. Even the few questions that I am still not 100% happy with get the students discussing and arguing possible outcomes. Fourthly, as with all courses there are students who come unprepared, not having done the pre-reading task. The other students aren't pleased with this and encourage them to complete required tasks on future occasions. Also there are those students who are very quiet, but prepare really well and at first don't voice any opinions, but the other students quickly come to realise they are diligent and start seeking their opinions, encouraging them to develop their voice, which is great.

The feedback has been very positive, with students interacting with their peers and lectures on a scale not recognised in some of their other courses. Some of the comments from this paper are:

"I've certainly found it easier than my other level three papers. That could just be from the teaching strategy, the way it's been taught."

"It gave me alternative perspectives ... coming from someone on my level rather than from a lecturer or from a text book."

"I actually thought I was going to hate it. ... I hate team work. ... But I actually liked it and enjoyed it in the end. So maybe it is my style of learning, even though I didn't know it was. I liked it because you had to talk about stuff."

Teaching cases

Reflections on rethinking the classroom: Interactive teaching and learning

He kohinga whakaaro mō te ako