



New Zealand Association for Cooperative Education 2012 Conference Proceedings

Nurturing Good Practice: “Getting Stuck In Together”

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*Editor
Karsten E. Zegwaard
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Front cover: Co-op student on work placement at the Hamilton Zoo, feeding Brazilian Tapirs (*Tapirus terrestris*)

New Zealand Association for Cooperative Education 2012 Conference Proceedings

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Border-crossing: Going over to the dark side

RICHARD K. COLL

Cooperative Education Unit, Faculty of Science and Engineering, University of Waikato

What am I going to talk about in this presentation? Well it is something of a personal journal of my experiences as a learner and as a teacher of science. It transcends major curriculum reforms- certainly at the school level, and I argued also at the higher education level. You will see, I hope, how much the educational landscape has changed in New Zealand and what factors influenced curriculum reform and the major influential forces in these reforms. I argue also that pedagogy at school and higher educational levels have also changed, albeit lagging the reforms – as we might expect. I ponder the future – always a hazardous exercise, and an exercise in extrapolation of data – something no self-respecting scientist (which I was) would ever do, but which social scientists (which I have become) seem to do all the time!

The First Stage: Dreaming of Becoming a Chemist

All my life I wanted to be a scientist; a physicist initially, and latterly a chemist. This is one of my most enduring memories. How then is it, then that I ended up becoming a science education researcher, a social scientist? Have I failed in some way? What is it often said? ‘Those who can’t do, teach’. I might add or extend this to ‘Those who can’t teach, do research about teaching’! Let me tell you something of this journey. It is an interesting story because it transcends major curriculum reforms in New Zealand, of which I, like most others, was completely oblivious to! But I’ll tell you more about that later.

I started primary school in the early 60s, and I came through what in New Zealand now is regarded as a very traditional educational regime, both at school and in higher education. No one expected much – except perhaps to avoid being thrashed too much (mind you, some in my secondary school seemed to see this as a badge of courage, as evidence of manliness!), and we certainly didn’t expect to learn much. You might wonder why. Well at that time in New Zealand boys had two aims: one was to join the civil service and have the archetypical ‘job for life’. The other was to get a job in the freezing works, on the wharfs, or in our neck of the woods, in the coal or gold mines! The pay was sensational, employment for life, and you left school as soon as you could, and as you might imagine this sort of manual labour was much sought after at the time. A few were interested in being a tradesman - a much respected occupation then, unlike now where tradesmen in New Zealand are often seen as cowboy rip-off merchants. A few odd lads like me wanted to study further. I can trace my desire to go on in study to a single event. I got 100% for the first science test I ever did at secondary school. I was somewhat shocked, and my classmates even more so. Perhaps was because I was the youngest child of a large family, I did not expect to be noticed, especially in a positive light. My interest in science exploded and I got 100% for each of the remaining tests for that year (and a few afterwards), all the time enormously engaged by an amiable, highly amusing, old Marist Brother - Brother Arthur, nicknamed ‘arf a brain – the mad scientist’ such a derogatory nickname, symptomatic of how scientists were viewed at the time.

The Second Stage: Learning Some Chemistry, But Not How to be a Chemist

There was no stopping me now, and I finished school top in all of my subjects and Dux of the school and was one of three or four from the whole town to venture to the ‘big smoke’ of Christchurch to do the unthinkable – go to university! My parents were bemused, but secretly rather proud of their rather odd, youngest, son. Going to university was not seen as anything particularly prestigious in those days, certainly not in my town. I was different, unusual, certainly not a real man, a real Westcoaster. My paternal grandfather in particular was not amused. It seemed I had let the side down. I vividly remember sitting down to dinner one night not long after I had started university, and being confronted by his huge hands held in front of my face as he scornfully berated me: “What the hell do you think are you doing boy, going to university? Writing things down on bits of paper. Hands boy, you have got to learn how to use your hands!” I couldn’t resist baiting him: “Well granddad I am really only going for the booze and the women” I replied. He cursed, all his views of university students confirmed, “long-haired, layabouts” with no practical skills at all. He seemed to forget at my age he too had a

very unruly mop of hair: "That was the fashion then boy". He loudly rebutted my smart aleck criticism that "it's the fashion now".

University was a revelation. I could be the scientist I had always dreamed of. I was at first very successful but as granddad had predicted I went somewhat off the rails, and after a promising start to my bachelor of science degree eventually finished with an 'ordinary' BSc degree. The teaching and learning at university in all subjects, except for two 'lecturers' (one an ex-school teacher, the other a newbie who hadn't realized he shouldn't try to engage students) was pretty uninspiring. Very didactic, we wrote frantically trying to keep up with what was spoken or written, and to make some sense of the screes and screes of equations and formulae. Learning consisted of rote memorization, and I got pretty good at that. Even advanced level study was rewarded by memorization. But this was no surprise, it was what we had at school, and everyone naturally expected to see much the same at university – and we did – no surprises. If we failed, it was because we were dim, lazy, or had discovered booze or girls or a combination of all three. Labs were labs. Totally 'cookbook', not much imagination there. Again this is what we expected, and reflected what had experienced at school. The equipment might be a bit fancier, but the rules of the game were the same. Write, write and write. It seemed the more you wrote the better you were.

The Third Stage: Learning to Become a Chemist

It is interesting to think about what I had actually learned by the time I graduated with my BSc in chemistry. Had I learned any chemistry? Depends on what you think of having learned chemistry I suppose! Curriculum? No one had much heard of that, and at school we were still using the School Certificate or University Entrance 'Syllabus'. I was about to find out if I had actually learned any chemistry because, I now joined the workforce as chemist. A 'plant chemist' ('plant' as in factory, not herbaceous territories – although I mistakenly thought it was the former until the job interview!) at one of New Zealand's biggest polymer manufacturing plants. To be fair to my university, polymer chemistry was not taught much at any university in those days, but it pretty soon became evident I didn't know much chemistry – well not much polymer chemistry anyway. I felt distinctly under-prepared for life as a 'real chemist'. This would have of course been exactly what my grandfather would have predicted – nothing useful was learnt at university (i.e., no practical skills). In fact, in many ways he was right. I spent the most part trying to understand polymer chemistry in purely scientific terms; that is the theory. I was reasonably well equipped to do that. But this was a major manufacturer and the factory (plant!) floor was a horse of a very different colour. But do you know what was interesting about that? The 'chief chemist' was unfazed: "We expect to take about two years to make you into a chemist" he observed. I do remember feeling slightly insulted and determined to take less time (which I did), and a vague sense of feeling somewhat cheated in my university learning. I did expect to still have to learn, but I did get pretty good grades (recovering some lost ground in the final year of my studies), but I didn't much blame my lecturers or think the curriculum was at fault; I guess I felt they couldn't cover everything in the course work, and resigned myself to having to work hard to catch up. I probably did wonder if there was a better way (there was - and I will come to that later).

Five years later I was a fully-fledged chemist respected by technical staff and factory staff. I well remember showing my father around the plant, and his obvious surprise at the respect with which I treated the factory staff, and probably more so the obvious respect they had for me. I instinctively realised when I first started I could learn a lot from the factory staff, especially when it came to the pretty formidable challenge of transforming my small scale experiments and formulations (that worked really very nicely in the lab) into a fully-fledged factory production operation. What did I learn in these years? I did see many young chemists come and go in those days, and it was pretty plain that: a) university did not equip them well to become a chemist, and b) their performance as a real world chemist bore zero correlation to their performance at university. Maybe I became a little smug. I now had a substantial history of successful factory-scale projects under my belt (the only real measure of a plant chemist!); but I had learned these mostly by experience – my grandfathers adage seemed proven; and I looked upon him with more tolerance if not respect. You really couldn't be taught to become 'a chemist'. Sure you needed the 'book learning' from university, but a BSc in chemistry was a licence to learn chemistry. Well that's pretty much what I felt at the time.

The Fourth Stage: Returning to the Maelstrom

After some years I became bored being a plant chemist. The career pathway didn't look too exciting. I had decided certainly didn't want to spend the rest of my days in the lab. Ironically my very success lead to boredom: there was no real challenge left – no dragons to slay! There was something of a career path into

management; the CEO was a past chief chemist. But that looked a seriously long way off, and didn't appeal much - maybe because this was a time of major industrial upheaval in New Zealand (the polymer industry workers at the time, like the wharfies and freezing workers were famous for industrial militancy and this only changed some years later when the government introduced legalisation that effectively disempowered unions). But the old dream had returned. I still really did want to be a scientist, not an industrial or plant chemist (that was not 'real science'). So I returned to university to do a masters and ultimately a PhD in organometallic chemistry (a subject I loved). This was 'real science', and I was very happy. Nothing practical here, I had succeeded in throwing off my grandfathers notions of practicality - although ironically I was a much better research scientist as a result of the problem-solving skills I learned in industry - even if I had forgotten a lot of theory after six years absence. I liked the 'blue skies' nature of organometallic chemistry and X-ray single crystal diffraction, and happily informed anyone brave enough to ask what my research was about, that it had no real practical value. It was 'pure science. I was highly driven, and finished my PhD in two years and 10 months and began my real career; a university lecturer with a licence to do real research; blue skies research.

So What Had I Learned?

So let's pause and think for a moment about what I had learned about science during these years, and think about curriculum I was exposed to and the teaching I endured (and I did endure it, but more later). Well the coursework (to use an all-encompassing term) at school and university did cover a massive amount of factual material. I learnt a lot of facts. I also learned some practical work at university during my undergraduate days, much more during my time as a plant chemist, and more again during my doctoral studies. So the 'curriculum' was highly prescribed at school, much the same as at university (this was a worldwide phenomena, I'll tell you more about this when I talk about my overseas lecturing experiences later), and none, certainly not I, thought to challenge it, or that it needed change. I didn't do well when I didn't work - that seemed borne out by my own experiences. As mentioned the pedagogies were highly teacher-centred and placed little emphasis on meaningful practical work, and nothing on inquiry.

Maybe we can focus on something in vogue these days. What did I learn about inquiry and the nature of science (NoS) as a result of my curriculum and working experiences? Well for NoS it was all pretty subliminal, with the exception of the 'scientific method' being drummed in at school and university. It certainly didn't appear in any curriculum documents. At school science was portrayed as an accumulation of esoteric facts. What about inquiry? Well as I mentioned this didn't appear in the school curriculum, but it sure did in industry. That was about all my work as a plant chemist was. Inquiry? No answer known in advance here. In fact pretty much the whole time we didn't even know if we could solve problems. And some of them were formidable. In my time I had to design a polymer roofing material that could be guaranteed to last 40 years; a synthetic polymer moulded track for a 20 tonne bulldozer, a polymer seal that could withstand molten aluminium, and a tubing that could be pushed out of an extruder at 20m a minute to be sliced by a lawn mower' to produce rubber bands! Interestingly, when I got back to university, inquiry was also the name of the game. I had to make exotic rare platinum group metal complexes on a milligram scale and fully characterize these using sophisticated instrumental methods of analysis. Again there were no known answers; I didn't even know if such complexes could be made, let alone how to make them. There was one particular frustration - one thing that really pointed to my struggle to really understand chemistry. In my honours year papers I got an A+ for structural chemistry. In a masters-come-honours level paper this was no mean achievement, and one might have imagined (as I did) that I must understand structural chemistry, including X-ray single crystal diffraction (given that it was about half the course) pretty well. In an experience eerily similar to when I first started as a plant chemist, it soon became evident that I didn't actually understand the practical aspects of X-ray crystal diffraction - the theory was bad enough, the practical stuff a whole new ballgame. This time I did feel cheated a bit by my teachers! I got there in the end, but it was arduous stuff; another case of learning by experience - how granddad would have enjoyed that! And it wasn't just me. I well remember a rather ungenerous satisfaction watching new comers struggle to do practical X-ray diffraction - first class honours students, all very high flyers everyone one of them, but they too were unprepared to do real chemistry, real X-ray diffraction (although as you might imagine the learned quickly).

New Zealand Curriculum Reforms

New Zealand is part of the British Commonwealth and so inherited its education system from the British. In the early years the national schools were provided with highly detailed syllabi to which they were expected to

adhere rigidly, and such adherence was closely monitored by school inspectors. Assessment consisted of external examinations and teaching was highly teacher-centred in nature.

This was all fine for decades mostly because New Zealand school leavers gained employment readily, because, up until the 1970s, New Zealand's economy was very robust and the country ranked highly in most rankings of economic wellbeing. But in the 1970s it all unravelled. The nation fell upon economic hardship in a very short timeframe for two reasons; one was the 'oil-shocks' when the cost of importing fuel increased substantially, and the second was when Britain joined the European Economic Community (as it was named at the time). A new government came to power with a strong mandate for economic, social, and educational change. This resulted in enormous changes to New Zealand's economy in a process of privatization and other reforms. Educational reforms followed soon after and the key driver was the role science and technology could play in New Zealand's economy. We needed more skilled workers was the mantra of the times. Something my grandfather might have agreed with, except that the government wasn't thinking of tradesmen or skilled manual workers; it was thinking of university educated people who could help build a knowledge economy (I always find that term terribly tiresome – what economy doesn't have knowledge?). The perception was then that massive reform of the educational system at both the compulsory school level and higher education was needed, and massive reform we got!

Pretty much every part of the educational system changed. It was all driven by the government, and started with devolution of school management to the communities associated with each school, who was then responsible for the running of the school. Curriculum and administrative reviews followed rapidly, and we ended up with National Education Guidelines containing National Education Goals, National Administration Guidelines which specified the administrative framework necessary to achieve these objectives, and the New Zealand Curriculum Framework which set the scene for *school-based curriculum development and implementation*. This was radical stuff, and probably not understood by many in or out of the sector. Curriculum documents were then developed for each of the learning areas for Year-1 to Year-13, and national curriculum statements for science, physics, chemistry, biology, and technology were produced.

So what did it all mean? Well it was supposed to be a 'learner-centred, constructivist-based curriculum'. But was it? Initially, probably not. As occurred elsewhere, most teachers tried to shoe-horn what they already did into the 'new curriculum'. At first the fact that the teacher was responsible for developing content, teaching activities and pedagogies was pretty scary! But as time went by teachers came to appreciate the flexibility of the curriculum, and I think we now have evidence the New Zealand school student experienced curriculum is actually learner-centred in nature.

So how did this go down with New Zealanders? Personally I was totally oblivious to it all. After all it didn't actually affect me. I had finished school, I at the time was studying at university (which was not *directly* impacted upon by the reforms) I had no kids so didn't care too much what happened to schooling! If I didn't care, plenty of others did (presumably those with kids!). The result of this was a pretty heated, media-driven, rather acrimonious debate. This debate has disappeared pretty much nowadays. What is actually the most interesting thing is that there is no great evidence that the curricula damaged, or indeed improved, New Zealand students' learning. I am not sure how you would measure such a thing reliably anyway. The government did commission a so-called 'curriculum stocktake' but this really only consisted of finding teachers' perceptions of the then new curriculum. No one seems to have checked to see if learning has improved (unless you count TIMSS and PISA). Later on the government introduced the National Education Monitoring (NEMP) project which extended TIMSS and PISA to other subjects than science. However, an anecdote suggests learning probably hasn't improved as much as we might have hoped. I attended a seminar presented by one of our postgraduates fairly recently. His research was about school students' alternative conceptions in physics. What to me was most remarkable was that all the same old alternative conceptions seemed to still be present. When I noted this and commented that it didn't say much about the success for the curriculum reform, his supervisor (who was heavily involved in the reforms) huffily replied the reforms weren't about improving student learning! You could have fooled me! If they weren't they sure as heck should have been.

New Zealand Higher Education Reforms

So what impact did the educational reforms have on the higher education sector? Well it was two-fold. First, the sector itself underwent reform (although this occurred later) and is still in the throes of reform (mostly economic in nature and the Government tries to control the cost of delivering higher education en masse). Second, the

school curriculum reforms impacted upon the intake to higher education. Let me tell you about the latter first, it is possibly easier to dispatch!

The school reforms resulted in more diversity in student choice at school particularly in the senior, pre-university years (in my day it was pretty limited). Probably of more concern to academia, this resulted in more diversity in terms of intake. I know many academics think the youth haven't got what it takes and are useless compared with 'my day' (right granddad?), but there actually is research evidence to suggest this perception of lack of preparedness is real. One of my PhD graduates did a study on just that. Certainly she found a strong and widespread view from academics that undergraduate biology new entrants to university study were under-prepared. But she also found the students thought this too, and that it was because a staggering 40% or thereabouts of new entrant university biology students had not actually studied biology at school. Another graduate student of mine found very similar findings for chemistry undergraduates. It seems this happens because students can take all sorts of (non-science) subjects in their senior high school years, rather than any lack of ability. The fact that every New Zealand university now has substantial bridging programs for a variety of subjects topics is another indicator that this is pretty widespread.

Let me tell you a bit more about the reforms of the higher education sector. The main thrust here was, as I mentioned, to produce a more skilled citizenry – to build the knowledge economy. So the government wanted much higher participation rates in higher education (figures like 50% get bandied around) not just universities, but higher education generally (e.g., polytechnics, colleges of further education and private training institutions). As you might imagine this led to huge growth in higher education enrolments and up until about the mid-1990s the growth was spectacular (one institution went from about 3000 EFTS to 32,000 EFTS in a matter of about four years). This, coupled with the diversity of student intake (including a huge influx of international students) meant huge problems for higher education teachers. Bear in mind, if you will, that at the time of such growth all the academics had come through the same rather traditional education system (at school and higher education levels) as I had, they had never heard of constructivism or 'learner-centred' education, and were firmly of the view (many still are) that this growth was not good, and that we should be much more selective about who we took in. It got worse. These academics were not trained teachers; indeed they were appointed and promoted on the basis of their research capability. The main purpose of students was to screen out the goodies, and get them to join postgraduate degree programs and do research (i.e., do some real science!). But if the academics didn't want to know about it, the universities did, and they were panicking. A massive bureaucracy grew with development of teaching support units and the like, university preparation programs, and so on. I don't want to go into the international student issue much. Suffice to say the increase in international student numbers was due to financial pressures, and resulted in exacerbation of much the same issues, to an even greater extent (i.e., diversity-wise).

Did teaching change? A bit, not much, but a bit. New younger academics came in and some were more interested in teaching. But my own EdD study (I'll tell you more soon) showed teaching in New Zealand universities is still pretty traditional. The work by my chemistry postgraduate student I mentioned above supports this. Should it change? Well that is an interesting question. Let me tell you I don't think we have a good case for change. I do think we needed to either: a) screen students as the academics want, or b) retain and maybe expand our support structures including our bridging programs. But I argued above we have no convincing evidence that, say learner-centred education, has actually improved student learning in our schools – this despite the undoubted millions spent on school educational reforms. Indeed many academics would argue it is worse – but it is not that simple – as I said above it is probably just the diversity of prior knowledge in our new intakes, rather than lack of capability. So why would we bother? As you can see from the science education literature it is a lot of work to change towards learner-centred education, so why would we when we have no great reason to think it will make things better?

I do think I know a teaching approach that is manifestly better (and for which there actually is good evidence it is), but before I tell you about that I have to convince you what I have written above is more widespread, and not confined to New Zealand. So I'll quickly tell you a bit more about my journey, and tell you about my overseas teaching experiences.

Overseas Teaching Experiences and Curricula

When I finished my PhD I was offered I think it was 10 or 12 jobs within a month or so. As you might imagine I felt vindicated in making the big sacrifice of returning to university giving up a fulltime, well-paid job, with a

company car (I can vividly remember the look on my previous manager's face on my last day at work when I dropped off the car and climbed on my bicycle to bike 12km to university!). But remember I wanted to be a scientist, so I took the one offer that might make that happen and took up a chemistry lecturing post in Fiji at the University of the South Pacific (USP). What more could one ask? I had a lecturing post in a tropical paradise! Well of course it wasn't quite that simple. I did enjoy the teaching even if I loudly complained about the same sort things everyone else did at home (i.e., the students and their lack of preparation for university level study!). But most frustrating I couldn't really do research – not in organometallic chemistry anyway. But I did become more interested in teaching and in education itself. The teaching at USP was almost exactly the same as New Zealand. The course prescription for 'Analytical Chemistry and Instrumental Methods of Analysis' could have been (maybe it was!) lifted directly from the department of Chemistry at the University of Canterbury where I did my own undergraduate chemistry degree! The teaching was certainly the same – lecturing pure and simple - although we did have (excitement plus) an OHP and I was one of the first at USP to have a computer.

Somewhat disillusioned I left USP, and went to another tropical paradise, Jamaica in the West Indies, and worked there as a lecturer in chemistry. When I walked into the first year chemistry laboratory, not only was the lab arrangement and set up the same as at home and in Fiji, but the experiments were too! The Brits again methinks! And, you guessed it; the teaching approaches were the same.

Beginning the Shift to the Dark Side

Before I left USP I met a colleague who worked for the USP's Institute of Education (IOE). The IOE was, as its name suggests an institution that sought to improve education, not actually at the higher education level but in primary schools and secondary schools in the USP region (this covers most of the south Pacific and includes some 12 member countries). I had been in a meeting moaning about how difficult teaching was at USP, and this person said he would be interested in working with me to find out how to teach better. This was radical stuff. The thought in those days of a science academic: a) being interested in improving teaching (rather than just campaigning/moaning about it, and b) doing some research about teaching and learning, was highly unusual. We did one project together (about first-year chemistry students' cognitive ability) before I departed to the West Indies, but my interest was piqued. It was about this time I really started to wonder about the appropriateness of the higher education curricula I was charged with delivering as chemistry lecturer. I can remember a pivotal moment. I was running a summer school block course – a condensed version of a first-year chemistry paper - in Kiribati (what used to be the Gilbert and Ellice Islands). I was in a laboratory, one that looked the same as all the others I had been in around the world, teaching quantum mechanics. I looked out the windows and saw nothing but ocean and coconut palms. I really wondered what they made of all this. The relevance of Schrödinger's wave equation to these students was not too obvious! Maybe not to me, but it was dead clear to my students. The equation (not Schrödinger's, that was difficult even to parrot learn) was simple; pass this paper, get a degree, get a civil servants job (i.e., a 'job for life', like we used to have in the good old days in NZ) or better still migrate. A means to an end!

After Jamaica, I returned to New Zealand to join the University of Waikato in a joint post between the Dean's Office and the Department of Chemistry. There are two parts to this story. I will tell you first about cooperative education and finish my story by looking at the blending of cooperative education and science education.

A Revelation: Cooperative Education (Really)

I was holidaying back in New Zealand when I saw an advertisement in the local paper for a post at the University of Waikato. By this time I had my fill of overseas posts in non-Western settings. I was weary of fixed-term contracts and poor research facilities, and was ripe for a change. But because I had not published much chemistry research, I doubted my chances of getting a chemistry position. But this post at Waikato involved liaison with industry, and ability to teach chemistry; remarkably I looked a good fit. I was, and was duly appointed. This brought me into the world of cooperative education (not to be confused with cooperative or group learning). Let me first tell you what it is, then a bit about how it developed in New Zealand and what I think it means in terms of curriculum and learning.

Cooperative education is a collaborative exercise in which students, employers and higher educational providers (HEP) work together to produce work-ready graduates; that is graduates that have (particularly) practical skills that complement theoretical academic learning, and that make them of almost immediate value to employers. Cooperative education has a variety of names and these often reflect its location. So in the UK it is seen most

commonly in 'sandwich' programs, and in the USA, it takes the form of 'co-op' work placements spaced evenly throughout the degree, or in the form of capstone internships – placements added on to the end of a degree (e.g., in medicine). In any system, the students spend predetermined periods of time – such periods of time commonly called work placements – in a relevant workplace. So an engineering student at university might complete two three-month work 'placements' in an engineering firm, a food technology student at a polytechnic might do the placement in the form of one day a week in a food testing laboratory, and so on.

Cooperative education is alive and well in New Zealand and is driven by a national professional body, the New Zealand Association for Cooperative Education (NZACE). Two national surveys found over 300 cooperative education programs available in the New Zealand tertiary education sector. In many ways this is an extraordinary figure, for a small country, and a modest number of HEPs. But it is probably mostly a reflection of the variety in the practice of co-op. These programs vary enormously in terms of program parameters: namely, the amount of time spent off-campus; whether or not the work component is credit bearing; whether or not the work placement is paid; at which phase of the program the work component occurs; the duration of the placement; whether the work component is done in one or more 'placements'; and so on. Remarkably, despite the large number of reported programs, there are few in engineering, a few in the IT-sector, and only one sustained program in science and technology (i.e., ours at Waikato!).

It took me a year or two to find out the above, but when I did I was convinced this was the 'holy grail' of education. And as I mentioned there was a good body of research to suggest it worked in operational terms (by that I mean success factors such as students getting work more easily, advancing in their careers and getting better pay).

I want to digress to another part of the journey that happened in parallel to my 'co-op story' and then I'll come back, and tell you about co-op research into learning and pedagogy.

Completing the Shift to the Dark Side

My joint appointment in the Department of Chemistry and the Dean's Office had some advantages, but it had several problems. Mainly I found it hard to attract chemistry graduates, and the workload associated with a split appointment also inhibited research (particularly chemistry which really needs plenty of time at the lab bench). I could see the familiar pattern of struggling with my research that had dogged my career. So I took a more radical step again. This time it was stimulated by two things. One was my interest in educational research that came about from my interaction with my colleague at USP's IOE, and the second was the fortuitous observation of a PhD and EdD program offered through Curtin University in Australia that said it was free to New Zealanders! It took me a while to believe them, but I eventually became convinced there were no fishhooks and duly enrolled in my EdD. I did a thesis not on co-op, but chemistry education. Thinking, rightly as it turned out, that it would look more generally useful than focussing on co-op which was not well known in New Zealand or internationally at the time. What actually convinced me was, not so much the free fees, but a paper sent to me by David Treagust about some work he had done with Allan Harrison on students understanding of atomic structure and analogies. This addressed exactly one of my main teaching problems (in NZ, Kiribati, Fiji, Jamaica, etc.). Thinking about it now, it is remarkable that the paper was so accessible to me who at the time had little knowledge of educational research.

I subsequently joined a graduate research centre in science education research at Waikato and so now completed the move from chemistry to educational research (I was still involved with co-op but not chemistry). I now had graduate students and things took off. Within a few years, I had published numerous papers, and was duly rewarded by promotion. At the same time I came to know about curriculum, the New Zealand curriculum reforms and pedagogies (all alien to me in my past years). I now focused my attention on co-op as an educational strategy. This wasn't my idea, but came from a colleague and graduate student (Dr Chris Eames) who did the first New Zealand PhD in co-op. Let me tell you something of his work, and how it shaped my thinking about curriculum and learning.

Chris Eames's work in my mind helped shift the co-op research agenda in New Zealand to a new, far more rigorous, level. First, it provided what I think of as 'missing link'; namely, a solid theoretical base to co-op research – drawing on sociocultural theories of learning. He argued that to understand co-op learning, and co-op as an educational strategy, we need to take account of the importance of contextual factors, especially sociological factors. So he talked of the student learning to become a scientist via *legitimate peripheral participation* as he or she worked alongside scientific experts. You can imagine how this resonated with my own experiences

as plant chemist! He then speaks of the notion of *mediated action*, in which learning in the workplace is a feature of the particular social circumstances. For example, language, such as the use of acronyms, features as a Vygotskyian tool, meaning that there is a way of using language (e.g., writing or speaking 'scientifically'), that is specific to the sociocultural context in which learning occurs. This again resonated with my exercises as a plant chemist and when doing my chemistry PhD. So I encountered numerous acronyms like LCMS, GLC, NMR which are normal language in a chemistry research laboratory. When I prepared a report for my industry colleagues it had to be written in one way, when I prepared a paper for publication in the *Journal of Organometallic Chemistry*, it had to be written in another way, and so on. Finally Chris talks about *distributed cognition* where knowledge is not resident solely in an individual (e.g., a PhD supervisor at university, or chief chemist in a polymer plant) but is distributed across the workplace or university. So the instrument technicians at the university, and the factory workers in the polymer plant I talked of earlier, all have some knowledge, which I could learn.

This all looks a bit heavy after my more conversational narrative of my journey; and it is. But to me now that is a feature of research, be it chemical or educational. It is peppered with jargon and acronyms, and I am not sure these tools, or this language, actually helps our understanding of how we learn or how to 'do' chemistry very much. Certainly I think it actually gets in the way of curriculum design and implementation. I want to finish here by reflecting on what I think this all means.

Making Sense of Curriculum and Reforms

So can my journey contribute anything to our understanding of curriculum and reforms and the pressures on curriculum reform, or is it an exercise in egomania?

If I think back over this journey I think (all bias aside) it is interesting, if for no other reason that it traces the decades of educational reform in New Zealand through the eyes of someone who was there. I lived through these rather turbulent times – economically and educationally. I think it is pretty evident that the New Zealand curriculum reforms were driven mostly by an economic imperative. I suppose there was a mandate for this, given the country's precarious economic position at the times. But it seems to me, like most curriculum reforms it has all been a bit of a waste of time (we have just co-authored a 30 chapter book on curriculum development and implementation which suggests the same applies internationally). Well let me moderate that a bit - it may be substantially a waste of time. The trouble is we don't actually know because no one has really done any in-depth research to see if it has worked. What, you might ask, do I mean by 'worked'? I guess I am taking a very simplistic view here. I mean do our science students exit the schools and universities with a better understanding of science, the nature of science and so on? I suggest those who do co-op do, but the others don't. Michael Matthews, amongst others, has argued you can judge the success or otherwise of a nation's science education system by the scientific literacy of its citizens (i.e., the 'products' of that system). In my view, the level of scientific literacy in New Zealand at the time of writing is truly appalling. We have never lived in a more prosperous and technologically-advanced era (I suggest to you these two things are interrelated), but the public in New Zealand is characterised by superstitious and pseudoscientific beliefs (we have researched this and have evidence). You cannot have a rational debate about GE food, fluoridation of municipal drinking water, or vaccination in New Zealand. It is actually fascinating to me to try and get to grips how people's minds work when discussing such issues. Has everyone in New Zealand forgotten that we eradicated numerous diseases by means of vaccination? It seems so. What is most fascinating to me is that many in New Zealand will believe in some things (e.g., clairvoyance, healing power of crystals, etc.) with not only zero evidence that such beliefs are well founded, but in the face of incontrovertible evidence that they aren't. There is no doubt in my mind that no evidence would convince them otherwise.

All I am suggesting to you here is that we need a much better understanding of curriculum development and reform, and we need to actually measure some meaningful outcomes. It is too simplistic for me to suggest that co-op degrees (and school programs involving co-op) are a panacea. I have no doubt co-op can be part of school and higher educational reform and we are making some moves in that direction. The last New Zealand Labour government actually mentioned co-op in its manifesto (although when we contacted them they seemed unaware of this), and the UK's so-called Dearing Report recommended co-op be a part of every program in UK universities. Waikato now has a co-op option for all of our undergraduate programs. This is staggering, really. It is not yet compulsory, but other imperatives may make it so *de facto*. There is hope! What am I saying overall? If you want to learn science and understand the nature of science, *you have to do some*, and our curriculum, at both the school and in higher education levels, needs to make that happen! End of story!

Getting stuck in together: Improving Work Integrated-Learning from an Australian institution and faculty perspective

DEBORAH PEACH

Science and Engineering Faculty, Queensland University of Technology

ABSTRACT

According to a recent report Australian higher education is not in crisis. However, we could be doing it better. The report *Mapping Australian Higher Education* (Norton, 2012) highlights comparative weaknesses such as levels of student engagement; interactions between students and academic staff; and academic staff preferences for research over teaching. The report points out that despite these concerns most graduates continue to get good, well-paid jobs, student satisfaction is improving, and levels of public confidence in Australian higher education are high. It also stresses that 'the promise of higher education is that it provides adaptable cognitive skills, not that it always provides the job specific skills graduates will need in their future employment' (Norton, 2012, p.58). This is worth keeping in mind as we contribute to the significant growth in curriculum initiatives aimed at preparing graduates for the world of work. Work Integrated Learning (WIL) is not a new concept but there is increased pressure on higher education globally to address graduate employability skills. The sector is under pressure in an increasingly competitive environment to demonstrate the relevance of courses, accountability and effective use of public funds (Peach & Gamble, 2011). In the Australian context this also means responding to the skills shortage in areas such as engineering, health, construction and business (DEEWR, 2010). This paper provides a brief overview of collaborative efforts over several years to improve the activity of WIL at the Queensland University of Technology (QUT). These efforts have resulted in changes to curriculum, pedagogy, systems and processes, and the initiation of local, regional, national, and international networks. The willingness of students, staff, and industry partners to 'get stuck in' and try new approaches in these different contexts can be understood as a form of boundary spanning. That is, the development of the capability to mediate between different forms of expertise and the demands of different contexts in order to nurture student learning and improve the outcomes of higher education through WIL (Peach, Cates, Ilg, Jones, Lechleiter, 2011).

BACKGROUND

The 2008 review of Australian higher education (Bradley, Noonan, Nugent & Scales, 2008, p.5) emphasised the need for universities to focus on preparing 'a highly productive, professional labour force including the preparation of graduates in relevant fields for professional practice'. The report points to shifts in funding of higher education and growing public expectations for performance, accountability, quality and relevance. Other pressures impacting on the Australian higher education sector include a national agenda to expand higher education access, particularly among low income and Indigenous communities; rapid technological changes; increased competition for international students; as well as generational changes and changing cohorts of students with new expectations. Changes have been made to the national quality assurance framework and a national discipline standards framework introduced. The 2012 report *Mapping Australian Higher Education* (Norton, 2012) highlights comparative weaknesses in Australian higher education but emphasises that despite these concerns the outcomes for most graduates are positive with high levels of public confidence in Australian higher education.

Within this shifting national context there has been increased effort at Queensland University of Technology (QUT) to transform its physical and virtual environments and to ensure that the University is 'a more engaging and exciting place for students, staff, and the wider community (Coaldrake, 2012). QUT is a large, industry linked, metropolitan university located in Brisbane, Australia. The main campuses are at Gardens Point and Kelvin Grove, with a shared campus at Caboolture and research facilities at Carseldine and numerous other sites around Brisbane. The university has six faculties, four institutes, and six divisions. In 2009, 40,563 students were enrolled including 6,299 international students and 1,726 research students. In 2009 the university employed 4,065 full time staff (academic and professional). Over many years the university has benefited from a highly successful marketing campaign that positions QUT as *a university for the real world*. The branding promises real world courses taught by real world lecturers leading to positive employment and graduate outcomes. Yet there is

ongoing debate about what is meant by real world learning and heightened concern about how the QUT brand might heighten student and employer expectations. This paper briefly describes collaborative efforts over several years to address these expectations through improving the activity of WIL.

THE CONCEPT OF REAL WORLD LEARNING

QUT policy documents describe real world learning as encompassing those elements throughout the whole curriculum, which enable students to experience and understand the relevance of their learning to their work and lives (Queensland University of Technology, 2009). The University Strategic Plan - *Blueprint3* (Queensland University of Technology, 2011) sets out priorities and key performance indicators for the next five years with specific reference to clarifying, exemplifying and assuring curriculum and pedagogical attributes of real world learning. *Blueprint3* also highlights the expectation that work placement and professional experience opportunities will be expanded, with an initial focus on school leavers and high-profile undergraduate programs.

PRACTICES AND ISSUES

QUT employs a range of strategies to enhance curriculum development and the quality of the student learning experience. For example, since 1992 a large learning and teaching grant scheme has been in operation. In 2006 a review of this scheme drew attention to the potential for a process of commissioned rather than competitive projects as vehicles for supporting whole of institution curriculum reform. This shift was intended to streamline project planning, implementation and accountability and stimulate university-wide strategic activity.

Three projects commenced in mid 2007 with two academic co-leaders assigned to each project. The initial phase involved an in-depth scoping study to identify key stakeholders, existing challenges and opportunities, and the development of a proposal for subsequent project phases. The scoping phase involved extensive discussion about definition and the best way to proceed in order to gain maximum faculty level engagement. Early in the scoping phase the projects and their interrelatedness was conceptualised around the student-learning journey and the transition from tertiary student identity to professional identity (Figure 1).

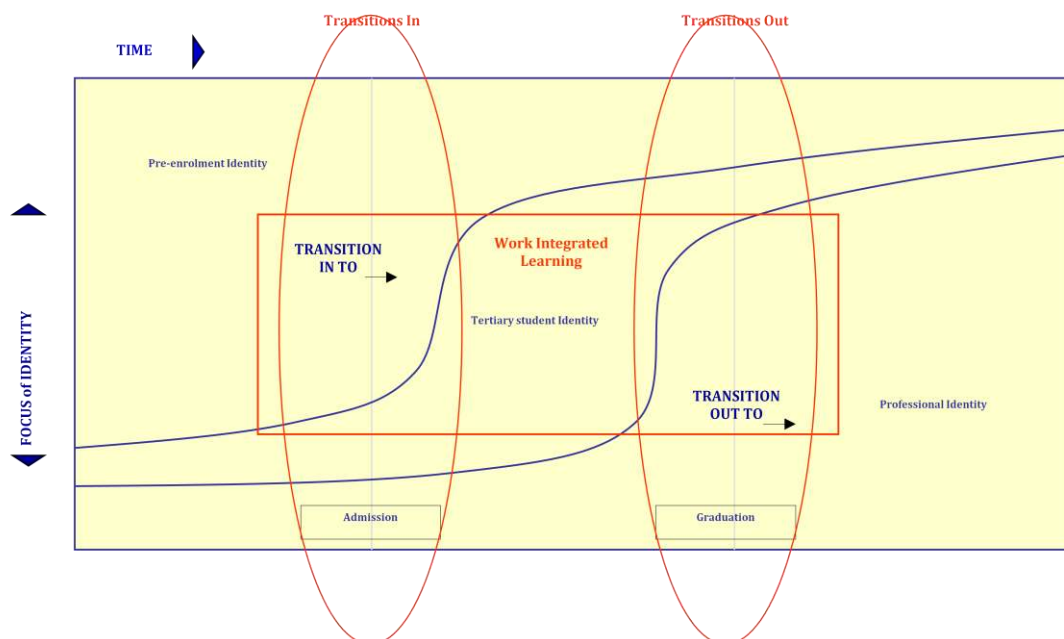


FIGURE 1: The Student Learning Journey (Taylor, Millwater & Nash, 2007, after Bridges, 2003)

There were high expectations that these projects would deliver robust solutions. However several changes in leadership and project staff as well as a reconceptualising of the overall theme and aims created challenges. Trying to reform whole of institution curriculum through a project approach is complex and presents ‘wicked problems’ that are usually ill-defined, often characterised by many interdependencies and focused on unstable problems that may still be evolving (Conklin, 2007; Head, 2008a & 2008b; Jackson, 2000; Jackson, 2010; Knight, 2007; Krause, 2010; Page & Knight, 2007; Wegner, 2009). The revised aims of the projects were to:

1. embed and sustain improved student learning outcomes,
2. build capacity of QUT academic staff in learning and teaching,
3. promote and support strategic change for the enhancement of learning and teaching – particularly the support of real world learning,
4. develop effective mechanisms for the identification, development, dissemination and embedding of good practice in learning and teaching across the disciplines, faculty-wide and at an institutional level.

The projects, identified as *Transitions In Project (TIP)*; *Work Integrated Learning (WIL)*, and *Transitions Out Project (TOP)*, had four streams of activity: students, curriculum, staff, and enabling systems (Table 1). Following revisions to project scope and budget, the stream enabling systems was renegotiated and it was agreed that whilst recommendations would be made deliverables in this stream were out of scope and out of budget.

TABLE 1: QUT supporting real world learning projects 2007-2010

	Students	Curriculum	Staff
TIP	Case managing students at risk	First year curriculum design, development and evaluation. Develop learning skills and associated resources	Communities of practice - increasing capacity for good first year teaching practice
WIL	Prepare students to engage with the real world and their future professions through WIL	Increase relevance of curriculum by greater focus on WIL unit design, alignment, implementation	Staff & Industry: build staff capacity and engagement with the ‘real world’ and WIL. Initiate and support widespread engagement of industry and the professions (Community of Practice)
TOP	Enhanced opportunities for students to become more confident, self-aware and practical in relation to transitions into new professional environments	Characterised by curricula designed to deliver clearly understood learning outcomes, linked to students’ successful transitions to new professional environments	Understand teaching contribution in the graduation year as contributing to developing a shared understanding and language necessary for systematic scaffolding of students' pathways leading to a professional career

The project leaders were very aware that the task of influencing curriculum decisions at course and unit level would require faculty and divisional staff collaboration. To encourage this collaboration the projects provided stakeholders with additional resources and created opportunities for scholarship and professional development including the facilitation of active communities of practice. For example, work was already underway in several faculties to develop and improve the activity of WIL. Table 2, derived from Patrick, Peach & Pocknee (2009), provides examples of WIL activity in the discipline areas of built environment, business, health and law. These examples include unit and whole-of-course approaches as well as a not-for-credit example.

The stakeholders involved in the faculty-based initiatives described in Table 2 actively participated in the communities of practice established as part of the *Supporting Real World Learning* projects. In this way their knowledge and experience was shared and helped inform others of the possibilities as well as challenges of strategic change. By 'getting stuck in together' and acting as boundary spanners stakeholders were able to mediate between different forms of expertise and the demands of different contexts in order to help students develop adaptive cognitive skills through WIL (Peach, Cates, Ilg, Jones, Lechleiter, 2011). The communities of practice identified common themes including the importance of recognising the work environment as a legitimate and unique learning environment; building stronger links with industry partners; and strategies and approaches to manage increased diversity and scale. These examples highlight the importance of providing students with flexibility, choice and appropriate support as well as possible affordances offered through the use of technology. Since 2010, QUT has continued to fund initiatives that support the key area of WIL. For example, a real world learning committee has been established to lead the development of additional curriculum resources; develop and implement a quality risk framework; and implement a new University-wide WIL placement management system. The impact of these initiatives is yet to be realised but they are expected to build on previous work to improve WIL curriculum; assist stakeholders to manage increased diversity and scale; and build stronger relationships.

CONCLUSION

QUT: a university for the real world – has been a successful way to differentiate the University in an increasingly competitive environment. However, there is ongoing discussion about the impact real world branding has on student and employer expectations regarding the development of professional attitudes and capabilities. These expectations are hardly surprising given the promise of positive graduate outcomes conveyed through marketing strategies and other university material. Yet despite consistently strong graduate outcomes the university is aware that improvements are needed in terms of student and employer perceptions of the quality of teaching and the delivery of the promise of a curriculum that will enable students to develop professional attitudes and capabilities. The QUT *Supporting Real World Learning* projects and subsequent investment in WIL systems and processes has helped build valuable professional networks and contributed to a more informed understanding of WIL and real world learning curriculum. A strong focus must be sustained on these key areas with explicit and firm expectations articulated by senior leadership and commitment from key stakeholders to 'get stuck in together'. Conklin (2007, p.5) adds that you don't so much "solve" wicked problems as help stakeholders negotiate shared understanding and shared meaning about the problem and its possible solutions. The objective of the work is coherent action, not a final solution'.

TABLE 2: QUT WIL Programs (derived from Patrick, Peach & Pocknee, 2009)

DISCIPLINE	BUILT ENVIRONMENT	BUSINESS (for credit)	BUSINESS (not for credit)	HEALTH	LAW
TITLE	Work Integrated Learning (WIL)	Internships in Advertising, Marketing and Public Relations	Business Advantage Program	WIL whole-of-course approach	Virtual Placement Project (VPP)
KEYWORDS	WIL: built environment, engineering, multi-discipline, curriculum, industry placement, blended delivery	Internships, advertising, marketing, public relations, work placements, industry partnerships	Extracurricular, generic skills, graduate capabilities, engagement, personal development, professional development, student experience, first year experience, community engagement	Practicum; curriculum; work-integrated learning; health	Virtual placement, work integrated learning, e-portfolio, team work, international, community engagement, e-learning, collaborative education, cooperative education, authentic learning
EMPLOYMENT SECTOR	Design, urban development, engineering	Advertising, marketing and public relations	Multi-sector	Multiple health disciplines including exercise and sport science, nursing, optometry, paramedic practice, podiatry, nutrition and dietetics, and social work	Multi-sector
STUDENT NUMBERS	Anticipated 1,200 when program fully in place	Average of 100 students per year	Approximately 500-600 per year in development modules, 1700-2000 per year subscribed to e-newsletter, 50 students involved in ancillary/spin-off activities	Approximately 3000 students per year	Anticipated 550+ when program fully in place
OPTIONAL or COMPULSORY	Compulsory for majority of students as per accreditation requirements	Elective unit for final year undergraduate students	Optional.	Required component of a number of undergraduate courses.	Optional.
CREDIT BEARING	Credit with option of completing a WIL Minor	12 credit points (in a 48 credit points full time semester load)	Non-award, voluntary	Credit	Credit
ASSESSMENT	Formal reports/seminars, work log, reflective diary	Placement plan, job application and response to selection criteria, report including reflective journal, presentation	Varied but can include: personal action plans, specific topics such as developing a budget or resume and class exercises.	According to the requirements of the various discipline groups and/or registering bodies, student performance is assessed in the workplace settings. There are variations but integration of national competency sets into the assessment methodology may be required, plus student self assessment	job application, online discussion forum entries and executive summary, project outline, completed project and individual assignment, student e-portfolio entry
PAYMENT	Majority paid - negotiated between student and employer	Generally, no payment to students	Programs are provided free to students	No payment except paramedic students undertaking final internship	No expectation but students may be encouraged to participate in relevant fund-raising activities to support social justice project implementation.
NUMBER OF STAFF INVOLVED	WIL Director (academic) supported by a WIL Officer (professional staff) and WIL coordinators (academic) in each of the 3 Schools, sessional tutors and markers	3 academic staff	1 full-time professional staff member, 9-10 internal/external facilitators	Academic Clinical Co-ordinator / WIL Director (or equivalent) in each school, administration staff., workplace staff employed as sessional staff and seconded from health care facilities	1 academic staff member, 1 workplace supervisor from each of the industry partners (appointed as sessional staff)
WEBLINK	http://www.sef.qut.edu.au/wil/	http://www.bus.qut.edu.au/faculty/schools/ampr/	http://www.bus.qut.edu.au/study/advantage/	http://www.hlth.qut.edu.au/	http://law.qut.edu.au/about/wil/
CONTACT	Dr Deborah Peach d.peach@qut.edu.au	Ingrid Larkin ik.larkin@qut.edu.au	Program Coordinator bus.advantage@qut.edu.au	Professor Robyn Nash r.nash@qut.edu.au	Associate Professor Tina Cockburn t.cockburn@qut.edu.au

REFERENCES

- Bradley, D., Noonan, P., Nugent, H., and Scales, B. (2008). *Review of Australian higher education* (Final Report). Canberra: Department of Education, Employment and Workplace Relations.
- Bridges, W. (2003). *Managing transitions* (2nd edition). Cambridge, MA: Perseus Publishing Company.
- Coaldrake, P. (2012). Last word. *QUT Links Alumni Magazine*, 15(1), 25
- Conklin, J. (2007). Rethinking wicked problems [interview]. *NextD Journal*, 10, 1-30.
- DEEWR (Department of Education, Employment and Workplace Relations. (2010). *Skills shortage Australia*. DEEWR, Canberra.
- Head, B. (2008a). *Wicked problems: The implications for public management*. Paper presented at the 12th Annual International Research Society for Public Management Conference, 26-28 March, 2008, Brisbane, Australia.
- Head, B. (2008b). *Wicked problems: Implications for policy and management*. Paper presented at the Australian Political Studies Association Conference, 6-9 July, 2008, Brisbane, Australia.
- Jackson, N. (2010). From a curriculum that integrates work to a curriculum that integrates life: Changing a university's perceptions of curriculum. *Higher Education Research and Development*, 29(5), 491-505.
- Jackson, P.M. (2000). The public manager in 2010: Managing public sector networked organizations. *Public Policy and Management*, 20(1), 11-16.
- Knight, P. (2007). *Fostering and assessing 'wicked' competencies*. Milton Keynes: Open University.
- Krause, K. (2010). *Making the most of institutional research: Whole-of-institution approaches*. Plenary address at the Institutional Research Colloquium, 28-30 April 2010, University of Otago, Dunedin, New Zealand
- Norton, A. (2012). *Mapping Australian higher education*, Grattan Institute, Melbourne.
- Page, A., & Knight, P. (2007). Assessing wicked competences. *Educational Developments*, 8(3), 6-8.
- Patrick, C-J., Peach, D., & Pocknee, C. (2009). *The WIL [Work Integrated Learning] report: A national scoping study* [Australian Learning and Teaching Council (ALTC) Final Report]. Brisbane: Queensland University of Technology.
- Peach, D., Cates, C., Ilg, B., Jones, J., & Lechleiter, H. (2011) Responding to rapid change in higher education: Enabling university departments responsible for work related programs through boundary spanning. *Journal of Cooperative Education and Internships*, 45(1), 94-106.
- Peach, D., & Gamble, N. (2011). Scoping work integrated learning purposes, practices and issues. In S. Billett & A. Henderson (Eds.), *Developing learning professionals: Integrating experiences in university and practice settings* (pp. 169-186). Dordrecht, Netherlands: Springer.
- Queensland University of Technology. (2011). *Blueprint3*. Brisbane, Queensland: University of Technology.
- Queensland University of Technology (2009). *Manual of Policies and Procedures*. Brisbane: Queensland University of Technology. Available at <http://www.mopp.qut.edu.au/>
- Taylor, P., Millwater, J., & Nash, R. (2007). *Talking about transitions: The value of a conceptual approach*. Paper presented the 30th HERDSA Annual Conference, Enhancing Higher Education, Theory and Scholarship, 8-11 July, 2007, Adelaide, Australia.
- Wegner, J. (2009). Reframing legal education's 'Wicked Problems'. *Rutgers Law Review*, 61(4), 867-1008.

Developing reflective practice in science and engineering students

SUE MCCURDY

Cooperative Education Unit, Faculty of Science and Engineering, University of Waikato

INTRODUCTION

Recent publications from the New Zealand Government and international academic institutions emphasise that one of the graduate attributes they are seeking is the ability of students to be reflective and hence develop critical thinking skills, self-evaluation, open mindedness, and deep learning. While a positive aspiration, questions remain as to how reflection works, how can it be taught, and ultimately in a teaching environment, and how reflection may be assessed. In this exploratory research the current use of a teaching tool to introduce reflective practice in a work placement preparation course is investigated. It is intended that further research will follow to develop innovative teaching methods and assessment methods to enhance reflective practice in engineering and science undergraduates.

LITERATURE REVIEW

Dewey (1933) is considered to be the first theorist who published his ideas about reflection in 1933. He described reflection as ‘active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusion to which it trends’ (p9) thus highlighting the search for understanding that is based within a context or background. Schon (1983, 1987) elucidated this further in the context of scientific research. He put forward a similar idea to Dewey that the search for knowledge and understanding should include the situation and background, but also that action should be preceded as well as followed by reflection, termed reflection-in-action. Kolb (1984) modelled the cyclic nature of learning, experience and reflection as shown in Figure 1A. This model has been further developed by many researchers (for an overview see Cassidy, 2004). Among the variations, there is the suggestion that the cycle does not flow in one direction or another, nor in complete cycles but can move back and forth until there is some resolution for the learner (Figure 1B).

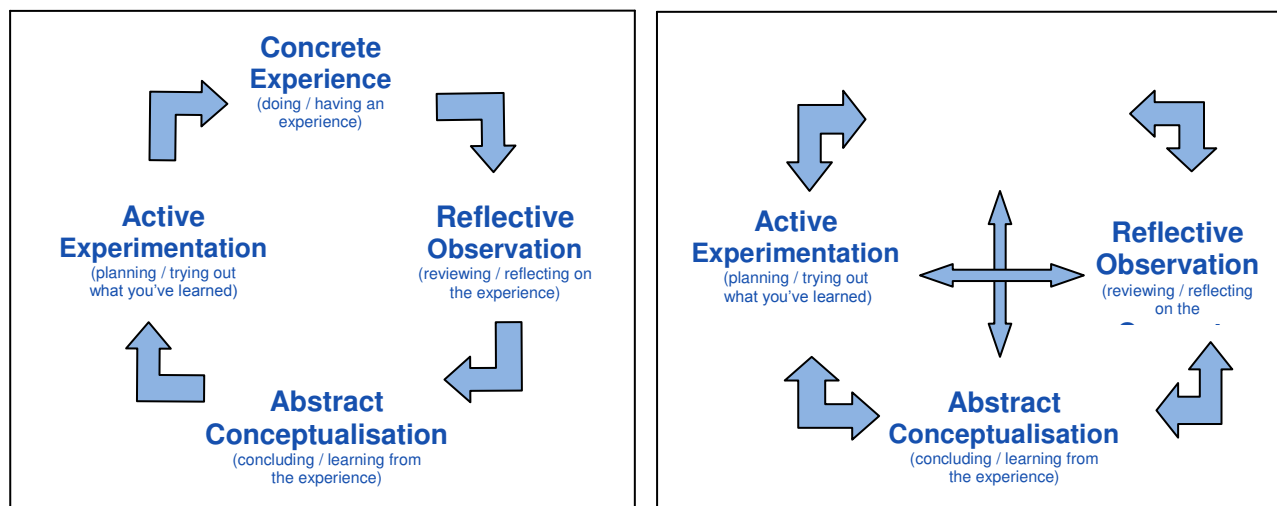


FIGURE 1A and 1B: Variation of Kolb's Experiential Learning model (adapted from Kolb, 1993)

Recent research has included defining reflection (Boud, Keogh, & Walker, 1985; Kember, 1997; Kember et al., 2000; Mezirow, 1991) assessing reflection (Ash & Clayton, 2004; Pee, Woodman, Fry, & Davenport, 2000; Scott, 2010) and developing robust tools to assist students with reflective practice (Pee, Woodman, Fry, & Davenport, 2002).

Based on Mezirow's (1991) work, Kember, Leung et al. (2000) developed four stages of reflection; 1/ Habitual, where the learning is by rote or "performed automatically or with little conscious thought" and importantly,

where a particular type of problem has been encountered many times, the way of dealing with it becomes routine. 2/ Understanding, described as using existing knowledge without trying to questions or review that knowledge or understanding. 3/ Reflection, described by Mezirow as “the critique of assumptions about the content or process of problem solving”. 4/ Critical reflection is recognised as a higher level and can be interpreted as a process which initiates or drives social change but more commonly now is used to denote reflection on our own personal perceptions and understanding why we think and feel specific ways.

BACKGROUND

Work integrated learning provides unique opportunities to combine these theories, that is, for situation-based reflective practice and enhancement of reflective learning for students. The University of Waikato offers two science and engineering degrees that have work placements embedded in the degree structure, BSc(Tech) and BE. Over recent years the Cooperative Education Unit (facilitates and administers the placements) have developed teaching modules to address perceived areas of difficulty for placement students. These include good CV writing skills, report writing, professional behaviour and reflective practice.

Development of these teaching modules is on-going and theory-based. Ultimately this research will investigate how to improve science and engineering students’ reflective practice through interventions for teaching reflection in these courses. However, in this research paper the use of learning objectives as a reflective tool is explored with the additional element where students set a second set of objectives after a period of placement work and reflection.

METHOD

One of the tools included in the pre-placement teaching is the setting of learning objectives. Students have verbal instruction as part of two separate lectures but do not get to practice setting objectives. Written instruction is available on Moodle (Appendix 1). Students were asked to set two objectives under the following areas: technical skills, knowledge skills and professional development. Technical skills involve the use of equipment, instruments or machinery and commonly include computer programs and scientific analysis equipment. Knowledge skills are to guide students look into the understanding underpinning their daily tasks and can include things like bacterial physiology, animal diseases, etc. The professional development skills are where students should be starting the reflective process although with a work focus; how have they developed as team members, how does communication work within their team, in what ways has their confidence improved.

Previously (2009, 2010) students were asked to create one set of objectives once they were about four weeks into their placement and these were handed in and received a possible 5% toward their final grade. In 2011/12 it was decided not to offer any incentive for setting the objectives, and they would also be requested to set a second set of objectives after they had been on placement for approximately eight weeks. As part of site visits objectives were discussed but in most cases, the second set had already been submitted.

Upon reading the objectives to give feedback it was apparent that there had been some significant changes in objectives, in many cases beyond what was expected as a ‘normal’ developmental changes as part of the placement. This has led to questioning on how to assess objectives and reflective development. At this point, there has been no development of criteria for assessment and the results presented are subjective and without rigour. Nevertheless, the value of setting a second set of objectives is apparent, as is the significance of reflection to some students.

RESULTS

A total of 47 Biology students were enrolled in the placement paper for summer 2011/2012, (26 second years and 21 third years). The first set of learning objectives was handed in by 43 students, (23 second years and 20 third years). The second set of objectives was handed in by a total of 38 students, (23 second years and 15 third years). As the learning objective exercises did not achieve a grade, only ‘feedback’, it was expected that a very low number would actually participate in the first hand-in and even fewer in the second hand in. Achieving 91% hand in of set one of objectives followed by 80% hand in of the second set indicates that students view this task as worthwhile.

When set one objectives were compared with set two objectives there appeared to be significant changes in 26 of the sets and 12 sets where there was no change at all.

In the documents that showed change, 13 showed a clear refinement in the technical skills as expected, 11 showed significant change in their knowledge objectives and 16 showed significant changes in their professional development (reflective) skills.

DISCUSSION

The clear intention of setting a second set of learning objects was to promote reflective practice. Students, it seemed, not only thought about their practical goals but also began to look at their own learning and changes in their behaviour and understanding of the workplace.

When applying the stages of reflection (Kember *et al.*, 2000) to these data, it seems that the level termed 'understanding' is easily demonstrated by the very precise changes to the technical and knowledge objectives, from "demonstrate and further my understanding of Excel by completing the formulas" to "write basic Structured Query Language (SQL) statements to do the ecological scoring of significant natural areas". The technical objectives are very focussed on situational learning as covered by Dewey (1933), Schon (1983) and Mezirow (1981) and can comfortably be added into Kolb's learning model in Figure 2.

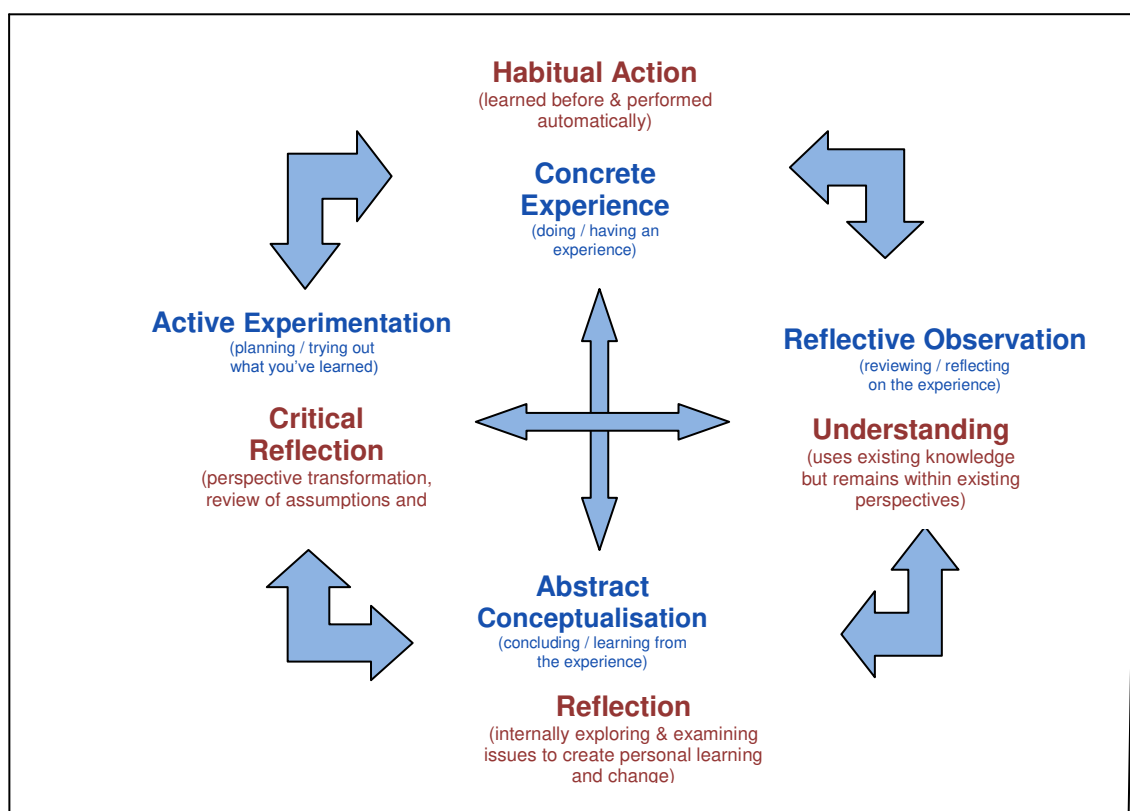


FIGURE 2: Variation of Kolb's Experiential Learning model with levels of reflective practice added (adapted from Kolb, 1993, and Kember, Leung *et al.*, 2000).

When considering the changes in the professional development skills, it appears that students have progressed to the levels of 'reflection' and perhaps in some cases to 'critical reflection'. Several themes emerged from the professional development data; enculturation (socialisation), communication, developing independence, accepting responsibility and developing outward-looking skills rather than just personalised skills.

Enculturation and the awareness of the social requirements to help fit into a group setting were demonstrated by comments like "gain a basic knowledge of New Zealand current events, allowing me to participate more in lunchtime conversations", and "adapt to working in an open office: get used to being working while surrounded with co-workers and noise".

Personal attitude changes based on reflection are indicated by comments like: "learn to be more persistent by adjusting the method appropriately to improve results rather than abandoning tests that do not immediately

yield the desired outcome”, and “show a developing, open and critical mind by discussing and sharing options with colleagues”.

Other personal issues relate to shyness, becoming independent, and being confident enough to ask questions. For one student, it was learning to deal with uncertainty and flexible schedules. There was interesting event around an animal ethics issue, and this also became a learning objective: “To be able to share my views on animal welfare with colleagues in such a way that may result in positive modifications in attitude ...” As can be seen by these comment there is evidence of changes in thinking and the tasks for the future will be to develop further tools to assist students, develop teaching material and assessment criteria.

CONCLUSION

Reflective thinking and change, like ‘soft skills’, is problematic to assess. While the stages outlined by Kember, Leung et al. (2000) are helpful in defining what to look for, there is work still be done to develop assessment tools and understanding the literature around this form of assessment. This research shows that using learning objectives with a follow-up set after a period of reflection are a valuable tool in helping students learn reflective practice, become more self-aware and contribute in a meaningful way to their area of science.

REFERENCES

- Ash, S., & Clayton, P. (2004). The articulated learning: an approach to guided reflection and assessment. *Innovative Higher Education*, 29(22), 137-154.
- Boud, D., Keogh, R., & Walker, D. (1985). *Reflection: turning experience into learning*. London: Kogan Page.
- Cassidy, S. (2004). Learning styles: An overview of theories, models, and measures. *Educational Psychology*, 24(4), 419-444.
- Dewey, J. (1933). *How we think: a restatement of the relation of reflective thinking to the educative process*. Boston: DC Heath.
- Kember, D. (1997). A reconceptualisation of the research into university academics' conceptions of teaching. *Learning and Instruction*, 7(3), 255-275.
- Kember, D., Leung, D. Y. P., Jones, A., Loke, A., McKay, J., Sinclair, K., et al. (2000). Development of a questionnaire to measure the level of reflective thinking *Assessment & Evaluation in Higher Education*, 25(4), 387-395.
- Kolb, D. (1984). *Experiential learning*. Englewood Cliffs, NJ: Prentice Hall.
- Mezirow, J. (1981). A critical theory of adult learning and education. *Adult Education*, 32(3), 3-24.
- Mezirow, J. (1991). *Transformative dimensions of adult learning*. San Francisco: Jossey-Bass.
- Pee, B., Woodman, T., Fry, H., & Davenport, E. (2000). Practice-based learning: views on the development of a reflective learning tool. *Medical Education*, 34, 754-761.
- Pee, B., Woodman, T., Fry, H., & Davenport, E. (2002). Appraising and assessing reflection in student's writing on a structured worksheet. *Medical Education*, 36, 575-585.
- Schon, D.A. (1983). *The reflective practitioner; how professionals think in action*. New York: Basic Books.
- Schon, D.A. (1987). *Educating the reflective practitioner*. San Francisco: Jossey-Boss.
- Scott, S.G. (2010). Enhancing reflection skills through learning portfolios: an empirical test. *Journal of Management Education*, 34(3), 430-457.

APPENDIX 1

Learning Objectives

In the first month of your placement, you need to set learning objectives. Your work placement is a learning experience, and your learning objectives should be based on what you would like to achieve during your time with the organisation. These objectives will be *part of your placement report* and not graded separately.

Naturally as you learn and progress in your placement your goals and what you want to learn should change. Part of what you can learn here is how to assess goals and determine new ones so you are always progressing and becoming a 'life-long learner'.

You will also develop two sets of objectives, one early on in the placement and another later in the placement.

Upload your first set of learning objectives to Moodle by **(date)**. While this will not get a grade you will get feedback.

Upload your second set of objectives by **(date)**. While this will not get a grade you will get feedback.

- Your learning objectives focus your learning and maximize the benefits from your placements.
- The 'Reflection & Review' segment of your placement will be structured around the objectives
- For students doing SCIE/ENGG379 next year, further reflection is developed by way of lectures and a 6 minute oral presentation building on what you complete for this assignment.

When writing your Learning Objectives, keep in mind the 'SMART' formula.

S Specific. These goals should be as specific as possible. For example not "become good in the lab", but "able to work unsupervised in the laboratory".

M Measurable. Make your objectives measurable. If you have set specific goals then this becomes easy. You need to be able to clearly tell if you have achieved them or not. For example instead of saying "become good at test procedure A" you should write "able to demonstrate my understanding of X by doing Y without any assistance within Z time" or "Be able to show my proficiency of test procedure X without referring to the Y test procedure document" or "Being able to obtain, explain, and put into practice the relevant skills required to accurately determine the source of the environmental pollution".

A Attainable. Make sure that you set goals that are obtainable. Be ambitious, but realistic - the odds of you developing a cure for cancer during the placement are rather low!

R Relevant. This is rather self-explanatory.....

T Time-bound. Clearly, you need to achieve these before the end of your placement!

Lastly you may find setting learning objectives challenging, this is not unusual. To help set your learning objectives, pick a time when you can focus and will be interrupted for a good period of time. We would suggest that you brainstorm on the ideas, group these together and then reword.

Guidelines:

There are three areas in which you need to set learning objectives. You need to set two learning objectives per area. Keep the wording as concise as possible (i.e., no longer than one sentence each).

Technical skills ('hands on' skills). For example; learning how to use a new piece of equipment; or becoming competent in a new skill; learning a new computer program; learning a new technique.

Knowledge (theory, background, workplace, industry). For example; the background of why your work is important; the science behind a task; previous and historical developments that have led to the current project or area of work; how a certain test was developed; understanding of the workplace structure; knowledge about this industry sector in NZ.

Professional development (behavioural skills). For example; skills and knowledge attained that might help towards your personal development or career aspirations; further development of your abilities such as leadership skills, communication skills, team work, initiative, independence; development of personal strengths such as self-confidence; awareness of workplace culture, professional behaviour and 'language' specific to your workplace.

Principles, process, competencies and reflection: Innovative programme design in professional psychology

BARBARA KENNEDY

School of Psychology, Massey University

BACKGROUND

Although practicing psychologists draw on a common foundational knowledgebase, in contrast to many trades and professions, their skills, techniques and jobs in diverse work contexts vary so widely that the connection may not be readily evident outside the profession. In New Zealand, the Psychologists Registration Board administers the Health Practitioners Competence Assurance (HPCA) Act (2003) to register psychologists currently under six scopes of practice: psychologist, clinical, educational, counselling, intern, or trainee. A set of core competencies (New Zealand Psychologists Board) has been defined for registration and applies to all psychologists with additional competencies specified for each of the clinical, educational, and counselling scopes.

Facility with the knowledgebase is acquired through university study to completion of Masters (minimum). Professional registration is available only after additional postgraduate training in application, including closely supervised work as an intern practitioner. This is typically accomplished in a cooperative education programme in which the university component addresses content knowledge about a particular type of psychological practice (e.g., clinical, community, counselling, educational, forensic, health, organisational). The placement however requires the development of a depth of expertise in only the subset of that content area required by the particular position. A given practitioner may subsequently work in a role requiring a quite different subset of content knowledge of psychological practice (there is an ethical obligation to achieve competence in the new area). In these programmes, for purposes of instruction and supervision, interns must practice in geographical proximity to the university.

Previously, a small number of psychologists became practitioners in diverse roles by completing a longer period of supervised practice. Disestablishment of the main supervision-to-registration scheme, *Supervision 2000*, severely limited both the range of options and number of places available (The New Zealand Psychological Society, 2007). Massey launched the Postgraduate Diploma in Psychological Practice (PGDipPP) to address this gap.

THE PROGRAMME

The PGDipPP is a one-year internship programme to prepare graduates with a Masters in Psychology (New Zealand) for registration under the psychologist scope. Psychologists registered under this scope work in a wide variety of roles and contexts, and may do work which is similar to that of colleagues registered under other scopes, or perform quite different duties. They might, for example, conduct psychometric assessments or provide therapy to particular types of clients or they could be involved in capacity-building in the community, supporting senior management in resolving staffing difficulties or working with patients to increase rate of recovery after major surgery.

Intern psychologists are required to complete 1,500 hours of supervised practice (equating to approximately one year, full-time), in a position which is that of a psychologist, at an entry level. In the PGDipPP, the intern's placement is for the whole year and is undertaken in addition to meeting academic requirements. Although interns are required to attend two week-long block courses, and submit a total of six 3,000 word review papers, academic work is focused on their development of the competencies they must demonstrate in order to achieve registration. PGDipPP students are located across New Zealand and complete their internship locally rather than being required to relocate in proximity to the university. Within a cohort, each intern may be working in a completely different type of practice from that of his or her colleagues. Field supervisors (employed by the organisation providing the internship) are approved by the university, have professional competence for the specific setting, and take responsibility for day-to-day oversight of the intern's work. Each intern is allocated a university supervisor, whose primary function is monitoring to ensure that the needs of all stakeholders are being met but who may also provide additional supervisory support, teaching, or coaching to meet identified knowledge/skill gaps or emergent difficulties.

The partnership between workplace and university operates on several fronts, for example, among organisation, management, field supervisor, university supervisor, programme, and university. The workplace, for example, provides the flexibility required for an intern to progressively increase capacity for both workload and work complexity (and be released to attend the two block weeks); the university involvement provides the benefits of a quality assured training process without the attendant administrative burden. Managers ensure interns have the resources necessary to their role and the programme scaffolds the intern's learning and rapid growth to meet workplace needs, supporting interns to link their academic preparation in theoretical learning to the requirements of practice in a particular setting. Field and university supervisors support the intern to meet the organisation's particular needs within the profession's parameters, and at times even contribute to new developments.

UNIQUE FEATURES

The key feature that distinguishes this programme is that it caters specifically for interns working in diverse fields of psychological practice. To achieve this, unlike other programmes, the curriculum is process-based rather than being embedded in the content of a particular type of psychological practice (e.g., clinical, educational). The curriculum is framed by the legal and professional requirements for registration, and provides both: an integrated teaching, learning, practice and assessment package common to all interns; and a fully individualised programme for each intern (Table 1). Although developed for this particular programme in psychology, the model underlying the approach has potential application in other settings.

TABLE 1: Curriculum elements - common and individualised

Common curriculum elements	Individualised curriculum elements
Teaching focuses on enabling interns to learn how to apply the theoretical and research-based knowledge of their discipline.	Develop and implement personal learning plan under guidance.
Learning activities are designed to achieve that end with respect to the intern's daily work activities but with due attention to the classic transfer of training issue.	Undertake common learning tasks but with reference to their practice setting and their personal pre-existing knowledge, skill, ability, and attribute profile.
The intern's practice provides both context and content that make the principles-based teaching and learning activities meaningful.	Become more aware of the similarities and differences between their particular role and other psychologist roles through the interactive learning, assessment, and teaching activities with interns working in different settings and types of psychological practice.
Assessment is designed to both scaffold learning and provide criterion-based summative evaluation required for registration.	

DISCUSSION

The traditional approach to curriculum design is fundamentally driven by a reciprocal consideration by a subject-matter expert of what content the learners need to master on a given topic, and the learning objectives which, when achieved, would constitute sufficient mastery of the topic. This leads logically to selection of appropriate teaching strategies, and choice of assessment methods.

The traditional approach is suitable for conditions under which the scope (of knowledge/skills) required is relatively tightly boundaried, the learners are highly heterogeneous, the knowledgebase and workplace expectations are relatively stable, and sufficient instructional time can be provided to address the required content. This approach also assumes that if students are taught 'the right' foundational knowledge, they will then be able to continue extending their knowledgebase, and once they have become experienced in one area,

will be able to transition successfully to another. These assumptions regarding transfer are at best contentious, but a critical examination of the evidence about the complexity of the transfer issue is beyond the scope of this paper (see discussions in Campbell & Kuncel, 2001).

The traditional approach to curriculum design is however, a poor match for the needs of the PGDipPP. The potential scope of a curriculum to address the practice of psychology across the variety of work undertaken by psychologists is unwieldy. Students have completed different constellations of Psychology papers to completion of Masters, and have different levels of experience in working with clients in allied roles. Knowledge in the discipline/profession is growing rapidly. The rate of change in the workplace/profession is such that many jobs for which we might train them now may soon not exist and conversely, psychologists will occupy new roles, not currently conceived. A content-based curriculum to address these conditions would be: very lengthy; severely limited in coverage and in preparing graduates for roles not yet in existence; offer little scope for individualisation to either the learner or their context; and leave the question of meeting the employer's specific needs outside the boundary of the curriculum.

Checkland (1981) developed Soft Systems Methodology to solve a similar problem in the field of Systems Engineering that relied on 'hard' systems thinking. 'Hard' systems-thinking provides a way of working out how to meet a well-defined and static (if complex) need (e.g., build a ship to carry a specified load). The core failure of hard systems thinking when applied to complex issues involving human action (e.g., educate psychologists) arises from the mismatch between the ideal, defined problem and reality. To the extent that it is necessary to pretend that a need is well-defined, the system derived will not meet the real need, nor can it adequately address the impact of change in either the context or the need itself. Systems Engineering provides a means of 'how to do it' when 'what to do' is already defined (Checkland & Scholes, 1990). In seeking to improve systems involving human action, often 'what to do' is not already known, cannot be defined in sufficiently precise terms or is dynamic in response to multiple factors. Applying Checkland's thinking to the curriculum design problem at hand shifts the focus from 'what content' to 'how to meet the needs of intern psychologists trained in theory and entering professional practice', and provides a methodological basis for the resultant model which guides the curriculum.

The resulting approach to curriculum design is driven by process rather than content, and, with respect to Kirkpatrick's (1959) criteria for evaluation, focussed on performance (behaviour and workplace outcomes) rather than on learning per sé. Considering performance (i.e., what a psychologist does), process is linked to both principles and competence. Interns are assisted to identify principles of knowledge and of good practice in psychology, which, together with an awareness of the processes by which these are applied, are linked to the core competencies defined by the New Zealand Psychologists Board for all registered psychologists. Each intern first seeks to gain clarity about the expression of those competencies in the setting in which they work. Through structured and incidental interaction with their cohort, they gain awareness of differences in the expression of those competencies across settings and hence heightened understanding of both the competency and its transferability across contexts. Both the competence itself and capacity for transfer are actively developed via critical reflection and supervision, in turn leading to continuing learning and improvement (there are elements of commonality with Engström's notion of expansive learning; see e.g., Engström, 2010). The extent to which this is achieved is monitored by supervision and by both formative and summative assessment. In this model, the field supervisor has most input to guiding the choice of content learned, but also contributes to evaluation. The university supervisor provides support for content learning, and academic staff have more responsibility for evaluation. Evaluation is strengthened by the triangulation effect of separating field and university supervision, meeting academic requirements and in oral examination by external examiners.

Although in its infancy (having graduated only three cohorts), the programme based on this approach to curriculum design is proving apparently successful. Interns work successfully with clients, rapidly developing the required competencies to the satisfaction of their employers, field and university supervisors, examiners and ultimately gaining registration and employment as professional psychologists. The design permits learning structured to meet the needs of the student, workplace, profession, and registration in a genuine partnership between university and workplace and directly addresses the classic challenge of transfer of training. As we accumulate data over subsequent cohorts, including their career outcomes, no doubt the model will be refined.

IMPLICATIONS

This system of curriculum design is based on process, principles, competence, reflection, and supervision. It aims to produce graduates competent for their position, equipped for continuous improvement, and with

explicit knowledge/skill for transferring competence to other roles. It is presented as an alternative to the more traditional approach to curriculum design, which is based on forced choices about what content is to be taught to all students, on the inherently flawed assumptions that it is possible to define the core material every student needs to master, that the said mastery necessarily implies both transferability and continuing learning, and improvement as a practitioner.

Some caveats however need consideration. In preparing psychologists for professional practice there is: (i) a set of clearly articulated competencies (ii) a well-established, common code of ethics (iii) a strong tradition of and (iv) professional norms facilitate cooperative effort between field and university supervisors. To the extent that these conditions do not exist for other cooperative education programmes, the approach would at least need modification. The approach also poses some challenges for stakeholders operating, even unconsciously, from assumptions about education/training being fundamentally based on mastery of content rather than competence in process. It does however hold promise for 'future-proofing' graduates, better equipping them to meet needs that do not yet exist however may before their career is complete. It also has considerable potential with respect to workforce development since it permits employers to ensure a supply to professionals trained to fill needed roles, to up-skill existing workforce and even to broaden or refine services with staff who have completed a university qualification that also meets the standardised requirements of a profession.

REFERENCES

- Campbell, J.P., & Kuncel, N.R. (2001). Individual and team training. In N. Anderson, D.S. Ones, H.K. Sinangil, & C. Viswesvaran (Eds.), *Handbook of industrial, work and organizational psychology – Volume 1*. (279 – 313). Thousand Oaks, CA: Sage Publications.
- Checkland, P.B. (1981). *Systems thinking, systems practice*. John Wiley & Sons, Chichester.
- Checkland, P.B., & Scholes, J. (1990). *Soft systems methodology in action*. John Wiley & Sons, Chichester.
- Engström, Y. (2010). Activity theory and learning at work. In M. Malloch, L. Cairns, K. Evans, & B. N. O'Connor (Eds.), *The sage handbook of workplace learning* (pp. 86-105). Thousand Oaks, CA: Sage Publications.
- Kirkpatrick, D.L. (1959) Techniques for evaluating training programs. *Journal of ASTD*, 13, 3-9.
- New Zealand Psychologists Board. *Core competencies for the practice of psychology in New Zealand*. http://www.psychologistsboard.org.nz/cms_show_download.php?id=41
- The New Zealand Psychological Society. (2007). Supervision for registration scheme. *The Bulletin*, 109, 36-37.

The role of partnerships in the delivery of transformational international service learning

MATTHEW CAMPBELL

Griffith Institute for Higher Education, Griffith University

JAN LONG

School of Education (NSW), Australian Catholic University

BACKGROUND

Within Australia (Bradley, 2008), and likewise in Europe and North America (Zemsky, 2006), higher education is being urged to engage and commit to imperatives of social inclusion and equity through a variety of strategies at the local, national and global levels. The agenda of social inclusion, particularly in light of recent government policy in Australia, is conceptualized at two levels; the first being the engagement of a range of students from previously under-represented demographics, and also for the university sector to extend its engagement with broad sectors of society empowering previously disadvantaged communities (Alexiadou, 2010). It is the second understanding in which this paper is located, as universities are realizing the potential value of service learning projects as mechanisms for meaningful student engagement within practice settings. Such experiences are seen as 'going beyond' the normal learning that is associated with 'traditional' cooperative education programs. Cooper, Orrell & Bowden (2010) conceptualise service learning as an extension of work-integrated learning, where service learning, particularly in a globalized context, facilitates the capacities of students to view themselves as agents of transformation. As contested by Hoekema (2010); "students who spend time volunteering during college, compared to those who do not volunteer, become more convinced that individuals can change society, feel more committed to personally affecting social change, and develop stronger leadership skills" (p. 10).

Commitments to engagement by universities with the community are often conceived as partnerships between the various organizations "based on a mutually beneficial exchange of knowledge and expertise between universities and communities" (Australian Universities Community Engagement Alliance, 2010, p.1). Partnerships hold many advantages and support the likelihood of success in achieving goals of engagement and empowerment as there is a common belief that more can be achieved by working together, in a consortium, rather than by working individually (Brown, Reed, et al., 2006). In particular, partnerships often provide avenues of access for the university sector into identified communities, which facilitates the translation of academic work (theory and research) into practical solutions and activity. In particular, such partnerships can provide opportunities for university students to utilize the skills and knowledge developed during their time at the university, in challenging environments and practice settings. Working alongside community organisations, universities are able to gain access to a range of settings in which students are able to employ their skills and knowledge to advance the needs of this particular group.

This paper presents a review of a recent partnership between the Australian Catholic University, Rotary Australia World Community Service (RAWCS) and the Government of the Republic of Vanuatu, which facilitated an immersion program of six pre-service teachers within a school in a remote area of Vanuatu. The program also involved the engagement of university academic staff in the delivery of professional development programs to existing school staff. The program has provided a model of community-centered praxis (Singer, 1994), which has seen benefits for the students as well as the school and university staff, laying the foundations for long-term engagement of the University in Vanuatu.

AREP SCHOOL PROGRAM

Arep Secondary School is located on the island of Vanua Lava, Vanuatu, in Sola, the capital of the north province of Torba. It provides boarding school facilities for around 200 students from the local islands, and is the only school in the province allowing students to complete Year 12 (though students are required to move to either Santo or Port Villa for Year 13). Within Sola, conditions and the environment are significantly different to Sydney, Australia. The school has an unreliable source of electricity, provided by a generator within the school grounds, and limited access to running water. The climate is tropical and the town has two unsealed roads, and approximately 3 vehicles, with a population estimated at around 1000 people. The school syllabus is based

upon the South Pacific examinations, but is evolving in line with the government's movement towards a national 'home-grown' syllabuses and curriculum. Despite these different sources, the syllabus is highly reflective of the New South Wales curriculum documents, and pedagogical practices developed through the university teacher education program are easily transferable to the Vanuatu context. Within Arep, due mainly to the changing educational context and a desire amongst the staff of Arep Secondary School for improved student learning outcomes, there presented a significant need for developed pedagogical practices.

The Australian Catholic University, in partnership with RAWCS, undertook in July, 2011 an immersion program at Arep Secondary School for 6 teacher education students (also referred to as student-teachers, due to their dual role as university students, and also as teachers within the classroom) and 2 academic staff from the School of Education. The program primarily aimed to provide for the teacher education students a unique international setting in which they could engage with teaching practice. As such these students were engaged in teaching across the secondary school for a period of two weeks, living in nearby accommodation. Of the six students only one was a secondary trained student, with three others being primary, and the remaining two from the early childhood / primary program. The experience of teaching in the classrooms, therefore, was a different experience for most students compared to what they had previously encountered. This difference provided for interesting and unexpected learning experiences for the students, as well as sources of professional learning for staff within the school. For example, the primary trained students brought to the experience highly developed skills of engaging students in active learning and discussion, which was a key focus of development for the school staff, yet, likewise, the student-teachers learnt more about timing and lesson structure given the nature of a secondary timetable. Complimenting the experience of the student-teachers, and providing a further element of capacity building for staff within the school, was the engagement of the academic staff. This element shifted the program from a simple practicum experience to a model of community engagement and empowerment.

UNIQUE FEATURES OF THE AREP SCHOOL PROGRAM

Common models of service learning, conceptualise a three-way partnership between the university, student and community organisation (or industry partner). This model, represented below as Figure 1, has embedded within relations of power between the various stakeholders. Such a model can be referred to as a triangular model of service learning. The relations of power are highlighted through the unidirectional arrows. An obvious relationship, for example, is between the university and student-teacher, especially where there are concerns of assessment within the particular program. More importantly is the subjugation of the community group by the charitable university. This model characterizes the actions of the university as 'doing' something to the student-teacher (e.g., transmission of learning), both the university and the student-teacher combine to 'do something' to the community organisation, in an act of charity. The university is positioned as the superior source of expertise and knowledge, whilst the community group is powerless and in need of direction. That is, the 'charitable' university provides its expertise and resources to the 'deserving' community (Bingle & Hatcher, 2002).

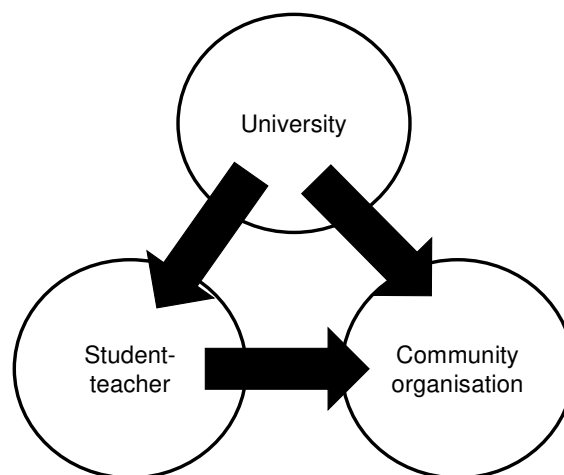


FIGURE 1: 'Traditional' model of Service Learning

The experience of Arep School differs from this model in two significant ways. Firstly, there was a deliberate effort made to ensure that the model was a shared partnership with expertise and resources moving between all partners, thereby empowering each partner in the process for greater social change outside of the immediate project. Secondly, it incorporated a fourth participant, in RAWCS, that facilitated the project organisation, the development of partnerships and provided the basis for future endeavours in a range of other settings. RAWCS also provided a facilitation of engagement with the community group, Arep School, so the school had a voice in shaping the activity of the university.

The model, represented as Figure 2, created an experience that was constructed around a position of community-centered praxis (Singer, 1994), or what can be referred to as a 'tetrahedral model' of community partnership, visually represented with the community organisation at the apex, and as the central-focus, of a four-sided partnership. This model enabled the partner school to identify specific needs, with solutions formulated through a collaborative process, which engaged the school, the university academics and the students partaking in the immersion experience. This model differs from normal teacher professional experience programs, and 'traditional' service learning models, which position the student-teachers as learners, partnered with an expert classroom teacher, supported by university representatives. In this model the professional experience was a collaborative exercise in which the student-teacher was both learner and teacher, working in collaboration with the existing school staff, alongside and mentored by the university academics. As Cooper, et al. (2010) contest, effective partnerships which support service learning are best grounded in concepts of reciprocity and multidirectional flows of needs and benefits. This element of collaboration and shared values was a central tenet to the success of the program empowering all partners in realizing the shared goals of the project.

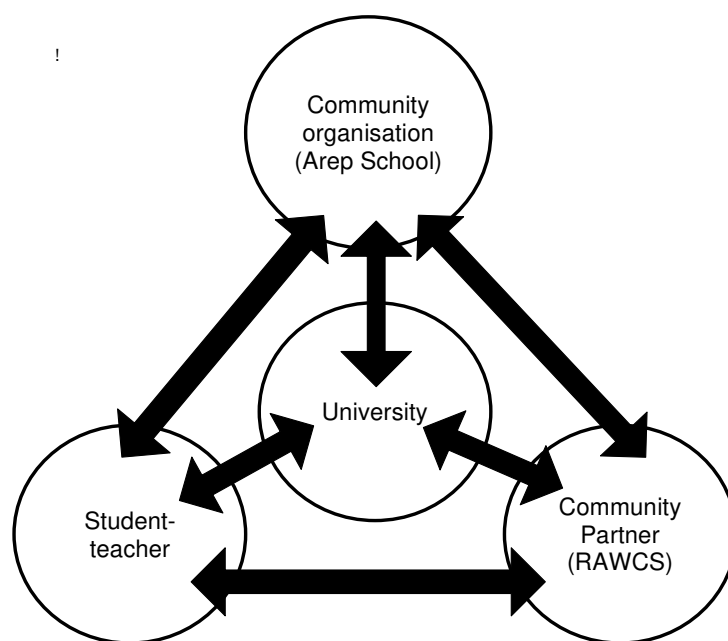


FIGURE 2: 'Tetrahedral' model of community partnership

DISCUSSION

The model of partnership adopted in the project created greater complexity in the relationship between the university and the partners, but this was off-set by the ability for the community partner (RAWCS) to take responsibility for many of the organisational aspects of the project; for example insurance, flights, accommodation, etc, thereby reducing the organisational workload of the university staff enabling greater focus on the social goals and educational outcomes. The formation and sustainability of this partnership required considerable energy and negotiation. Rotary had been working within the Sola community for nearly a decade

prior to this project, therefore held a lot of the social capital and networks in the relationship. However, there also existed a shared professional understanding between the teaching staff within the school and the university staff that was outside of the existing relationships. At times these 'external' relationships came into conflict with each other and re-negotiation of position and power occurred as a consequence. Such a process is to be expected within a complex relationship such as that which is described here, and, to some extent, is a necessary process to ensure that the partnership is truly mutually beneficial and equal.

Within the 'tetrahedral model', the most interesting aspect is the empowerment of the students to manage their own experience. A consultative process was had between the university academics and school leadership team to create some common understandings of need and resources, and as a simple professional development program this conversation would have normally remained within this relationship. However, with this project the student-teachers brought recent classroom experience, novice energies and passionate pedagogies that both complimented and extended the professional development program. Working with the university academics as mentors the students were challenged to create sustainable resources and pedagogies that they could demonstrate and share with the staff in the school, as well as negotiate with the school staff to have a reciprocal sharing of expertise. Unlike 'normal' professional experience programs, based on a novice-expert model of apprenticeship, where a student-teacher is subjugated to the expert-teacher, this experience required the students to be able to operate at the level of an experienced teacher, and work alongside the school staff as peers and colleagues.

This experience, although being incredibly worthwhile and beneficial to all concerned, was by no means without challenges. Within any partnership there must occur processes of critical reflection and review. Likewise, within this partnership similar processes had to occur. A critical element to the success of partnerships is open and equal dialogue and communication. Given the geographical locations of the partners and the inability to secure reliable communication technologies, at times the level of communication between the partners was not as high as would have been hoped. Often this required assumptions to be made based on reasonable judgments and previous experience of some participants in Vanuatu. Some of these assumptions did not, naturally, marry with the reality. Therefore, such partnerships and experiences require great flexibility by each of the partners to compensate for that which does not meet the ideal.

One of the great challenges, and also learning opportunities, from this partnership has been the realization and negotiation of cultural positions. For example, coming to understand the cultural hierarchies of the school community presented as a challenge for the students that were used to the experience of a more democratic school culture. Also understandings and demonstrations of the role of the teacher varied considerably between the student-teachers and school staff. The challenge was not to note these differences but to develop an appreciation that both can be simultaneously productive and correct. It is this negotiation of respect for difference and diversity that presented as the most significant outcome of this experience.

CONCLUSION

A tetrahedral partnership enables universities to be more fully engaged with greater numbers of community groups and to reach further than their immediate networks. Beyond working with Arep School, RAWCS has partnership programs in many countries throughout the world and therefore may provide a future stepping-stone for similar experiences to be undertaken in a variety of other settings. Such a partnership program needs to be engaged and understanding of the needs of the community group giving voice to them in the process. Although the university is often the conduit that leads the conversation, it is the community group that needs to be at the centre of focus and empowered to shape the outcomes. This model is not about the university 'doing things to' or graciously with the community group, but enabling the community group to choose to do things, in partnership, with the university.

REFERENCES

- Alexiadou, N. (2010). Social inclusion and social exclusion in England: Tensions in education policy. *Journal of Education Policy*. 17(1), 71-86
- Bingle, R., & Hatcher, J. (2002). Campus-community partnerships: The terms of engagement. *Journal of Social Sciences*. 58(3), 503-516
- Bradley, D. (2008). *Review of Australian higher education final report*. Commonwealth of Australia. Accessed at <http://www.deewr.gov.au/HigherEducation/Review/Pages/ReviewofAustralianHigherEducationReport.aspx> on 4/10/11

- Brown, R. E., Reed, C. S., Bates, L. V., Knaggs, D., McKnight-Casey, K., & Barnes, J. V. (2006). The transformative engagement process: Foundations and supports for university-community partnerships. *Journal of Higher Education, Outreach and Engagement*, 11(1), 9–23.
- Cooper, L., Orrell, J. & Bowden, M. (2010). *Work integrated learning: A guide to effective practice.*: Abingdon: Routledge.
- Hoekema, D. (2010). Is there an ethicist in the house? How can we tell? In E. Kiss & J.P. Euben (Eds.) 2010 *Debating Moral Education: Rethinking the Role of the Modern University*. Durham, NC: Duke University Press.
- Singer, M. (1994). Community-centered praxis: Toward an alternative non-dominative applied anthropology. *Human Organisation*. 53(4), 336-344.
- Zemsky, R. (2006). Three challenges for higher education. *Continuing Higher Education Review*, 70, 37-46.

Getting stuck in: Learners participation in an online community of practice.

DIANA AYLING, EDWARD FLAGG

Te Puna Ako, Unitec Institute of Technology

BACKGROUND

As Web 2.0 technology embeds into work and education, increasingly online communities are being established to support work integrated learning courses. These communities connect students, teachers, and workplace hosts in an online environment which is based on Internet software applications (apps). While participating in the online community students, staff and hosts are expected to be both autonomous learners and to collaborate with others. The online communities become virtual professional development for students while on placement.

There is little research and publication about the experiences of learners participating in online communities. As the technology that supports these communities is relatively new,¹ there is little evidence of how learners engage in these communities and how they are supported in their professional learning.

In the course of our work as academic developers for a New Zealand Institute of Technology, the authors built a small handful of online communities of practice (CoPs) in September of 2009 for our teaching staff. One of these communities of practice, "The Teaching and Learning Community at Unitec" had, by early 2011, evolved into New Zealand's largest and most active online teaching and learning community of practice, with over 280 members from across New Zealand and around the world.

The aim of our research was to find out how workplace learners engage in an online environment. We were particularly interested the type of participation demonstrated by our members. Our research into members' participation gives some insights into the advantages and benefits and the barriers and issues with online learning communities.

INTRODUCTION

The Teaching and Learning Community is a place where teachers share ideas and experiences, create resources, form their online professional identities, join groups and announce events. The site is, as Wenger, White and Smith (2009) remind us, a location for social learning with three basic characteristics, a domain, a practice and a community. The Teaching and Learning Community domain is education, members have education as a fundamental core in their professional identity; the practice is a sustained, shared engagement in the technical skills of design, facilitation, assessment, evaluation, professional development, and scholarship; and the community fosters social learning with relationships built on trust, mutual engagement, well-managed community boundaries, and members willing to take leadership roles to sustain and develop enquiry. The Teaching and Learning Community is where teachers connect and learn and it has become an essential part of our work as academic developers.

The design, creation, and recreation of the Teaching and Learning site at Unitec Institute of Technology was influenced by the writings of Wenger, White and Smith (2009), Preece (2003) Schlager and Fusco (2003), Johnson (2001), Handley(2006) and Ardichvili (2003). It was Preece (2003) who explained theories relevant to online communities are drawn mostly from the social sciences, particularly sociology, anthropology, social psychology and linguistics. No particular theory or set of theories has dominated research on online communities. However, some recurrent themes including design, theory, and practice have emerged (Preece, 2003).

Fundamental to the learning theory of communities of practice are the concepts of participation and reification (Wenger et al., 2009). Participation is observed from individuals' engagement with the activities, conversations, and reflections taking place in the community. The production of artefacts for the community, documents, concepts, theories, stories, and links are forms of reification (making into an object). These are important because they reflect a shared experience and indicate the level of organisation in the community. To be

¹ As recent as 2007.

successful communities of practice need to balance both participation and reification as these processes ensure knowledge is created and shared (Wenger et al., 2009).

Ardichvili (2003) concluded that any online community of practice cannot survive trust. He identified three factors present in a supportive environment.

- 1) A set of institutional norms based on trust that foster knowledge sharing,
- 2) Multiple face-to-face communities that provide a foundation for knowledge based trust, and
- 3) Clearly communicated norms about knowledge sharing, examples of what is acceptable and what constitutes a breach of the rules.

Schlager and Fusco, (2003) used the Activity Theory Framework, (Engestrom, 1987, 1999; Cole & Engestrom, 1993) to analyse how individuals and groups engage in an online community. They explained that participating in the online community is a new project (activity), designed to support and develop members (subjects), to use new activities, and information (tools), to improve their performance (object). To do this, members must take on new collaborative roles (division of labour) based on values and norms (rules). The members are encouraged to develop trust in and form a lasting community with one another as they implement new ideas in their practice. These elements became key themes in our research into the Teaching and Learning Community.

Handley (2006) explained the concept of “participation” as a meaningful activity where meaning is developed through relationships and shared identities (though there is still a distinction between emic [meaningful to me] and etic [meaningful as observed by others]). Handley believed “practice” could be simplified because it is limited to observable activity rather than the relationships and meanings which such activity may or may not imply. Handley (2006), Roberts (2006), and Wenger (2009) identified different forms of participation which are peripheral, full, marginal or contingent. These concepts were important to our research design.

Maximizing the development of a community of practice was the ultimate goal of the community co-ordinators and technology stewards of the Teaching and Learning Community. The first phase of our study was setting up a virtual community (i.e., based on a review of the literature of virtual communities and communities of practice), observing the emergent community behaviour, and implementing support in the form of collaborative techniques, facilitation, and adequate scaffolding. In the second phase, we monitored and reflected how the community developed practices because of and/or in spite of the intended design.

AIM

The aim of this research was to find out how workplace learners engage in an online environment, how they connect, and how they learn. One aspect of engagement we were particularly interested in is participation of the members of the community within the online community of practice.

METHOD

The study was of three months duration. It employed a single survey and an examination of the Teaching and Learning Community website using platform observation and Google Analytics. At the time of the survey, there were 280 members of the community and 23 members responded to the survey. The return rate of less than 10% is not uncommon in online environments, where a small core are fully participating members.

In preparing our study, we were influenced by the writing of Johnson (2001) who believed a valid case study could be constructed as follows:

- 1) Design a virtual community,
- 2) Provide support scaffolding,
- 3) Predict how the emergent community of practice will use the designed elements,
- 4) Monitor how the community develops practices because of and/or in spite of the intended design, and
- 5) Implement revisions that make learning more efficient.

Johnson noted that discrepancies between the intended design and the emergent usage would surely exist, therefore, the observant effects should yield insight in refined design—an iterative process. In constructing our survey and in monitoring Google Analytics we sought to refine the design of the Teaching and Learning Community.

In the first phase of the study a literature search was conducted. The review was presented as a topical interest paper at the New Zealand Cooperative Education Conference in Napier in April, 2010 (Ayling & Flagg, 2011). In the second phase of the research, the researchers have taken a two-pronged approach: we invited all members to participate in an online survey and we data-mined the site using Google Analytics and basic platform observation (of resources, member data and other artefacts) to gather basic demographic and usage information. We are aware of the drawbacks in using surveys to gather data due to the low response rate, however, we wanted to be able to gather data from all participants wherever they were based in the world (Preece, 2003). An online survey ensured everyone had the opportunity to participate and share their thoughts and experiences.

The purpose of survey was to find out how members are participating in the community, what they would like changed, and what they think of learning and technology from their experiences of participating in an online community. We obtained data that demonstrated users' understanding of the Domain, application of the site's resources in their Practices, and how their sense of the Community was working in their social learning within the community of practice.

RESULTS

In analysing the members' engagement in the community we identified evidence of participation and reification. Interestingly, just over a quarter of the members (27%) had uploaded a photo of themselves to their profile page in the community of practice. We considered that uploading an identifying photo is one indicator of a strong active presence in any community. As the literature explained (Brown & Duguid, 1991; Lave & Wenger, 1991; Wenger, 2009), more than three quarters of the members of any online community take the valid role of passive consumers of community cultural artefacts (resources, knowledge, skills and values). This interested us because on the face of it, this a photo as an indicator of online presence fits well with the definition of participation in an online community of practice.

There were some behaviours that indicated a strong and active presence in the community of practice. Resources were created and developed by members through our blog posts while discussions on specialty topics in education were held in groups. A strong online presence was demonstrated by the number of resources a member created and shared (blog posts) and participation in a variety of discussions in the community groups.

At the time of joining the community a clear majority (68%) claimed they were 'confident' or 'very confident' of publishing ideas online. However, at the time of analysis, 254 resources (blog posts) had been created, 223 of them (88%) by the two primary drivers of the community of practice. Another 25 posts (10%) had been written by four other members of the community, and the rest were one-offs by various members. While this behaviour seems to contradict members' perceptions of themselves, it appeared to align with the widely held belief that most community of practice members would be valued 'lurkers' (peripheral participants), reading others' ideas but not sharing their own. This was our first indicator that members perceptions of themselves did not match the reality of their behaviour.

The community hosted fourteen groups, all of them education-related, with an average of 15 participants per group. Many members had overlapping interests so many of these participants were the same members. While there were only a few drivers of the community of practice, and most members would prefer to consume the community's resources than produce them (again, this is perfectly normal for an online CoP) there was a circle of members willing to develop their knowledge and understanding through conversation. This group of experts was however, small.

We analysed data usage for the month of August 2011, which indicated that although most members are not creating resources or sharing ideas, a great many are accessing what was available in the community. In August 2011, the site received 904 hits, or slightly over 29 hits per day. With an average of 10% of users accessing the site daily, the large portion of members who did not produce community resources were consuming them.

Members responses to the survey provided further insight into members participation in the community. Using themes identified in the Learning Activity Framework we have categorised members around activity, subjects, tools, object, division of labour and rules.

VALUE TO MEMBERS (ACTIVITY)

The members were generally appreciative of a community of higher education teachers sharing and supporting each others practice and professional development. The idea of creating and maintaining an online community of practice to support higher education teachers, was both accepted and valued.

Fun trying to keep up though - not a negative experience at all, rather it is inspiring to see how many different new ways there are to do the same thing and how others are learning.

The T&L Ning is a perfect example of organic growth.

I love the TLC site. It's a fantastic resource for teachers at Unitec and needs to be more broadly known and used. I suspect use of it will grow as more and more teachers learn of it through others or through courses they take.

I appreciate the new things that I gleam and glad it's not me having to drive it.

I think the site has really flourished into an important hub of useful contacts, resources, perspectives and insights. I always suggest to staff I work with that they join the Ning, especially for the common interest groups, discussions, event notifications, and blogs.

PARTICIPATION (SUBJECTS)

Respondents acknowledged different levels of participation. Although supportive of the online community, they were not necessarily ready or able to be an active member. One respondent explained their position of supporting the development of the online community to support learning, while as the same time remaining on the periphery.

I agree with it. I know from my knowledge of communities of practice that some people stay on the outskirts of the community. I seem to be there at the moment.

There is no doubt any online community functions best when there is both online and offline engagement between members. During the period of the research the community held a number of events which drew members together for a specific purpose. These were well supported and enjoyed. A respondent explained that without the face-to-face meetings and making connections they were unlikely to remain in the community.

I find it difficult to engage with "profiles" rather than people with whom I have some connection. I think without that connection I am likely to leave rather than evolve with the group, as I feel no loyalty or reciprocity with it.

Another respondent suggested increasing the face-to-face interaction of the community.

I think there may need to be physical (ie personal) interaction to develop a more tangible feeling of community.

LEARNING ABOUT PRACTICE (OBJECT)

One respondent made a clear connection between learning online and practicing new skills. They stated:

However, CoPs are the place where I have learnt and shared. But, in order to truly learn I need to practice more and there is a limit to the time I have to do this effectively. Practising once is not enough, of course.

Another respondent spoke of the positive sense of innovation and creativity provided by an online community.

The Ning is quite liberating, because in a sense, it enables us (participants) to leave the box (figurative or actual!) in which we work, and cast off the restrictions and 'urgency' of our day to day roles to reflect, explore and give commentary on those issues which are important in our practice, or about which we are truly passionate.

Although the participants were keen to learn more about practice they were not willing to share their own. This is one of the most interesting aspects of our research, and indicates a gap in higher education teachers' understanding of their professional responsibilities. It has taken fine analysis of an online community of practice to uncover an unusual lack of reciprocity between members of a professional community. Participants indicate they view the community as additional to their practice and not part of it.

PARTICIPATION (DIVISION OF LABOUR)

Three main barriers to participation in the online community arose from the research data. Technology, trust and clarity of purpose were matters that prevented some members for full online engagement. The respondents themselves were curious as to the barriers to engagement, one respondent stating:

I would be concerned how this community of practice is evolving, there is very little community participation. Is this because members are too busy or because they lack the skills to participate.

We believe it is a combination of knowledge, skills and values which prevent full participation in the community. Members may have gaps in terms of their understanding of communities of practice and their role within it. Some members may lack technological, or technical skills to connect and share. Others, may be confused as to the values/rules than underlie a community of practice and their role within it.

COMMUNITIES OF PRACTICE, TECHNOLOGY AND CHANGE (TOOLS)

An online community of practice offered familiar and unfamiliar challenges. Some respondents realised the technology was an integral part of the community but not the community itself, stating: *"I think technology supports community rather than fosters it."* The technology enabled the community to communicate and share across physical boundaries, but it was the members and their practice that were at the heart of the community. This is a key understanding from this research.; technology supports practice and learning.

A number of members who joined the online community and remained on the periphery. They were content to consume the artefacts, and observe activity online than to share their ideas and practice. One respondent provided a clue to this type of engagement.

I agree that CoPs offer useful perspective on technology and to me this one demonstrates the members need much more training to be confident in participating.

Other members expressed a feeling of being overwhelmed by both organisational and technological change. The ongoing creation of new technologies, expectations of digital literacy and need to evidence practice in an increasingly accountable higher education environment is creating new pressure on teachers.

I have become more of a 'lurker'. I try and share everything I learn from this CoP and from others but many colleagues are in the same situation as me and are becoming overwhelmed.

Not all members had the capabilities, confidence, time or interest in participating online. Change needs to be carefully managed with support and training. One respondent provided some advice:

I think the site is approaching critical mass for groups to really start providing more of their own content and direction, it's just a matter of developing confidence, and of some members to make the shift from seeing themselves as information seekers, to contributors.

We agreed and considered training for teachers in higher education should cover technological, technical and professional knowledge, skills and values. These are the key elements of a learning curriculum for our community, and something we will now foster and explore with our members.

Participation/non participation is behaviour which reveals something more important – identity. It was the essence of moving from novice, to practitioner to expert in the field of higher education. Our community we concluded has very few experts, some practitioners and many novices, some of whom have been teaching for a length of time.

A CULTURE OF TRUST (RULES)

Although none of the respondents identified issues of "trust" explicitly, it is clear from the literature, that trust is a key element in a successful online community of practice. (Roberts, 2006; Schlager, 2003). The public/private issue was important for some members. The online community of practice was open to the public and included a small section for members only. Some members would have preferred the whole site for members only, with no public access. One of our respondents stated:

A good example is the opening of the Ning to members outside Unitec - a decision which I had no say in and which constrained my willingness to participate.

Clearly, members are challenged in an environment which requires publicly sharing of ideas and activities in an online environment. This is an issue that the researchers have highlighted as needing further discussion with members. For many members learning is a private activity.

CLARITY OF PURPOSE (OBJECT)

One respondent raised issues of reasons and purpose of the online community stating:

I want to know what the aims and/or objectives are, so that I can assess from the outset whether my time is best served participating in such a forum.

Similarly, another respondent stated:

It's all a bit too vague and airy fairy for me in terms of my precious time. I like to know beforehand what I will get out of any time I put in.

In terms of activity theory it is clear members want to know the rules before fully engaging. It is therefore the role of community co-ordinators and technology stewards to specify roles, rules and purposes of the community. The researched community developed organically and these matters were not clear as the community was being established. Once more people joined and began to participate the need for clarity was increasingly evident. In addition, there is an opportunity to provide greater support and discussion on what it means to be a higher education expert practitioner. We realised we lacked an explicit curriculum of study for our higher education teachers in a community of practice and this hampered the ongoing development and level of participation of members.

CONCLUSION

The community of practice was useful and relevant to higher education teachers. It was characterised by a core of members, primarily the technology stewards, driving the Community, ; a slightly larger group of members tried their hand at sharing ideas and participating in group discussions; and on the vast periphery, the majority who read but did not share. By all appearances, it is a classic, healthy Community of Practice, creating, developing and managing knowledge, skills and values.

Our research indicated that an online community of practice for teachers is complex and closely connected to identity. Teachers have responded positively to participation in an online environment, although, participation can range from "lurking" to active engagement. There are barriers to teachers' participation including, technological skills (digital literacy), pace of change, trust, and clarity of purpose. Other barriers include confidence, technical teaching knowledge and understanding of, and commitment to professional responsibilities.

Our community has a greater number of novices, than we would have anticipated. Many members did not know how to participate in an online learning environment. This places a greater demand on the few experts to steward the learning and development of both novices and practitioners. Questions arise as to how online communities of practice fit within the general education of teachers in higher education environments.

There are clear parallels with students and work integrated learning environments. If students, staff and workplace hosts are to be connected in an online environment, a number of similar issues will arise. There will be a large number of novices, few stewards, and challenges for many participants to use their technological, technical and professional knowledge and skills. Weaknesses in the students' curriculum of study will become evident in an online community as they are challenged to not only consume but also produce resources for the community.

There are challenges in stewarding an online community of practice. Our ultimate goal is to foster a community of practice by maximising its development. To do this we are aware the conditions need to be present to maximise the participation and contribution of the members of the community. An online community of practice is an excellent support tool for the development of new professionals. It needs to be constructed to support and acknowledge learning and to be explicit about the purpose of professional learning. The curriculum will need to include the technological, technical, and professional knowledge of the domain and the field of study. The community will require stewarding and co-ordination from experts, who may well have to up-skill in technology. Online communities of practice can support learning across the barriers of time and space and immediately support students learning in the workplace.

REFERENCES

- Ayling, D., & Flagg, E. (2011) Being where teachers are - an online community of practice for tertiary teachers. In: K.E. Zegwaard (Ed.), *New Zealand Association for Cooperative Education 2011 Conference Proceedings* (pp. 25-27). Napier, New Zealand: New Zealand Association for Cooperative Education.
- Ardichvili, A., Page, V., & Wentling, T. (2003) Motivation and barriers to participation in virtual knowledge-sharing communities. *Journal of Knowledge Management*, 7(1), 64-77.
- Brown, J. S., & Duguid, P. (1991) Organisational learning and communities of practice: Toward a unified view of work, learning and innovation. *Organisation Science*, 2, 40-57.
- Cole, M., & Engestrom, Y. (1993) A cultural-historical approach to distributed cognition. In: G. Solomon (ed.) *Distributed cognitions: Psychological and educational considerations* (pp. 1-46). Cambridge, UK: Cambridge University Press.
- Engestrom, Y. (1987) Learning by expanding: An activity-theoretical approach to developmental research. Helsinki: Orienta-Konsultit.
- Engestrom, Y. (1999) Expansive visibilization of work: An activity-theoretical perspective. *Computer Supported Cooperative Work (CSCW)* 8(1-2), 63-93.
- Handley, K., Sturdy, A., Fincham, R., & Clark, T. (2006) Within and beyond communities of practice: Making sense of learning through participation, identity and practice. *Journal of Management Studies*, 43(3), 641-52
- Johnson, C.M. (2001) A survey of current research on online communities of practice. *The Internet and Higher Education*, 4(2001), 45-60.
- Lave, J., & Wenger, E. (1991) *Situated learning: Legitimate peripheral participation*. Cambridge, UK: University Press
- Preece, J., & Maloney-Krichmar, D. (2005). Online communities: Design, theory, and practice. *Journal of Computer-Mediated Communication*, 10(4) <http://jcmc.indiana.edu/vol10/issue4/preece.html>
- Roberts, J. (2006) Limits to communities of practice. *Journal of Management Studies*, 43(3), 623-39.
- Schlager, M., & Fusco, J. (2003) Teacher professional development, technology and communities of practice: Are we putting the cart before the horse? *The Information Society*, 19, 203-220.
- Wenger, E. (1998) *Communities of practice: Learning, meaning and identity*. New York: Cambridge University Press.
- Wenger, E., White, N., & Smith, J. D. (2009) *Digital habitats: Stewarding technology for communities*. Oregon: CPSquare.

Seven barriers to graduate transition: Does cooperative education help students find jobs?

DAVID SKELTON

Faculty of Business and Computing, Eastern Institute of Technology

BARRIERS TO GRADUATE JOB SUCCESS

This paper explores the issues that may be hindering tertiary graduates from entering career-level jobs in their field of study in New Zealand. There are various viewpoints on this issue, from some that argue that universities and institutes of technology (ITP) should focus on excellence within their programmes, aim for a holistic graduate profile but leave the graduate transition to individual choice and the market place. However, there is evidence that institutions are looking more closely at the barriers to graduate transition in a more institute-wide approach, probably influenced by downstream market signals (graduates finding it more difficult to find work) and government signals with the Tertiary Education Commission (TEC, 2012) new strategy document outlining goals of measuring successful graduate transition. The New Zealand (NZ) Government is aiming to require tertiary providers to demonstrate connections between students and employers and have the agility to respond to market signals.

A previous study did conclude that the cooperative experience does increase the likelihood of students gaining employment in their graduating field with evidence that the rate of immediate employment of cooperative students by the sponsor organisations is greater for internship students than for non-embedded project students (Skelton, 2009). The cooperative literature also suggests that students do achieve more immediate employment success following an internship experience particularly (Gault, Redington, & Schlager, 2000). This paper explores this issue from the perspective of identifying and describing barriers to relevant employment. Responses were collated from an initial broad staff investigation into their impressions of the experience of graduates from various degree and diploma programmes at the Eastern Institute of Technology (EIT). It is hoped that the investigation at EIT could be useful in a wider context as well.

NEW ZEALAND GRADUATES AND EMPLOYMENT

According to the NZ Department of Labour, over 56,000 people aged between 15 and 24 in New Zealand are neither employed or in training (Department of Labour, 2011). A recent headline in the NZ Herald newspaper stated that "job issues dominate students' worry list" (New Zealand Herald, 2012, p.A6). According to this report based on Colmar-Brunton research, 21% of 1000 tertiary students surveyed reported that their biggest fear when leaving study was not being able to find employment in their chosen field. EIT has participated in a comprehensive graduate destination survey which is beginning to build a more accurate picture of the percentage of jobs gained in students' field of study; however, specific details of the EIT graduate destination are being kept confidential currently.

REASONS FOR UNSUCCESSFUL GRADUATE TRANSITION

In economic terms, any mismatch between available workers (for example recent graduates) and available jobs is described as frictional unemployment (Shimer, 2005). The mismatch may be due to skills, pay rates, time flexibility, location, personal preferences and many other factors. Even workers in permanent jobs may still feel that they are somewhat mismatched to their position and will either add further training, change positions internally, or change jobs to seek a better match for themselves. Interestingly, some of the staff responded to this campus-wide enquiry with a comment that this issue of graduate transition has applicability to in-work people who may have achieved postgraduate qualifications and yet not necessarily achieved higher-level positions.

SEVEN BARRIERS TO GRADUATE EMPLOYMENT

The following discussion outlines seven particular barriers to graduates finding and succeeding in early career employment. This is not seen as an exhaustive list.

1. *Language, Communication and International transition*

The international section of EIT reported that they are interested in this investigation as international students all want information on job-seeking. The prospect of job seeking success does have an effect on recruitment decisions by international students. Therefore, some historic statistics on employment outcomes for internationals would be helpful. Although language and communication were identified by staff as one of the main barriers, international students may not be able to study English alongside their courses as they are deemed to be proficient in English through achievement of International English Language Testing System (IELTS) levels in order to come to study. The other international barrier is perceived to be about racial bias in new employment situations. "Some migrants feel their overseas employment history is being dismissed as Kiwi employers are favouring people with experience in the New Zealand workplace and have little understanding about overseas companies" (Newswire, 2011). Friedman and Krackhardt (1997) found that the lack of social ties in the workplace negatively influences job success rates and returns on education for Asian immigrants, suggesting that access to high-status organizational members influences professional success and recent immigrants tend to lack such access.

2. *Open Access Enrolments and Staircasing Arrangements*

In recent times there has been a widespread movement to set up lower level programmes which allow students who have not achieved university entrance or even NCEA level 2 at secondary school to enrol in foundation programmes, and then gain entrance into degree level programmes. This does achieve a worthy goal of inclusiveness and provides a second or third chance to students who have not achieved academic success early. But it may allow entrance of uncommitted students into programmes that they are not equipped or motivated for. Many students who do not complete their qualification (thus facing more barriers than the graduates) do so because they cannot see a connection between their programme and visible jobs in the labour market (Harvard, 2011). A lack of a sharply focussed graduate profile was mentioned by some staff at EIT as an issue affecting students' clarity. The generalised graduate profile popular throughout the tertiary sector tends to avoid addressing direct employability.

3. *Artificiality of Industry Project / No Workplace Experience*

Although many programmes at EIT and other institutes do provide industry experience, some of these do not have any longer term network benefits for the students. For example, a student may create a website for a small company as their capstone project but this company will not have any ongoing work in this field. The student would need to seek employment with a web development company; therefore, it may be advisable for the student to attempt to arrange a project where they are developing on behalf of a web development company. Comments from students from the EIT graduate destination survey across a range of programmes suggest that students do desire more direct work-place experience integrated into their degrees.

4. *Lack of Personal Development and Professionalism*

Social change has had an impact on the delayed effect on youth working fulltime and providing for themselves. Young adults are taking longer to become economically self-sufficient and by the age of 30, only half as many young adults achieve all of the traditional markers of adulthood as in the previous generation (Harvard, 2011).

Some feedback from staff at EIT indicated that their students were not preparing resources such as CVs or LinkedIn accounts during their time in tertiary study although were encouraged to do so. Many students enrol in a programme at EIT without knowing what eventual employment in that discipline involves. Results from the Australasian Survey of Student Engagement (AUSSE) survey undertaken at EIT in 2011 showed that 81% of EIT's Degree students do not keep their resume up to date. 87% have not contacted the career services for advice at any time and only 50% have thought about how to present themselves to potential employers. There appears to be a belief amongst students that by simply fulfilling the course requirements that this is taking care of all future issues of connecting to their industry. The hidden job market is not investigated by the student until after graduation by which time they are less connected with the industry via their faculty.

5. *Economic, Governmental and Geographic conditions*

A number of Schools at EIT commented that they estimated from anecdotal conversations that their graduates are experiencing it harder to get jobs over the previous 12 months. Some particular graduates have also been affected by the government changing the criteria for working in government sponsored areas. Another school at EIT reported that geographical isolation in Hawkes Bay reduces their students' options and those that leave the area fare better. To help students in their graduate transition, information could be compiled on job types available by region which may signal to students and graduates where more jobs in their specialty are available. However, while geographical job-market scanning may be helpful to the student, this may be sensitive data as tertiary institutes are under pressure from TEC to prove their programmes do supply a local need.

6. *Changing Technologies and Market Requirements*

Many junior entrance-level jobs still stipulate a minimum of two years experience as well as a qualification. A daily scan of Graphic Design jobs on Trade Me and Seek in NZ over a one week period in January 2012 revealed 36 jobs in this field with only one available for a graduate with no industry experience. Once this barrier is identified then there may be opportunity for students to re-package and present their cooperative experience within their qualification as 'experience', however, this is still no match compared with applicants who do have a period of full time work experience in addition to their degree.

Individual courses and major programme changes can be difficult to adapt quickly to changing skill requirements in industries. Graduate nurses are another group who do find jobs but often overseas. They are a group of particular interest as we know that the workforce requirements for nurses will be high once the baby boomer nurses start retiring over the next few years, but currently in provincial areas younger nurses are finding job-seeking more difficult. Picking winners in the job market is problematic and the new TEC strategy will attempt to achieve this by trying to match learners to market/industry needs. However, these matches can change quickly, for example, IT may be in demand for the next two years, then fall off – meanwhile an institute may have ramped up their programme and resources in response to the increased demand for IT graduates. Staff also mentioned the lack of research on what needs the qualification is going to meet in relation to the desired student career intentions. Institutions can be constrained to make changes quickly for student learning environments in order to match changing market conditions.

7. *Networking and Personal Connections.*

Some feedback from staff included their perception of the advantage of students having connections with parents, family and friends who may be in a position to have influence on the decision maker. In addition to the success of formal internships with organisations, a growing trend for some students at EIT is to find their own informal workplace experience in their field during holiday breaks or part-time during their studies. This often then flows into the formal cooperative experience within their qualification or assists in their transition into full time work after graduation. Social media was also mentioned as a 'connector' to those working in the industry.

CONCLUSIONS AND IMPLICATIONS

It is useful to realise from this preliminary investigation that tertiary organisations are not solely responsible for overcoming all of the identified barriers to a successful student transition to work. Students, tertiary providers, Government, economic conditions and freedom of choice all have a contributing effect on how the student fares in their progress after graduation. Students make mixed evaluations on their programmes of study with programme and subject choice sometimes ranking higher than perceived job prospects initially. There is an obvious widespread recognition of the issue amongst EIT staff and a willingness to adapt the institute's methods and add services to assist students.

EIT is investigating setting up a form of work-integrated learning (WIL) advice unit to support WIL across the entire institute. Some of the issues for such a central unit include caution with the identification of programmes in terms of winners and losers. There are programmes by their very nature that are not as directly career-focussed (e.g., Art) as others (e.g., IT). Discussions have been held with the Careers Counsellor and the Business Liaison Manager around how WIL assistance could be set up and assistance offered. In line with the conference theme of 'getting stuck in together', the experience of EIT and other institutes indicate that more tertiary organisations are moving into a phase of taking a campus wide approach to addressing these issues of graduate transition and work integration learning responses.

REFERENCES

- Department of Labour. (2012). *The impact of the recession on young people*. Retrieved from <http://www.dol.govt.nz/publications/lmr/hlfs-investigation-reports/recession-impact/index.asp>
- Department of Labour. (2012). *Youth in the New Zealand labour market*. Retrieved from <http://www.dol.govt.nz/publications/lmr/hlfs-investigation-reports/recession-impact/index.asp>
- Friedman, R.A., & Krackhardt, D. (1997). Social capital and career mobility. *The Journal of Applied Behavioral Science*, 33(3), 316 – 335.
- Gault, J., Redington, J., & Schlager, T. (2000). Undergraduate business internships and career success: Are they related? *Journal of Marketing Education*, 22(1), 45-53.
- Havard. (2011). *Pathways to prosperity*. Retrieved from http://www.gse.harvard.edu/news_events/features/2011/Pathways_to_Prosperty_Feb2011.pdf
- Newswire. (2011). *Recession not the only job barrier for migrants*. Retrieved from <http://www.newswire.co.nz/2011/03/recession-not-only-job-barrier-for-migrants>
- New Zealand Herald. (2012). *Students flee NZ over job fears*. Retrieved from http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=10787888
- The Royal Swedish Academy of Sciences. (2010). *Markets with search frictions*. Retrieved from http://kva.se/Documents/Priser/Ekonomi/2010/sciback_ek_10.pdf
- Schimer, R. (2005). The cyclical behavior of equilibrium unemployment and vacancies. *The American Economic Review*, 95(1), 25-49.
- Skelton, D. (2009). The varying influence of the cooperative influence in creating opportunities for employment. In R. K. Coll (Ed.), *Conference proceedings: New Zealand Association for Cooperative Education Annual Conference*, (pp. 34-37). Auckland, New Zealand: New Zealand Association for Cooperative Education.
- Tertiary Education Commission. (2012). *Tertiary education strategy*. Retrieved from <http://www.minedu.govt.nz/NZEducation/EducationPolicies/TertiaryEducation/PolicyAndStrategy/TertiaryEducationStrategy.aspx>

Overview of the Asia-Pacific Journal of Cooperative Education

KARSTEN E. ZEGWAARD

Editor-in-Chief, Asia-Pacific Journal of Cooperative Education

Cooperative Education Unit, Faculty of Science and Engineering, University of Waikato

INTRODUCTION

The *Asia-Pacific Journal of Cooperative Education* (APJCE) was founded in 1999 by Prof. Richard Coll and hosted by the University of Waikato, with the first volume published in 2000. The founding of the journal was driven by several prominent factors at the time. At the end of the 1990's cooperative education (co-op) and work-integrated learning (WIL) research seemed to be waning and ebbing, with little new research being published. However, overviews of the regional and international conferences suggested that much research, albeit perhaps somewhat basic research, appeared to be occurring. Furthermore, despite co-op research having historically a strong presence in the US and to some extent Europe, little co-op research was occurring in the Asia-Pacific region (with activities limited to New Zealand and Australia), which contrasts to the strong growth of co-op programmes in the Asian countries. This suggested that research activity in this region was perhaps in its infancy, with practitioners engaged in co-op research having little experience in publishing their research in journals. Thus, APJCE set out with the initial intention being a developmental journal to encourage up-and-coming researchers to publish works that are often presented as conference papers but had struggled with advancing this work to a journal article or had encountered discouraging reviewing processes. The journal took a hands-on, constructive approach to reviewing to enable up-and-coming researchers to have successful publication outcomes and not appear to be discouraging or overtly critical. The journal editors also adhered strongly to the philosophy of having information and knowledge freely available, therefore, chose to be a fully online journal. This paper will look at some of the key elements of success of APJCE, explore the growth of APJCE has experienced, and discuss the journals performance.

PUBLISHING AND ACCESSIBILITY

Success of a journal depends significantly on its ability to gain profile and the number of citations its articles can attract, as well as the number and the quality of articles published. A journal's profile can be considerably improved by allowing unlimited, free and open access. Nowadays many journals publish online under a variety of models (McVeigh, 2004). There are two broad models for online journals; commercial model (a fee charged to publish and view the articles) and open access model (free to view) (Willinsky, 2003). The commercial model was most prevalent in the past (Willinsky, 2006), with the pay-per-view mode most common. Open access is loosely described as being 'free access to refereed literature', with the driving factor not being economics rather being the readily sharing of knowledge within a community (Anderson, 2004). There are two general sub-models of open access journals, with both models allowing free access for the viewer, however one sub-model charging a fee for authors to publish whilst the other being fully free, open access; that is neither charge a fee to the readers to access the articles nor the authors to publish their works (Bjork, 2004).

In the case of APJCE, neither the readers nor the authors pay a fee to access or publish in the journal (i.e., a fully open access, online journal), with APJCE adhering to a philosophy of making knowledge readily and freely available to its community and general populace. The fairly modest costs of producing (e.g., copy editor, webpage maintenance and hosting, domain name licensing) are covered by New Zealand Association for Cooperative Education (NZACE) and the University of Waikato.

Journals that have moved to open access often claim increased visibility of the published works as the main advantage (Antelman, 2004). Already in 2001, comparative work showed that conference proceedings for computer sciences (for whom conference proceedings are considered particularly important) published online was 4.5 times more effective in garnering citations than comparative conference proceedings produced only in print form (Lawrence, 2001). In fact, not only are online articles more frequently cited, they are also cited earlier than print-only articles (Harnad et al., 2004; Lawrence, 2001; McVeigh, 2004). Harnad and Brody (2004) and Antelman (2004) found that the 'research impact' is considerably greater for articles available on free open access journals compared to those limited to print or pay-per-view online access.

DEVELOPMENT AND GROWTH OF ASIA-PACIFIC JOURNAL OF COOPERATIVE EDUCATION

APJCE initially accepted five forms of manuscripts; research, topical issues/discussion papers, best practice, book reviews, and correspondence. There have been no correspondence publications since 2003 and, as the journal has grown, it is not something the journal now seeks. The prevalent form of manuscript submitted is topical issues/discussion papers, with a select few research-based papers. Of late there has been several book reviews published, however, will likely remain limited to two or three a year. Initially, best practice papers were sought, as this tends to be where beginning researchers start, however is now discouraged unless it describes a particularly unique or unusual setting. Often best practice papers are modified to discussion-type papers by restructuring to avoid focussing on the context (e.g., placement programme) and instead focus on a particular unique aspect or the issue being investigated and discussed.

Bartkus and Stull (1997) analysed the co-op/WIL literature in 1997, describing it as sketchy, limited, and uncertain, with a predominate focus on best practice, essentially echoing views held by Wilson (1988) 10 years earlier. However, when describing the state of play of co-op literature for the second edition of the *International Handbook for Cooperative and Work-integrated Education* in 2011, Bartkus and Higgs described the literature as stronger than when assessed for the first edition in 2004 (Bartkus & Higgs, 2011; Bartkus & Stull, 2004). The strengthening of the literature reflects greater researcher activity over that period, particularly by Australian researchers, subsequently reflected in the growth experienced by APJCE. Of significance, an overview of the international co-op/WIL international community shows that it has grown to a stage that it can sustain two central journals, the APJCE and the *Journal of Cooperative Education and Internships* (JCEI), which is an indication of the maturation of co-op/WIL over the last 15 years (Zegwaard & Coll, 2011). A further indication of the maturation of the co-op/WIL literature is the increasing of co-op/WIL orientated published literature occurring in discipline specific educational journals other than APJCE and JCEI (Bartkus, 2007; Coll & Kalnins, 2009).

At the beginning of 2010, the growth in APJCE publication volume was at a stage that a copy editor was employed to undertake the tasks of preparing the manuscripts for publication and interacting with authors at the final stages of publishing to clarifying details. The webpage, at this stage 10 years dated, was significant updated and restructured to allow for better functionality and accessibility of what has become a significant collection of articles. As of March, 2012, the number of articles accessible via the APJCE webpage has grown to 128 articles.

The editorial board has also grown over the years and now consists of 31 members from a variety of countries. APJCE has flat editorial board structure (editor-in-chief, editorial board). Some journals, particularly journals with a high volume of manuscript submissions, use a multi-tiered editorial board structure (editor(s)-in-chief, assistant editors, editorial board, and reviewers). Journal rankings are affected by the makeup of the editorial board, with preference on senior researchers, thus APJCE expanded its editorial board to shift towards a more senior editorial board as well as to reflect the increase in the number of manuscript submissions it now receives. As of March, 2012, 19 members of the editorial board are PhD holders, with eight holding positions of either Associate Professor or full Professor, from six countries, including several beyond the Asia-Pacific region.

In 2010, APJCE was ranked by the Australian Research Council (ARC) as a B journal, which places the journal in the top 20%, particularly favourable compared to other comparable journals. Large international databases of academic and scholarly journals, such as Scopus, by Elsevier, Cabell's Directories, by Cabell Publishing Inc, and ERIC (Education Resources Information Center), are currently reviewing eligibility of APJCE for inclusion. Inclusion into these databases will give APJCE an even higher profile and will likely increase the number of citations its articles receive. Research performance reviews, such as New Zealand's Performance-Based Research Fund (PBRF), refer to international databases such as Scopus for indications of the significance of the journals within which researchers have published.

REVIEWING PROCESS

APJCE follows the editorial guidelines laid out by the international Committee on Publication Ethics. The journal undertakes a double blind peer review process, with all manuscripts reviewed by at least two members of the editorial board. Before the submitted manuscript is sent to the editorial board, the editor-in-chief conducts a review of the relevance of the manuscript content to the APJCE audience. Manuscripts sent out to the board for review are typically returned to the author with comments within two months. Common review outcomes require some amendments to be made to the manuscript, either minor or major, and typically attempt

to seek further information or more critical in-depth discussion around the issue. An outcome of 'accepted with no modification' is highly unusual for any manuscript and, for APJCE, has occurred only once in the last three years. An outright rejection of a manuscript after having undergone the reviewing process is also unusual, and authors usually are given the option to modify the paper even if the reviewing process requires very substantive modifications with resubmission/re-review (essentially a fatal review, but an opportunity is given to modify the manuscript). Often these manuscripts are not returned and for the purposes of the discussion in this paper, subsequently included in the journal rejection rate figure as 'rejected after review'.

Manuscripts that require some amendments typically are returned to the editor-in-chief within a month, depending on the scale of amendments required. When the amended manuscript has been returned, an analysis is undertaken to determine if the editorial board's comments have been reasonably addressed or responded to, and if so, the manuscript is passed to the copy editor for preparation for publication. At times, the reviewers will be asked to determine if the issues identified have been sufficiently addressed and pass this advisement to the editor-in-chief. With APJCE being a fully online journal, articles can be published as these complete the review and preparation process, as a rolling publication, rather than when a full issue is available.

JOURNAL STATISTICS

APJCE maintains a database of all submitted manuscripts for tracking and statistical purposes, and along with data from Google Scholar (which provides citation statistics) and Google Analytics (which provides APJCE webpage visits and downloads statistics), a valuable insight of the journal performance can be obtained. From somewhat modest beginnings, the number of publications per year grew in two stages, from 2000 to 2002 and from 2006 to present (Figure 1a), with an increasing wider international source of authors. The lull in 2005 reflects the decrease in the number of submissions in the previous year (Figure 1b). The increases in number of submissions, particularly in the 2010, was largely in response to the special edition around the theme of the 2010 ACEN conference and the 2010 realisation of the ARC rankings, which resulted in increased publication rates for 2010 and 2011. Recently the overall number of manuscripts rejected has proportionally increased slightly above the submission rate (Figure 1c).

Journals often indicate the manuscript rejection rate and at times are cited as one of several measures of quality. Even though not all journals openly communicate their rejection rates, and appear to measure 'rejection' differently, rates of 40-50% appear common, with journals claiming a high impact factor reporting rejection rates well over 70% (Aarssen et al., 2008). The rejection rate of APJCE is ~30%. About half are rejected before editorial board review on grounds of relevance (Figure 1c), typically containing content material focussed on similar sounding but vastly different subject areas, such as cooperative learning, cooperative food groups, cooperative banking. APJCE uses a constructive approach to reviewing, with the aim of having as many manuscripts published as possible, on the proviso these are ultimately publishable manuscripts, thus does not see a high reject rate as a measure of quality. The journal attempts to avoid rejecting manuscripts outright, allowing authors of manuscripts that require significant amendments to attempt to undertake such work, and will provide support and guidance in the process. Albeit, as the journal grows the rejection rate would likely increase as greater selection of particularly high quality manuscripts becomes available, the philosophy of constructive and formative approach of the reviewing process, reminiscent of when APJCE was a developmental journal, remains well-established.

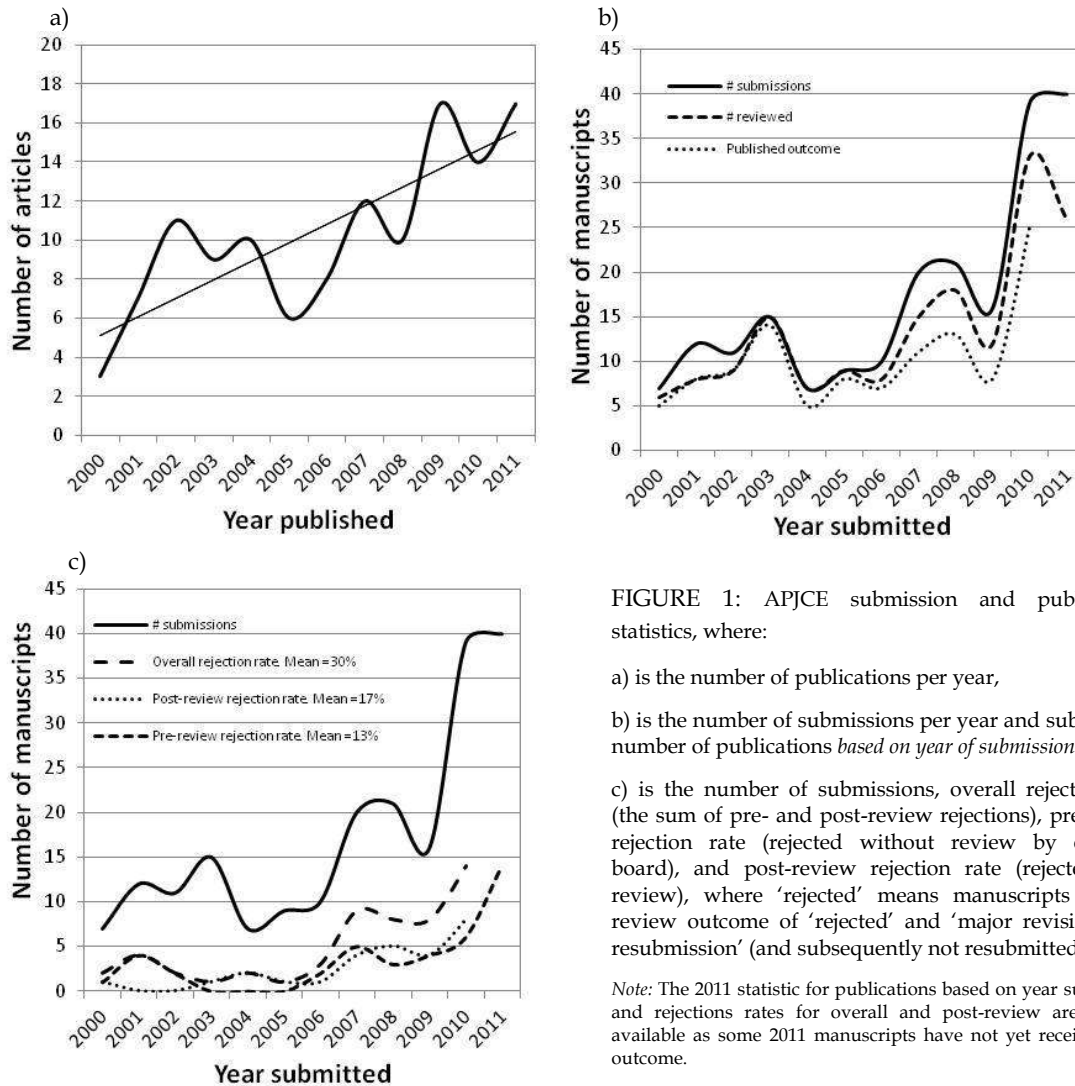


FIGURE 1: APJCE submission and publications statistics, where:

- a) is the number of publications per year,
- b) is the number of submissions per year and subsequent number of publications based on year of submission, and
- c) is the number of submissions, overall rejection rate (the sum of pre- and post-review rejections), pre-review rejection rate (rejected without review by editorial board), and post-review rejection rate (rejected after review), where 'rejected' means manuscripts with a review outcome of 'rejected' and 'major revision with resubmission' (and subsequently not resubmitted).

Note: The 2011 statistic for publications based on year submitted, and rejections rates for overall and post-review are not yet available as some 2011 manuscripts have not yet received final outcome.

A measure of acceptance of any journal is the number of citations of its articles in other journals. Often citations from a journal tend to be within articles in the same journal or self-citations in other journals. It is difficult to fully measure the number of APJCE citations in other journals, but anecdotally, greater number of such citations, which are not self-citations, seem to be occurring (e.g., in *Research in Science and Technology*, *Science Education International*, *African Journal of Business Management*, *The Qualitative Report*, *Asia Pacific Education Review*, *The Journal of International Agricultural Education*, *Industry and Higher Education*, *Journal of Planning Education and Research*). The number of citations of APJCE articles according to Google Scholar are also increasing, with several articles gaining prominence, with the work by Rainsbury, Burchell, Hodges, and Lay (2002) attracting the greatest number of citations (Table 1).

Since the reconstruction of the APJCE webpage, statistical data has been collected using Google Analytics including, for example, the number of downloads, country of origin, and number of returning visits. Since 10th of July, 2011, the date the new webpage became accessible, the APJCE has had 6,538 individual visits creating 11,798 downloads². The majority of these users were from six countries; New Zealand (16%), Australia (12%), the US (9%), the UK (6%), Canada (5%), and the Philippines (4%). Of particular note, three of these countries are outside the Asia-Pacific region.

² Data covering the period of 10th of July 2011 (date of new webpage initiation) to 19th of March, 2012

TABLE 1: Top 10 cited APJCE articles¹, in descending order, according to Google Scholar.

Authors	Subject
Rainsbury, Burchell, Hodges, Lay (2002)	Researching perceived important graduate competencies from students and graduates perspectives
Hodges, Burchell (2003)	Researching perceived important graduate competencies from employers perspectives
Abeysekera (2007)	Curriculum design implications when incorporating WIL
Coll, Chapman (2000)	Research approaches and methodologies for co-op
Coll, Eames (2000)	Alternative models for the role of placement coordinators
Coll, Taylor, Grainger (2002)	Exploring current assessment practices of work-based learning for teachers
Martin, Leberman (2005)	Exploring learning perceptions by students and supervisors after practicum experience
Fleming, Eames (2005)	Work placement programme structure impact on student learning
Zegwaard, Coll, Hodges (2003)	Competencies based framework for assessing workplace learning
Walo (2002)	Assessing how student competencies are enhanced by WIL

¹ as for February, 2012.

Analyses on how users arrived at the APJCE webpage shows that 38% did so directly (e.g., using favourites or by entering web URL). Another 47% of users arrived via a search engine, with most commonly used search-words, in descending order, being; the journal title (or similar), 'APJCE', 'graduate competencies', 'achievement and work placements', 'Karsten APJCE', and then sentence compounds mostly using 'cooperative education' and 'work-integrated leaning' with modifiers such as; 'importance', 'reflection', 'impact', 'assessment', 'benefits', and 'employers views'. The remaining 15% arriving at the APJCE webpage were 'referral traffic' (e.g., via an internet link). As of March 2012, the homepage (which contains all the APJCE published articles) was the most common landing page (91% of users first arrive at APJCE by accessing the homepage). User behaviour, however, shifts somewhat over time. Notably, since December 2011, there has been an increase in the number of users from India and Indonesia, the later exceeding the number of users from the US for the same period.

CONCLUSION AND THE FUTURE

APJCE has enjoyed a successful past and it looks to have a promising future. The free, open access model, has been a notable strength of APJCE. The body of available articles has grown to 128, with the webpage receiving a high number of visits and downloads. The annual number of manuscript submissions has increased sharply, along with the number of articles published. The number of citations of APJCE articles has increased, including in journals other than APJCE and at the peripheries of co-op/WIL. The bulk of the articles published are from the Asia-Pacific region, indicating that the journal has fulfilled its original intent. However, as the journal has grown, its profile has increasingly become more international, suggesting that the journal is maturing beyond its original regional focus. There are increasingly published works from countries beyond the Asia-Pacific region, the APJCE webpage is regularly accessed from countries such as the US, UK, Canada, India, and APJCE articles are being cited by researchers based in countries outside the Asia-Pacific region. With the inclusion of APJCE in international databases for academic and scholarly journals, this trend is likely to be sustained. It would appear that the journal has developed into an international journal.

The new journal webpage structure is well positioned for future growth. The current editorial board structure has capacity for some further growth; however, if the volume of submitted manuscripts increases at the same rate as the last two year, APJCE may eventually need to include a tier of associate editors. Reflecting on the journal growth and development, it is clear that APJCE has carved out a significant and successful presence

amongst the co-op/WIL practitioners and researchers. Considering the potential future opportunities, it is encouraging to both the editors of APJCE, and no doubt the authors who has published in APJCE, that the journal looks to have a bright future indeed.

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REFERENCES

- Aarssen, L.W., Tregenza, T., Budden, A.E., Lortie, C.J., Koricheva, J., & Leimu, R. (2008). Bang for your buck: Rejection rates and impact factors in ecological journals. *The Open Ecology Journal*, 1(1), 14-19.
- Abeyssekera, I. (2007). Issues Relating to Designing a Work-integrated Learning Program in an Undergraduate Accounting Degree Program and its Implications for the Curriculum. *Asia-Pacific Journal of Cooperative Education*, 7(1), 7-15.
- Anderson, B. (2004). Open access journals. *Behavioral and Social Sciences Librarian*, 22(2), 93-99. doi: 10.1300/j103v22n02_06
- Antelman, K. (2004). Do open access articles have a greater research impact? *College & Research Libraries News* 65(5), 372-382.
- Bartkus, K.R. (2007). A review and synthesis of scholarly research in cooperative education and internship: Part 1. An analysis of quantitative research published outside the Journal of Cooperative Education and Internships. *Journal of Cooperative Education and Internships*, 41(1), 56-96.
- Bartkus, K.R., & Higgs, J. (2011). Research in cooperative and work-integrated education. In R. K. Coll & K. E. Zegwaard (Eds.), *International handbook for cooperative and work-integrated education: International perspectives of theory, research and practice* (2nd ed., pp. 73-84). Lowell, MA: World Association for Cooperative Education.
- Bartkus, K.R., & Stull, W.A. (1997). Some thoughts about research in cooperative education. *Journal of Cooperative Education*, 32, 7-16.
- Bartkus, K.R., & Stull, W.A. (2004). Research in cooperative education. In R. K. Coll & C. Eames (Eds.), *International handbook for cooperative education: An international perspective of the theory, research and practice of work-integrated learning* (pp. 67-81). Boston, MA: World Association for Cooperative Education.
- Bjork, B.-C. (2004). Open access to scientific publications: An analysis of the barriers to change? *Information Research*, 9(2), Available at <http://informationr.net/ir/9-2/paper170.html>.
- Coll, R.K., & Chapman, R. (2000). Choices of methodology for cooperative education researchers. *Asia-Pacific Journal of Cooperative Education*, 1(1), 1-8.
- Coll, R.K., & Eames, C. (2000). The role of the placement coordinator: An alternative model. *Asia-Pacific Journal of Cooperative Education*, 1(1), 9-14.
- Coll, R.K., & Kalnins, T. (2009). A critical analysis of interpretive research studies in cooperative education and internships. *Journal of Cooperative Education and Internships*, 43(1), 1-14.
- Coll, R.K., Taylor, N., & Grainger, S. (2002). Assessment of work based learning: some lessons from the teaching profession. *Asia-Pacific Journal of Cooperative Education*, 3(2), 5-12.
- Fleming, J., & Eames, C. (2005). Student learning in relation to the structure of the cooperative experience. *Asia-Pacific Journal of Cooperative Education*, 6(2), 26-31.
- Harnad, S., & Brody, T. (2004). Comparing the impact of open access (OA) vs. non-OA articles in the same journals. *D-Lib Magazine*, 10(6).
- Harnad, S., Brody, T., Vallières, F., Carr, L., Hitchcock, S., Gingras, Y., Oppenheim, C., Stamerjohanns, H., & Hilf, E.R. (2004). The access/impact problem and the green and gold roads to open access. *Serials Review*, 30(4), 310-314.
- Hodges, D., & Burchell, N. (2003). Business graduate competencies: Employers' views on importance and performance. *Asia-Pacific Journal of Cooperative Education*, 4(2), 16-22.
- Lawrence, S. (2001). Online or invisible? *Nature*, 411(6837), 521-523.
- Martin, A., & Leberman, S. (2005). Keeping up with the play: Practicum, partnership and practice. *Asia-Pacific Journal of Cooperative Education*, 6(1), 17-25.
- McVeigh, M.E. (2004). Open access journals in the ISI Citation Databases: Analysis of impact factors and citation patterns: Thomson Corporation.
- Rainsbury, E., Hodges, D., Burchell, N., & Lay, M. (2002). Ranking workplace competencies: Student and graduate perceptions. *Asia-Pacific Journal of Cooperative Education*, 3(2), 8-18.
- Walo, M. (2002). Assessing the contribution of internship in developing Australian tourism and hospitality students' management competencies. *Asia-Pacific Journal of Cooperative Education*, 2(2), 12-28.

- Willinsky, J. (2003). Scholarly associations and the economic viability of open access publishing. *Journal of Digital Information*, 4(2), http://works.bepress.com/ir_research/13.
- Willinsky, J. (2006). *The access principle: The case for open access to research and scholarship*. Cambridge, MA: MIT Press.
- Wilson, R.L. (1988). Research in cooperative education. *Journal of Cooperative Education*, 24(2-3), 77-89.
- Zegwaard, K.E., & Coll, R.K. (2011). Exploring some current issues for Cooperative Education. *Journal of Cooperative Education and Internships*, 42(2), 8-15.
- Zegwaard, K.E., Coll, R.K., & Hodges, D. (2003). Assessment of workplace learning: A framework. *Asia-Pacific Journal of Cooperative Education*, 4(1), 10-18.

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