Teaching-Research Linkages: Opportunities and Challenges for Practice and Policy

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> *'I love this job, I love the subject particularly because I can tie my research interests into my teaching ... of all the things in the world this is what I want to explore.'* [Discipline: History]

Background to the Project

This paper provides preliminary findings based on academic staff interviews as part of the Carrick-funded project: "*The Academic's and Policy-Maker's Guides to the Teaching-research Nexus: A suite of resources for enhancing reflective practice.*" This project aims to develop practical resources to assist Australian universities to strengthen the teaching-research nexus (TRN) in both institutional policy and individual practice.

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The project team is preparing evidence-based, ready-to-use resources that will provide illustrative possibilities and case studies. By developing these resources our goal is to provide practical resources for academics and policy-makers wishing to engage with the issue and operationalise the TRN in classroom, faculty and institutional practice. In particular, our focus is on the implications of the TRN for enhancing the quality and outcomes of student learning.

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Approach

Phase 1: Review of existing international activity (late 2006)
Phase 2: Data gathering and consultation with leading practitioners, students and policy-makers in a range of Australian universities. (2007)
Phase 3: Resource development and website pilot (2007)
Phase 4: National release, promotion and discussion of the project resources (early 2008)

The project resources will be available via a website and will include an academic's and policy-maker's guide to the TRN, comprising:

- evidence based 'models to guide TRN practice' adapted to suit disciplinary and context-specific needs to guide the practical integration of research into teaching practice;
- step-by-step scaffolding to support implementation and review of TRN practices;
- checklists for self-review for academics and departments and review of student learning with respect to the processes and outcomes of research-led teaching;
- empirical evidence from interviewees in a range of disciplines on the benefits and challenges of achieving pedagogically sound connections between teaching and research; and
- annotated examples and case studies.

During the course of our semi-structured interviews with 31 academic staff across seven institutions and a range of disciplines in Australian universities, interviewees provided a wealth of information on their conceptions of and approaches to the TRN. A preliminary analysis of findings is presented in the next section, with a focus on some of the assumptions underlying the views expressed. The paper concludes with a consideration of selected opportunities and challenges of these findings for practice and policy.

Preliminary findings and implications arising from academic staff interviews

As part of the methodology of this project, we set about exploring existing conceptions of the TRN. The academic staff we interviewed offered a range of views, which are synthesised in this section. In particular, we have been interested to explore some of the assumptions underlying these conceptions and their implications for teaching and policy-making in higher education.

Included below are five conceptions of the TRN expressed by academic staff interviewees. Following these is a brief summary of staff views on factors that facilitate and hinder the implementation of the TRN in their context.

Five conceptions of the TRN

1. "The TRN epitomises teaching and learning in higher education"

Unsurprisingly, many interviewees viewed the connection between teaching and research as a fundamental, distinctive aspect of university teaching that sets it apart

from teaching in other sectors. For many academic staff, the TRN is simply a 'given'. Typical comments were:

> "*At a university level research has to inform your teaching. If it's not you might as well be teaching either at high school or at TAFE. … It's what differentiates a university, a higher education degree and that should be what all of the staff are actively engaged in.*" [Discipline: Marine science – see also Case Study]

A small group of academics in the sample even went so far as to say that research-based learning and teaching improved the standard of teaching for a range of reasons including that students benefited from cutting edge knowledge.

> "*Only someone who has made scientific discoveries can convey a sense of intellectual ownership to what they teach … a lecturer who is a published author can convey critical judgement to the students because he knows how fragile knowledge is … students learn alongside their teacher in a mutual dialogue, with the ultimate aim for the apprentice to exceed the master.*" [Discipline: Nanotechnology]

Though there is a conception of the TRN that permeates teaching and learning across higher education, the challenge for higher educators is that the precise nature of the connection is often implicit, intangible and vaguely formulated. When academics are probed further on this, some appear to localise the TRN within specific subjects and year levels. For example, academic interviewees involved in teaching within the IT discipline often commented that the TRN is evident at third year and honours level, by which time students have developed a solid understanding of the 'basics' of the discipline and are therefore able to engage with research in the field.

Beyond these broad sentiments, staff perceptions of the precise nature of the TRN varied. Some viewed the TRN exclusively in terms of either reporting on their research or students reading about current research. Others also conceptualised it in terms of students undertaking research of their own. Yet, it was clear from staff comments that they used a variety of activities that might be associated with the TRN – but simply did not characterise them as such. These differing conceptions of the TRN are significant in terms of understanding the ways in which the TRN might more deliberately and pervasively permeate teaching and learning in higher education.

2. "The TRN engages and motivates students"

A commonly held view of the TRN is that it motivates students. For example:

> "*It's impossible to be a teaching only academic. You have to be … engaged with the discipline and doing … research … to make sense of … be abreast of what's going on in the discipline …to inform students … inspire them … give them the sense that they can get passionate about research themselves*" [Discipline: Music]

and

> "[Students' think] *here is a leader in this field … I'm getting this knowledge first hand … It takes teaching to a different level … that passion and enthusiasm rub off more effectively*" [Discipline: History– see also Case Study]

While responses varied to some extent across disciplines, there was a reasonable level of agreement over the ways in which research-infused learning and teaching engaged and motivated students. Some academics commented that the TRN makes learning 'exciting', 'fun', and 'intellectually stimulating'. Others observed that when teaching and research are brought together, students tend to be inspired and enabled to be more autonomous, independent thinkers, who are curious and engaged with the world, and empowered to believe they can make a contribution to their field. In addition, several academics in the sample expressed the view that the TRN connects students to their discipline and generates enthusiasm for research.

However, while claims are made for enthusiasm, engagement and excitement around the TRN, there is not conclusive evidence in undergraduate evaluation of teaching, such as from the CEQ, that from a students' viewpoint this stimulation is universal. Does the TRN, in fact, inspire students? If so, how can we be sure? If the TRN has a number of manifestations, how do we know which particular aspects inspire and engage students? In order to support and justify these claims, there may be a need to make specific links between how the different aspects of the TRN influence student motivation and inspire student learning across the different disciplines and year levels.

3. "The TRN develops important graduate attributes"

A common theme that emerged from the interviews was that the TRN develops students' analytical thinking skills, initiative and the capacity for independent thinking, all of which are important life-skills, as well as graduate attributes.

> "*These days … students are expected to take their life into their own hands … control their own future … research their options … critical thinking, analysis, gathering of data and useful evidence and then creating a path for themselves … they get from research strategy*" [Discipline: Media]

As with earlier conceptions of the benefits of the TRN for the quality of student learning and outcomes, this assumption requires more rigorous empirical investigation. While some reference was made by the interviewees to assessment tasks or group work that reflect outcomes of student learning, how higher-order attributes can be directly attributed to the TRN rather than other learning activities is not clear from the interviews that have been conducted.

4. "The TRN prepares students for future employment"

Closely related to the previous point, many of the interviewees reported that the TRN increases the employability of students. The main justification for this was that many of the skills developed through the TRN were transferable to the workplace, whether students find themselves in a research position or professional employment. For example:

> "[Students] *become … astute learners … about how they can apply their learning in different contexts … how to communicate in effective ways … to impart knowledge … active producers of their own citizenship … they go out into the workforce in a very mature way*" [Discipline: Cultural studies].

Another interviewee observed that students gain invaluable project planning skills that are needed in some professions, such as in media-related professions. However, once again, while this conception of the TRN may have intuitive appeal, on deeper inspection it is unclear how this benefit is explicit in day-to-day teaching and how it might be evaluated. One assumption would be that the TRN should develop sequentially over the years of the program, so that the students develop the transferable skills that may be needed in the workplace. To what extent does this occur and how do we evaluate the acquisition of skills necessary for future employment? How do we know that workplace skills have developed as a result of TRN activities? Are students who only experience the TRN in third or fourth year less prepared for the workplace?

5. "The TRN offers professional benefits for academic staff"

Academic staff offered a range of views about ways in which they perceived the TRN might be beneficial to them. One of the benefits identified by academic staff was that evidence of the TRN enhanced one's chances of academic promotion. When this was explored further, responses indicated that the connection between the TRN and promotion was not clearly articulated. Some academics believed that linking teaching and research enabled academics to share their passion and enthusiasm for their research area, which in turn improved the quality of students' ratings of the quality of teaching. The perceived connection between staff enthusiasm for their subject and student motivation and stimulation is evident here. Other academics believed that the TRN improved their communication skills and this resulted in better teaching.

A selection of interviewees saw the TRN as including scholarly research on one's teaching, rather than disciplinary based research alone. This contributed to the view that the TRN can be beneficial to career progression because, according to these interviewees, research into teaching practice makes academics better teachers for which they, in turn, receive teaching awards. However, academics acknowledged that career benefits of the TRN were dependent on the extent to which university policy explicitly promoted and valued the TRN, particularly in the case of the promotion policy. In fact, a small number of academics in the sample considered that, while they needed to demonstrate excellence in both teaching and research to gain promotion, research activities did not necessarily need to be linked to teaching in their university:

> "*You're rewarded ... because you've got publications and because you've got a large research grant ... I don't think it would've mattered what my grant was on ...* [nobody] *has ever said ... wow ... you've got an ARC ... for ... the teaching-research nexus*" [Discipline: Education– see also Case Study]

Other benefits of the TRN noted by academic staff included:

- improved communication skills among academic staff developed by explaining complex research to students:
  > "*It challenges you to condense in one 60 minute timeslot one facet of your research ... It makes you ... a better communicator of your research ... makes your writing clear and more focused*" [Discipline: History– see also Case Study]
- encouragement for academics to keep up-to-date with research developments; and

- professional satisfaction of seeing students develop as researchers and enrol in PhDs.

The potential link between the TRN and promotion, as noted by some interviewees above, is very important for this provides an obvious entry point for stimulating academic attention with respect to the TRN. For the main part, universities frame their promotion policy around teaching and research excellence. It consists of two main entities – teaching and research. Universities may wish to consider ways in which the TRN is reflected in the probation and promotion criteria and work allocation models. Related to this is the extent to which the TRN features in key institutional policies, and importantly, whether there are specific resources applied to these.

Factors that facilitate and impede the TRN in practice and policy

We asked academic staff interviewees to reflect on departmental and institutional factors that help and hinder teaching-research linkages from their perspective. A recurring feature of the data was that interviewees had greater difficulty identifying factors that helped them link teaching and learning, while factors that hindered the TRN sprung easily to mind.

Factors that facilitated the link between teaching and research included:

- a culture of research within department/faculty. The most frequently mentioned facilitating factor was the presence and encouragement of supportive colleagues within the department, the existence of mentors and supportive leaders, such as Heads of School;
- practical assistance in the form of ethics approval for data collection with students, study leave and funding to travel and attend conferences;
- connections with and initiatives from academic development units in universities;
- research grants, particularly institutional and national grants for research into teaching; and
- awards specifically targeted at rewarding evidence of good practice in linking teaching and research, such as a Vice-Chancellor's excellence award for evidence of leading practice in achieving the TRN.

Factors that impeded the link between teaching and research for interviewees included:

- the valuing of research over teaching in universities:
  "*Those that focus on their research and let teaching slip tend to get ahead because they're publishing harder … If you focus … a lot of energy and effort on the teaching, then that does detract from your research performance.*" [Discipline: Marine science– see also Case Study]
- organisational structures of universities that separate teaching and research 'from the top down', for example the DVC (Academic) and DVC (Research) are seen as completely separate roles;
- a view that academic staff hiring decisions are based on research outputs not teaching ability;
- failure to host regular departmental teaching forums to parallel the regular research seminars that so many departments host;
- the RQF exercise and its emphasis on the value of research over teaching;

> "*I'm worried with the RQF … we're taking a huge step backwards … only employ people who are…* [research] *high flyers … I'm … worried that research informing teaching is going to be much less of a priority than it should be.*" [Discipline: Marine science– see also Case Study]

- the apparent consideration being given to having two tiers of Australian universities - "research intensive" universities and "teaching only" universities - is seen as a threat to achieving effective teaching-research linkages;
- lack of time: larger class sizes, heavy teaching loads and greater administrative loads placed increase pressure on academics and make it more difficult for them to find the time to carry out research and to infuse the curriculum with innovative strategies;
- lack of staffing and other resources, such as lab and tutorial spaces, are perceived to hinder the TRN;
- changing student demographics and expectations are seen by some academics as necessitating a 'dumbing down' of course content which in turn makes it difficult to set intellectually challenging research-related assignments and still achieve positive student evaluations;
- promotion criteria and performance development review processes that do not value the TRN; and
- the fact that the more successful academics are, the less teaching they appear to do:

> "*I find myself being pushed into research more and more. I hope it doesn't stop me from teaching. My inspiration is X … As Vice-Chancellor at X University he was still teaching … don't know any other Vice-Chancellor that is still teaching … As a research teacher … in class … he would have us captivated … that's when a teacher is fantastic"* [Discipline: Cultural studies].

Conclusion and policy implications

This stimulus paper has provided a selection of initial findings from our interviews with academic staff across a range of disciplines and university types in Australian universities. In analysing academics' conceptions of the TRN we have posed several questions that represent both challenges and opportunities for the sector. Issues such as the need to align promotions policies with institutional aspirations to connect teaching, learning and research are pressing, as is the need to conduct more rigorous empirical studies of the connection between the TRN and student learning outcomes.

Academic staff have been forthcoming in their responses about factors that facilitate and hinder the TRN in their experience. The challenge for academic leaders and policy makers is to consider implications of these findings for facilitating and embedding the TRN in the local context. A further challenge is to develop a culture of evidence in which regular monitoring and reporting of the benefits of the TRN for student learning outcomes occurs.

The next step of our study is to develop resources that support academics and their policy-making colleagues to address some of these challenges and to make the most of the opportunities represented by the fusing of learning, teaching and research in higher education.

Appendix: Examples of Good Practice in Teaching-Research Linkages

The following five examples are illustrative of the range of examples of innovative and effective practice that we collected during the course of our interviews with academic staff. Each presents an snapshot of the range of ways in which the TRN might be exemplified across disciplines and learning contexts.

Example 1: Senior Lecturer: Information Technology in Teacher Education at a Regional University

This lecturer viewed the TRN as research into the scholarship of teaching in collaboration with her students. She saw this as a circular process involving rigorous action research through which she modelled (and provided explicit instruction on) strategies for being a reflective practitioner who researched her own teaching practice. This lecturers' teaching was informed by her research: her PhD focussed on developing a "metacognitive" model of pedagogy for teaching computer education. She used this model when she taught trainee teachers and also in research with teachers in schools. Her students incorporated the principles into their own teaching styles, reflected on their effectiveness when conducting teaching practice in schools and provided their lecturer with feedback which was incorporated into her research and subsequent course development. This approach was used in courses for a range of year levels from first year to postgraduate.

> "*My research has been on the factors that influence people's engagement with technology and through action research … development of a process to help as a metacognitive process that helps them to better understand … what influences their computer learning. …Imbedded in the course is a process of … think about yourself as a learner… how you're engaging with technology … what influences you… who you blame when things go wrong … how you problem solve … what strategies you're using and whether they're effective … that has grown out of my engagement with the students. … Everything I've learnt from… those students is fed back to them in terms of a process that … will give them a better teaching and learning process. …In the IT environment, there traditionally has been a focus on just training … here's a set of skills and we'll teach you those skills…. the approach that I've developed is explicitly not that. It's about … there's no point giving you specific skills cause … five years down the track there'll be a whole different set of technologies and everything will change and you've got to adapt to that change. … Challenging, the competency models and developing a capability model… It's saying … what's most important … is that you develop the ability to go on learning whatever the context.*"

Example 2: Associate Professor: Marine Science at a Regional University

This lecturer taught field-oriented courses at first and third year and emphasised that the activities they carried out applied the same research techniques and principles that scientists used in their research and professional consultancies. He ensured students gained practical skills and considered the combination of theoretical and practical knowledge his students gained made them more marketable than other graduates and also gave the students confidence in their own abilities.

> *"If you go out and show people that this is … the currently accepted practice and this is the way that you go about doing real research, it empowers the students because they think … that's not hard. I can understand (a) the concept and (b) how to do it. … Used to say to them … once you … have completed this course, you can go out and do exactly these consultancy things or research in these areas because you're using the techniques. … When they go for a job … already pre-trained … gives them encouragement … see the relevance of what they're doing and it empowers them.*"

In addition to job skills, this lecturer considered his students benefited intellectually because they had learned to problem solve when faced with unexpected difficulties in the field. He encouraged students to work collaboratively to solve the problems they faced which enhanced students' communication and networking skills.

> "*When you … do … field research you're constantly challenged by different circumstances. … Suddenly one of your boats breaks down or one of your nets get broken … or the bus doesn't turn up on time, so you've half the time … you … calmly explain to students, this is the real world, this is what you're going to be facing. So what we have to do is rapidly deconstruct and reconstruct the way we're going to approach the problem. … Intellectually it challenges them. … You … put the onus onto them and work through it as a group … Say … this is different to what we expected … how are we going to approach this problem given* [the] *resources we have to … answer… the questions we were trying to ask?*"

Example 3: Senior Lecturer in Asian History at a Go8 University
This lecturer, who taught second, third and fourth year subjects, focused on developing his students' critical thinking skills through critiques of primary sources. He told his students that historians looked at primary documents, explicitly stating that students were engaged in the same research-related activities as the lecturer/researcher.

> "*I see myself as a teacher of skills that help empower students to be critical thinkers … I use history as a way of conveying … these skills so* [students] *can see the world differently for themselves. … I tell the students my research is very similar. … My research goes about asking questions … conducting research and analysis and presenting those findings in a persuasive way. I try to get those skills across in my teaching … the content is not as important as the skills*"

Example 4: Associate Lecturer: Cultural Studies at a New Generation University
This young lecturer used *MySpace* to engage in collaborative research with his first year students. He put topical material on *MySpace* and encouraged his students to post links to material of relevance to the course. He considered that students responded to the interactive nature of *MySpace* more positively than they responded to Blackboard, the institutional enterprise system.

> "*I use MySpace in my teaching …* [the material I put on *MySpace*] *is the textbook that I can't find … my own personal blogs … The students … love it … they're encouraged to interact with me … they put up … comments … They*

> *like it better than* [Blackboard] ... *They respond* [to material I have posted] ... *get into it in a way they can't with webCT* [Blackboard] ... [more] *interaction ... There's room for bulletins ... people can put up stuff ... I think it's amazing ... that* [student] *has found this* [link to an article of relevance to course content] … *This ... is not the style for everyone ... generational change in this ... next cohort of academics* [aged under 40] ... *casual contracts ... as opposed to older academics ... don't experience tenure ... so 'I'm going to be as loud as I can' ... A friend of mine did undergraduate ...* [lecturer] *recommended a textbook that had been out of print for 15 years ...* [technology provides a up-to-date] *resource network* "

Example 5: Associate Lecturer in Digital Writing/Art at an Innovative Research University

This lecturer responded to the challenge of teaching classes with students from a range of disciplines and year levels (first year through to postgraduate) in the same class by providing individualised learning to students in his IT lab-based course. He set generic research tasks which students could shape to fit their own interests and abilities.

> "*I developed ... Hypertext Essay. ... I have them write an essay that ... looks at how they can find a job ... have them put it into a hypertextual ... interactive, multimedia format ... I don't constrain them to one specific thing they have to make ... not all making the same thing ... they have to do a lot of research ... to figure out what they want to make ...working on the same assignment in completely different ways.*"