# Pedagogical Change at Times of Change in the Higher Education System: An Exploration of Early Career Mentoring, Co-publication and Teaching & Learning Insights

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**Abstract:** Universities are at a time of change. Their social, political and economic conditions are under challenge, while technological change challenges curriculum design and implementation, requiring reconsiderations of teaching and learning practices. In this context, and as part of the conference session on *Higher education in 2014: threshold, watershed or business as usual?*, I reviewed an approach I have been trialing to supporting early- and mid-career academics to navigate through this changing environment. This paper presents an illustrated essay on a human-scale approach to early- and mid-career mentoring through the establishment of small team-based research and writing projects. The essay provides examples of activities that, on the one hand, assist academics to develop the tools they need to navigate the new and evolving environment of higher education, while on the other hand directly addresses key pedagogical issues and provides new insight into teaching and learning in higher education.

**Keywords:** change in higher education, scholarly culture, career mentoring, research, scholarship of teaching & learning, team-based research.

## Introduction – a journey through higher education

Universities are at a time of change. Their social, political and economic conditions are under challenge while technological change is seriously challenging curriculum design and implementation. Such changes require reconsiderations of teaching and learning practices. There are many critiques of the sources and effects of and of the potential solutions to concerns raised by many academics regarding such wide-scale and seemingly pervasive change. This essay canvasses one perspective on the matter, drawing on a human-scale approach to early- and mid-career mentoring. That approach

is one that, on the one hand, assists academics in developing the tools they require to navigate the new and evolving environment of higher education, while on the other hand directly addresses key pedagogical issues and provide insights into the processes of teaching and learning in higher education.

While the professoriate may be unable to directly tackle the malaise that some (see below) ascribe to what are unsustainable staffing conditions in the universities, it has, I believe, a duty of care to early- and mid-career academics. That duty of care can be articulated through active mentoring and should result in such academics being better able to navigate the new, emerging and evolving university environment. My work has commenced with an acknowledgement that there is a growing group of academics recruited from the professions and/or specifically for teaching, who are now increasingly required to meet broader scholarly research performance targets. Their professional background, however, limits the cultural experience they require to survive as research, rather than teaching, scholars. It has, however, been assumed that they, on appointment, come with the requisite cultural knowledge. This is not necessarily so, and such new academics require to be mentored or in some other way supported into their new roles. This essay illustrates some examples of such support.

Opening with a description of my approach to guided and mentored team-based, multi-authored research, this essay describes the alignment of experienced and inexperienced researchers into small project teams. Using a scholarship of teaching and learning focus, early- and mid-career academics can be better inducted into the world of academe, start to be research-productive, and thus be acknowledged, validated and rewarded as well-rounded academics and scholars. The paper will describe a number of recent projects, exploring issues as diverse as engaging Web 2.0 technology in teaching and learning, building engagement with research ethics and the teaching-research nexus, developing innovative pedagogical approaches, addressing student anxieties, and integrating scholarship into teaching and learning.

The journey will travel over diverse terrain: research mentoring as professional development for early career academics; where are we going? … and how do we get there?; changing scholarly cultures: role of reflection, SoTL & publication. It will draw on specific examples of projects: teaching-research nexus; research ethics writing project; research pedagogy in osteopathy practitioner training; curriculum intervention in mathematics teacher training; and ITC intervention – wikis & Web 2.0 design, citizen science, Google MashUp. All address issues of cultural change in the academy. I close in asking the question whether, in seeking to assess whether the approach works, if this represents the 'Hero's Journey'.

## Research mentoring as professional development

One beginning to the journey is an article in the journal *Australian Universities' Review*, by Eva Bendix Peterson (2011). She recounts a tale of malaise in the universities, one in which she records a sad story of early career academics expressing concern over the choices they feel they have in terms of developing their careers and of aspirations they feel the system will not allow them to achieve. Peterson describes a

situation in which a significant number of, especially, early- and mid-career academics express their feelings of being overworked and undervalued. In seeking originally to record the strategies that such academics were harnessing to progress their careers as university academics, Peterson discovered an array of coping and (potential) exiting strategies, ways in which academics were envisioning their exit from their career early, rather than working towards life-long career pathways. This, Peterson asserts, stems from the growing corporatisation and bureaucratisation of higher education of the universities, at least in Australia. One suspects that this is a global phenomenon. Peterson (2011:41) concludes that policy makers and university managers should listen to the staff narratives she is recording, although she notes that such narratives "continue to be dismissed and even denigrated by those who should be listening extra carefully".

My response (Boyd & Horstmanshof, 2013; Figure 2) was to acknowledge that while the system requires addressing, the university is only as good as its people; indeed it is fundamentally about people and its community, and one path towards addressing the malaise that Peterson describes is by focusing on the people first (Figure 3). The professoriate has a duty both to the institution to lead institutional change and the community of that institution, and to provide intellectual and scholarly leadership to its colleagues. In this regard we suggested that one response was to provide mentoring and support for early- and mid-career colleagues through the practical experience of developing, implementing and writing up small team-based research projects. Building on their day-to-day work and acknowledging the importance of developing an appropriate intellectual culture, small projects of the type described in this paper have emerged.

## Foundations

The intellectual basis of these small projects lies in the realisation that many early- and mid-career academics in the new university system have a professional rather than scholarly background. That is, their understanding of the cultural behaviours of being an academic is shaped by different cultural milieu from that of the university. I have described this elsewhere (Boyd et al., 2012:14, emphasis added) thus:

> While academics with scholarly apprenticeships … may intuitively understand 'research' and 'university teaching and learning', for academics with professional backgrounds or later-in-life academic career starts (i.e. whose apprenticeship and culture is professional rather than academic), such intuitive understanding may be less tangible. Their professional cultural background is different.
> While such academics want to be good university teachers, they question what is required as an academic researcher. While there may be other organisational impediments to a university promoting the nexus, *the professional cultural apprenticeship may be the crucial personal epistemological and ontological impediment to engaging the nexus.*

Several other matters have also been important influences in the development of this approach.

First is the growth and acceptance of a relatively new discipline, the Scholarship of Teaching & Learning (often short-handed as SoTL). Gilpin (2007, 2001) notes that SoTL reconceptualises teaching as an ongoing and scholarly process with an emphasis on improving student learning. It is distinguished by four characteristics: it treats teaching as a form of inquiry into student learning; it views teaching as a public and community, rather than private, practice; its outcomes should be subject to review and evaluation; and it should be accessible to others in one's field. It differs, according to Gilpin, from other disciplines in its locus of origin and practice. SoTL is initiated by academics to improve their own teaching and their students' learning. In this way, it relies on individual and collective desire to improve student learning and thus focuses on the contexts of teaching and learning and assessment and evaluation of the impact of an academic's teaching on student learning. "Part of SoTL's appeal," Gilpin suggests, "is that it functions as a rich text forum through which works from different fields, interests, philosophical orientations, and methodologies find space and thrive. These works converge in their focus on improved student learning. Embedded within SoTL, the ethic of reflexivity asserts that we are responsible for the applications and ramifications of our works in both our specific context and in society." (Gilpin, 2014). Defined thus, SoTL provides an entirely suitable foundation for mentoring teaching academics into broadening this scholarship to include research. It does so by engaging the very professional activity that consumes much of their working day – teaching.

Secondly, Boyer's model of four integrated scholarships (Boyer, 1990, 1996), bringing together the scholarships of discovery, integration, application, and teaching, provides a valuable foundation to consider an academic's scholarship as a unified and integrated whole, rather than an assemblage of unrelated activities. Elsewhere (Boyd, 2013), I have discussed the interest and impact of Boyer on those concerned about the scholarship of teaching and learning, especially in higher education and noted the growing literature on the adoption of Boyer's model and its principles and practices across the disciplines and in expanding the scope of SoTL-informed teaching and learning. Many writers focus on the advantages to curriculum development and the improvement and increasing effectiveness of teaching. However, a close nexus between scholars' sense of professional identity and what they see to be their enhanced capacity to deliver good teaching and learning is becoming clear. I previously noted that the role of Boyer's model appears to play a "significant part in the (implicit) professional development of individual scholars, as much as in the (explicit) enhancement of pedagogical practice" (Boyd, 2013:2), even if this remains un- or under-stated.

Thirdly, the teaching-research nexus (often short-handed as TRN) provides yet another focus for scholarship mentoring. University education can be distinguished from other higher education in that the teaching and learning is closely related to other scholarship, including research (Boyd et al., 2010). This is the relationship that is referred to as the teaching-research nexus and is a relationship that Boyer (1990) considers a fundamental characteristic of academic work. Research and teaching have been described as being "mutually reinforcing endeavours" (Anon, 2003), while researchers such as Krause et al. (2007, 2008) articulate the diversity of relationships possible between teaching and research. Whichever way the TRN is articulated, it provides valuable opportunity for professional development for both teaching and research academics.

The final influencing matter is the spectacular growth in journal publication over the recent years, notably with online journals making the results of research increasingly accessible. In particular, open source publication ensures that publications are readily available for all to use.

Pulling this together, my approach has been to harness these contexts. My choice to do this has, in part, reflected my role as Chair of my University's research ethics committee. In that capacity, I offer training for researchers wishing to engage the research ethics processes. I also promote research ethics and its processes. This amounts to a role in which I encounter and support researchers across the University. In many cases, in conversing about a research ethics matter, it becomes apparent that there is a more fundamental issue at hand, one of understanding of or at least developing a nuanced engagement with the culture and practices of research. The resonance with earlier work of mine in mentoring students and colleagues through a reflective practice model (Boyd et al., 2013; Figure 1) is palpable: this was an experiment in a collective reflective interview in which we explored our intellectual foundations. The resulting paper was entitled "Finding a home: …", a title that emphasized the importance of scholars reflecting on their professional activity in order to understand it more fully and to thus find their cultural home.

As noted above in the quote above from Boyd et al. (2012:14) ("While academics with scholarly apprenticeships …"), this need to understand oneself is not uncommon. Indeed, I suggest, understanding oneself is an essential element of professional development. What Boyd et al. have shown in the context of academics aspiring to engage the teaching-research nexus is that there are critical gaps in professional development. These can be filled, but this needs to be a conscious activity. Adopting SoTL as a development focus allows this to be managed with the day-to-day activity of most academics, and from a practical perspective, I have chosen the use of small team projects. This allows individuals to invest a suitable amount of time and energy in a project without feeling, as many early- and mid-career academics feel, overwhelmed. Finally, the practical matter is one of focusing on project identification, planning, implementation and publication, i.e. running a small project from go to woe. The choice of project rests with the group and usually emerges following discussion about teaching and learning: every academic, I find, has a question, and usually several questions, about the teaching they are doing, the learning their students are doing, the curriculum, the syllabus, teaching devices, assessment, evaluation, organizational matters, and so on. Finding an issue to research is not difficult.

## Examples of the projects

Several projects will be briefly described to demonstrate the diversity, role and effect of early- and mid-career mentoring through team research and writing. These brief descriptions will also illustrate the types of educational insights that may emerge from such an approach to the scholarship of teaching and learning. The projects are: (i) a teaching research nexus project; (ii) a research ethics-writing project; (iii) a project around the adoption of research pedagogy in practitioner training; (iv) a project focusing on curriculum intervention in a pre-service teacher-training course; and (v)

three projects exploring aspects of information and communication technology (ICT) in teaching, with specific interest in the use of wikis in teaching, the adoption of citizen science in environmental data collection and the use of Google MashUp in student exercises.

**(i) The teaching research nexus project**

Building on previous work with experienced teaching-research nexus practitioners (Boyd et al., 2010), it became apparent that the conventional language of professional development concerning the teaching-research nexus was not useful. Indeed, in working with academics who considered themselves experienced and skilled in drawing together their teaching and their research, it became clear that their conceptions of the nexus was usually rather limited, often reduced to a single articulation of it. Despite good evidence (Krause et al., 2007, 2008) that there are at least five dimensions of the nexus – learning through research, research-led teaching, researching teaching, teaching informed research, and learning how to do research – most academics tend to use only one version of it explicitly, and perhaps a couple more implicitly. When asked to define the nexus, few academics are likely to be able to go beyond a superficial definition.

In discussing the potential for early- and mid-career academics to engage in the nexus, it was clear that such a definitional foundation was lacking. Both the formal expression of the nexus and the formal language used in scholarly development, it turns out, means little to this group. Rather than head down traditional training paths, it was decided by a small (but growing) group to use a reflective model to explore this issue. This involved several rounds of experiential narrative writing – participants were asked to draft a short (one page or so) account of what they thought the nexus was, why they were interested in engaging it, how they thought they could engage with it, what they perceived the impediments to be, and so on. Form and content was not prescribed. This group had read the accounts of experienced practitioners (Boyd et al., 2010). Their own accounts were extremely varied. They all highlighted their inexperience and thus gaps in their understanding. Yet, on a most positive side, they all identified sources of inspiration as need and desire. In short, all knew that they should engage the nexus, and all wished to.

The reflective narrative project commenced with the explicit intention that a publication would be prepared and published. This eventuated, providing many of the participants their first scholarship of teaching and learning paper (Boyd et al., 2012; Figure 1). Recording the very different stimuli and strategies adopted by the participants (the title of the paper, "Friday is my research day", was drawn from one participant's strategy of setting aside one day to 'do' research), the paper concluded thus (Boyd et al., 2012:13, emphasis added):

> Changing circumstances [in universities] imply that conventional academic development needs to be *adapted to harness the opportunities offered by [the] focus on teaching and learning, the pragmatic day-to-day demands of teaching academics and the serendipity so influential in any career* … Mentoring … needs to rely *less* on formal expressions of the nexus and *more* on adaptive strategies based on the daily experience of academics. The institutional response – the method to lead the novice to the threshold – needs to realistically reflect

the diverse, troublesome and contingent contexts of academics' desires to engage the teaching-research nexus.



**Figure 1. "Friday is my research day": Writing about the teaching-research nexus. Publishing reflective narratives provided both experienced and inexperienced scholars the opportunity to consider their adoption or desired adoption of the nexus as a frame to align their activities as teaching and research scholars. For many of the authors, this was their first venture in scholarship of teaching and learning publication.**

**(ii) The research ethics-writing project**

This project commenced from a similar base as the one described above, and reflects an equivalent issue to the teaching-research nexus project. In my role as chair of the research ethics committee, I was frequently asked functional questions about completing the ethics application form. There was an expectation that there are mandatory responses ("All consent must be written", for example), most of which represents a mythical understanding of the research ethics system. The important aspect of writing for ethics approval, and of course prior to that for planning for ethical research, is that decisions about what, who, how and why are guided by a set of principles. Discussions of the type I was engaging in reflected a tendency towards considering the ethics application process as an operational rather than cultural one. What I considered was required was an increasing cultural understanding of research ethics processes.

It became apparent that questions about writing for ethics approval were often really questions about conceptualising and planning for research (Boyd, 2009). The writing of a research ethics application is closely related to, but different from, the writing of a

research proposal. However, this dichotomy presents a challenge to early- and (often) mid- career academics. Their diligence in writing the ethics proposal, thus, often results in dismay when their application is criticised by an ethics review committee. That criticism often reflects the inexperience of planning for research rather than any ethically-problematic matter. A research ethics proposal needs to take a research proposal as its basis, but is modified to demonstrate that the research, as planned, will (as best as possible) meet the principles of ethical research. In Australia, human research must reflect four defined principles – merit and integrity, justice, beneficence, and respect – and must address issues of risk (Anon. 2007). In doing so, the researcher often finds that their research design and method requires modification. Writing the research ethics proposal often acts, therefore, as a trigger for early reflection – reflection even before the research has started – on the researcher's research practice.

To address such matters, a team comprising two experienced researchers, two early career academics and two tutoring postgraduate students was assembled. The team operated a self-mentoring process over several months, mentoring through group discussions, iterative writing, and mutual storytelling. In a similar manner to the teaching-research nexus project, the shared process of reflection allowed each member to find ways of exploring and expressing their relationships with the act of writing for ethics approval. Likewise, the project recorded a diversity of inceptive, desires, approaches and inspirations. As with the TRN project, the work was explicitly designed for publication. The resulting paper (Boyd et al., 2013; Figure 2) highlighted several important points.
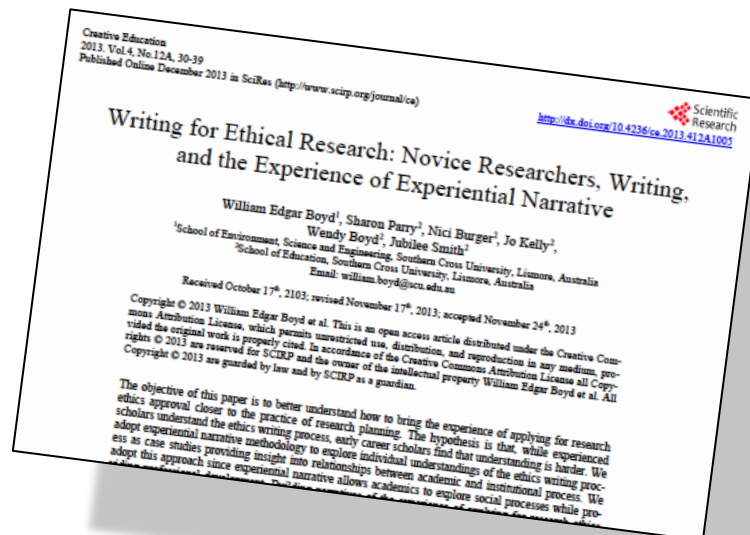


**Figure 2: Writing for ethical research: the publication that gives … not only the first publication on research ethics for most the authors, but the first on teaching and learning. While it was being composed, it was a learning exercise and mentoring journey for all the team members.**

First, it recorded the participants' self-awareness and empowerment at all levels of the process. This included, very usefully, the experiences of the established researchers in the team. Secondly, it resulted in improved research ethics writing and applications. And thirdly, it assisted the participants to let go of both academic anxieties and cherished models. The paper concluded with a positive affirmation of the role of writing in mentoring academic careers: "the very bureaucratic writing embedded in the research ethics proposal can be harnessed to mentor early career – and later career – writing and scholarly development" (Boyd et al., 2013:37).

**(iii) Adoption of research pedagogy in practitioner training**

This project, while also engaging a reflective mode of enquiry, extended the data collection to include student survey and observation. The basis of the study is the adoption of a research methodology – that is the planning, execution and write-up of small, usually group, research projects by final year Masters students in an Osteopathy course. The important aspect of this is that the course's primary purpose is to provide training for future osteopathy practitioners rather than for future osteopathy academics. The choice of a research methodology is, therefore, something that needs to be carefully considered in terms of its seeming relevance to the course objectives. While the staff members running this course have no doubts as to its relevance, there was some reluctance amongst students to accept this as a valid form of training for their future needs as practitioners. Part of this, it appears, stemmed from a lack of familiarity with research processes, a lack of familiarity that expressed itself especially at the stage of seeking human research ethics approval. The human research ethics processes are core to this pedagogical experience, and to this end I, as chair of the university's human research ethics committee, became involved in the teaching. My role as a teacher involved providing an introductory lecture on research ethics to the students and providing individual assistance in how they engaged research ethics principles in their project planning stage. In this way I contributed to efforts to assist students in developing an understanding of the value of research – and research ethics – in a clinical setting.

In terms of the research, the team, based on the core teaching team, comprised two experienced researchers, one mid-career and three early-career academics. They devised an evaluative project that involved two principle activities. First, they sought to test students' acceptance of the research-practitioner crossover, students' comfort with the research mode, and the role of research ethics in the project. Secondly, they undertook self-reflection on their own roles and perceptions of the situation. The senior staff members mentored the research project planning and implementation that included encouraging the less experienced staff to make a conference presentation and to develop a publication (Figure 3). The former went well and helped validate views amongst the team regarding the utility of research pedagogy in a practitioner-training course. In particular, the team now understands both the student and their own relationships with the activity better. From a student perspective, the team has a record of initial reticence by some students to accept research in clinical practice training programs. However, they also record evidence that the research projects contributed positively to student ethical clinical practice learning. The student engagement with ethics was, nevertheless,

variable in both depth and form. From the point of view of validating and enhancing the use of research as a pedagogical tool for ethical clinical practice, the team now understands the need to make explicit the connections between research and clinical ethical behaviour, to provide projects that are clinically relevant, and to provide opportunities for student reflection on research experience. The adaptation of research ethics principles and practices in this clinical training setting has therefore demonstrated the value of research as professional training pedagogy. It expanded students' understanding of engagement with enquiry. It also evolved into a professional mentoring project with teaching staff through this scholarship of teaching and learning research project.

Publishing these results, however, has gone more slowly than expected, as the team discovers the joys of team writing (Grace et al., in draft). The theme of the publication does not sit well, it seems, with mainstream health education journals.

In a broader sense, this example is important because it demonstrates potential for cross-over education with students whose primary focus is on professional or clinical training and qualification, and who are not initially or primarily interested in developing research or scholarly careers (Boyd, 2014). Although this seeming disjunction – the introduction of material that may be unfamiliar or exotic to students – first worked as a limiting factor in uptake and interest, it later became an empowering factor in student understanding. Boyd (2014), in a review of similar work in another context, has identified three points that are key to successful adoption of such an approach. First, the use of unfamiliar or exotic content to stimulate student insight and learning is realistic and practical. Its primary value lies in its unfamiliarity to the student, and therefore its capacity to stimulate the enquiring mind. Secondly, allowing students enough time to process new and unfamiliar ideas – content, technical terms, relevance – is important. Thirdly, from a teaching perspective, clarity of purpose is essential.

**(iv) Curriculum intervention in a pre-service teacher-training course**

Research into pre-service teachers' attitudes towards teaching mathematics shows that many pre-service teachers experience high levels of mathematics anxiety about both learning and teaching mathematics. This is especially important for pre-service primary school teachers who will go on to provide children with their foundation of mathematics for high school. Addressing this anxiety at pre-service training could effectively eliminate later problems in both teaching and learning. In recognising this, a team pre-service teacher-training lecturers developed a research project that moved beyond the usual student survey. While an original curiosity regarding actual (rather than assumed) levels of student anxiety about maths (cf. Boyd et al., 1998) could have been satisfied through a standard student survey, the team recognised the need for the students to benefit directly from any enquiry. The team thus devised a project involving curriculum interventions comprising start- and end-of-session surveys, content development and student engagement and analysis of grades and other data. In doing so, this was a good opportunity to introduce education early-career staff to scholarship of teaching and learning.

The study has run for over a year, and is being extended to future years, including a potential longitudinal study. Logistical outcomes include a successful application for funding, a paper published (Boyd et al., 2014), the development of PhD studies, improved teaching, and recorded morale boost (Figure 4).

In educational terms the study has identified three important findings. First, students' memories of mathematics were either overwhelmingly positive (40%) or negative (60%), and students understood these to determine how they now feel about mathematics. Secondly, 40% of students are now anxious about teaching mathematics. And thirdly, students' considered their mathematical ability to be influenced by two factors: external, i.e. the impact of past teachers (47% of respondents: 35% positive, 65% negative); and internal, i.e. that one is either good at mathematics or not (57% of respondents: 43% positive, 57% negative). Importantly, many students remember finding primary school mathematics difficult and may pass this anxiety on to their pupils. Such evidence of intergenerational effect emphasises the importance of making issues and processes of discipline anxiety explicit in the current teacher-training curriculum. Although the current project did not, by introducing new syllabus content on mathematics anxiety, reduce the incidence of anxiety, students reported improved understanding of and attitude towards mathematical concepts at the end of term.
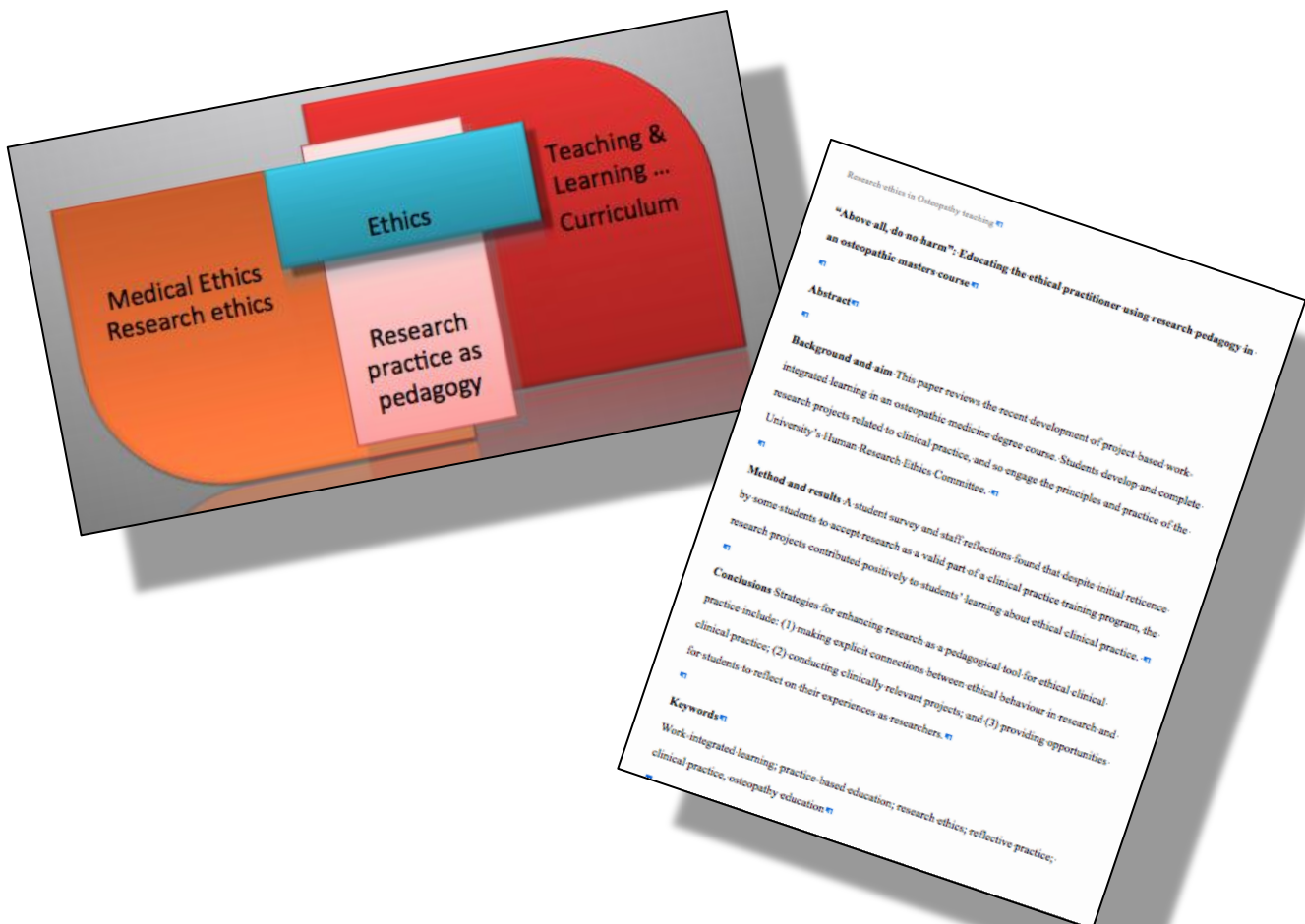
**Figure 3: Reporting on an evaluation of the adoption of a research pedagogical approach to osteopathy practitioner training. While presentation as a workshop provides valuable opportunity for academics with relatively little SoTL experience to reflect on their SoTL project – the coloured diagram depicted the relationships between key elements of osteopathy training – publishing the results has proved, at this stage, a little slower than anticipated**



**Figure 4: Addressing mathematics anxiety amongst pre-service teacher: academics now better understand the incidence and sources of anxiety, and can introduce this information to students to counteract the effects of previous negative experience and help them become more confident mathematics teachers. This scholarship of teaching and learning activity also boosted lecturer confidence: the image reflects how one, previously research-inexperienced team member, responded.**

**(v) Exploration of ICT in teaching … wikis, citizen science, and Google MashUp**

The final example comprises three independent studies. These were opportunistic projects stimulated by a call for papers for a special issue on wikis for the journal *Future Internet*. It was opportunistic because the call for papers for a themed issue of the journal provided the stimulus for gathering the project teams together to reflect on and write about work that was already being done, but for which there was no prior plan

to publish. Two ended up being published there (den Exter et al., 2012; Newell et al., 2012) and one elsewhere (Boyd & Ellis, 2013). The unifying characteristic of these papers is that the writing teams comprised experts in ICT (information and communication technology) in education, these team members being the early- to mid-career academics, whereas my role was to encourage and mentor experts in their fields to research and write about something that they take for granted in their daily work.

The study by den Exter et al. concerned the use of wikis and blogs in teaching large classes. The team included two very experienced on-line teachers, people known as technology early adopters and advocates. For them, teaching engaging Web 2.0 technology is straightforward, but they had no prior inclination to write and publish about their daily activities, hence the need for encouragement. The paper reviewed and analysed their approaches to large class teaching using Web 2.0 technology and described two approaches to using such technology, emergent and structured. The paper provided rich descriptions of the teaching circumstances, drawing on student feedback, data on student engagement, website data trawling, and analysis, to provide detailed records of class and teacher performance. This resulted in a model of teaching as learning dynamics (Figure 5). The paper concluded in considering the needs and opportunities for designing an integrated Web 2.0 community of inquiry on six points.

- Web 2.0 provides significant learning opportunities for distance education students.
- System design depends on time available for teacher and student, clarity of pedagogical goals, and appropriate curriculum.
- Important matters comprise: teacher guidance; clear instruction; and matching design with pedagogical goals and the student-teacher context.
- There is a gradient between structured and emergent uses of Web 2.0 techniques; the adoption of these, or their balance, in any particular situation, depends on pedagogical goals, class size, and teacher time.
- For a successful emergent approach, the teacher needs to be present throughout, the Web 2.0 tools need to be tightly integrated, and initial guidance activities are essential.
- For a successful structured approach, there is need for initial use of a tight structure, and for model wikis for student guidance.

While den Exter et al.'s study primarily focussed on successful in-class implementation of Web 2.0 technology, the studies by Newell et al. and Boyd & Ellis, while superficially appearing to be about technology *per se*, were about ITC and culture change. Newell et al. discussed a form of citizen science, and Boyd & Ellis considered the use of the shared (online) resources of Google MashUp for teaching (Figure 6). Both concluded, however, on the need for cultural change in relation to attitudes towards technology, knowledge and authority/authorship. Both papers, perhaps unsurprisingly, concluded in a similar manner.

> In particular, concerns around ownership of the application, the tool and the data, stemming from the public nature of the technology and the role of non-specialist data collectors – the community-based collaborative providers of data – require us to consider the role of culture change. In parallel to the

technological development, there needs to be consideration of the potentially significant shifts in attitude towards knowledge, authority and ownership required for a profession to adopt such tools with comfort. (Newell et al., 2012:559).

Social issues around the ownership and authorship of knowledge, and therefore the creation of original outputs by students, are challenged by such collaborative and open-source technology. The challenge is to our cultural understanding of the ownership and expression of knowledge. The paper ends in supporting other authors calling for the development of appropriate social systems, dynamics and cultures that allow for the acknowledgment and validity of shared knowledge and, thus, shared output generation as valid, honest and unproblematic. (Boyd & Ellis, 2013:412)
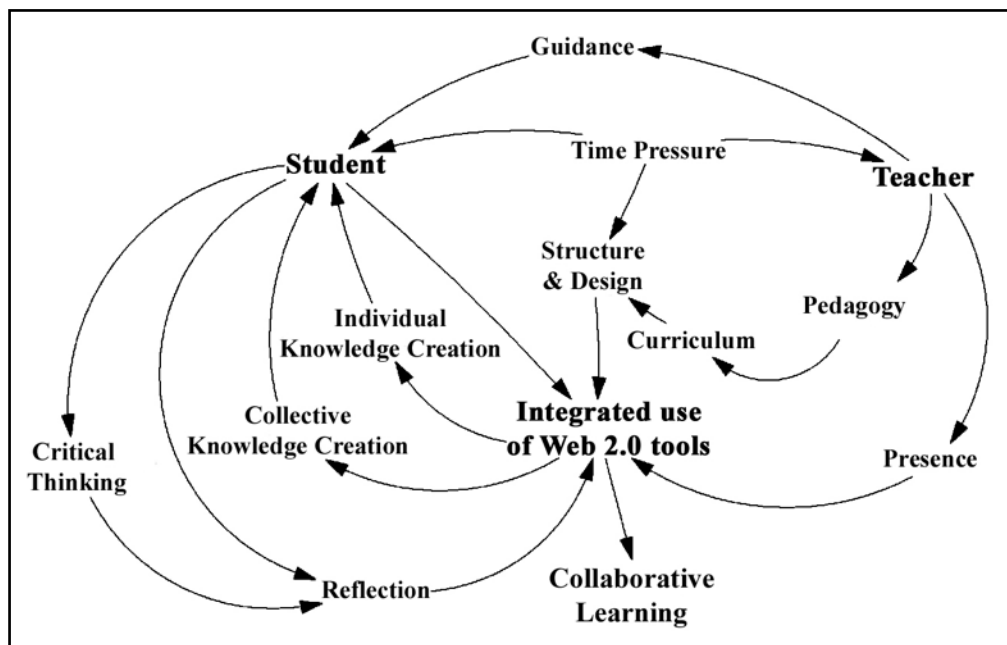


**Figure 5: Designing an integrated Web 2.0 community of inquiry: a conceptual model, illustrating relationships between teacher, student and the integrated use of Web 2.0 tools, and outlining the essential elements of teaching with Web 2.0 technology (den Exter et al., 2012, Figure 1).**

**Figure 6: Web 2.0 tools at work: Upper image: Newell et al. harnessed the power of citizen science using a web app to record the presence of the noxious cane toad in Eastern Australia – a screen shot of the Toad Tracker interface. Lower image: Boyd & Ellis reflected on the use of the shared resources of Google MashUp as sources of learning activities for students (Google, 2011).**

## The benefits of small project team mentoring

While each of these studies has yielded interesting insights into various processes of education, the primary purpose was to provide mentoring to early- and mid-career academic staff who find themselves in a position of requiring to develop research skills and a research profile. The question now is whether this has worked. There is a quote from J.R.R. Tolkien's novel, *The Hobbit*, which seems rather apposite in the circumstances:

> This is a story of how a Baggins had an adventure, and found himself doing and saying things altogether unexpected. He may have lost the neighbours' respect, but he gained – well, you will see whether he gained anything in the end.

The question is whether the team members have gained anything in the end (Figure 7). For each project publication has been or will be a tangible outcome. In the emerging academic world of (at least) Australian universities, tangible and measurable published outputs are important. This is especially so for early-career academics. Furthermore, given a gradual acknowledgement in the sector that scholarship of teaching (and for some learning) is important, and thus needs to be considered and assessed in recruitment, performance evaluation and promotion.

**Figure 7: The Hero's Journey – A popular device used to assist students to critique Bilbo Baggins' journey in *The Hobbit* is the Hero's Journey. There are many depictions and expressions of the Journey, but this one, as illustrated on the teaching support web site *Teacher Anthony* [http://www.teacheranthoney.com/7th-grade-ela-novels.html](http://www.teacheranthoney.com/7th-grade-ela-novels.html)), seems to provide all the elements of the journeys undertaken by the early- and mid-career participants in the projects described in this paper. Further analysis could be enlightening[i].**
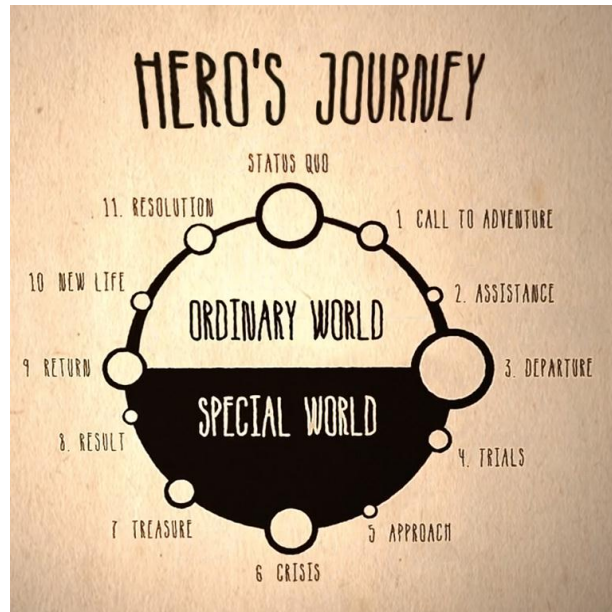
Perhaps a stronger indicator of whether individuals have gained anything in the end is whether they continue to publish in the field. While it is early days to judge this, at least some are doing so. Ellis has one more item recently published (Ellis & Boyd, 2014), in which he explores another adaption of Web 2.0 technology, the use of vodcasting (the video equivalent of podcasting), in teaching and learning. The mathematics anxiety team are actively planning continuing projects, and discussing future publications. Furthermore, additional projects are emerging related to the mathematics anxiety project in other disciplines. On another front, it is important to note that at least one of the authors described above has acknowledged the utility of their paper in supporting their successful application for promotion.

Another approach to considering whether the team members have gained anything in the end may be to consider how the teams worked. There are many frames for such a consideration. At this stage I have not conducted the evaluation of team processes within each project so can only outline possibilities at this stage, with a view to more detailed examination in due course.

Coutu (2013:29) summarises "five basic conditions that leaders … must fulfil in order to create and maintain effective teams" thus: teams must be real; teams must need a compelling direction; teams need enabling structures; teams need a supportive organisation; and teams need expert coaching. While it may be argued that the teams

described here are real, had compelling direction and expert coaching, the definition of enabling structures and supportive organisation may need further examination. Katzenbach & Smith (20134:38-39) cast these ideas slightly differently, identifying five characteristics of a team's "essential discipline": a meaningful purpose that the team has helped to shape; specific performance goals that flow from the common purpose; as mix of complementary skills; a strong commitment to how the work gets done; and mutual accountability. While this essay has not addressed the internal dynamics of the teams, it should be noted that all the projects arose out of team discussions regarding desired outcome. Performance goals were perhaps less explicitly defined, other than to aim for publication. The teams are generally diverse, bringing together different, and possibly complementary, skills, although where accountability for these lay often remained implicit rather than explicit. Authors such as Katzenbach & Smith (2013) and Gratton & Erickson (2013) also provide operational advice on building team performance, while concepts of collaborations (e.g. Anon, 2013) provide fertile ground for enhancing the experience of early- and mid-career academics embarking on team-based research and writing mentoring projects.

Finally, and returning to my opening assertions regarding the need for mentoring to assist in provide early- and mid-career academics with the skills development required to navigate the new and emerging higher education system in Australia – in effect, to provide a meaningful scholarly education – I reflect on some research done on an equivalent experience, the introduction of research into undergraduate curricula. At the core of the experiences described in this paper lies an assumption that active engagement in research – learning about research by doing research – is a most effective way to develop scholarly skills. "One realistic way of bringing teaching and research together in learning environments", claims Willison, "is for academics to explicitly develop student research skills in regular semester-length courses …, immersing students in the discipline, not only for its content, but also for its knowledge-making practices" (Willison, 2012:906). Willison's work has focused on introducing research into undergraduate courses, based on the premise that "in order to engage in meaningful research, students would benefit from the explicit development of their research skill, as would the staff guiding that development" (Willison & O'Regan, 2007:234). This paper shares that premise, albeit as a foundation for supporting early- and mid-career academics' development. In an early paper developing their 'Research Skill Development Framework', Willison & O'Regan (2007:407) concluded thus:

> [There are "pockets of realization"] where undergraduate research involvement has contributed significantly to enhanced experience of programs, graduate employment outcomes and postgraduate research experience. … Conceptualising student research skill development and actualizing it in the early years of undergraduate studies is critical if our global society is to provide quality researchers to deal with the challenges of the early, middle and late twenty-first century. Moreover … there are numerous skill and satisfaction gains …: research skill development, from low degree of autonomy to high degree of autonomy, is relevant for all undergraduate students.

Replace the words 'undergraduate' and 'undergraduate students' with the term, 'earl- and mid-career academic(s)', and the sentiment remains. Continuing research (Willison, 2012) has identified a number of important processes that reflect on the experiences

described here. From the learner perspective, mentees understood they had developed discipline-specific skills that are useful for current or future employment; this has occurred in the described examples, although to what extent still needs to be tested. Importantly, development is recognised to occur best early in a degree program (read career). From the mentor perspective, most factors that facilitated or impeded research skill development are noted to be within the control of the person coordinating the process; this reflects the role of the team leader. Willison, furthermore, argues that the process helped academics involved as mentors to reconsider the nature of their disciplinary research and, on occasions, find new research directions. Several of the project described above involved reflective practices in which the senior members of the teams were expected to contribute as much as the early- and mid-career members, and although the outcomes of that reflection have not been made explicit in this paper, they often did provide a point of re-evaluation of the senior members' views of their scholarship and relationships in academe. Certainly the very process of teams defining their research projects has opened up new research possibilities for all participants. Finally, however, Willison found that explicit research skill development has the capacity to be more effective than mentored research, for undergraduate students; it would be interesting to see if this transfers to career academics.

**A conclusion**

How to conclude what is clearly a continuing journey? Perhaps with a quote that, in some way, brings together the diverse experiences described in this essay that somehow encapsulates the successes of the individual projects and, especially, for this is what underlies all of this work, the progress of the individual involved in each project. In the spirit of mentoring, the reader is asked to read into these what he or she will. How about Benjamin Franklin's well-worn "Tell me and I forget, teach me and I may remember, involve me and I learn"? Perhaps, in a more absolute mode, we should listen to Albert Schweitzer's assertion that, "Example is not the main thing in influencing others. It is the only thing." However, in due acknowledgement to all my colleagues, co-researchers and co-authors, I close on this offering from the educator James Bryant Conant. He asked us simply to "Behold the turtle: He only makes progress when he sticks his neck out."

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[i] I acknowledge one of the referees of an earlier version of this paper who drew to my attention the notion that *The Heroes Journey* is a model for narrative initially adopted from Jung's notion of the monomyth and popularised by Joseph Campbell in *The Hero with a Thousand Faces.* It is a device for structuring particularly quest stories: hence (i) the image here attached represents the stages of the quest, and (ii) the attractiveness for this model as a device for examining the progress of the early career academics I have been working with.