Transforming Disciplines:
Emergent Learning and Threshold Concepts
18th – 19th November, 2013

Conference Report
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TRANSFORMING DISCIPLINES:
EMERGENT LEARNING AND THRESHOLD CONCEPTS

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CONFERENCE REPORT

CONTEXT

The Threshold Concepts Conference was held at the University of Waikato under the auspices of the Wilf Malcolm Institute of Educational Research (WMIER) and was the culmination of a two year Teaching Learning Research Initiative (TLRI) managed by the New Zealand Council for Educational Research. The project was an interdisciplinary one that brought together academic practitioners from Electronics Engineering, English, Tertiary Teaching and Learning, and Management Studies to explore the prospect of transforming student learning through key features of threshold concepts; these being:

- transformative but also potentially troublesome,

- irreversible, that is, difficult to unlearn,

- Integrative - revealing previously hidden knowledge,

- Re-constitutive - effecting a change in the learner's subjectivity,

- Bounded - leading to new conceptual terrain,

- Discursive – changed, and

- possessing liminality - a space to be crossed, a shift in identity, that may be uncomfortable.

Conference papers, reporting upon projects, were offered not only by this team, but also by practitioners from within the University of Waikato and other major New Zealand universities as well as from several Australian universities and covered such diverse fields as engineering, physics, religious studies, medicine, accounting, economics, drama, and blended learning.

INTRODUCING THRESHOLD CONCEPTS

The conference was opened by the Dean of the Faculty of Education who used a 'nice conceit' to suggest that its mission was to apply threshold concepts to threshold concepts. His introduction was followed by a concise and clear exposition of the power of threshold concepts (hereafter referred to as TCs) when working at the course level, by one of their founding theoreticians, Erik Meyer who focused, in particular, upon matters of variation. Not only do those who employ TCs vary in their articulation and application, but also students will vary in their learning when they are subject to teaching and assessment practices that are founded upon the principles associated with TCs. Using a case study of open catchment hydraulics Professor Meyer stepped back from the generic to demonstrate the structural complexity of the ways in which students can develop a capacity for meta-learning by judging responses to assessment tasks, generated by both others and themselves. He concluded that the employment of TCs provided both teachers and learners with a new analytic lens.

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EMERGENT THEMES

While each presentation was contextualized within the traditions and practices of given disciplines it was clear that a number of themes were common to the ways in which users of TCs could identify their power and value. Pedagogical implications in relation to teaching, learning and curriculum development were manifest in the range of studies that were presented. The second category could be said to be associated with the impact of change, institutionally and personally.

Pedagogical implications

Pedagogy is taken here to mean the intersection of teaching, learning and the curriculum in context. Being explicit, considering assessment, unsettling learning, moving through and across boundaries, taking account of variability, engaging in playfulness and experimentation and providing for motivation and engagement all constitute elements of changes to pedagogy.

Being explicit – making the abstract concrete

A number of presentations pointed to the need to explore with students their conceptions of what learning actually is, in all of its structural complexity. In order to achieve a high level of meta-cognition it was necessary to make explicit both the processes and purposes of learning. "You teach to the TCs, you point them out and isolate them, you force students into the liminal space." It was seen as helpful to focus on one or two concepts at any one time in order that they would be better understood and employed. The challenge then becomes one of bridging between concepts, thus understanding the ways in which they relate to each other. Taking this stance has implications for curriculum design and assessment, "TCs are the jewels in the curriculum".

Changing assessment regimes

Assessment within a TC discourse was seen as formative in character. In a number of reported instances, using a TC orientation, students were required to identify answers as an opportunity for learning, rather than in terms of a score noting achievement. They had to consider what the questions were thought to be testing, not only in substance but also in terms of the learning that was required and the TCs being employed.

Indeed, for example, from a tertiary teaching and learning perspective, there can be a certain freedom from micro-assessment as doctoral students learn the requisite skills of writing a dissertation using a 4 x 4 strategy: identify, articulate, discuss and plan. The question then arises "can there be TCs in the context of no taught courses"? With the implication being that because there is no such course work then neither is there assessment except at the moment of lodging the thesis.

In such a context there can be fruitful discussions of what the writing process is; is it thinking to write? is it writing to think? and what of reading itself? When do students move to adopting a position of authority over their writing? Not being assessed means that the processes used to support student writing can be seen as liberating, but nonetheless imbued with TCs.

Unsettling the learning

Partly learning is unsettled by developing new understandings of what counts as knowledge, how it is defined and developed both individually and collectively and in context. Conceptions and perceptions are there to be interrogated, critiqued and expanded; so that, for example, accountancy students find themselves creating collages, provoking creativity, embracing imagination and going beyond the norms that are usually associated with accountancy education. Another example was found in the teaching of physics and the discipline's relationship to mathematics, "experts see mathematics *informing* physics, students believe that it *explains* phenomena". By making clear these different orientations students see that their taken-for-granted views of the association between mathematics

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and physics are not those necessarily shared by their teachers and that this alone is an unsettling experience.

Students and their teachers may find themselves moving from "a secure orientation to a disturbing disorientation, and even a surprising re-orientation". Several spoke of this kind of perturbation as being "the 'aha' moment" or "the light at the end of the tunnel". A critical event occurs, it can create temporary confusion and be troublesome, then the threshold is reached and even crossed.

Beyond the boundaries – liminality

Unsettling the learning takes students, once they have penetrated the boundaries of former thinking and practices, to a new space, the liminal space where new ways of speaking can be manifest. Recognising and re-naming ideas in relation to the new space can be transformative and moves the learning forward, "it makes the theory 'sticky'". All the same, as Erik cautioned, there needs to be an awareness of the range of participants "being squeezed into the liminal space" and what this can mean.

Variability

Throughout the discussion it was clear that TCs do not provide some kind of template that can be universally applied. The concepts, being identified, arise from the practices of a given discipline. Not only do these vary between disciplines, but also within them. Similarly those who teach and learn, using a carefully tailored TC framework, will have differing competencies, experiences, dispositions and socio-cultural backgrounds.

Playfulness and experimentation

It was suggested that playfulness can allow a retreat from the perceived constraints of the given discipline and that "playing on the thresholds of the discipline can be a way of escaping the discipline" or as a way of navigating a changing world.

While much of what is taken to be learning occurs in formal settings and institutions, there is also a whole domain of informal education that may be playful and experimental but also can be understood within a discussion of TCs. Informal education in areas such as dance deserves our critical attention, in particular where there is a desire for it to be sustainable and developmental.

Motivation and engagement

Stepping outside conventional boundaries clearly creates its own discomfort. However, as a number of presentations testified the range of different and inclusive practices generated their own motivation and engagement for all who participated. In medicine, for example, it was seen that acquiring medical knowledge is not the same thing as doing or practicing it. Difficult as innovations such as working towards Safe and Effective Outcomes (SECO) are, persistence, being motivated to work until the task is complete with the integration of facts and theories has its own rewards.

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The impact and problematics of change

Various presentations made clear that doing things differently, even thinking of doing things differently has effects on both individuals and the institution itself. Designing with and enacting TCs is not just a series of transactions in an instrumental sense, but has the potential to lead to authentic transformations.

On the individual

Unsettling ideas can result in a form of disequilibrium. While there was some advocacy for "being comfortable in one's own skin" it was also clear that adopting TCs was not for the faint-hearted. Many presentations made the case for practitioners and learners to work in concert with one another, to face their fear of change and be aware of the ways in which communication can both distort and assist practice. TCs would appear to require practitioners to create a new language, seeing provocations and uncertainty as opportunities rather than threats.

On the institution

In a similar way, if the institution remains unchanged then there is little prospect for the innovation to be sustainable. Haste and the intensification of academic work leave little space for reflection and meaningful evaluation. It was suggested that organisations need to be resilient and have a positive disposition to experimentation and give those who work in them "glimpses of an untraveled road, not yet crossed", understanding that "education is on the cusp of disruption". Some would even eschew rational planning such as was experienced in the former USSR, where "everything was forever, until it was no more."

CONCLUSION

The conference was designed to be participative. Its size allowed all delegates to be engaged with all presentations and to discuss salient points and issues. As well as establishing and firming up professional networks those attending were enabled to explore their own "liminal space" as they dealt with troublesome ideas through discursive interaction that they could integrate and re-order through the range and variety of papers and discussions.

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