Adapting educational theory to discipline pedagogy: integrating research, teaching and scholarship (0209)

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Context for the paper

One of the consequences of the shift from elite to mass participation in university education has been a growing emphasis on teaching quality, as a means to ensure successful learning outcomes for an increasingly diverse student body. In a number of countries – for example, the UK, parts of continental Europe and Australia – this focus on teaching quality has led to the expectation that new academics acquire a scholarly qualification in university pedagogy. Pedagogically valuable and research-informed as these qualifications may be, they typically take academics out of the disciplinary homes that pervade other aspects of their practice, separating rather then integrating them with their disciplinary colleagues.

Meanwhile, as the demands on academics as teachers are rising, so too are the administrative, research, entrepreneurial and broader workload demands. Economic pressures, accountability demands, rising staff:student ratios, exponential knowledge growth, and competition for academic positions, students and research funding have led to a dramatic rise in academic workloads, an increasing sense of competition for scarce resources, and a fragmentation of academic work roles. This combination of pressures is ironic, for it means that as expectations on academics as teacher-scholars are rising, their freedom and capacity to respond is simultaneously reducing.

A collaborative, discipline-based curriculum development project

In the current context, how is it possible to approach pedagogical development and scholarship in a way that addresses these conflicting pressures: integrating generic educational research with disciplinary concerns; promoting collegiality rather than competitiveness; integrating teaching, research and scholarship This paper describes a project funded by the Australian Learning and Teaching Council (ALTC) and designed to develop, trial and test a unique model for curriculum design, based on educational theory, peer collaboration and practitioner action research. Through a mixed combination of cross-institutional collaborative partnerships, academics involved in the project engage with disciplinary peers and educational researchers to investigate discipline-specific curriculum design issues at play in their own classrooms. Two contrasting disciplines, Physics and Law, were selected to trial and test the model.

Four or five academics within each discipline, one or two from each of four institutions, participated in the project, along with one higher education researcher/developer from each institution. This created a total of 12 primary participants, consisting of 2 disciplinary and 4 institutional groups, in addition to the group of educational researchers. Each academic also involved one-two of their tutors or demonstrators in the project, to reduce individual project workloads and ensure broader disciplinary consultation.

Educationally, the project built on: (1) the notion of disciplinary threshold concepts; (2) practitioner action research using phenomenographic methods; and (3) the variation theory of learning.

Over the course of the 2-year project, each team of physics and law lecturers worked together to:

1. identify a common threshold concept for first-year students in their discipline, worthy of targeted curriculum design attention
2. conduct phenomenographic action research into variation in student (mis)understandings of that concept
3. collaboratively redesign their first-year curricula, informed by this variation in understanding and guided by the variation theory of learning
4. implement the revised curriculum design and assess student learning outcomes.

Why the focus on threshold concepts?

It has been suggested that, within each discipline, there are a limited number of concepts that are 'threshold' in nature, so-called because they act as 'conceptual gateways' to disciplinary ways of thinking (Meyer and Land, 2005; 2006; Meyer, Land and Davies, 2008). Students who gain understanding of a threshold concept obtain "a transformed internal view of subject matter, subject landscape or even world view" (Meyer and Land, 2005 p.373), leading not only to new ways of understanding a subject area but a shift in the learner's sense of identity, while students who fail to grasp a threshold concept find their path blocked, with no means to proceed.

Why phenomenographic action research?

Although many teachers and educational researchers find the idea of threshold concepts intuitively appealing in explaining certain student learning difficulties, it is not always clear what the nature of the threshold is, nor what it is about any one concept that is difficult to learn. Phenomenographic research (Marton & Booth, 1997; Bowden and Green, 2005) provides a means of identifying variation in student understanding of a concept, and what it is that students perceive (or don't perceive) about the concept that leads to different understandings.

Why the variation theory of learning?

According to variation theory (Marton & Tsui, 2004; Marton & Pang, 2006), misunderstandings of a disciplinary concept may be explained in terms of students' lack of awareness of key features or aspects of the concept. Curriculum design based on variation theory enables students to progressively expand their awareness of different aspects of the concept being studied, of the relations between the aspects, and then generalize their understanding through applying the concept in different contexts. Variation theory also enables academics to analyse how different types of explanations and different patterns of examples might open up, close down or confuse opportunities for students to develop their understanding.

Transformation and development for the academics involved

The student learning benefits of the project are described elsewhere. The focus of this paper is on the impact of this collaborative, scholarly and research-based pedagogical development process on the disciplinary academics involved. Evidence from group meetings suggests that the academics became aware of how aspects of the threshold concepts were often addressed tacitly or in the context of teaching other subject matter, rather than being made an explicit focus of attention. In addition, anecdotal feedback indicates that, for some, the process has been transformative, even impacting on their understanding of the threshold concepts themselves. Their self-confidence has been increased through the realizations that their views are shared by disciplinary colleagues and that they are capable of researching and adapting their teaching to their students' learning processes. One-hour interviews addressing questions such as the effects of the project on the academics' awareness of their curriculum, students' understandings and their own understandings of thresholds in their disciplines are being conducted and key findings will be reported at the conference.

References

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