

# Disciplinary-based approaches to curriculum, learning and teaching: extending project findings

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# **ADDENDUM M**

## **Disciplinary-based approaches to curriculum, learning and teaching: extending project findings**

### **Introduction**

As we reported in our main project document, the need for greater attention to, and better ways of thinking about, curriculum conceptualisation and planning within university settings was a recurring thread in our activities. Indeed in 2007 the ALTC hosted a „curriculum forum’ based on what Hicks (2007) observed as an „absence’ of scholarly analysis and discussion of curriculum practice within the higher education sector. The forum brought together curriculum theorists from the schooling sector and various interested people from higher education. The project director was invited to attend this forum, and found that the themes emerging from our project found equal favour with forum attendees – that is, the sector was in need of disciplinary relevant approaches to curriculum theory and practice. As a result, the project leader and project director devised a number of activities that sought to redress this gap – three of which are reported here:

- Devising a methodology for analysis of threshold concepts and troublesome knowledge to guide curricular and assessment redesign (funded by UQ Strategic T&L Grant Scheme, 2008-2009; CI: D’Agostino et al.);
- An action research investigation of how teachers enable students to master discipline-specific forms of thinking and reasoning (funded by the UQ Early Career Researcher Grant Scheme, 2009-2010; CI: O’Brien);
- An action research investigation of „making disciplinary thinking visible’ within university classrooms (funded by the ALTC Competitive Grant Scheme, 2009-2011; CI: O’Brien).

### **Background**

While disciplinary epistemologies shape higher-order thinking and intellectual engagement, they can be elusive and difficult for students to grasp (Donald, 2002; Huber & Morreale, 2002). The critical features of disciplinary concepts and the nuances of disciplinary thinking rely on epistemological advances that can be challenging to navigate (Entwistle, in press; Kreber, 2009; Meyer & Land, 2006). These complex forms of thinking, reasoning and knowing are central to grasping disciplinary epistemologies and to a critical higher education.

The advantage that more sophisticated forms of knowledge and reasoning provide some students often remains implicit and assumed within university course work (Fraser & Bosquant, 2006), inadvertently made part of the „hidden’ curriculum (Toohey, 1999). This is particularly salient as undergraduate cohorts continue to expand and diversify; and greater proportions of commencing students lack the cultural capital and educational experience that is positively associated with success in university study (Krause, 2005; Krause et al, 2005; Kreber, 2009). Students must learn to transform existing approaches to learning and thinking into higher order forms of engagement based upon more sophisticated theories of knowledge (Hofer, 2006). In the higher education context, these forms of thinking, reasoning and

knowledge are disciplinary in nature (Barnett, 2009). If we are to continue to enhance the university learning experience we need to investigate disciplinary-specific forms of thinking, reasoning and knowing in ways that are sensitive to and that cast light upon how disciplinary epistemologies may be made explicit and cogent for students within university classrooms.

### ***Improving discipline-specific approaches to teaching***

Despite the centrality of disciplinary knowledge and practice in higher education, disciplinary epistemologies are often absent from currently discussed models of curriculum, teaching and assessment practice (Kreber, 2008; Parker, 2003). Nor are they included within the professional development programs designed to assist staff to gain teaching capability and expertise (Knight et al., 2005). This is a notable absence in the higher education literature and practice as academics, while disciplinary experts, often come to teaching with limited knowledge about how the particular forms of thinking and reasoning that comprise their discipline may be effectively learned, taught and assessed (Barnett, Parry and Coate, 2002; Parker, 2002). Moreover, while university teachers can demonstrate a detailed and elaborate knowledge of the subject matter – they can underestimate and oversimplify the learning demands and challenges their subject matter places on students (O'Brien, 2008).

Currently, professional development or „learning to teach’ programs offer limited opportunities for participants to delve deeply into the specific subject areas they will teach (Knight et al., 2005). Instead an emphasis is given to reviewing generalised principles of „effective teaching practice’ (Reimann, 2009; Prosser et al., 2006). In part this reflects a well-intentioned desire to locate active student learning at the centre of university pedagogy, and to avoid „content-focused’ approaches to teaching (Prosser et al., 2006). But it also reflects an empirical gap in our understanding of how disciplinary epistemologies might usefully inform pedagogical knowledge and practice (James & Krause, 2008), and approaches to learning to teach (O'Brien, 2008b). At the macro level, the practice of articulating discipline specific knowledge, reasoning and thinking remains an identified gap in the effective attainment of graduate attributes and student learning (Barrie et al., 2008; D'Agostino & O'Brien, 2007); and may account for narrow interpretations of, yet provide scaffolding for, the effective implementation of the teaching and research nexus (Krause et al., 2008).

### ***Investigating the teaching and learning of disciplinary epistemologies***

Disciplines exert a „real effect’ on student learning (Barnett, 2009), as do emerging interdisciplinary fields of research and practice, as they represent valued and powerful ways of engaging with the world. What remains unexamined is how university learning experiences may effectively furnish discipline specific ways of thinking and reasoning for students; and how university teachers can develop the pedagogical expertise that enables them to facilitate, support and assess such learning. There is potential to develop modes of professional learning and engagement, currently unavailable, that enable university teachers to build teaching capability by considering a) how the distinctive forms of thinking and reasoning within their discipline will require their students to employ particular kinds of learning, thinking, and knowledge building; b) why these may prove difficult and challenging for students to learn; and c) what teachers can do to support and enable students to overcome such difficulties. An investigation of disciplinary epistemologies in learning and teaching would redress this gap, as would the development of a methodology

that supports university teachers to inquire into, and develop strategies towards, the facilitation of effective learning and assessment of discipline specific forms of thinking and reasoning within university classrooms.

### **Project 1. A methodology for analysis of threshold concepts and troublesome knowledge, to guide curricular planning and assessment design in HE.**

This project, funded by the UQ Strategic T&L Grant Scheme (2008-2009) emerged as the project director and project leader sought to explore a particular area of need within faculty-based curriculum development and renewal – tools, methods and points of reference that made sense to academic staff engaged in planning or redeveloping sequences of study. Following an extensive survey of the existing research, we found the activities and outcomes of a large project within the UK to be of most value: the ESRC funded project on Enhancing Teaching and Learning (UK), led by Professor Noel Entwistle.

#### *Background to project*

In 2002 a consortium of academic developers and higher education researchers in the UK attained funding from the Economic and Social Research Council to investigate disciplinary-specific teaching and learning practices within universities across the UK (Entwistle et al., 2002-2005). Amongst its aims, the ETL project sought to:

- identify the characteristics of high quality teaching across various subject areas;
- develop conceptual frameworks that assist staff in achieving constructive alignment and the integration of deep approaches to studying and high level outcomes of learning across a range of disciplines; and
- identify the components of courses and programs that facilitate (or hinder) effective and high-quality learning.

An initial but telling finding was the immediate need to bridge the conceptual/linguistic gap between the educationally specific foci of the project and the discipline-specific thinking of participants. The project developed a set of conceptual frameworks designed to assist academics within specific subject areas to “develop more precise ways of thinking about university teaching and learning” (Entwistle, 2003). These conceptual frameworks comprised:

- disciplinary ways of thinking and practicing (disciplinary epistemologies),
- threshold concepts and troublesome knowledge (important concepts that are core to or that facilitate discipline-specific thinking/perspectives; and that can be challenging to learn), and
- constructive alignment (of disciplinary epistemologies to teaching and learning goals, activities and assessment).

The major findings of the ETL project (from Hounsell et al., 2005) indicated that:

*High quality learning (student learning approaches that are deep or strategically organized) may be encouraged and reinforced when course assessment, teaching and learning activities, teacher feedback, and learning*

*materials provide an explicit focus on disciplinary epistemologies; on the important and transformative threshold concepts that comprise the subject area; and on the kinds of troublesome knowledge students are likely to encounter;*

*Processes that facilitate pedagogical enhancement and change are more effective when anchored in disciplinary cultures and epistemologies because they readily engender academic involvement by enabling faculty staff to draw directly from their existing expertise and experience. Moreover, disciplinary epistemologies provide both faculty staff and educational development staff with compelling points of reference for gauging the effectiveness of teaching practice and the quality of learning outcomes.*

These findings highlight the potential of disciplinary epistemologies (and the related conceptual frameworks) to guide, articulate, refine and enhance teaching and learning practice; as well as make recommendations for further elaboration and expansion of these findings.

#### *Implications for this project*

There is a need to investigate the validity of these conceptual tools and frameworks for university teachers within the Australian higher education context; and to build on the UK findings by creating and evaluating a methodology that enables academics across all disciplines to use these conceptual frameworks, to undertake an inquiry within their own disciplines, and to concurrently build expertise and teaching capability. There is also potential for this project to contribute directly to, and invite contributions from, the emerging activities of the ALTC Discipline Scholars and Groups.

#### *Outcomes of the project to date*

The project has been trialling a method of analysing threshold concepts and troublesome knowledge with staff from three diverse disciplinary fields: statistics, studies of religion, and journalism. The method entails the collection of data from staff about what they see as both threshold and troublesome within a specific course, and why; as well as data from surveys that enable students to identify and describe their thoughts about concepts central to understanding the discipline and what is troublesome or difficult for them to learn. An important step within this design is the joint analysis and discussion of student data between academic and researcher; and the comparative analysis of academics' initial thoughts about the course with the summaries of student responses. Initial findings indicate that, above all, this process is valuable in enlightening academics about how students interpret course materials and experiences, as well as in illuminating the ways in which students grapple with difficult concepts.

#### ***Project 2: An action research investigation of how teachers enable students to master discipline-specific forms of thinking and reasoning.***

Another salient but pervasive finding of our project is the surprisingly infrequent opportunities course coordinators, major convenors, program coordinators and academic staff in general have to discuss the specific forms of knowledge, thinking and reasoning that comprise their field or discipline. This finding emerged in the early stages of our project, when Working Party members described the under-recognition

of curriculum work. This theme continued to emerge throughout our Phase Two activities (within the workshops and in the curriculum leadership in action initiatives) – as staff reported that these sessions initiated discussions about disciplinary-forms of thinking, teaching, assessing, and specific learning demands that had until that point, been left implicit or unexplored. Many found the term ‘junk-yard’ curriculum’ to be unnervingly accurate! This project emerged as the project leader (D’Agostino) encouraged the project director (O’Brien) to extend her own research agenda in ways that would make empirically-based contributions to our understandings of disciplinary pedagogies. Funded by the University’s early career researcher scheme, this project is currently undertaking an action research investigation of the pedagogical content knowledge, thinking and reasoning of university teachers as they describe, implement, assess and reflect on an aspect of disciplinary thinking and reasoning that their students must learn. Phase 1 case studies affirm an interesting finding from project 2 (above) – that in-depth discussion and analysis of disciplinary knowledge and thinking i) is not routinely undertaken within teaching and learning practice; and ii) is a potentially potent process of professional learning.

### ***3. An action research investigation of ‘making disciplinary thinking visible’ within university classrooms – a national study of disciplinary clusters***

This project is an extension of projects 1 and 2, in that the aims and objectives are to investigate and document methods of ‘making disciplinary thinking visible’ within curriculum, assessment, learning and teaching. The project is funded by the ALTC competitive grant scheme, led by O’Brien (with Professor Kerri-Lee Krause, Griffith University; Professor Keith Trigwell, University of Sydney) and supported by D’Agostino (as a member of the project reference group, and Arts disciplinary consultant).

The project design is guided by a review of recently completed ALTC projects, a related ARC project, the UK ESRC project, and relevant research of disciplinary epistemologies. These point to the need to:

- Pay closer attention to the role of disciplinary epistemologies in learning, teaching, curriculum, assessment practice, and their potential to enhance student learning and teaching practice.
- Build on existing conceptual frameworks that enable academic staff to investigate disciplinary ways of thinking and practicing and their significance within teaching and learning at the course level.
- Foster networks of academic staff within and across disciplines to develop skills in relation to articulating epistemological beliefs and applying these for the purposes of enhancing teaching and curriculum design in disciplinary contexts
- Develop a methodology that supports staff to improve and enhance their knowledge of disciplinary epistemologies and their implications for learning and teaching, and that fosters effective approaches to making those epistemologies visible and explicit within students’ learning experiences.

This proposal responds to these imperatives by proposing to investigate how academics might attend to the task of translating disciplinary epistemologies into effective curriculum, teaching, learning, and assessment practice (ALTC objectives a/d/f); and how students engage with, and make sense of, particular disciplinary

epistemologies within university classrooms (ALTC objective a/d).

These implications are incorporated into the project approach and design, which draws together academics from universities across Australia into six disciplinary clusters. The role of disciplinary epistemologies in curriculum, teaching, learning and assessment will be explored within these clusters (using an action research methodology) and delineated further via two national forums. The project will facilitate engagement between project participants and team members of the UK ESRC project (Entwistle et al.); and other international theorists within higher education.