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**New pedagogies in the knowledge society: Why this challenge is
an epistemological one**

Mia O'Brien

Teaching and Educational Development Institute

University of Queensland

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Contact Details:

Mia O'Brien

Education Consultant in Educational Design

Teaching Educational Development Institute (TEDI)

University of Queensland, Qld. 4072

AUSTRALIA

Ph: +61 7 3381 1263

Fax: + 61 7 3381 1252

Email: mia.obrien@uq.edu.au

New pedagogies in the knowledge society: Why this challenge is an epistemological one

As Australian higher education continues to evolve within an era of unprecedented change, academic professional development needs are becoming increasingly multifaceted and complex. Recent notions of 'new pedagogy' and 'the knowledge society' reflect a contextual and conceptual shift that places fresh demands and new dilemmas upon university teaching, curriculum development and program design. In particular, the question of how we conceptualise knowledge within the growing number of interdisciplinary and transdisciplinary fields continues to challenge our epistemological and pedagogical understandings.

This discussion paper outlines some of the issues arising from these trends, and will outline the implications for reflective practice and professional development. It will draw upon recent research on teacher epistemology and the nature of knowledge in professional practice to problematise this trend.

In doing so, several questions are raised for consideration and exploration:

- *What are the epistemological implications that underpin the growing concern for universities to provide 'work-ready' graduates?*
- *How do we conceptualise knowledge in an era of interdisciplinary and transdisciplinary fields of application?*
- *Given the curricular and pedagogical challenges we currently face, how do we respond effectively to them?*
- *What are the implications for our theories of practice, our epistemological understandings and our personal philosophies of teaching?*

The paper concludes by examining the broader issues for academic professional development as an ongoing concern for staff development, and for conceptualising quality of teaching within revised understandings of quality in curriculum and learning experiences in higher education.

Why this challenge is an epistemological one

The current emphasis on knowledge and transformative learning in Australian policies and discussion papers reflect overarching perceptions of higher education as central in the creation of knowledge and knowledgeable people (most recently see Learning for the Knowledge Society, DETYA, 2000; and Higher Education at the Crossroads, DEST, 2002; and for an overview of similar themes in the UK, Brew, 2000; and Gordon, 1999). In often broadly scoped recommendations, we are encouraged to seek ways to 'support Australia's transition to the information economy, manage new approaches to learning, professional development, content development and research, and practice 'world leading' innovations in educational design and delivery (DEST, 2002; DETYA, 2000).

Whilst it is acknowledged that such a vision poses "significant challenges for our providers" (DETYA, 2000:1), we are yet to fully explore those challenges at the level of curriculum, teaching and learning. I propose that these challenges include a substantial epistemological dimension. That is, in the face of dynamic social and economic change, where change is 'knowledge oriented' and 'knowledge driven', teaching in higher education is currently presented with some profoundly epistemological questions and dilemmas:

- What are our current beliefs about knowledge and knowing?

- How do we conceptualise, organise and utilise the subject matter knowledge that underpins our students' learning experiences?
- What are our students' beliefs about knowledge and knowing? How do we account for them and facilitate their growth and development?
- Are there forms of knowledge more valuable than others?
- How well do the answers to each of these questions translate into the contemporary context, in light of the changing nature of knowledge and how we are required to apply it?

These questions need consideration at both macro and micro levels of higher education, and may pose several dilemmas for our philosophical assumptions about educational endeavours. It is beyond the scope of this paper to comprehensively review the political and philosophical underpinnings of current educational developments. This paper intends to explore the implications for program design and pedagogical approaches in higher education.

In a recent paper on higher education in the UK, Barnett and Hallam (1999) problematise pedagogy by examining the challenges we face within an increasingly complex and knowledge-oriented context. In doing so, the authors propose the term 'supercomplexity' as a way of characterising the world and the dilemmas we face within it as:

"...that state of affairs where one is faced with alternative frameworks of interpretation through which to make sense of one's world and to act purposively in it... situations such as these present their subjects with alternative and possibly incommensurable frameworks to understanding not just those situations, but themselves. The dilemmas that supercomplexity presents us all with are dilemmas of understanding (the world), of action (in the world) and of identity and self-understanding (in the world).

Similarly, in Australia, we are faced with a multiplicity of ideals, each seeking to achieve more 'productive' social and economic outcomes in society. As levels of participation in higher education continue to burgeon, institutes are faced with an increasing diversity of students and an ever more complex array of stakeholder involvement. Universities are now encouraged to seek secure incomes from non-government sources, and there continues to be a growing emphasis on academic and industry collaboration. University/industry collaborations can provide potential for rich and rewarding partnerships, particularly in the area of knowledge development and research advancement. However, such partnerships can necessitate negotiations within issues of ownership, design of curriculum, and direction of professional practise and research. In doing so, they can also challenge traditional disciplinary domains and authority within the academy (Barnett and Hallam, 1999; Coaldrake and Stedman, 1999; King, 2002).

Education, in seeking commitment to an 'education for life and work' paradigm, are faced with the complex requirements of the world and employment today. Employers and stakeholders expect graduates to demonstrate transdisciplinary understandings, diversity of experience and problem-solving dispositions. Graduates can expect to find themselves in areas that require immediate application of a range of profession-oriented attributes, and an independent approach to complex professional demands. Our context appears to be equally 'supercomplex'.

Barnett and Hallam (1999) go on to suggest that there is an apparent absence of discussion within UK higher education, on the pedagogical challenges such 'supercomplexity' presents,

and the philosophical shifts inherent within the emerging pedagogical issues. I suggest that this is also the case in Australian higher education. Moreover, our dilemma deepens when we consider the changing ideas of knowledge and learning that evolve along side the educational evolution, and the unexamined epistemologies that underpin them. Despite much discussion on the changing nature of higher education and the influences upon culture, context, quality, policies and outcomes, there is less investigation of curriculum, pedagogy and student learning, particularly in relation to our new understandings of knowledge and the transdisciplinary thinking it demands (Brew, 1995).

What does this mean for how (and what) students learn?

Most educationalists would argue that our task in higher education remains one of 'preparing graduates not to just cope with this world, but to prosper in it, and to go on adding to it' (Barnett and Hallam, 1999; Biggs, 1999; Brockbank and McGill, 1999). What would constitute this degree of 'preparedness'? What are the implications for learning - in terms of both 'what' students learn, and 'how' they learn? The post-modern commercial and research sector, in demanding graduates who possess a wider range of skills and abilities, call into question the adequacy of current curricula.

Within the broad changes of education are shifting conceptions of knowledge, the nature of facts and information, and the nature of the disciplines that have traditionally bound them (Barnett and Hallam, 1999; Brew, 1995; McCormick and Paechter, 1999). Where expertise once lay within complex frameworks of theories and understandings in a particular domain, a 'supercomplex' world presents us with increasingly complex applications of understandings and ever expanding possibilities for interpretation. Expertise is recast and often drawn from a number of alternative frameworks that may traverse quite diverse disciplinary boundaries. Moreover, the situations we face in contemporary society present us with a complex set of dilemmas in terms of how we understand the world, our action in the world, and our identity and self-understanding within that world (Barnett and Hallam, 1999).

Learning experiences that aim only to achieve acquisition of domain specific knowledge, discrete skills and generic processes may be inadequate in preparing students for these complexities. The real world is comprised of instability, ambiguity, contestability and dynamic change. Our students require learning experiences that enable them to act purposefully within such a context. Those students who have developed a well-formulated and integrated pedagogical, professional and epistemological stance are likely to fair better than their less experienced peers (Barnett and Hallam, 1999; McCormick and Paechter, 1999).

Barnett and Hallam (1999) suggest 'supercomplexity' requires a pedagogy that is operative in three domains - knowledge, action and self. They point out that doing so will attend to students' development of knowledge and the enactment of skills within the "pedagogical space to develop their own ideas, to inject something of themselves into their learning and to make and to substantiate...their own truth claims" (1999:148). The claim here is that the domain of 'self' is central to development of those purposeful orientations needed for advancement in the world.

An understanding of self, as a 'purposeful professional practitioner' brings an added dimension to the learning experience - one of self-knowledge, and knowledge of the integration of these three domains (knowledge, skills and self), as they would be applied objectively in practice. Requiring a sound epistemological perspective, this understanding

appears to be more complex than the dimensions of personal epistemological beliefs proposed by researchers at present (Hofer and Pintrich, 1997; Schommer, 1990; Schommer, Crouse, and Rhodes, 1992; Maor and Taylor, 1995). It is an integrated understanding of field-related knowledge sets, methodologies, and applications that are complex hybrids of diverse disciplinary domains (McCormick and Paechter, 1999); combined with an understanding of how the 'self' operationalises these understandings in response to an unpredictable, problematic, professional context (Barnett and Hallam, 1999). I propose that this 'epistemological understanding' is at the heart of effective learning experiences in the 'knowledge society'.

Experience tells us that pedagogical decisions are grounded within interpretations of knowledge, theories of learning, assumptions about the learner, and the demands of the context - and that these interact in ways to inform our decisions about 'what is to be learned, and how it is to be experienced' (Gibbs, in Brew, 2000; Howard, McGee, Schwartz and Purcell, 2000; Savin-Baden, 2000).

Given the nature of a 'supercomplex' context, the intentions of growing university partnerships, and the trend for programs couched with a number of different disciplines, the following questions warrant discussion:

- Are our current pre-occupations with 'techno-centric' outcomes and 'flexible learning experiences' limiting?
- What are our interpretations of knowledge and understanding within transdisciplinary or multidisciplinary fields?
- What constitutes 'professional knowledge' and how is it most effectively learned?
- If students are to benefit from developing epistemological competence, interdisciplinary understanding, professional action and critical, open-minded dispositions - how do we organise, structure and assess their learning?

While recent studies of Australian universities indicate our preference for constructivist models of learning in many higher education environments (Ling, Arger, Smallwood, Toomey, Kirkpatrick, and Barnard, 2001), have we given adequate consideration to the teacher epistemologies and orientations that effective constructivist learning is dependent upon?

What does this have to do with how (and what) we teach?

Unsurprisingly, decisions about what is taught and the methodologies most valued are no longer the exclusive and authoritative domain of academics alone. In a contemporary world, neither the needs of students, nor the requirements of corporate clients fall neatly into disciplinary compartments. Coaldrake and Stedman (1999) point out the pressures and challenges confronting academic work as the locus of attention in the student-centred view shifts to programs of study rather than academic departments, and corporate/client preferences for multidisciplinary research and teaching.

Multidisciplinary knowledge and professional epistemologies present complex implications for our theories of practice. Embedded within these theories are assumptions about knowledge, how it is learned, and how we interpret it in the context of facilitating student learning (Hofer and Pintrich, 1997; Howard, McGee, Schwartz and Purcell, 2000; Penso, 2002; Shulman, 1987). New disciplines, the importation of existing areas of study (such as tourism, nursing and information technology), and the evolution of fields representing an

integration or hybrid of different disciplines generate new demands for research, and create fresh challenges to our epistemological and pedagogical understandings. They are essentially a question of what counts as knowledge, and a challenge for our current understandings and orientations as teachers.

However it is here that we also see an absence of dialogue in higher education at present. In teacher education, we are familiar with the term 'pedagogical content knowledge' as "the type of knowledge that is unique to teachers.. based on the manner in which teachers relate their pedagogical knowledge (what they know about teaching) to their subject matter knowledge (what they know about what they teach)" (Penso, 2002). Originating from Shulman's work in teacher education (1987) the concept of pedagogical content knowledge refers to teachers' interpretations and transformations of subject matter knowledge in the context of facilitating student learning.

Given the problematic context the 'knowledge society' presents us with, questions of how we interpret and transform subject matter knowledge should be at the heart of our current dialogue. This is particularly salient when 'subject matter knowledge' has become problematic, epistemologically and ontologically diverse, and often comprised of a collection of multiple contending disciplinary voices.

Beliefs about the nature of knowledge have been shown to affect teacher's curriculum decision making and implementation (Chan and Elliott, 2000; Hofer and Pintrich, 1997; Kagan, 1990; Pajares, 1992; Prawat, 1992), teacher's use of teaching strategies, problem solving techniques and use of texts (Hashweh, 1996; Howard et al, 2000; Savin-Baden, 2000), and their students' approach to higher-level thinking skills (Maor and Taylor, 1995). Moreover, as we continue to value and validate the power of constructivist theories and social constructivist models of learning, there is an overarching necessity for teachers to hold sophisticated epistemologies and pedagogies (Howard et al, 2000).

New pedagogies grounded within new ideas about knowledge and knowing are predicated upon such epistemologies and pedagogies. As we continue with the task of examining and understanding the nature of new knowledge, we need to push the envelope of our conceptions of teaching. We need to elaborate our theories of practice through more sophisticated relational conceptions of interdisciplinary frameworks, student understandings and professional knowledge in action.

How do we do this effectively? What are the implications for our professional development needs?

Epistemological theorists assert that epistemological beliefs are multiple, independent dimensions (Schommer, 1994) that may include beliefs about the nature of intelligence in addition to knowledge beliefs (Hofer and Pintrich, 1997). More recent research investigating the effectiveness of professional development for promoting epistemological change has shown some epistemological dimensions as amenable (Howard et al, 2000; O'Brien, 2002).

Much of the research in teachers' epistemology is yet to be examined in the broader higher education context. Epistemological research and development in teacher education has yielded interesting gains in our understanding of classroom decision-making and practice (Chan and Elliott, 2000; Howard et al, 2000). Most importantly, teacher beliefs have been indicated as central obstacles within educational reform, and in the promotion of changes in educational practice (Chan and Elliott, 2000; Pintrich, 1990; Tilleman, 1995). As effective learning in higher education relies more and more on student directedness, autonomous thinking, and finding one's way through the multi-disciplinary maze, lecturers' pedagogical

content knowledge and new epistemological understandings become increasingly central in the design and implementation of effective learning.

How do we manage the epistemological challenge?

Despite the growing involvement of professional partners and stakeholders in the academic community, facilitating learning remains primarily in the hands of academic teaching staff. As the models of learning and higher education experiences continue to diversify, new models of pedagogy need to be tried, developed and evaluated (Barnett and Hallam, 1999). However in addition to pedagogical practice, this paper has raised epistemological issues for student learning, teachers' beliefs and orientations, and curriculum development. Professional knowledge, interdisciplinary fields of study and the nature of contemporary contexts challenge our traditional disciplinary boundaries. A genuinely higher education must find ways to continue to contribute to the creation of knowledge, and through the development of knowledgeable people. At present, this seems to be an epistemological horizon.

It follows that at least some of our problematic futures lie within questions about the nature of professional practice, theories of knowledge, the changing nature of knowledge, and their implications for our understandings of pedagogical content knowledge. Perhaps notions of 'epistemological understandings' for student learning, assessment and curriculum design should have a more central place within the dialogue of new pedagogies, approaches to staff development, and the directions in research and teaching for a higher education in the knowledge society.

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