

## Threshold concepts within the disciplines

A report on a Symposium at the University of Strathclyde, Glasgow, 30 August to 1 September 2006

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Threshold concepts and a related notion of troublesome knowledge have become the recent focus of some interesting developments in research and thinking about learning and teaching in higher education. Our GEES Annual Conference in June took these topics as one of the main themes and we generated an initial and tentative list of threshold concepts in the three disciplines. The two key figures in this new field, Ray Land and Erik Meyer, convened this symposium in Glasgow and it attracted some 70 people from three continents and a good mixture of education specialists and disciplinary scholars. As with all education conferences I have ever attended, it was friendly yet very scholarly. The symposium had the classic model of keynote papers and parallel sessions, so my account must be personal and partial.

No ideas emerge suddenly in education and 'troublesome knowledge' was a phrase coined by Harvard educationalist David Perkins during the 1990s to describe what he called 'things beyond understanding'. So, we were fortunate to have David deliver the opening keynote. He offered a magisterial review of the literature of learning in higher education and suggested that three conceptions of knowing could be found among teachers and students:

- A possessive conception, where knowing is seen as knowledge to be retained and applied consistently in routine situations.
- A performative conception, where knowing is seen as a capacity to talk and think about something in a personal way and to be able to use in a variety of situations.
- A proactive conception, where knowing is seen as applying knowledge actively, creatively and imaginatively in a variety of ways and where it forms the basis for further inquiry.

The parallels with the conceptions of learning work of Marton and colleagues and with the SOLO taxonomy of John Biggs were emphasised. David went on to argue, very much in this vein, that proactive knowing was not just a short step beyond performative knowing but a major leap. To make this leap, the learner needs to have a particular learning disposition, particularly to be open-minded, curious, concerned with evidence, to be alert and engaged and willing to venture beyond the comfortable and the known. He argued that students frequently encounter ideas and knowledge without this disposition (and he also admitted that teaching, too, often failed to equip students to develop such dispositions) and so these ideas and knowledge became 'troublesome' and effectively blocked further intellectual development. He suggested that 'troublesome knowledge' was itself a threshold concept for teachers and students alike. The power of the idea of threshold concept, he concluded, was to provide a hook to connect knowledge structures to actual and potential situations and applications. Teaching to help students through these thresholds in their disciplines would probably shift still further from problem solving to problem finding, problem refining and problem framing.

Another paper to link threshold concepts to established work was that by Noel Entwistle. Noel reminded us of his work in the early 1990s with students talking about their experiences of revising for finals examinations and developing understanding during this process. He then posed the intriguing question as to

whether the conceptions and experiences of developing understanding in this context would be the same as those experienced and developed as students worked with threshold concepts in their disciplines. He stressed one point of similarity as he saw it; namely the development of a real sense of integration and synthesis of a wide body of factual, conceptual and theoretical material. He cautioned against too ready an acceptance of threshold knowledge as merely being things that students found hard to grasp. The refinement of what a threshold concept might mean was the theme of a paper by Chris Cope from La Trobe University in Australia. He used a series of mountaineer metaphors. Learning was like ascending a mountain, with the slope becoming steadily steeper and the effort needed rising. The climbers rope up and start to use their hands, but the basic motion is still the same and it remains possible to stop and turn back. Chris suggested that an overhang on the mountain required a completely different technique, was a different motion (and emotion) and that it was impossible to turn back. This, he suggested, was the threshold concept.

He talked of 'educationally critical aspects' as the key handholds and moves on this overhang of the threshold concept that would make progress possible.

Many other papers explored the characteristics of threshold concepts in disciplines as diverse as nursing, computing, education and economics. All found the notion compelling and useful. What struck me, however, was the variation in the way in which the researchers seemed to have framed threshold concept. Many of the papers recognised a clear hierarchy of concepts and put a relative handful of threshold concepts as antecedent to and a portal to all other, lower order concepts. Others seemed to portray a discipline with a much less differentiated set of concepts and usually with a larger number of threshold concepts. I am still not sure whether that tells us about profound disciplinary differences or the elusive and contested nature of threshold concepts. On another dimension, some papers seemed to imply that threshold concepts just are and always will be and, as new ideas emerge, future generations may face more threshold concepts, while others suggested some sort of decline in the shock of the new. I was left wondering whether threshold concepts are contextual and have a life span, passing from troublesome to conventional.

In a really interesting paper, Maggi Savin-Baden, offered a completely different way of conceptualising the phenomenon. She wanted to start with and to challenge the notion of 'stuckness', or of not making progress with learning and understanding. The ideas of threshold concepts imply a linear model of learning and that one approaches the threshold but, until the concept is grasped, no progress is made and, once grasped, there is little further intellectual development. Instead, Maggi wants to offer a notion of learning spaces, allowing for learning frequently being cyclical, done in a variety of ways (learning styles) and in a variety of settings, including the academic and every-day lifeworlds. She also suggests that it might be more profitable for us to think not of 'stuckness' but of liquid learning, a term she acknowledges as coming from Zygmunt Bauman's *Liquid Modernity*. Liquid learning is provisional but it is also emancipatory, reflexive and flexible, a form of learning to fit with Ronald Barnett's 'age of supercomplexity'. She also invoked

the notion of 'troublesome power' of educational structures, practices and roles and suggested that inadequate analyses of power relations were frequently at the root of unhappy and unsatisfactory experiences of learning and teaching.

These for me were some of the highlights of the symposium. The field is clearly growing and generating interesting insights and intriguing research questions. There is to be another symposium next year in June at Kingston University in Canada. Meanwhile, the papers from the Glasgow symposium are being collected for publication.

## References to key papers and to video links for symposium papers

- Cousin, G. (2006), *Threshold Concepts: old wine in new bottles?* Streamed video of session at the Thresholds Symposium, Glasgow 2006. [Accessed 03/10/06 at <http://video.strath.ac.uk/06/140-06-04.wvx>]
- Entwistle, N. (2006), *Threshold Concepts within Research into Higher Education*. Streamed video of session at the Thresholds Symposium, Glasgow 2006. [Accessed 03/10/06 at: <http://video.strath.ac.uk/06/140-06-02.wvx>]
- Land, R., Cousin, G., Meyer, J.H.F and Davies, P. (2005), Threshold concepts and troublesome knowledge (3): Implications for Course Design and Evaluation. In: Rust, C. (ed.), *Improving Student Learning: Diversity and Inclusivity*, Oxford: OCSLD.
- Land, R., Cousin, G., Meyer, J.H.F and Davies, P. (2006), Conclusion: Implications of threshold concepts for course design and evaluation. In: Meyer, J.H.F and Land,

- R. (eds.), *Overcoming Barriers to Student Understanding: threshold concepts and troublesome knowledge*, London: Routledge. 195-206.
- Land, R. (2006), Threshold Concepts within the Disciplines Symposium. [Accessed 03/10/06 at <http://personal.strath.ac.uk/ray.land/thresholds/home.htm>]
- Meyer, E., Land, R. and Davies, P. (2006), *Threshold Concepts and Troublesome Knowledge (4): Issues of variation and variability*. Streamed video of session at the Thresholds Symposium, Glasgow 2006. [Accessed 03/10/06 at <http://video.strath.ac.uk/06/140-06-03.wvx>]
- Meyer, J.H.F and Land, R. (2003), Threshold concepts and troublesome knowledge (1): linkages to ways of thinking and practising within the disciplines. In: Rust, C. (ed.), *Improving Student Learning Theory and Practice - 10 years on*. Proceedings of the 2002 10th international symposium. Oxford: OCSLD. Oxford. [An early version of this paper accessed 17/10/06 at <http://www.tla.ed.ac.uk/centre/etl/docs/ETLreport4.pdf>]
- Meyer, J.H.F and Land, R. (2005), Threshold concepts and troublesome knowledge (2): Epistemological considerations and a conceptual framework for teaching and learning, *Higher Education*, 49: 373-388.
- Meyer, J.H.F and Land, R. (eds.) (2006), *Overcoming Barriers to Student Understanding: threshold concepts and troublesome knowledge*, London: Routledge.
- Perkins, D. (2006), *Beyond Understanding*. Streamed video of session at the Thresholds Symposium, Glasgow 2006. [Accessed 03/10/06 at <http://video.strath.ac.uk/06/140-06-01.wvx>]

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