Threshold Concepts in the Wild

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Abstract

The paper draws on research with student college teachers in the UK and university faculty in the US to examine the features of threshold concepts outside mainstream academic disciplines. Questions are raised about the impact of discipline characteristics, such as their "hardness" or "softness"; how threshold concepts may be masked by the structure of vocational curricula; the prominence assumed by the ontological component of the threshold concepts; and the issue of their mythic status, where their claims to truth are less significant than their impact on the learner.

In this paper, we explore what teacher-training students, mostly from vocational and professional disciplines, and also established university faculty, make of threshold concepts when offered as a tool to improve the effectiveness of their teaching; the issues they raise test the defining characteristics of threshold concepts.

Background and methodology

Teacher education in the post-compulsory (post-16) non-university sector in the UK has undergone an upheaval, introducing qualification requirements for all teaching staff, and putting the emphasis on specific knowledge and skills required to teach within disciplines. Given that "disciplines" are defined as much by occupational requirements as by traditional academic subjects, there are only twelve defined subjects in the UK national curriculum, but over ten times that number in vocational education.

One two-year part-time programme, with almost 700 students, based on the University of Bedfordshire and eight outlying college centres, has addressed this challenge by adopting the framework of Threshold Concepts to organise the discipline-specific components of the programme. It brings together students from all centres for "Study Days" to create "Interest Groups" addressing particular issues in teaching specific disciplines; in this way even teachers in niche areas (arboriculture, aromatherapy, fish management), isolated in their individual centres, can reach a critical mass to share ideas in groups. Each group of between four and twelve students meets for about twelve hours per year over two days. This paper draws on material from 550 students at different stages in the course, working in 40 groups.

In 2007-2008 the organising principle behind the constitution of the Interest Groups was identifying the Threshold Concepts of the particular area of practice, and developing resources to teach and assess them.

The groups were self-managed, but met with a tutor and another group at the beginning and end of each day; they were required to produce a short 250-word report from each day, shared on the VLE, and were encouraged to discuss the ideas and their practice on discussion boards. The data for the study is therefore based on those postings (385 of them), and tutor reports of meetings with groups at the end of each day, triangulated with material from evaluation questionnaires where possible.

At the same time, the third author was exploring similar issues at the University of Wisconsin Milwaukee, through the university grants program, inviting faculty to bid for funding to undertake scholarship of teaching and learning projects in the area of researching threshold concepts in their disciplines. Twenty bids were submitted, most of them of two pages.

Given that our interest is at this stage in posing questions and exploring the field rather than making substantive assertions, the methodological framework was the usual diluted grounded theory approach, of just wanting to explore what the respondents had proactively generated, focused by our interest in threshold concepts and what the variation between accounts and anticipated implications might suggest about threshold concepts and troublesome knowledge.

Hard and Soft Disciplines

Much of the writing about threshold concepts has concentrated on "hard", "convergent" or "serial" disciplines, as opposed to either "softer" or more applied disciplines. Of the two major volumes of papers, 24 out of 40 discipline-based papers are about science, technology or mathematically-oriented social science disciplines (*i.e.* economics). It is of course early days, but it poses the question whether the framework will prove as productive of ideas outside that area.

Each of these hard disciplines has a distinctive claim to knowledge, or even "selling proposition". Going back to a previous generation of educational philosophers, they correspond to Phenix's (1964) "realms of meaning" or Hirst's (1969) "forms of knowledge". As such it is not unexpected that they have readily identifiable threshold concepts, which are of clear epistemological importance.

As Eraut (1994) discusses, these correspond to his first category of knowledge, "discipline-based theories and concepts … (Wissenschaft)". But he notes that professional knowledge also includes;

- "Generalizations and practical principles in the applied field of professional action, and

- Specific propositions about particular cases, decisions and actions."

(Eraut, 1994: 43)

So, as Cove, McAdam and McGonigal (2008) have demonstrated, the situation regarding threshold concepts in professional education—in particular professional education in teaching, which is our shared concern—is far from as clear. The ten threshold concepts identified in their paper are much vaguer, than those discussed in relation to more straightforward academic disciplines; they contain contestable and evaluative terms such as "reflection" and "professional" (used in quotes) and refer to the importance of trust. It is not clear where the students pass the thresholds, because they encounter them in different orders and manifestations. This is not to be critical of the study itself, but to demonstrate that the significance of these threshold concepts lies much more in their significance for ontological than epistemological change.

So it is, too, that in professional and vocational study, the boundaries between the forms of knowledge (in the Hirst sense) are often blurred, and indeed their integrity may be violated, as Bernstein noted many years ago (1971) in his account of the "integrated curriculum".

A staple of many courses in social care, for example, is a standard unit on "Human Growth and Development". It is best described as developmental psychology put through a blender; different schools of thought and contestable ideas have been homogenised, in the interest of making general principles accessible to students with little or no background knowledge in the field. The "Health and Social Care" Interest Groups in our study unsurprisingly found it difficult to identify significant *cognitive* threshold concepts in their courses. Instead, they, and several other groups, readily found the *affective* threshold concepts, and developed them, sometimes without realising their significance;

> "I am struggling to see how threshold concepts can be taught when the childcare students I teach are so young and unmotivated and *have no appreciation of how to respect themselves or others.* […] So Threshold concepts are some way off I guess!"
>
> Contribution to discussion board; Child Care Interest Group, our emphasis.

An "appreciation of how to respect themselves or others" of course would be a critical threshold concept for those learners, but one which belongs more to the affective domain, in Kratwohl *et al's* terms (1964).

There are two levels at which we might look at the students' work on TCs, using Harris' (1976) version of the emic/etic distinction;

- in terms of their own engagement with the TC of the TC (the etic perspective), and
- in terms of the TCs they themselves identify (emic perspective)

There is an etic theme contained in the Child Care example above, which will be discussed before moving on to the emic issue.

"Getting" Threshold Concepts Themselves

The point has frequently been made in the literature that the idea of a threshold concept is in itself a threshold concept; as such it is only to be expected that some people will find it hard to grasp, both because of its transformative implications but also because of its intellectual difficulty and superficial resemblance to other common-sensical sets of concepts in the notoriously fuzzily-defined lexicon of "education".

Entwistle (2008) comments;

> "Initial discussions with staff suggested that it was quite difficult for them to grasp the essential transformative property of threshold concepts, with the term often being confused with the more commonly used idea of *key concepts*."
>
> (Entwistle in Meyer, Land and Smith (eds.) 2008: 22)

This was certainly the case for the tutorial team when they first encountered threshold concepts, as well as for the students in the Interest Groups exercise, where it was sometimes reported on explicitly;

> "We raised the question that threshold concepts may be the 'emperor's new clothes'. We struggle to see the difference between basic principles and threshold concepts. We wonder whether this is an old concept by a new name."
>
> Humanities Interest Group Report, Day 2

Interestingly in the light of the prior discussion of the literature, the engineering Interest Group saw past this issue;

> "Our group [...] came to a conclusion that threshold concepts were fundamental to the subject being studied and also required true understanding as they "opened a gateway" to other concepts within the subject. [...] Core concepts are also fundamental to the subject being studied, however not all core concepts are threshold concepts as they may not "lead" onto to other concepts within the subject being studied.
>
> Engineering Interest Group, Day 1

These contrasting reports again illustrate effectively the greater identifiability of threshold concepts in the hard disciplines, as discussed earlier; the rest of the report bears out that the engineers recognised the idea at once and had no reservations about adopting it, while the humanities teachers (also perhaps more accustomed to being critical of what they read, and to fashions in theories) were more sceptical about the very idea.

Etically, our first reaction on reviewing the reports and postings was that many of the groups had not "got" it. The first pass of coding the 40 reports tagged ten of them as "misunderstood"—prompting of course considerable reflection on our part as to

whether there were problems with the briefing. In particular, even those who had a better apparent grasp of the idea tended to concentrate on the characteristic of the TC as a place at which learners (as our students' own students are known in PCE jargon) get "stuck", rather than as portals onto new understandings.

Closer scrutiny showed that very general suggested topics such as "communication" and "professionalism" were frequently not articulated in sufficient detail—"Just what is it about communication which is a threshold concept? Does the simple fact that communication is a pre-requisite make it into a threshold concept?"—possibly because in the integrated curriculum of the programme the students had not encountered it in sufficient detail as a discrete area of study. Sometimes, too, their articulation was at an inappropriate level, *e.g.* simply a list of topics such as "concern for clients' well-being" under "professionalism".

Nevertheless there was a recognition of the impact of such learning on the learners. First, the students were identifying these topics as points at which their learners get stuck, and second recognising that the reason was that learning in this area was not merely "additive" but in some measure transformative. De Zengotita (2005) has suggested that deprecated communication tactics such as "txtspk" among young people are not evidence of regression to pre-verbal behaviour as suggested by cultural mavens, but sophisticated ways of mediating conversation within sub-groups—a similar point to Bernstein's points about "restricted language codes" in the '60s (1965). To acquire—and more important to use—the skills of more elaborated codes is to acknowledge engagement with a wider and possibly more frightening world, for an adolescent in particular. It certainly opens up new vistas, but equally certainly liminalises the learner.

What the students were readily identifying were the ontological demands being made on their learners by the nature of the programmes on which they were studying; the students' difficulty was not with recognising that process, but with tracing it back to specific points in the programme, and to specific threshold concepts within the curriculum.

The Priority of the Ontological

Much attention has been paid in the threshold concepts literature to forms of knowledge, with most authors choosing a different schema; this is in itself implies that the epistemological issues are contestable. However, Perkins quotes Dewey to good effect;

> "Only in education, never in the life of farmer, sailor, merchant, physician, or laboratory experimenter, does knowledge mean primarily a store of information aloof from doing"

> Dewey (1916 ch 14) cit. in Perkins (2008: 5)

Parallels are apparent with Perkin's own "inert" knowledge (1999), and "possessive" knowledge (2008), with Entwistle's (2008) use of Saljo's (1979) and Perry's (1970) schemas, and with McCormick's (2008) use of Sfard's (1998) acquisition and participation metaphors.

The evidence of the current study suggests that in post-compulsory education, knowledge is often experienced by learners as inert and irrelevant. It consists of fragmented gobbets which do not connect with each other, and which learners believe have to be learned by rote. Since they are not seen as related, one cannot "lead to" another, except by association and proximity, nor can an argument be sustained. This is classic surface learning; as discussed by Saljo (1979) these learners are not likely to get beyond his second, "memorising" category.

A corollary is that epistemologically-prioritised or more simply "cognitive" threshold concepts do not feature much in the experience of the learners, unless and until (we conjecture) they have engaged with the ontological challenges associated with the transformation of identity implicit in taking on a working role;

> "Although theory and constructs will often be the base content that we use in sessions, teaching to these alone is teaching to the assessment, not maximising the potential of the individual. We can, however, use these as a 'starting stall' from which students can identify a threshold they have the choice whether to cross or not. I would argue that if it stays solely in the area of being a piece of knowledge or skill, a process or procedure, the learner never crosses the threshold. It is only when someone is willing to challenge themselves mentally, physically or emotionally by doing something in a new way or thinking in a new way and altering their mindset about something - the schemata with which they approach something and so alter how they will approach similar matters in future - that they cross the threshold. This cannot be just mechanical, technical or physical learning, though that may be the outward manifestation; it requires an emotional engagement as well."
>
> Business Studies Group, Day 2

Although rather more detailed and articulate than other postings, the above quotation from the Business Studies group expresses a view shared with a number of other groups.

Hence it is the ontological significance of threshold concepts which attracts most attention for teachers in these primarily vocational fields, and this directed their attention in some surprising directions.

- An interest group which included students who taught literacy and numeracy in prisons identified that the biggest threshold concept for their students was the recognition that if a prisoner were to become literate, he would no longer be as excluded from society as hitherto. From the teachers' point of view, this would be a wonderful "step forward", even "transformative" in Mezirow's (1991) usage, but the prisoner might well feel much more ambivalent, being in a liminal

position. He could, like the learners moving beyond their restricted language code, feel that he was betraying his natural social group. For such learners the "underlying game" or episteme (Perkins) may well be principally about fitting in, or more grandly about social capital. As long ago as 1972, Curran identified the extent to which the acquisition of a basic education could disadvantage and isolate inner-city youths within both peer and family groups. Connolly and Sienart (2008) put a different spin on this, arguing for a recognition of "orality" as a form of knowledge and communication which is much more than the mere deficit which is implied by "illiteracy".

- On the other side of the fence, as it were, the group which included trainers of police officers, security personnel and "door managers" (*a.k.a.* "bouncers") identified what they called "hyper-vigilance" as a threshold concept. As they readily conceded, acquiring hyper-vigilance—an orientation of sensitivity to danger at all times—is as much a liability as an asset, and can even tip over into paranoia.

In some of the Interest Groups, doubts were expressed about the relevance of exploring threshold concepts, as opposed for example to other more immediately pressing issues for beginning teachers such as behaviour management. What these group members appeared not to have understood at that stage was that "learning to behave in class" would in itself be a threshold concept for some of their more recalcitrant learners, and given the history many of them might have with the educational system before joining further education, it might well launch them into the unknown. This was in fact explicitly grasped and commented on by an Interest Group which identified its shared area of practice as work in specialist "Referral Units" for disruptive learners; and most notably by the "Special Educational Needs" group, who included "recognising oneself as an individual" as a threshold concept for learners with severe learning disabilities. (However, this group also noted that for such learners, the "irreversibility" criterion was problematic in respect of any learning, including threshold concepts.)

More sophisticatedly, one of the Art and Design groups identified "studentship" as a threshold concept—bringing the issue of learner identity firmly to the fore.

> "[Studentship is taken] to mean the development of the student as insider, a cultural and professional agent prepared and able to mesh with larger cultural and professional norms, through attitude building and the confident use of subject related visual language."
>
> Art and Design Group 2; Study Day 2

The formulation of "the student as insider" is interesting here, having clear links to the idea of a community of practice, and a recognition of the importance of initiation.

Another aspect of initiation was identified by the Hospitality and Catering group, who suggested "how to wash one's hands" as a threshold concept. Unsurprisingly, the nursing groups also identified strongly with that, although their own formulations had been more about professional values.

The tutor chairing the summary meeting at the end of the day expressed doubts about whether such a mundane act as hand-washing could serve as a threshold concept. The students explained that hand-washing was not merely a drill, but one which betokened a different perspective on the working environment, emphasising hygiene and the possibility of cross-contamination—of foodstuffs in the case of catering. By learning that some ways of washing hands are more efficient than others (and how to wash in the approved way), the learner is problematising a taken-for-granted procedure and making it a marker for an occupational frame of reference. To adopt the standards of hygiene required of a chef is to move beyond the lower standard expected of a consumer, and it is at this basic level that the risks and responsibilities of a professional identity are initially conveyed.

Essentially, washing hands is—in catering as in nursing—a health and safety issue, but this engagement with the ontological implications, and hence the identification of a real threshold concept, stood in contrast to the work of other groups in this area. From Construction to Hair and Beauty, groups latched on to the idea that the most important thing, so important that it was always the first thing to be taught, was "Health and Safety". As one of us sought to demonstrate in a paper on the website supporting the Study Days, far from being a threshold concept (it can be argued that the "real" threshold concept in this area is the inevitability of risk and how it might be assessed and managed), "healthandsafety" is more of a dead-end, cul-de-sac concept, in that it blocks off further understanding through simple insistence on rigid adherence to dogmatic rules. On reflection, however, it is not surprising that it is frequently tackled thus; education is understandably a risk-averse culture, and it is important that such basic safety requirements be taught reliably and in compliance with a range of regulations; it is just unfortunate that to address the threshold concepts, where people get stuck and experience the uncertainty of liminality, is itself seen as risky. The teaching is therefore self-limiting, and in practice compliance with the requirements of a safety code may be honoured more in the breach than the observance (this issue is explored in more detail in Hadfield and Atherton, 2008, forthcoming).

Threshold "Myths"

Another theme which emerged from both the student teacher study and the university faculty study was the possibility of a subset of threshold concepts which might tentatively be called threshold "myths". There are many contesting definitions of myth: it must be emphasised here that the term "myth" is not being used in a sense of implying that concepts are necessarily false, but just that their pragmatic

function is simply more important than their truth, and that it can be performed independently of truth.

One of the present authors discussed this formulation of "working myths" some time ago, defining them as *the set of assumptions which need to be held by participants in an activity about what they are doing, which are expressed in their day-to-day practice* (Atherton, 1989: 101, re-phrased to embrace this more general context). The extended definition points out that such assumptions are generally expressed in narrative, rather than abstract, form.

Armstrong succinctly makes the point;

> A myth, therefore, is true because it is effective, not because it gives us factual information. […] If it *works*, that is, if it forces us to change our minds and hearts, gives us new hope, and compels us to live more fully, it is a valid myth. Mythology will only transform us if we follow its directives. A myth is essentially a Guide; it tells us what we must do in order to live more richly. If we do not apply it to our own situation and make the myth a reality in our own lives, it will remain as incomprehensible and remote as the rules of a board game, which often seem confusing and boring until we start to play.

<div align="right">(Armstrong, 2005: 10)</div>

A working myth can be effectively illustrated by a report from a member of the "Complementary Therapies" group;

> "Awareness of the concept that 'energy' exists. Methods that I have used to bring about this awareness include encouraging students to sense each others' energy field, forming Reiki energy balls and working on seeing auras."

<div align="right">Complementary and Holistic Therapies Group; Study Day 2</div>

"Energy", in the new age, mystical sense that the term is used here, is highly contestable. A large proportion of the population might well contend that the idea is rubbish. Nevertheless, in at least one respect the student is right. It is indeed a threshold concept in his discipline. Without "awareness" (whatever that means) of "energy" it is clearly impossible to continue with the study of the discipline of Reiki. Acceptance of the concept opens the possibility of all kinds of new ideas and it delineates the object of study. Whether or not it is irreversible, however, is a problem; if indeed learners can "form Reiki energy balls" and "see auras", presumably they have sensory evidence which goes beyond mere faith, and which is not readily undermined. Otherwise the belief may be merely a passing fancy. (For present purposes we are leaving aside psychological issues such as emotional investment and the possibility of cognitive dissonance.)

Particularly in terms of initiation, threshold myths are ideas which, often because of the troublesome knowledge which they embody, serve to introduce not only new ideas and knowledge (leaving aside any judgement as to its value) but also act as passwords to procure entry to a community of practice or belief.

This process is independent of the credibility of the concept itself. The reiki example may be regarded as an esoteric belief. However, much more mainstream but nonetheless ideological beliefs serve as threshold concepts in disciplines where the affective and indeed political element matters a great deal.

> "[how] my students become "stuck" and hopefully "unstuck" with the threshold concept of Whiteness and its very real implications for their work with urban children and youth. [...] the theorizing and making sense of *Whiteness as a structural force* that has the great potential to hinder and stall White urban teachers' work with their students and perpetuate passive racism (Marx, 2006).
>
> Rene Antrop-Gonzales, University of Wisconsin-Milwaukee (emphasis added)

> "College students from a variety of [...] backgrounds come to college campuses having been socialized into the national rhetoric of a 'colorblind American Dream,' in which everyone has the same chance to achieve, and racism is restricted to individual acts of bigotry. As such, the threshold concept of *racism as a system of advantage based on race* is often something students struggle to understand and with which they are initially uncomfortable. Some students remain highly resistant, and struggle with later concepts that build upon this understanding. In this study, I want to measure how and when student thinking about racism shifts over the fifteen weeks of the semester during which they are enrolled in my class.
>
> Erin Winkler, University of Wisconsin-Milwaukee (emphasis added)

As both of these instructors indicate, the learners (the term is used for consistency with previous examples) in their courses need to move beyond common threshold myths if they are to understand racism as a structural force in U.S. society. The learners who attend this university are primarily Caucasian, and for many of them Whiteness is not a "race." They have never stopped to think about the color of their skin, nor how they are part of a racist culture. So they need to get beyond the "colorblind American Dream" (as identified in the second quote) before they can come to understand that racism is a system of advantage structured into all facets of the U.S. culture. The concepts of colorblindness and Whiteness are threshold myths so strong that most learners cannot cross them in a single semester. Many students never get beyond them, some revert back once the semester is over, and others make only small steps toward breaking the hold that these myths have on their thinking. In addition, and as we mentioned earlier, the affective component of these myths is often harder to face, and more difficult to cross, than the cognitive aspects. In other

words they exhibit all the characteristics of liminal trepidation evident in trangressing an ontological threshold.

In these examples then, the construction of the discipline of these instructors clearly requires acceptance of the threshold myths surrounding racism in order that it might be addressed at all. It would be impossible to have any discourse in the subject—indeed the subject would not exist—without not only understanding the myths but also committing to this threshold concept. It is also worth noting that in fields such as these, "neutrality" or "objectivity" is not an option; as Wolfensberger points out in the slightly different context of working with people with learning disabilities, "Ideology is inescapable; the choice is never between ideology and no ideology, but always between one ideology and another" (1982: 28). The learners have already tacitly accepted one threshold myth (of colorblindness, for example) through their early socialization. The course cannot but confirm or transform these pre-existing myths (*cf.* Mezirow *et al* 1990, 2000).

Discussion

Threshold concepts have generally been regarded in the literature as components or features which inhere within disciplines, which students/learners will necessarily come across as they pursue a subject. What can be seen in these latter examples, however, are threshold concepts as "articles of faith" which are more *affective* than *cognitive*, to be *believed* as much as *understood*. Nevertheless, they serve the same function as portals to new areas of knowledge, integrating other ideas, and defining the boundaries of the discipline or belief system. They are of course ontologically transformative, that being the principal characteristic we have seen preserved as threshold concepts have been identified beyond traditional academic disciplines.

However, it may be the irreversibility of threshold concepts which is the characteristic least likely to be preserved, or one which is confined to the more conventional academic "forms of knowledge" or "realms of meaning".

What then are the implications of this perspective for professional education and integrated curricula?

We have explored this area in order to pose useful questions rather than to impose answers and solutions. Among those questions raised by this tentative disturbance of the nest are;

- What is/are the relationship(s) between threshold concepts and truth?
- What is the extent of the authority of a course to require *belief* in particular ideas, and to assess for it?
- To what extent is it the professional role of the tutor to support students experiencing the stresses of liminality?

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