



Threshold concepts

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Some background....

- ETL project initially set out to examine quality of learning (in different disciplines)
 - initial emphasis on conceptual understanding to represent high quality learning then broadened to cover additional skills and ways of thinking (academic and professional) - WTP
- Wanted to research:
 - teaching staff who are providing good experiences for students
 - students about how they approach/perceive their studies in such environments and how this could be enhanced
- Framed in terms of deep learning within the disciplines - Entwistle model which is an enhanced version of Biggs.
- Within this they explored areas that students find particularly difficult to try to get at how understanding develops (and how teaching is best carried out)

Notion of Threshold Concepts coined...

Meyer and Land (2003) have proposed that in many disciplines there are **threshold concepts**, which can be *'considered akin to passing through a portal, or conceptual gateway, thus opening up a new and previously inaccessible way of thinking about something.'*

Such concepts lead to a transformed way of understanding , or viewing something that may represent how people 'think' in a particular discipline, or how they perceive, apprehend or experience particular phenomena within a discipline.





Some examples:

- the concepts of complex numbers and limits in pure mathematics,
- opportunity cost in economics
- recursion in computer programming, and
- depreciation in accounting
- the central limit theorem in Statistics,
- entropy in Physics
- irony in literary studies
- Reflection in teaching development

Thresholds cont....

- They are *a subset* of core concepts which are building blocks that must be understood, these are about conceptual change.
- Threshold concepts offer potential help in encouraging students towards deep rather than surface learning. They are, however, likely to prove troublesome to students.
- Difficulty in understanding **threshold concepts** may leave the learner in a state of '**liminality**', - a suspended state or 'stuck place' in which understanding remains within transition, often within a troubled or oscillating state.



Characteristics...

- *transformative*: they change the way a student looks at things in the discipline.
- *integrative*: they tie together **concepts** in ways that were previously unknown to students.
- *Irreversible*: they are difficult for students to unlearn
- potentially *troublesome* for students: they are conceptually difficult, alien, and/or counter-intuitive.
- often *boundary markers*: they indicate the limits of a conceptual area or the discipline itself.

Students who have mastered these **threshold concepts** have, at least in part, crossed over from being outsiders to belonging to the field they are studying.



Resources....

Abundance of papers on the web!

- See for instance:

<http://www.ee.ucl.ac.uk/~mflanaga/thresholds.html>

Biennial Symposium

- <http://www.thresholdconcepts2010.unsw.edu.au/>