

The Interdisciplinary ‘Ice Flow’: Help to identify threshold concepts for an arts-science hybrid Round Table

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How does one define essential concepts in an interdisciplinary field of study? Here, we welcome participants to a roundtable discussion on the specific case of the field of science communication and invite reflection on issues for other interdisciplinary fields. The authors each draw on over a decade of experience in research, practice, and teaching in science communication and data gleaned from assessing the work – and understandings -- of hundreds of students during this period.

This experience suggests that a student looking for solid ground in an interdisciplinary major can be likened to someone traversing an ice flow, with a clear need to step carefully. The student’s trajectory may frustrate their formation of a sense of disciplinary identity as they take on a series of subjects of study, each one taught by a member of academic staff from a different department, discipline, or profession. Even within their major, they are sampling a moment in the field’s evolution, where it can progress from a hodge-podge discourse engaged in by talented practitioners, autodidacts, and irrepressible boundary-crossers toward increasing professionalisation, clearer definitions of community boundaries, and a more distinct sense of identity for members (Lave & Wenger, 1990).

They can experience a ‘canon’ of threshold concepts as an unsteady construct, perhaps not realising that it may represent a strategic response by a relatively new field. It can bolster legitimacy for a small academic program seeking to counter pressures from tightening university budgets by defining territory within the curriculum, territory that aligns with a university’s aims. Threshold concepts can also help to create consensus on themes for research, which can spur collaborations and assist in goading those who assess grant applications to accept new directions, which can be a particular challenge for those of us engaged in ‘mode 2’ research (Gibbons, *et al*, 1994).

Candidates for a set of threshold concepts could include concepts that are essential to one contributing discipline that do not appear to be core knowledge to those applying that discipline to issues in the interdisciplinary domain. For example, knowledge of oxidation-reduction processes, which are essential to chemistry, may not seem like threshold concepts to specialists who are studying communication about the science of climate change.

Further, in the sciences, threshold concepts have been seen to be defined in terms of ‘eureka moments’ and ‘big ideas’ (CARET, 2007; Hanson, 1958). In the social sciences, arts, and humanities, the preference has been for ‘ways of seeing’ and ‘ways of thinking and practicing’ (CARET, 2007; Entwistle, 2005). Even if conceptions of what constitutes a threshold concept are consistent across the arts-science divide, specific candidates for threshold concepts may need to be compatible with not only the positivism that predominates in science but the constructivism of the arts.

How then does one build a firm foundation of threshold concepts for students facing such an ‘ice flow’? We look forward to a roundtable discussion on the matter.

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