The Teaching of Threshold Concepts: A case study of one possible pedagogical strategy

Brad Wuetherick, Dalhousie University, Canada

> "If the theory of threshold concepts is to be useful in guiding teaching and improving student performance, it must be translated into principles that can inform the design of teaching and the curriculum" (Davies & Mangan, 2008, p. 37)

Different threshold concepts have been conceptualized as the subject matter for learning and teaching, as the process of learning (students mastery of disciplinary ways of thinking and practicing), or as the process of teaching (as the facilitation of transformative learning and the induction of students into disciplinary ways of thinking and practicing) (O'Brien, 2008). Regardless of how the threshold concept is conceptualized, one might ask: how is the threshold concept fundamental to disciplinary ways of thinking and practicing?; what might be troublesome about the threshold concept?; and what transformation is needed or evoked by the threshold concept? (O'Brien, 2008).

Once a threshold concept is identified in a discipline, or in any particular course within a discipline, the question still remains – how do you best teach that concept? Knowing that it may be a threshold concept that will be transformational for students, and that students will likely find the concept troublesome in some manner, is part of the battle as an instructor. Knowing, however, that there is preliminal, liminal, postliminal and subliminal variation in students' readiness and ability to engage with threshold concepts, the question of how to best teach the concept is much easier to pose than to resolve. While there have been several interesting explorations of key considerations when teaching threshold concepts (see, for example, Davies & Mangan, 2008 or O'Brien, 2008), one possible pedagogical strategy that seems to have proven particularly successful in facilitating students' learning of threshold concepts across several disciplines is what has been called an 'expectation failure' (Bain, 2004).

This paper will introduce the concept of expectation failure as a pedagogical strategy, and will summarize the preliminary results of two years of working with faculty across various disciplines to explore how using expectation failures might facilitate the teaching of threshold concepts. It has been found that setting up low risk spaces for students to experience an expectation failure, which Bain describes as "a situation in which existing mental models lead to faulty expectations, causing ... students to realize the problems they face in believing whatever they believe", can help encourage students to grapple with a threshold concept, potentially come up short, receive feedback, and try again (Bain, 2004, p. 28). Constructing an expectation failure well can result in students reflecting on how and why their mental models do not work in addressing a particular challenge, to help make explicit the liminal state in which students might find themselves and help them cross the threshold of understanding.