Engineering thresholds in engineering curriculum review

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Abstract

We developed a gradual process of curriculum review and optimization for introductory Engineering courses at the University of Birmingham, using the basis of threshold concept theory. It has been suggested that threshold concept theory can act as a powerful curriculum development tool. We explored these threshold concepts and considered ways of helping the students pass through the thresholds, thereby enabling them to become fully developed professionals. We started with the creation of a growing conceptual map of introductory level concepts to be transcended by the University of Birmingham first year engineering students (Properties and application of materials). We investigated the nature of the identified thresholds, ways of helping students pass through the associated ‘portals’ (teaching approach) and ways of assessing any transformation (student assessment) and we developed a model for curriculum development in engineering based on threshold concepts theory for dissemination to all engineering programs in UK and beyond.

Keywords: Threshold concepts, curriculum design, materials engineering

This work is in progress and a full case study will be available soon.