

Project title: Authentic learning, exploring an educational approach for Higher Engineering Education, at the interface between technical knowledge, social sciences and humanities

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Summary

In today's fast changing and increasingly globalizing world, there is a call for technically grounded engineers with a reflective understanding of the practical, ethical, social and political ramifications of their work. Therefore, Higher Engineering Education (HEE) has undergone a shift away from behaviourist pedagogies to more constructivist models which lend themselves to curriculum design that situates authentic learning (AuL) at the epicentre of the curriculum and promotes a closer collaboration between technical knowledge, social sciences and humanities. However, previous research highlights that the term AuL is often used un-reflected and ill-defined in curriculum development, and it points to certain issues related to the perceived relevance and value of social sciences and humanities in HEE curricula.

The proposed research takes a step in addressing these shortcomings. It does so by conducting four studies that aim to approach the concept of AuL in the context of interdisciplinary HEE, from a variety of research viewpoints. The research context is the User, Society, and Enterprise (USE) program, an undergraduate program offered by the Eindhoven University of Technology (TU/e) that brings together educational elements from engineering, social sciences and humanities. The research question that follows the research as a red thread is: *how authentic learning could facilitate the successful integration of social sciences and humanities into higher engineering education curricula?*

In the first study, by the means of a systematic literature review, this research project will explore literature about AuL in HEE, social sciences and humanities, in order to provide a systemically derived set of features for curriculum design for programs similar to USE. The second study takes a teacher-centered perspective and it intends, by the content analysis of self-reflective journals, to explore teachers' challenges within the AuL environment of HEE courses that bridge engineering, with social sciences and humanities. In the third study, the research focus shifts to the students of these courses. It is a phenomenographic study that aspires to provide a detailed "anatomy" of students' perceptions and experiences in the idiosyncratic learning context of the USE program. Finally, the fourth study of the proposed research project, by the means of quantitative data, it aspires to measure engineering students' competence development, and therefore to explore the learning potential of an AuL environment at the context of interdisciplinary HEE.

Based on the results of the research project, theoretical and practical implications for educators and curriculum designers of AuL environments in interdisciplinary HEE will be formulated