Enabling Sustainable Thinking in Undergraduate Engineering Education

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Abstract

In this paper we address the need for curricular changes that foster sustainable thinking and review a number of engineering curricular changes at selected universities, drawing comparisons to medical and other fields. For each engineering program, we examined the level at which sustainability concepts and active-learning methods were integrated into its curricula. A majority of the universities examined "bolted-on" various components of sustainability or student-centered learning into their existing programs. Only one university examined has made significant efforts to redesign engineering education in terms of sustainability and pedagogy. A number of barriers hindering the re-orientation of engineering curricula toward "sustainable" engineering are discussed.

Keywords: sustainability; problem-based learning; intellectual development