Design for the Future: Integrating International Development into Canadian Undergraduate Engineering Curriculum

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Abstract

With an ever-increasing need to address the future of engineered sustainability in our global communities, a simple, brief, study of sustainability factors in undergraduate engineering curriculum is no longer adequate. With exponentially rising problems in the global society such as water contamination and shortages, food processing needs, ineffective irrigation practices, technology shortfalls, and underdeveloped sanitation practices, engineering curriculum today must address these international development issues, along with sustainability concepts, using effective, hands-on methods to prepare Canadian graduates for the competitive and challenging workforce they will enter. In this contribution, the importance of considering international development problems in the engineering design component of undergraduate curriculum is analyzed. We then go on to discuss the various methods that can be utilized to implement and teach an international development curriculum. International development engineering curriculum should not only focus on the hands-on design requirements, but should introduce the student to issues such as education, health care, political stability, and economy in the developing world. Topics such as cultural sensitivity and community integration, which are concerns that must be an integral part of any international development project, should also be incorporated into this curriculum. Finally, a case study is presented in which a Canadian university has successfully enhanced their first-year engineering design curriculum by integrating international development problems into their syllabus.