THE EFFECT OF EXTREME INTER-CULTURAL EXPERIENCES ON THE DEVELOPMENT OF THE PROFESSIONAL LEADERSHIP AND DESIGN SKILLS OF FUTURE ENGINEERS

Florin Gheorghe and H.F. Machiel Van der Loos

Mechanical Engineering,
University of British Columbia
Vancouver, BC, Canada

<gheorghe.florin@gmail.com>

Abstract –There is a growing focus today in universities on enriching extra-curricular opportunities for students. In engineering departments, these include international exchange, community service learning, and work with organizations such as Engineers Without Borders.

During the same period, the move towards outcomes-based accreditation requirements by the Canadian Engineering Accreditation Board (CEAB) has challenged institutions to deliver curricular interventions and measure their effectiveness on their graduating classes. As the CEAB is exploring new pedagogical approaches for developing young engineers' acumen in the areas of leadership, communication, and design, this paper examines the impact of overseas work experience in "extreme" inter-cultural settings on those same attributes.

We define an extreme experience as marked not only by what students are doing, but also the geographic and socio-economic context in which they must practice. When students are exposed to situations that defy their expected norms, instincts, and social cues, we expect a resulting cognitive adaptation and growth in collaborative technological interactions. Being engineers, they will manifest this learning when tackling future complex, human-centred design problems.

In this study, students who have had an extreme inter-cultural experience are tasked, upon their return, with a team-based design challenge, and then compared with students who have completed an equally engaging but local activity. We propose a methodology for identifying changes in performance on various CEAB outcome areas through the use of qualitative in-situ observation, interviews, and analysis of design outputs. Participants will be surveyed in order to identify specific mechanisms that triggered and contributed to the observed professional development while overseas.

Preliminary results are expected on what mechanisms result in observed changes as measured through the CEAB accreditation lens. These results will inform pedagogy and decisions on the integration of similar experiential mechanisms into the engineering curriculum to accelerate student learning and develop the engineering leaders of tomorrow.