

In Pursuit of Greater Coherence Between Learning Outcomes and Competence Development for Successful Teaching of Engineering

Cathal de PAOR^{a,1}, Pisut KOOMSAP^b and Duangthida HUSSADINTORN NA AYUTTHAYA^b

^a*Mary Immaculate College, University of Limerick*

^b*Industrial Systems Engineering, School of Engineering and Technology, Asian Institute of Technology, Pathumthani 12120, Thailand*

Abstract. Although learning outcomes are widely used in higher education in programme design, most course developers end up considering only the cognitive domain while overlooking the affective and psychomotor domains, the other two musketeers of the taxonomy of educational objectives. Similarly, in planning programmes for competence development, the focus is usually narrowed to the instrumental competence dimension, with relatively less attention given to how interpersonal and systematic competences might be developed. This results in poor alignment between learning outcomes and competences, including subject specific and generic or key competences. This occurs both at module and programme level. In order to address this, course developers need a more holistic and systematic way of programme planning, especially where the ultimate goal is to attain technical and transversal competences needed for the workplace. This paper draws on an Erasmus+ capacity building in higher education project in Thailand's non-university tertiary education sector (RECAP 4.0) to explore how curriculum developers may be supported in dealing with this challenge. During the project, ten modules were designed to support the professional development of higher education teachers in areas related to teaching enhancement, curriculum development, and various engineering topics. Developers were provided with a competence development template designed to support greater alignment between planned learning outcomes, intended competences, teaching activities and assessment plans. The template invited them to reference more than one domain as appropriate when writing each learning outcome, indicate the intended performance level for each of the domains, as well as the competence(s) to which the learning outcome contributed. The results show how such a template may support optimum coherence in curriculum design.

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¹ Corresponding Author, Mail: cathal.depaor@mic.ul.ie

