

COMPETENCE FRAMEWORK: A TOOL TO DESIGN LEARNING AND ASSESSMENT ACTIVITIES

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Abstract

The aim is to demonstrate how a competence framework can help when designing learning or assessment activities, under certain conditions that will be discussed during the presentation. The participants will also understand how starting from a competence framework has significant consequences on the learning and the assessment methods.

Keywords: engineering, learning, assessment, framework, CDIO

Extended abstract

The Faculty of Engineering of the Université Libre de Bruxelles, together with the Faculté polytechnique de Mons, has elaborated an original framework of the expected competences at the end of the engineering curriculum.

To elaborate this framework, we followed the following methodology:

- Analysis of similar frameworks for engineering curricula or other, interview of several actors (CDIO, 3TU, Sherbrooke, ...)
- Survey about the required professional competences according to young graduated engineers (less than 5 years) and employers,
- Expert interviews: researcher, middle- and top-management, professional associations, etc.

In order to facilitate the future framework implementation in the learning activities, a workgroup has been composed by 5 academics and 1 pedagogical advisor from each university. Several workshops with the other teaching staff and the students have been organised throughout the process to validate the framework.

The framework has several goals. First, we want to be able to assess the learning programme and activities with respect to the expected competences. Secondly, it aims at facilitating the student exchange programme and the institutional communication in Belgium and in Europe.

Considering the first aim, we are currently starting the assessment of the bachelor years, based on a suitable methodology.

Even if we do not have used the CDIO framework as such, we think that our initiative is closely related. The questions that we addressed, the tentative answers and methodology that we developed could contribute to the active activities of the conference. We intend to discuss two main topics:

- Is the framework helpful in designing learning or assessment activity? Under which circumstances or conditions?
- What is the impact of the framework on the proposed activity type?

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Biographical Information

- Philippe Bouillard is Professor at the Faculty of Engineering of the Université Libre de Bruxelles. Civil engineer (1990, ULB), he starts his career working for major French contractors. Back to the University in 1992, he got a PhD in applied sciences (1997, ULB) and a habilitation to conduct research (2004, Université Pierre et Marie Curie, Paris VI). His research activities refer to computational structural dynamics and vibro-acoustics while his teaching activities mainly concern the structural mechanics. He has been one of the pioneer in the pedagogical reform in his Faculty. He is currently Rector's advisor on Quality.
- Frédéric Robert was born in Brussels in 1972. He received the M.Sc. degree in electronics and telecommunications engineering in 1995 and the Ph. D. degree in applied sciences in 1999 from the Université Libre de Bruxelles (ULB), Belgium. He is now professor in the Bio, Electro and Mechanical Systems (BEAMS) lab of the Applied Science Faculty, ULB, and leads research in embedded systems design and optimization, as well as in artificial learning. He obtained the ULB Socrates prize for outstanding pedagogical skills in 2007.
- Nadine Postiaux is faculty developer at the Faculty of Engineering of the Université Libre de Bruxelles. First trained as a pupil teacher, she got a Ms in Education Sciences and is specialised in higher education pedagogy. She is currently working on a PhD thesis on the training framework.

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Background of the Topic (taken from the abstract)

- Curriculum and programme design
- Assessment of professional competences
- Facilitating change in engineering education
- Evaluating the impact of CDIO Programs
- Active and experiential learning

Interactions and Activities

The participants will be grouped by 3. Each group will choose a competence for which he will propose a learning or an assessment activity (10min). The discussion based on the proposals will try to address two major questions:

- Is the framework helpful in designing learning or assessment activity? Under which circumstances or conditions?
- What is the impact of the framework on the proposed activity type?