Learning Outcome Based Higher Education: iCoper Use Cases

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Abstract

In this paper, we introduce use cases and standards towards a new approach of learning that is driven by learning outcomes to be achieved by learners. This leads to higher employability of learners.

1 Introduction

Nowadays, development and delivery of learning modules and courses in most higher education institutions, still, is input based (length, content and teachers of study program). Learning outcome based learning, which focuses on knowledge, skills and competencies, enables higher levels of transfer and mobility of people across different educational, training and workplace institutions in Europe. According to the European Qualification Framework (EQF) [6], competency means the proven ability to use knowledge, skills and personal, social and/or methodological abilities, in work or study situations and in professional and personal development.

The main goal of the iCoper project [1] is to enable online learning outcome based education at university environments. In order to achieve this goal, learner acquired and desired learning outcomes need to be the starting and focal point in the design [7], delivery and assessment of units of learning and learning opportunities at universities. In addition to that, learning outcomes required by the workplace should also be taken into account during the development of university learning offerings. This enables closing the gap between the needs of the workplace and the offerings of the academia.

Towards supporting the creation of outcome based units of learning, tools and methods used to identify and analyse university needs of learning outcomes and related standards in iCoper are presented in Section 2. Section 3 introduces two outcome based learning use cases. Conclusions and future directions are drawn in Section 4.

2 Methods and Concepts

Definitions, understanding and use of learning outcomes at curricula development at universities were analysed. A questionnaire, which covers the following information, was developed to collect relevant data:

- University definition for the term learning outcomes and competency.
- Use and alignment of EQF in curricula development; EQF is proposed to reconcile the heterogeneous national qualification frameworks.
- Design, management, consistency and responsibility of generic learning outcomes models.
- Alignment of curricula learning outcomes to the workplace needs (employability).
- Design of learning outcome assessment methods.

Regarding learning outcomes and competency standards, an appropriate template was developed to analyse the existing standards used to describe learning outcomes, profiles and opportunities. The template includes the following components:

- An overall overview of the analysed standard; such as its title, description, producer, conceptual model and data bindings, scope and purpose.
- Capability for extension and customization.

3 Learning Outcome Based Use Cases

Two outcome based learning use cases are introduced. Use cases were identified based on analysis of data collected by iCoper questionnaire on university experience with learning outcomes, mentioned in Section 2.

3.1 Learning outcome based search

The first use case supports finding relevant units of learning based on a learning outcome chosen by a learner (or teacher); see Figure 1.
First, the learner (or teacher) provides, using search terms or by browsing particular knowledge, skill or competency taxonomy, the desired learning outcome she wants to achieve. The context where the learning outcome should be obtained is then selected. A context can be a scientific domain (e.g., biology, math) or a situation (lab, classroom, complex situation, etc.). Afterwards, the learner sets a qualifier (like proficiency level) for the knowledge, skill or competency. Then, the system provides the learners with units of learning and assessments (to be taken by learner) that should enable him to achieve the desired knowledge, skill or competency.

### 3.2 Employability

This use case aims at ensuring high employability of learners; see Figure 2.

![Employability use case](image)

By finishing the study/training program the Institution system generates learning outcomes profile of a learner. The institution system then sends (makes it available) the profile to the placement centre at the university. The placement centre system stores and manages profiles of learners. The placement system also exports learning outcomes profiles of learners (based on their requests) into interoperable formats readable by social tools and recruitment systems. For example, a learning outcomes profile of a student can be exported into LEAP2A ePortfolio format.

Optional, the recruitment systems may contact placement centre to inform about learning outcomes missed in learners’ profiles. The institution system then identifies a set of units of learning and assessments that a learner should follow to update her profile and achieve the desired learning outcomes of the target workplace.

### 4 Conclusions and Future Directions

In order to enable the use cases, a set of relevant standard were selected.

IEEE Reusable Competency Definitions (RCD) [2] will be used to describe (e.g., title, identifier, definition and description of “team player” competency) the reusable individual generic knowledge, skills and abilities; see Figure 3. Regarding the description of learning outcome profiles of learners - which describes relation between the set of RCDs that form the profile, evidence, context and qualifiers of outcomes - a new specification should be developed, based on the draft proposal of IEEE CP [5] and HR-XML competency standard [3]. CEN MLO [4] will be used to describe learning opportunities and link them to learning outcomes profiles. IMS LD [8] will be used to describe units of learning.

Future directions in iCoper project include defining procedures and services needed to access and relate learning outcomes profiles, learning opportunities and assessments. Standards will be advised (customized) towards enabling outcome based learning.

### References