Chapter 18
A Data Model for Describing and Exchanging Personal Achieved Learning Outcomes (PALO)

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ABSTRACT

Employers seek people that match particular qualifications and graduates seek jobs that match their qualifications. This market is currently managed primarily using paper certificates and heterogeneous university management systems that capture achieved learning outcomes as well as corporate information systems that capture required qualifications. In light of trends toward increased student mobility, employability and lifelong learning, this situation is less than satisfactory. Therefore, in this paper, the authors propose a schema that facilitates interoperable storage and management of Personal Achieved Learning Outcomes (PALO) based on a common data model. This paper presents use case scenarios and implementations addressing these challenges and demonstrating the added value of using such a common model.

INTRODUCTION

Nowadays, the management and interoperability of data about learning outcomes (knowledge, skill and competence) in outcome based learning are of high importance for both education and employment sectors. By managing and sharing data about their profiles, learners in higher education and lifelong learning can better plan their careers and enhance their employability potential. In order to achieve this goal, the information about learning outcomes associated to learning opportunities and

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units of learning as well as the learning outcomes achieved by learners need to be captured, managed and exchanged in common formats (Paquette, 2007; Van Assche, 2007; Sampson, 2009; Lindgren et al., 2004).

Currently, in the context of online learning, higher education institutions have yet adopted neither a common format for describing learning outcome definitions nor formats for describing achieved learning outcomes of learners. Such data are gathered in personal profiles and give information about the context where the outcomes were achieved (Richter & Pawlowski, 2007) by taking a learning opportunity, the achieved outcome level, and assessment information (Crespo et al., 2010; Grant, 2002).

Using a common format for describing, referencing and sharing learning outcome definitions enables exchange and comparison of learning outcome definitions across systems, domains and sectors. For instance, data about learning outcomes achieved in one course or by one student and stored at a university database may be exchanged with a Human Resources (HR) system of an employment agency. In other words, the two systems can refer to a common definition of a learning outcome with a common meaning. By this way, a lifelong learner would be able to access his/her achieved learning outcomes from the school, the university, the training agencies and the employer in one profile. This work would enable the matching between what people learn in universities (and schools) and what they need to know and be able to do at work. The gap in learner skills and knowledge may be easily identified (Paquette, 2007).

Following the European initiatives like European Qualification Framework (EQF, 2000), Europass (2010) and European Learner Mobility (EuroLM, 2009), the aim of this paper is to introduce a specification that captures information on knowledge, skills and competences achieved by a person (a lifelong learner) in higher education and training institutions or in the workplace. The specification represents data on relations between a learner’s achieved learning outcomes. In addition to that, information on the context where the learning outcomes are obtained or applied is covered by schema. Evidence (assessment) records and levels (e.g. proficiency level) associated to the outcomes are also a core part of this schema. This specification is an important step towards the enhancement of the interoperability and transparency of such personal data of a lifelong learner between higher educational and workplace applications and services.

The Personal Achieved Learning Outcomes (PALO) specification presented in this paper went through at least three iterative expert evaluations by the ICOPER consortium and at relevant international workshops by standards experts, teachers and learners to make sure that it captures data needed for increased employability of learners and higher interoperability with different learning systems.

Prototypes of outcome based learning applications like widgets and modules of Learning Management Systems (LMS) are being developed, to produce and import data about achieved learning outcomes of learners in systems like Moodle (2010), Elgg (2010) and Clix (2010). The data of learner achieved learning outcomes profiles are stored in ICOPER’s PALO repository. These data can be consumed by learning systems to provide learners with relevant material, recommendation of other teachers and learners based on similarity of learning outcome profiles, or to enable learners to share their achievement profiles with social or recruitment systems.

This paper is structured as follows: In the second section, related work regarding outcome-based learning, competence and learning outcome specifications is provided. Then, in the third section, the outcome based learning components and features are introduced. The fourth section provides a scenario of learner achievements in outcome-based learning. After wards, fifth section, the Personal Achieved Learning Outcomes
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