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PBL3.0: Integrating Learning Analytics and Semantics in Problem-Based Learning

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ABSTRACT

The education and training field has progressed over the years, by introducing novel learning strategies that aim to shift the focus from the educator to the learners as well as novel technologies to support learning activities (Norman & Spohrer, 1996). However, policies in the field continue to identify limitations and issues that are required to be addressed and solved (European Commission, 2010). Moreover, the current ever-changing world causes economies, trends, technologies and professional domains to constantly shift and transform. To this end, all sectors require competent employees with lifelong learning abilities and skills to quickly adapt and contribute to economic growth and boost societal benefits (EU, 2010).

This paper presents the PBL3.0 project that aims at enhancing Problem Based Learning (PBL) with Learning Analytics (LA) and Learning Semantics (LS) in order to produce a new educational paradigm and pilot it to produce relevant policy recommendations. To this end, the project constructed a new educational approach that combines a well-established learning strategy like PBL with novel technologies in learning, aiming also at respecting legal and ethical considerations (PBL_LA). Moreover, a semantic model for PBL_LA was designed that enables the annotation of learning resources in order to easily integrate them to the PBL approach and enable their discoverability when setting personalized learning pathways. During the project, a set of open source software tools, analytics tools, and an intuitive semantic annotation tool were employed in order to support the PBL_LA and the semantic model on existing Learning Management Systems (LMS). With a view to drawing evidence-based conclusions, trials employing different LMS at various sites are performed, and relevant, semantically annotated educational material is developed. Finally, the project aims at

producing relevant policy recommendations for PBL_LA that could raise the quality in education and training.

In our presentation, we focus on a trial that run for one semester at Aalborg University and aimed at developing a platform employing LA for monitoring PBL semester projects. The platform is developed in Moodle, and it provides a communication and information channel between project supervisors and students, and between students belonging in the same group. Moreover, the platform provides ways for student groups to better manage their projects, and for project supervisors to follow groups' progress. The platform is also used as a place, where students hand-in assignments that are related to their project work and report their status in the project. In this platform, we employ various LA tools offered by Moodle in order to monitor both group and individual student activity. Such tools provide learning data on individual student engagement and activity within the platform, generic statistics on the use of the platform, and insights into the exchange of information in the platform.

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