

Personal Learning Environments in a Global Higher Engineering Education Web 2.0 Realm

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Abstract—This paper presents investigations on formal and informal requirements for personal learning environments taking into account students' personal and social learning practices. The potential of global Web 2.0 educational service bundles and informal learning communities, as well as their recommendation by educators are addressed. A scenario showing how these new paradigms can be integrated in engineering education as a way to bring together personal and social learning practices is drawn.

Web 2.0; Personal Learning Environments; Mash up; Social Learning; Personal Learning; Educational Widgets; Learning Communities

SUMMARY

Nowadays, Web 2.0 technologies enable students to mash up the learning resources, the learning services and the learning communities of their choice. The same technologies also enable educators to move from blended learning approaches to blended contents (blogs, wiki, repositories) and blended learning environments called personal learning environments (PLEs) [1]. Such environments will progressively replace, or at least complement, learning management systems (LMS) in the coming years in a move towards personal and social learning.

Higher engineering education institutions should have a closer look at the informal personal and social spaces and practices, which are expanding at a global scale and are giving students access to an unlimited realm of potentially valuable resources and experts. Hence, a challenge for academic institutions is to integrate in a proper way the students' practices and environments in the existing institutional ones in order to take advantage of them. Another challenge is to support the students in their informal learning practices and in the construction of their learning environments and networks as a next step in increasing digital literacy. Students nowadays need recommendation regarding trusty resources and networks [2] that go beyond the traditional brick-and-mortar universities.

This paper discussed the motivations and the challenges associated with the introduction of personal learning environments in higher engineering education. In addition to highlighting the need for a fundamental change necessary in the educational paradigm to better account and support personal learning, essential pedagogical and technological requirements pertaining to PLEs are pointed out, such as self-

regulated learning, community based learning, or interoperability standards. Especially, usability is elicited as one of the most challenging features of personal learning environments, together with the need of powerful recommendation capability to help learners find relevant resources and people in the Web 2.0 realm. The recommendation should be self-directed by unobtrusively involving the learner in the process, and by taking into account his/her learning contexts and interests, as well as his/her network of trusties.

Personal Learning Environments (PLE) are virtual spaces aggregated by learners at a specific time, for a specific purpose, and in a given context. The contextualization and repurposing of the PLEs should be enabled according to implicit or explicit learning strategies or competence gaps.

An example of a novel Web 2.0 social software that can be exploited in engineering education is presented, together with an implementation scenario for laboratory activities associated with a control course. This example shows how both the pedagogical and the learning environment design can be adjusted for a better integration of formal and informal learning practices [3].

As an emerging topic in field of technology enhanced learning, the design and development of open and responsive PLEs is deemed challenging. A number of controversies entail further scientific discourses and more empirical validations. Amongst others, we name several examples: striving the balance between system-driven and user-driven personalization mechanisms (cf. the privacy issue pertinent to user profiling), deepening the understanding of trust-building enablers and integrating them into recommendation protocols, and identifying viable means to sustain the development of ever-augmenting widget-landscape.

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