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Resum de la tesi (màxim 4000 caràcters. Si se supera aquest límit, el resum es tallarà automàticament al caràcter 4000)

Education is an engine for change. United Nations (UN) stated in 2000 that education is one of the Millennium Goals for Development. With this goal in mind, the United Nations wanted to ensure that all the children might be able to complete primary education by 2015. UN declared the period 2005-2015 Decade of Education for Sustainable Development, because education is a key element to transform society into a more sustainable one. That is why the Delors Report proposes a transformation of society towards lifelong learning; the abilities and knowledge that a person learns has to help him overcome challenges all his life. It is necessary to learn new abilities and aptitudes, instead of perishable knowledge. It is necessary to learn digital competences to develop further in the society. Digital competences are tools used in all kind of learning. Not all uses of Information and Communications Technologies (ICT) for education encourage the same type of learning. We must find those uses of ICT for education that promote sustainable development and help bridge the digital divide.

Mobile ICT has great potential to transform education towards lifelong learning. Mobiles are the only ICT sector where the digital divide between rich and poor is decreasing. Mobile Internet may be a tool for the poorest to access the Information Society. Once granted access to the Internet, there are many free online software tools for mobile platforms. These tools can be used for everyone to spread their message.

In the context of mobile ICT for education (m-learning) to promote lifelong learning, many problems need to be addressed. For example, how to introduce m-learning practices in educational institutions, in a relatively simple way, producing m-learning projects that have a long-term sustainability. To help achieve long-term sustainability of m-learning projects, this work proposes a series of guidelines.

One way to introduce m-learning in the practices of educational institutions, is through integration with other educational technologies. This is the case of Learning Management Systems (LMS), which are the most used e-learning platforms in current educational institutions. LMS usually present the course as an organizational unit divided into lessons that contain resources and educational tools. This structure mimics the structure of the traditional classroom where the teacher teaches a predetermined content in a curriculum to a group of students. LMS have several limitations to interact with external applications such as social networks, blogs or mobile applications. These external applications are often used by students to learn.

In contrast to LMS, m-learning offers 1) a more personalized learning environment, 2) more student-centered learning and 3) an alternative channel to access content or services. The downside is that often there is lack of support from educational institutions to introduce m-learning, because it means changing established ways of working. It is also necessary to train teachers in order to introduce the m-learning and finally there are interoperability problems with e-learning platforms.

This dichotomy between the world of e-learning platforms and m-learning could be solved by integrating the m-learning applications with current e-learning platforms. For this reason, this work studies the problem of how to integrate m-learning applications with existing LMS.

To study this problem the Moodbile project was initiated. This project aims to 1) extend a particular LMS, Moodle, to the world of mobile devices. The goal is to create mobile applications that replicate some of the services offered by the LMS and 2) provide a framework for mobile applications in the LMS side in the form of special activities. The present work focuses on extending a particular LMS, Moodle, to the world of mobile devices in order to define mobile applications that replicate some of the services offered by the LMS.

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