Adaptable Personal E-Assessment

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ABSTRACT

This paper presents the concept of an adaptable personal learning environment (APLE) which meets the personal needs and requirements of the individual students. Such a system responds to the need of providing inclusive learning for a wider range of learners, which is an important agenda item for higher education institutions. For the complete design of an APLE it is necessary to integrate an adaptable personal assessment tool which is able to assess students’ performance, regardless of their specific learning needs and preferences, including those with disabilities.

Keywords: Accessibility, Adaptability, E-Learning, Personal Learning Environment, Virtual Learning Environment

1. INTRODUCTION

E-learning and ICT are integral parts of a modern education system, actively supported at national and European level. Currently the focus is on how to use ICTs for educational purposes in the best way in order to achieve effective learning. This includes applying innovative pedagogical solutions to provide high quality learning resources, using innovative assessment tools and approaches and considering psychological and social issues for achieving effective, efficient and high quality training (Collins & Ehrmann, 2001). A modern learning environment has to provide e-learning anywhere, anytime and on any device and to improve student’s learning experience (Corfield, 2007). An effective learning environment has to provide conditions to achieve educational goals and optimal learning results (Nacheva-Skopalik, 2007). Additionally, the learning environment has to be adaptable to be able to achieve optimal learning considering the student’s learning status for different target groups and disciplines (Blackwell et al., 2009). This adaptability can be achieved using different pedagogical approaches for teaching, learning and assessment (scenario-based, programmed learning, active learning, and project-based learning). However, in order to benefit from these advanced features of e-learning each student has to be able to have access to provide educational services in the most convenient way according his/her personal needs and preferences. In this sense e-learning has to provide the conditions for teaching and learning to happen and to be adaptable to the student’s individual learning needs and preferences.

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2. ADAPTABLE PERSONAL LEARNING ENVIRONMENT

The learning process is characterised by its content and media format and therefore we can also talk about adaptability from both a content and media point of view. In both cases it is necessary to apply intelligent approaches in order to achieve an adaptable tutoring system that is really effective in supporting students in their learning.

Accessibility and usability of a learning environment are extremely important aspects of the modern learning environments (Harper et al., 2005; Dodd et al., 2009; Nevile and Treviranus, 2006). Developing inclusive learning solutions is a complicated area of research and practical work. The Joint Information System Council in the UK (JISC) actively supports the work on learning environments which support a learner’s individual preferences and introduced the name Personal Learning Environment (PLE) for such systems. Within the Accessibility Research Centre (ARC) at Teesside University a number of researchers are working on elements of personalisation, integration, usability, accessibility and mobility of learning, which taken as a whole will contribute to a PLE (Green et al., 2006). Additional work is done on development of an environment in which content, tools and interfaces can be personalised and adapted to the needs or preferences of a variety of learners, including those with disabilities. This type of system is specified as an Adaptable Personal Learning Environment (APLE) (Green et al., 2008; Green et al., 2009). An APLE would potentially widen the group of learners, who can be catered for.

The basic structure of an APLE is presented below in Figure 1. The components and features of an APLE and in particular the accessibility service known as the TASS are discussed in detail in the next section. However here we can see that e-assessment is just one of a number of components which allow the learner to have a unique, personalized and accessible learning experience. However this is a vital component to any learning environment because without it neither the student nor the teacher can have any confidence in what knowledge or skills have been acquired; more precisely this is the extent to which individual learning goals have been met.

From this figure we can see that tutors are expected to be the main designers of educational content (including learning objects (LO) and assessments) and tools. However the learner is not presented with this content directly. Instead the learner has access to a set of adapted content (tools, learning objects and assessments). These are recomposed based on a store of available learning or assessment objects, alternative media and tools templates and components which meet the learner’s profile. Central to the PLE are a number of web services and tool. These include WIDGaT for the authoring of personalized widgets, LOTTI for learning object or assessment construction and PAL for the creation of profiles based on AccessForAll PNPs. Additionally a central automated service is the TASS which can specify and perform automated adaptation of media content based on personal needs and preferences. This is described in detail in the next section.

3. PERSONAL NEEDS AND PREFERENCES

Access to education is one of the main human rights (G3ICT, 2009). Everyone should have access to education and anyone capable of benefiting from it from further and higher education. However there are a number who are excluded not because of a lack of ability but simply on the grounds that they have a disability or specific need which current education systems are not addressing. The design of learning experiences which meet the needs of everyone is close to impossible. This is sometimes referred to as universal design. However the increased use of the internet and the ready availability of assistive technologies for people with disabilities make the concept of inclusive design more practical. This is expressed as a framework and defines the components of the environment in which
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