From planning learning paths to assessment: Innovations to the practical benefits of Learning Design

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Extended abstract
The Interactive Technologies Group (GTI, 2008) at Universitat Pompeu Fabra is working on several research lines aiming at innovating and enhancing the technological support to increase the practical benefits of Learning Design. This research is mainly performed in the context of the European TENCompetence project (TENCompetence, 2008) which will support individuals, groups and organisations in lifelong competence development by establishing a technical and organisational infrastructure, using opensource standards-based, sustainable and innovative technology. In particular, GTI is working on three main topics: planning learning paths, flexibility in the enactment of learning designs and innovative forms of assessment.

Lifelong learning goes beyond the mandatory education curricula and takes place throughout people's lives. With the explosion of offers related to learning courses and materials, keeping track and planning learning paths and activities has become a real challenge for educationalists and learners. Figure 1 shows the approach that GTI is developing to tackle this problem. It consists in a tool that visualizes educational units and enables the exploration of large datasets. The visualization is layered so that it benefits human's habit rather than system constraints (Moghnieh et al., 2007; Girardin et al., 2007). The layers consider three levels of interaction as illustrated in Figure 1 where the user converges on proper options when moving from the overview layer to the planning layer, even making decisions that narrow the choices down to the most convenient ones. Providing the individuals with the means to understand their choices and compose personalized learning plans will certainly empower them to participate proactively in forging their learning paths and adapt them to their personal preferences.

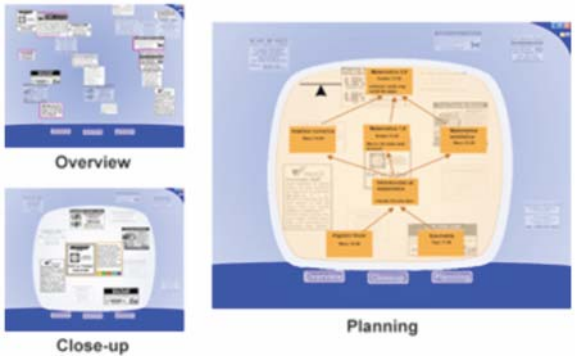

Figure 1: Planning learning paths using three different views of educational units

Figure 2: Template integrated in an IMS LD runtime system

Learning paths are composed of educational units. The design of these units should also consider appropriate pedagogical methodologies and their associated flexibility requirements. GTI has selected the dialogic learning methodology, proved to be useful in lifelong educational situations, to study flexibility issues (Hernández-Leo et al., submitted). Not only may unexpected situations occur which would require a learning design to be modified on the fly (Dillenbourg & Tchounikine, 2007; Zarraonandia et al., 2006), but this methodology also entails that the participants are able to contribute in the (on-going) communicative design of the units. This situation demands a different approach to the current IMS Learning Design (IMS LD) implementations in which authoring tools are not integrated in runtime systems and where the designs need to be planned in advance. GTI has adopted the ideas of dialogic learning to develop an LD template that can be directly integrated in runtime systems as shown in Figure 2 (following a similar approach than the one implemented in LAMS). The template is computationally represented in the form of what we call a meta-unit, which is a fully-fledged unit of

learning offering abstract information derived from other more concrete enactments. Participants can refine the template into completely defined designs according to the needs of their particular learning situation.

IMS LD can be jointly used with IMS Question and Test Interoperability (IMS QTI) to incorporate test-based assessment. GTI has extended the existing support to enact QTI tests and is currently integrating this support into an LD runtime system (Blat et al., 2007). Moreover and with the aim of providing new forms of exploration and interaction beyond those provided by QTI, GTI has proposed to integrate Web 2.0 services with QTI items. As a first example, GTI has developed a QTI assessment engine enhanced with web maps from Google Maps (Bouzo et al., 2007). The system enables the user to interact with the map to answer questions, providing a more natural interface for geographic information. The concept of map interaction has been introduced to represent the different ways of processing the student actions on the map. Depending on the selected map interaction, different spatial operations are applied to validate the correctness of responses (see Figure 3.)

Figure 3: Screenshot of Google maps integrated in an IMS QTI item

Current work is devoted mainly to evaluate these proposals and developing enhancements as well as new approaches to solve related and emerging problems around the three lines of planning, flexible support and assessment solutions.

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