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From the Editors …

Welcome to the October 2011 issue of the Learning Technology newsletter on Virtual Worlds for Academic, Organizational, and Life-Long Learning.

Virtual worlds get more and more popular and are used in different settings such as education. Virtual worlds have been demonstrated to be useful to support learning at formal educational institutions, for organizational learning and for life-long learning. In order to support learning in such virtual worlds, different forms of formal and informal learning spaces are built, using either traditional educational concepts or taking advantage of new concepts and technologies for learning available in virtual worlds.

This issue shows current research on academic, organizational and life-long learning in virtual worlds and introduces the use of new concepts and technologies as well as demonstrates the successful use of those concepts and technologies.

Gregory describes the activities of the Australian and New Zealand Virtual Worlds Working Group (VWWG) for supporting the collaboration through virtual worlds in Australia and New Zealand higher education institutions. Vallance describes the results of an international collaboration between researchers at Future University Hakodate, Japan and UK universities, where robots and virtual worlds have been employed for science education. Peachey & Herman describe virtual world activities for groups of students, where a virtual platform is used to augment the social aspect of belonging to a study cohort, exploiting the sense of presence and constructivist affordances of the 3-D environment. Nisiotis, Beer & Uruchurtu describe the SHU3DED Cyber Campus Prototype, which is based on SecondLife and serves as a testbed for investigating how social networking can be used to help students facing barriers to attending on-campus courses. Ramírez et al. describe the results of an educational project, where virtual world technologies have been used to build up a set of virtual laboratories oriented towards engineering studies. Wingrave discusses the Minds of Chimera project which is based on MineCraft for creating a virtual creative learning platform. Di Blas et al. present the results of four different educational programs that were deployed in school environments to investigate the educational effectiveness of Multi User Virtual Environments. Geer & Hardin describe Star Journey, a symbol-based method for self-reflection that has been re-created in a virtual world format for positive teaching and learning experiences. Terzidou et al. discuss the design, implementation and evaluation of virtual metaphors, appearance features, gestures for students' avatars. Vosinakis & Koutsabasis present a postgraduate Human-Computer Interaction design studio course that makes a combined use of the constructivist pedagogy of Problem-Based Learning with a Virtual World design studio. Garrido, Morales & Serina discuss the necessity of time+resource metadata in current e-learning standards to support collaborative activities. Finally, Hill describes a library exhibit to share information on tornadoes, including virtual books, posters, handouts, links, 3D objects, and photos.

The issue also includes a section with regular articles (i.e. articles that are not related to the special theme). Mishra discuses some of the key issues associated with public-private partnerships in education, in order to understand the role that multi-stakeholder partnerships can have in improving the skills and education system of the European Union. Masud et al. describe VizResearch, an online research community, a social network of researchers and academicians where they can interact with through following other's work, form a group of same interest, do group base activities like message post, comment, and file sharing.

Erbaggio et al. discuss three case studies to show that by creating materials online, course content can be more authentic, appropriate and cost-effective; furthermore, the use of instructional technology can help create more positive affect effects in today's students' learning. Borrego-Jaraba, Ruiz & Gómez-Nieto describe a prototype system that provides students access to bibliographic sources recommended by teachers, based on the IMS LD specification. Noel et al. describe a prototype which uses Microsoft XBOX 360 Kinect to help teachers interact with powerpoint presentations more naturally. Hassan et al. describe an educational game which aims to teach autistic children the concept of money and how to make use of it in the shopping mall. Camas & Mengalli describe a project which aimed to support teacher education in order to advance e-learning in Brazil. Tyagi et al. present a brief introduction of e-Learning, including its history, evolution and main considerations. Finally, Koumpis discusses the cost of employee learning.

Special theme of the next issue: Adaptive and Intelligent Systems for Collaborative Learning
(guest-edited by Dr. Stavros Demetriadis)

Deadline for submission of articles: 15 December 2011

Articles that are not in the area of the special theme are most welcome as well and will be published in the regular article section.

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Special Theme Section: Virtual Worlds for Academic, Organizational, and Life-Long Learning

On the necessity of time and resource issues to support collaboration in e-learning standards

In this paper we motivate the necessity of time+resource metadata in current e-learning standards to support collaborative activities. Learning Objects (LOs) are currently defined in a very independent way from each other, which makes it difficult to use them in a real scenario where students interact and have their own constraints. We present some challenging features that, at least, should be discussed when elaborating new e-learning standards.

Motivation

In e-learning, metadata labelling offers an effective way to annotate LOs by means of title, description, keywords, relations and some technical data. Basically, e-learning standards focus on the educational perspective, dealing with LOs in an isolated way, which facilitates the dynamic sequencing of learning routes tailored to the students' profiles. However, a fully-tailored route should not only cover the individual user pedagogical aspects, but also the physical issues of the real setting in which the route will be used [1]:

1. LOs and their involved activities could require group interaction, collaboration and sharing of some particular resources which are not always available.
2. Students (and teachers) have their own temporal constraints (e.g. number of hours devoted to each course), which implies constraints on the learning route.
3. Not all the students have the same learning goals; some students are interested in being acquainted with some general contents, but others want proficiency in just a few topics. And students also have different preferences in terms of difficulty of the course, duration or even fees.

Therefore, it does not suffice to bring the right content to the right person, but also at the right time and with the right resources, which is usually missing in traditional e-learning standards. In addition to these static characteristics, students have to eventually execute the learning route, which means that some discrepancies (e.g. an activity takes more time than expected, a resource is no longer available, or one student cannot finish an activity on time) may appear and invalidate the original route. At this stage, students may opt for keeping as much of the original route as possible, or to find a similar cost/length new route. And again, nothing about these stability concerns is considered in current standards.

Most Learning Management Systems (LMSs) and tutoring tools now provide options to address collaboration, such as shared calendars, chat, forum tools and on-line surveys (i.e., evaluation checkpoints where teachers monitor the accomplishment of a learning activity). However, this information is poorly supported in current e-learning specifications. For instance, i) IMS-LD models collaborative activities but cannot represent temporal nor resource constraints; and ii) goals are usually represented as nested activity structures, and checkpoints are modelled as properties that represent predefined conditional routes. This information is currently too static, and prevents us from using an automated mechanism that adapts the learning route to the students' profile in a dynamic way -mainly because there is not a clear standard specification from where to obtain this information. Perhaps, IMS-LIP could be used to define goals at different levels, or IMS-MD to define temporal margins for collaborative LOs; but again, there is no metadata to express this.

Use of modern techniques and applicability

AI planning techniques offer very appealing possibilities for the development of e-learning environments that effectively consider the previously described constraints and requirements. In fact, a lot of everyday activities imply some kind of intuitive planning to determine a series of tasks to reach some goals under definite constraints. The advantage of using intelligent planning (and scheduling) techniques is that they bridge the gap between the purely e-learning necessities and the accommodation of time+resource constraints of the real environment. Planning techniques go beyond the traditional e-learning insights and give support not only to adaptation and LO sequencing, but also to scheduling constraints and multi-criteria optimization metrics. This raises a challenge for a successful integration with LMSs that facilitate the dynamic navigation of contents/LOs, monitor the students' progress when following their proposed learning routes, check whether some discrepancies appear and react to them to adapt the routes to the new necessities.

The possibility of directly encoding in the e-learning standards all the information related to temporal and resources constraints, students' goals and preferences would highly increase the effective applicability of planning, independently from the LMS adopted. And not only for planning application, but also for other approaches that address these issues. In fact, many authors have tried in the last years to handle these constraints using different techniques, such as adjacency matrices, integer programming models, neural networks and graph-based sequencing procedures [1,2,3], but the main limitation is the lack of standard metadata on which to rely.

Conclusions

We propose the integration of time+resource metadata in current e-learning standards to promote a more effective learning process. This is fundamental to support collaborative activities, sharing of resources, handle users' constraints and goals independently from the LMS adopted. We have used AI planning techniques which have shown to be very adequate to generate fully tailored routes [1], although other approaches could benefit from these additional information. All in all, we think that the use of automated techniques that deal with temporal and resource constraints would be very important for the development of effective e-learning collaborative methods and their integration with current LMSs.

References

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