Technology: changing the future of learning

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Technology is shaping all aspects of our life, and is also dramatically shaping present and future ways of learning. Such huge impact is a result from the great power technology has to promote high quality conditions for learning, such as sharing, collaboration, communication, participation, experiencing, peer support and, last but not least, fun!

A lot has been argued about the benefits of technology on learning, but one of the most relevant is speed. Because technology accelerates the way people interact with each other and access learning resources, speed is a direct benefit from the use of technology for learning thus contributing to personal and organisational competitiveness. But technology also provides other benefits such as enabling a more effective inclusion of minorities.

Currently, the use of technology is not a question is most educational systems and organisations at least in the more technological developed world. Question is "which technology" never "technology or not"! By the way, it would be a rather inglorious task to discuss the advantage of not using technology in a specific educational context, at least as far as technological developed societies are concerned.

However, careful attention should be paid to the digital gap that originates from different approaches and investment policies around the world, that contributes to deepening the gap among different cultures and countries. Technology should not be a promoter of instability in the world, otherwise must be a tool to bring together different people form different cultures and regions, contributing to develop mutual understanding and knowledge sharing as the best driveway for peace.

Currently there are plenty of technological solutions to promote learning for almost any conceivable need. Everyday new software and hardware solutions are developed, discussed, validated, disseminated. "Traditional" tools such as LMS evolved to incorporate content and activity management facilities, and are being complemented by very promising and flexible web 2.0 social software tools, such as blogs and wikis. Learning object frameworks and supporting tools are slowly taking their path, with the strong contribution from many international organisations, such as the ADL initiative, IEEE or the IMS consortium. Inexpensive solutions, such as Instant Messaging and low cost videoconferencing software, are invading the education world as long as they also became indispensable in the lives of students, teachers and other staff.

One of the most recent and challenging technologies under discussion and experiment for learning is the distributed virtual environment. Second Life is the most well known example, and many scientific and academic organisations, such as the University of Aveiro, are currently investing in developing knowledge on the benefits/drawbacks of using such environments to deliver

learning opportunities. Several efforts, such as SLOODLE, that intends to articulate MOODLE and Second Life concepts and technologies, are currently underway to develop new concepts of learning management systems appropriated to these new virtual learning worlds.

Our current world has also plenty of solutions for one of the most mythic challenges in learning: ubiquitous learning! Mobile phones, iPhones, PDA, iPOD technologies, geographically referenced data and devices, GSM, 3G, WiFi, WiMax, etc, etc, are all over the place, at least for those that can afford them.

So what are the main challenges that we face today and that may help change the use of technologies in learning and fulfil the endless promises that we have been inventing during the last years? Of course, every expert may have his/her own ideas. I've selected a few that I'm pleased to share with you.

The first challenge is, everyone will agree, increase and improve the use of ICT in schools, at all educational levels. Lowering cost of technological solutions is a mandatory condition, but training teaching staff to be able to adopt and develop new learning strategies, taking advantage from the technological tools available, is the most important condition to improve the use of ICT in schools. When asked what is the most effective way to introduce ICT in schools, I always answer that is introducing ICT in the daily life of teachers, emphasising the idea that teachers must be familiar with technologies to be able to use them in a natural and creative way. The skill most youngsters have when using sophisticated technologies derive from the familiarity developed in informal daily life situations.

Another challenge is spreading the adoption of the concept and the technologies of learning objects (LO). LO have the power to help reduce costs to develop new learning solutions because of the re-usable nature of LO. Furthermore, LO may be a very valuable tool to help reduce the digital gap, because they may encapsulate validated learning resources and learning paths already tested, although careful attention should be made to cultural and language specificities.

The promotion of distance education in higher education is also another challenge. It became of great importance because boundaries are falling all over the world, and new market opportunities, such as the BRIC countries (Brazil, Russia, India and China) are rapidly emerging. Curricula convergence and efforts such as the creation of the European higher education commonplace (Bologna treaty), pave the way for a global market for distance education, requiring new supporting solutions.

But these new challenges raise new problems in many directions, including qualification and training of teaching and technical staff. Although pedagogical qualification and training is a common concern in basic and secondary education, in higher education is a neglected matter in many countries. Scientific qualification is no longer the unique required condition for teaching staff in higher education, because new technologies introduced demand for unprecedented skills, such as organising a learning path and gather a set of learning resources for an autonomous learner, or managing a distributed learning community, or providing a lecture or supervising a doctoral student via a videoconference system.

Quality management is mandatory in every educational organisation, but it is especially relevant in distributed educational frameworks, or in other educational scenarios where face-to-face activities are not the rule. In these environments quality management must be reinforced because evidences of the way work is being carried by all the actors (students, teachers, technical staff, etc) is often difficult to perceive.

Just in time learning is still a huge challenge. But the desire to be able to cope with any unexpected situation in a knowledge-supported way is a mythic objective both on professional and on personal situations. Learning organisations, or positive organisations, require highly flexible professionals, but their most valuable skill is, no doubt, the skill to learn fast, as individuals and as a collective, even in the hardest conditions. For this, the capability to provide fast, updated, context meaningful information and learning resources is a key factor. Mobile technology, media convergence, bioscreens, 3D/4D applications, high resolution geographically referenced data and improved context based communication techniques are some of the technologies that will play a key role in the development of new generations of just in time learning solutions. Other emerging and futures technologies, such as context and environment sensing technologies or new developments in 5-senses representation, will lead the way for yet unsuspected learning scenarios.

However, the main challenge as far as technology in education is concerned is, from my point of view, the challenge of using technology as a basis to help balance the world. Only a well-balanced world, balanced as far as (learning) opportunities and (learning) resources are available, will be a sustainable world where education may occur as the most important human asset.