The Role of Internet in Education

Mateja Ploj Virtič

Department of technical education, University of Maribor, Maribor, Slovenia
mateja.ploj-virtic@uni-mb.si

Abstract

The rapid changing of life requires a support for continuous learning and ongoing creation of new ideas and skills. The life-long education is becoming a necessity in tomorrow’s world. Thanks to Internet, the education process changed significantly in last two decades. E-learning becomes important source of knowledge for lifelong learners, as well as full-time students. The paper presents different definitions of e-learning, which are changing by development of technologies through the years. Although learning resources are often considered as key intellectual property in a competitive higher education world, more and more institutions and individuals are sharing their digital learning resources over the Internet openly and for free, as Open Educational Resources (OER). The concept of using the educational resources has changed significantly in last decade. The development led from free content that one can individually teach himself, to social learning, where users have the possibility of mutual communication and exchange of opinions. Linking databases of resources, which will allow the user to use the information adapted to his previous knowledge, is expected in the near future. The paper touches also the quality of educational materials and the problem which appears because a lot of the materials are pedagogically inadequately prepared. There are also several good practices of OER, ideas and existing initiatives presented.

Keywords


Introduction

The access to higher education is becoming a necessary element in expanding economic prosperity and improving the quality of life. The problem of the growing global demand then we need to address for education, as S. John Daniel foresaw in 1996. Compounding this challenge of demand from college-age students is the fact that the world is changing at an ever-faster pace. Few of young people today will have a fixed, single career; instead, they are likely to follow a trajectory that encompasses multiple careers. As they move from career to career, much of what they will need to know will not be what they learned in school decades earlier. We are entering a world in which we all will have to acquire new knowledge and skills on an almost continuous basis.

It is unlikely that sufficient resources will be available to build enough new campuses to meet the growing global demand for higher education—at least not the sort of campuses that we have traditionally built for colleges and universities. Nor is it likely that the current methods of teaching and learning will suffice to prepare students for the lives that they will lead in the twenty-first century (Brown & Adler, 2008).
Fortunately, the Internet and Information and Communication Technologies have greatly expanded into the field of education in last two decades. The global adoption of new technologies into education provides an opportunity for modernising of study, the introduction of modern teaching methods, distance learning as a form of e-learning, and ultimately better prepare students for life in the twenty-first century.

Definition of e-learning

With the popularization of Internet, the demand of e-learning has greatly increased. (Chang et.al, 2009, Wirt et.al, 2004) The term e-learning has different meanings in different contexts (Nicholson, 2007). There are many definitions of e-learning, which are changing by development of technologies through the years. Rosenberg (2001) defined e-learning as ‘the use of internet technologies to deliver a broad array of solutions that enhance knowledge and performance’. Masie (2008) similarly defined e-learning as ‘the use of network technology to design, deliver, select, administer, and extend learning’. For an instructional designer, e-learning often means courses or learning materials directed at meeting an objective within the larger scope of program development. A corporate trainer may view e-learning as a combination of courses and knowledge management. Siemens (2004) defined 7 categories of e-learning:

1. Courses: organisations typically take existing educational materials, add various media, sequence the material and consider it “transferred” to the online environment.
2. Informal learning: “At work we learn more in the break room than in the classroom. We discover how to do our jobs through informal learning - observing others, asking the person in the next cubicle, calling the help desk, trial-and-error, and simply working with people in the know. Formal learning - classes and workshops and online events - is the source of only 10% to 20% of what we learn at work.” (Cross, 2003)
3. Blended learning: is a combination of classroom (face-to-face) and online learning.
4. Online communities: allow people to stay current in their field through dialogue with other members of the same organization, or the larger global field.
5. Knowledge management: involves the process of identifying, indexing, and making available (in various formats) knowledge generated within the daily activities of an organization.
6. Networked learning: Communities typically form around a particular goal, concept or theme.
7. Work-based learning: attempt to inject learning content into the actual point of need. This style of learning can be seen in many computer applications.

Arguably, the most visible impact of the Internet on education to date has been the Open Educational Resources (OER) movement. Although learning resources are often considered as key intellectual property in a competitive higher education world, more and more institutions and individuals are sharing their digital learning resources over the Internet openly and for free, as Open Educational Resources. With reference to the OER movement, the William and Flora Hewlett Foundation justifies their investment in OER as follows: “At the heart of the movement toward OER is the simple and powerful idea that the world’s knowledge is a public good and that technology in general and the Worldwide Web in particular provide an extraordinary opportunity for everyone to share, use, and re-use knowledge.” (Brown & Adler, 2008). OER are the parts of that knowledge that comprise the fundamental components of education – content and tools for teaching, learning and research – actually all 7 categories of e-learning, defined by Siemens (2004), with open access.
What does OER mean?

There are different interpretations of Open Educational Resources (OER). For example, on the webpage of their OER survey, the OECD’s Centre for Educational Research and Innovation (CERI) states that this would comprise “Open courseware and content; Open software tools; Open material for e-learning capacity building of faculty staff; Repositories of learning objects; Free educational courses” (Hylén, 2007).

According to Gesser (2007), OER have the following core attributes:

- that access to open content (including metadata) is provided free of charge for educational institutions, content services, and the end-users such as teachers, students and lifelong learners;
- that the content is liberally licensed for re-use in educational activities, favourably free from restrictions to modify, combine and repurpose the content; consequently, that the content should ideally be designed for easy re-use in that open content standards and formats are being employed;
- that for educational systems/tools software is used for which the source code is available (i.e. Open Source software) and that there are open Application Programming Interfaces (open APIs) and authorisations to re-use Web-based services as well as resources (e.g. for educational content RSS feeds).

The evolution of internet development for the educational needs

The very openness of OER is changing the relationships between educators, learners and content (resources) and is becoming a primary agent of change.

Free materials on the Web

The OER movement practically began in 2001 at MIT. The first e-materials, different Internet applications and online courses provided open knowledge to anyone (in March 2006, about two thirds of MIT professors had their courses online) (Dinevski, 2009).

Traditional e-learning systems and the first OER supported "one-way" communication and more individual studying. Teachers provided knowledge for learners, but they were unable to use a student’s learning experiences to benefit the class as a whole. The learning style of open knowledge students was then centred on individual learning; the focus was on what he is learning, not on how he is learning.

Social learning with Web 2.0

Compelling evidence for the importance of social interaction to learning comes from the landmark study by Light R.J., of the Harvard Graduate School of Education, of students’ college/university experience. Light discovered that one of the strongest determinants of students’ success in higher education – more important than the details of their instructors’ teaching styles – was their ability to form or participate in small study groups. Students, who studied in groups, even only once a week, were more engaged in their studies, were better prepared for class, and learned significantly more than students who worked on their own (Light, 2001).

Wang & Chiu developed a theoretical model to assess user satisfaction and loyalty intentions to an e-learning system using communication quality, information quality, system quality, and service
quality. The empirical results show that communication quality, information quality, and service quality significantly and positively affect user satisfaction and loyalty intentions to use the e-learning system for sharing experience, communicating with others, and getting feedback. (Wang & Chiu 2011).

The findings that social learning and good communication are needed to improve learning outcomes led to the development of Web 2.0, allowing users the possibility of mutual communication and exchange of opinions.

Web 2.0 brings new opportunities for e-learning by associating with web applications that facilitate participatory information sharing, interoperability and user-centred design, and collaboration on the World Wide Web. A Web 2.0 site allows users to interact and collaborate with each other in a social media dialogue as creators of user-generated content in a virtual community. Examples of Web 2.0 include social networking sites, blogs, wikis, video sharing sites, hosted services, web applications...

It is argued that this represents a shift from a teacher-centric, systematic model of change in teaching practices as embodied in earlier ideas about LO to a learner-centric, systemic model of change as embodied in OER (Lane & McAndrew, 2010).

The vision of e-learning: Semantic Web or Web 3.0 will connect people and information

The Web is the world – everything and everyone in the world casts an “information shadow,” an aura of data which, when captured and processed intelligently, offers extraordinary opportunity and mind bending implications (O’Reilly & Battelle, 2009).

The Semantic Web is regarded as an integrator across different content, information applications and systems. The future of e-education using Semantic Web is going to be like having a personal assistant who knows practically everything about the user and can access all the information on the Internet to answer any question. We can compare Web 3.0 to a giant database. While Web 2.0 uses the Internet to make connections between people, Web 3.0 will use the Internet to make connections with information. Linking databases of resources will allow the user to use the information, adapted to his previous knowledge. The Web opportunity is no longer growing arithmetically; it’s growing exponentially. OER resources will gain essentially on the value of semantic-web, because it will be easier to use information in the correct context.

Quality of educational resources

Open content obviously has many authors, including professional authors, teachers and also learners is therefore subject to a constant improvement process. Open content quality control is in the hands of learners and teachers (and is conducted simultaneously with the learning process) instead of instructional experts.

Just a great volume of open content is not sufficient. It should support different teaching activities, different selection criteria, and be easily findable and adaptable. Although examples of successful OER utilisation are not isolated phenomena, there is a low level of awareness about existing OER. (Dichev & Dicheva, 2012).

Cazan and Indreica (2011) report that students are not satisfied with teaching and learning by distance. Their preference for distance learning is largely because of the flexibility of use of time and...
location and work commitment. We see the reason for this unsatisfaction in lack of communication and peer cooperation, which is typical for traditional e-learning systems.

It is obvious that the pedagogical model is not a key point in the OER as such. The discussion of OER has often been dominated by technical and management considerations rather than the perspectives of educational practitioners. To achieve the ambitious goals of the presented lifelong learning philosophy, didactics and pedagogy must be deeply involved into the practical solutions (Dinevski & Brodnik, 2005). This subject requires a wide and integral approach that exceeds the scope of this paper.

Lund University took part in three international benchmarking projects, related to the quality in e-learning. It shows that various aspects of accessibility, flexibility, interactiveness, personalization, and productivity should be embedded in all levels of management and services within the field of e-learning in higher education (Ossiannilsson & Landgren, 2012). Therefore, successful e-learning requires change from an organizational as well as a pedagogical perspective. Attracting experts with appropriate permanent financing of OER, the highest professional and educational quality would be guaranteed.

OER good practices

The OER movement started in 2001 when the Massachusetts Institute of Technology (MIT) announced Open Courseware, as free and open publication of the course materials for nearly all of MIT's courses. MIT Open Courseware has served as an important catalyst in the OER movement, and has provided the model for over 150 universities and educational organisations to openly publish over 13,000 courses and associated course materials. The majority of these courses follow the original model of collecting course materials and then publishing them openly. Course materials are arranged as they would be in a typical course, according to a syllabus with readings and lectures, and in some cases having associated video lectures and interactive exercises. (Muramatsu, 2011)

After 2001, the OER movement has an important tendency in universities all over the world (Johansen & Wiley, 2011, Klebl et.al., 2010, Wang, 2011).

While it is a fact that millions of documents can be found on the Internet using search engines like Google, there is no guarantee that a query will lead to trustable material on which high quality education can be built. Well managed learning object repositories that aggregate high quality content offer a solution to this problem. GLOBE (Global Learning Objects Brokering Exchange) is a one-stop-shop for learning resource broker organisations, each of them managing and/or federating one or more learning object repositories. GLOBE makes a suite of online services and tools available to its members for the exchange of learning resources, and is set up as a worldwide Open Community. The GLOBE initiative started in 2008, with a collaboration of 5 organisations. In the last 4 years, the number of collaborative organisations increased up to 13.

The number of non-course OER available increases rapidly as well. Rice’s Connexions project currently hosts over 2,800 open learning objects available for mixing and matching into study units or full courses.

MERLOT offers almost 15,000 resources, European based ARIADNE offers links and federated searches in several networks and repositories. Textbook Revolution contains links to hundreds of freely available, copyright-clean textbooks. Freely accessible encyclopaedias like Wikipedia and Math World grow in size and quality. UNESCO/IIEP hosts a Wiki called “OER useful resources” listing several other portals, gateways and repositories. (Hylén, 2007).
Conclusion

The appearance of the Internet has changed the education significantly. Properly used information from the Internet, represent added value to the education.

Limiting the government’s financial and human resources, consequently, has greatly increased the need to introduce new educational methods. E-learning has been in use for over a decade. During this time, both the advantages and disadvantages of using the Internet for learning have clearly demonstrated. In recent years, OER development has contributed to a higher quality and efficiency of e-learning.

The concept of using the educational resources has changed significantly. The development led from free content that one can individually teach himself, to social learning, where users have the possibility of mutual communication and exchange of opinions. Linking databases of resources, which will allow the user to use the information adapted to his previous knowledge, is expected in the near future. More about e-learning, its future and good practices will be presented in the book “E-learning Good Practices”, which will be published both online and in printed edition in 2012.

There are many good practices scattered on the web, but still a lot of things should be done to come to the critical mass of high quality educational content which is free for everybody and easy to use in different learning contexts and needs.

References


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