

QUALITY DEVELOPMENT FOR E-LEARNING 2.0

MILENA STANKOVIĆ

University of Niš, Faculty of Electronic Engineering, milena.stankovic@elfak.ni.ac.rs

RADOMIR S. STANKOVIĆ

University of Niš, Faculty of Electronic Engineering, radomir.stankovic@gmail.com

Abstract: The term *e-learning 2.0* applies when the online tools, such as blogs, forums, wikis or podcasts, are used for learning and teaching. Learners can create their own contents and exchange information in networks like, for instance Facebook, video platform YouTube, or the repository of photos Flickr. In the development of a quality system of this new learning concept, various aspects comparing to the classical face-to-face learning or classical e-Learning, must be reviewed and possibly changed and/or adapted. In e-Learning 2.0 scenarios, the learning progress is considered to be the main factor of the quality and new forms as e-portfolio, recommendations, and on-line reviews, become more useful as tools for the quality assessment.

Keywords: E-Learning 2.0, Quality of learning

1. INTRODUCTION

It is evident that nowadays we can speak about a new generation of students or the *Net Generation* of students (born since 1980). They have grown up and used to learn in a world in which computers and various mobile communication tools are a part of everyday life. Being in a continuous communication through social networks, chats, instant messaging, phone calls, and e-mail is the normal way of life. Members of this new generation use computers and mobile devices for instant access to information via the Internet or some specialized services. They are active in downloading data from public repositories and uploading their own data for sharing with the friends.

For this new generation, the classical model of face-to-face learning or classical e-learning is inconvenient, time consuming, boring, insufficiently inspiring and, therefore, not much productive. They have different attitudes and needs towards learning.

Only by understanding this Net generation and by creating learning environments that are in a correlation with their skills, needs, behavior, and habits, it would be possible to ensure learner motivation and improve the quality of learning.

The last decade of the development of Web is marked by the Web 2.0 technologies the foundations of which are collaboration, interaction among the users, and application of collective intelligence. This assumes that users contribute to the building and development of the contents accessible through the Web and by tags, comments, and recommendations help other users to find necessary data in this wide collective environment.

The application of Web 2.0 technologies in education and teaching leads to the concept of e-Learning 2.0 where the application of Web 2.0 technologies (such as blog, wiki, podcast, virtual worlds, etc.) provides an entirely

new approach to learning offering large potentials for improving the quality of learning.

In this paper, we point out the development and changes in the education system that can be achieved by the application of e-Learning 2.0 technologies. Especial attention is paid to the tools that can be used to estimate the quality of learning emerging from these technologies.

Section 2 is devoted to the notion of digital intelligence which arises from the needs to manipulate with information presented in various digital forms. In section 3, we discuss new forms of learning that are based on the application of e-Learning 2.0 technologies. Section 4 points out differences between the classical e-Learning and e-Learning 2.0, and section 5 discusses the development of the quality system in the education systems based on e-Learning 2.0 technologies.

2. NEW CONCEPT OF INTELLIGENCE

The view to the notion of intelligence has been changed compared to that in the past and already in eighties a new form of intelligence was proposed in particular with respect to the areas of human activities as music, interpersonal knowledge, mathematical, linguistic ability, and others areas. The intelligence was defined by Gardner [1] as "the capacity to solve problems or to fashion products that are valued in one or more cultural settings". He defined seven different intelligences including: *Logical Intelligence*, *Mathematical Intelligence*, *Linguistic Intelligence*, *Spatial Intelligence*, *Musical Intelligence*, *Bodily-Kinesthetic Intelligence*, and *Personal Intelligence*. The proposed theory is called the *Theory of Multiple Intelligences* [1], and refers to the aptitude of a learner. All these different intelligences are necessary to be present in certain measure for a student that he might be able to learn efficiently.

Nowadays it is possible to distinguish an additional form of intelligence, the *Digital intelligence*, whose importance

is supposed to be ever increasing in future. The Digital intelligence is viewed as an emerging form of human intelligence based upon the ability to process effectively the information presented in digital form or by digital means. It is characterized by logical statements, and represents a kind of multitasking ability, and a good skill to identify and take advantage of potential links among concepts and then decompose the information into pieces such that they can be latter easily transformed and when needed reassembled into a new system of knowledge for various further applications.

The ability to recognize and exploit potential connections among the pieces of information is an important feature of the digital intelligence. As pointed out in [2]: *Reasoning in the digital age has much to do with parts of knowledge the practice of transforming "found" materials by incorporating them and reassembling them into something new, as in mashups and the evolving social media of Web 2.0.*

3. NEW FORMS OF LEARNING

The fundamental concept in learning in the digital era is based upon the ideas of collaboration and undertaking the control over the learning process by the learners themselves instead the teachers or instructors.

The idea is to encourage learners to take an active role in learning by requesting to search and provide their own material necessary to master certain subject. In this case, the learner can adapt the contents to be learnt according to his previous experiences and background knowledge. The learning is conducted by exploiting connections and constructions through the communications of the knowledge schemes and constructions with other members or participants in their social connections or networks. The individual and rather isolated way of learning is slowly abandon at the advantage of learning models that are established on the links between learners, and learners and tutors or teachers.

Integration of various Web 2.0 tools, such as blogs, forums, wikis, virtual worlds, and simulations, into classical teaching methods allows to create a new style of learning much better suited for new generations. This style is more compatible with their other activities, since assumes that learners can create their own contents and exchange information in social networks like Facebook, or video platform like YouTube, or Flickr, in the same way as they are already doing that by sharing various other data.

The emerging learning styles include [3]:

- Usage of multiple media including audio, video, podcast, simulations, virtual settings, and augmented reality.
- Expression through small parts of contents by incorporating them into blogs and wikis, by tagging, commenting and reviewing, and recommending.
- Adaptation and personalization of learning contents according to individual needs and preferences.
- A balance among experiential learning, guided mentoring, and collective reflections.

Blog as a tool for learning

A Blog (the terms that is an abbreviation for *Web Log*) is often used as a personal journal that can be updated frequently and is intended for general public consumption. Blogs generally reflect the personal view of the author related to the some topic.

From the application point of view, they are very popular and easy to use, since can be easily maintained and updated through a standard web browser requiring no additional technologies and skills.

It is important to point out that it is often allowed that visitors to a blog can contribute from their own side and participate in creating the content. Blogs can also reuse the content from other blogs (that is referred to as syndication from an RSS "feed"). Due to that, blogs are well proved as a well suited and rather powerful medium for establishing various web communities and special interest groups also for learning.

The visitors of blogs are encouraged to write comments on the contents that are posted by the owner of the blog and are allowed to include links to other web sites and blogs, write new articles, or even upload pictures. Different forms of video and audio sharing and podcasting sites can also be embedded into blogs.

The entries in blogs can be tagged by the writers with keywords, which are a kind of categories for blog posts. This allows posts to be viewed (and searched) by users by category as well as by the date they were posted.

Wiki

A wiki is a collaborative online space where learners have opportunity to build the content together and online. They can be available for general public consumption or the access can be allowed to the groups of users defined in advance. Wikis encourage participation in a group work and help in developing valuable communication and teamwork skills. The asynchronous communication common for wikis offers to learners a comfort to contribute at any time and from any space on their best convenience. Furthermore, wikis are useful as a support in the dissemination of information and enable the exchange of ideas, as well as facilitate the group interaction. Wikis can also be used to create a set of documents that express the shared knowledge of the learning group. Typically, class wikis include text, pictures, links to other resources, and multimedia.

Podcasts

A podcast is usually viewed as an audio/video file posted on the web that is delivered to listeners via a subscription service, such as an RSS feed. The RSS feeds inform subscribers when new files are posted to a Web site, and notice whether the files are new entries in a blog or some specialized services. Although the audio files and audio blogs are already used for long, the term "podcast" was first coined in 2004, blending the words "iPod" and "broadcast", see for instance [4].

Institutions providing the education services and conducting teaching can produce and provide audio and video files related to particular topic that can be

downloaded and played by the students on their portable players as for instance iPods, smart phones, or tablets.

Instant massaging

Massaging is a form of online communication that allows a real-time (or nearly real-time) interaction through personal computers or mobile computing devices. Users can exchange messages privately, similar to e-mails, or join group conversations. Typed text is still a prevalent form of instant messaging, although the contemporary technology allows users to send images, audio and video files, and other attachments to their contacts. Instant messaging is extended to mobile phones through SMS and MMS messages.

Virtual worlds

Virtual worlds are online environments where multiple users can interact together or with characters or interactive environments. They are typically immersive 3D environments where users enjoy a lot of freedom in terms of mutual interactions and places where they can go and visit. Users act and participate in the imaginary world through the control of an avatar or an online persona. The avatar allows the user to choose how much of their real features they might wish to portray in the virtual world, and eventually allows them to play the role of completely different persons. Virtual worlds are convenient for simulations, experiments, and work in groups and similar.

4. CHARACTERISTICS OF THE LEARNING SUPPORTED BY E-LEARNING 2.0

Comparing with classical e-Learning, it is possible to characterize the e-Learning 2.0 by the following characteristics [3,5].

Different environment: The learning materials are not isolated into the Learning Management System (LMS). They are distributed all around the Internet which can be viewed as a common learning environment. The learners participate in building and enriching the environment they are using for learning.

Different approach to learning: In classical approach to teaching and learning, the complete material is prepared for the learners, and they are subjected to strict instructions on the contents and the manner of learning. Instead, in e-Learning 2.0, the learners have an active role and are partners in the teaching process. This can be seen from the feature that learners are requested to find and select the teaching material by themselves and then also adjust the speed of learning to their own abilities and needs. The main idea is to request the learner to find the links among concepts by himself and in this way he is at the same time also trained to widen his knowledge.

Different roles of teachers and tutors: The position and role of instructors is also completely changed. The teacher is not any more a person that brings the knowledge to students by writing down facts, definitions, and theorems at the black board. It is not his role to formulate problems and then provide solutions to them. Instead, the teacher

serves just as a kind of a navigator through the wide ocean of knowledge and helps in tracing the directions in learning for individual learners. It is an authority to whom students can talk and check their models and ask for help and advices in avoiding obstacles they may experience. The teacher should encourage and motivate students to search for new solutions and look towards a deeper exploring of particular problems by criticizing, but always with friendly suggestions and comments.

Different methods of learning: The learning is not based on examples and tasks prepared in advance and offered to students as a completed work. Instead, the solutions are search for in virtual labs, experiences are exchanged with other students, and solutions are reaching through a process of discussing, asking questions, and providing comments and remarks to the work of others. Every student finds the manner of learning that is best suited to his interests, needs, and abilities.

5. NEW CONCEPTS OF QUALITY

The educational process should be focused on both quality and motivation (internal/external).

New environment of e-Learning 2.0 imposes new approaches to the quality system. In classical learning, the quality system assumes providing the space, class rooms, labs, and teaching equipment. It also relates to providing text books, manuals for lab exercises, and other supplementary teaching materials, as well as a good organization of the teaching process and control of its implementation, a system for evaluation of students knowledge, self-evaluation of the teaching process, and related matters. In the new circumstances some other aspects are more relevant and dominant.

The learning process should promote learners as active producers rather than passive consumers. It should follow the path from reception to participation and focus on the interaction among learners and teachers.

The possibilities for learners to contribute to the teaching process should be accompanied with the ensuring of highly accessible media. It is assumed that an end user enrolls, follows, and completes a course over the Web. Typically, the user should not be requested to download any software or learn any new application. The same as with all other application services, an effective course shares basic principles and good practices of Web publishing. Pages presenting the material to be learnt should display quickly without request to install some plug-in, an appropriate navigation should be provided, as well as the integration with other related services (as for instance an LMS) should be transparent and user friendly.

In e-Learning 2.0, the notion of quality is essentially different from that in the classical distant learning or e-Learning. We do not evaluate the quality of learning material, but the advent in learning and quality of new knowledge earned. The teaching material is not predefined and prepared according to some predefined standards. It is more important to estimate how the learning environment influence and motivate individual activities by each learner in preparing the material, how easily this material can be incorporated in the existing

system. The question is how well the learners are motivated to select and prepare the material that should be learnt and if they are ready to be active partners in creating the learning environment.

The role of quality development in e-Learning 2.0 is also changed. Comparing with the classical approaches, various different aspects should be considered, different objects must be evaluated, different criteria of quality applied, and some rather specific methods of quality assurance, enhancement, and development have to be used [3,6,7].

In traditional learning scenarios, the quality development mostly reduces to the checking and controlling of the implementation of different standards.

In e-Learning 2.0 scenarios, the learning progress becomes main factor of the quality. In this new environment the methods as reflections and recommendation mechanisms appear as more important.

E-portfolio

The e-portfolio is a collection of work (files, graphics, photos, curriculum vitas, multimedia etc) that should serve to demonstrate competence that grows with the learner through a lifelong cycle of the training and employment. The purpose of most e-portfolios is to provide learners with a space to record, reflect, and present the relevant information about themselves, their education and training experiences for the purposes of learning, assessment, and making transitions, particularly to employment. In this way e-portfolio serves as a tool for quality control since shows the advent a learner is getting.

Typically an online portfolio includes:

- Evidence of achievement,
- Details of the learner goals,
- Daily notes on learning progress,
- Peer evaluations of work,
- Journal entries which demonstrate engagement of the learner and reflection with the learning,
- Feedback from trainers, workplace assessors, colleagues, employers, etc.,
- Major assessment tasks,
- Reports at the end of the process which demonstrate the synthesis and analysis of the research and related practical activities.

Reactions, online reviewing and recommendations

Comments, recommendations, peer to peer reviewing and similar reaction tools are common in Web 2.0 and are very often used by the users to express their opinions and thoughts.

Instead of classical questionnaires that are typical for systems of quality control and classical learning systems, the Web 2.0 tools are much more suitable for the e-Learning 2.0 environment.

The spontaneous comments by learners on the quality of teaching material can be much more informative than classical questionnaires which users usually do not like to fill out. The free form of commenting allows to express

more precisely and deeply some new aspects of the quality assessment that cannot be seen in advance.

Further, peer to peer online reviewing and recommendations can influence the determining of directions in learning and in this way may contribute to the better final outcomes. An analysis of these recommendations can provide a more complete picture on the quality of the entire learning process.

An automatic analysis of comments and recommendations can certainly be more complex and demanding than the analysis of classic questionnaires and tests. This analysis requires invention and development of specialized data mining tools, which leads to very interesting research areas.

6. CONCLUSION

The paper reviews basic definitions of e-Learning 2.0 and briefly discusses its features. We present some new approaches to learning where learners have a more active role and are requested to take full responsibility for their efficiency and success in education and professional development. We point out that in the development of the quality system of the model of learning mixed with the e-Learning 2.0 some new tools such e-portfolio and different reflections tools must be involved. Such tools as for example recommendations and peer to peer reviews, are more convenient for the quality control than classical questionnaires and tests. The central point in this new learning model is learner and the progress of his learning. Less important is when, where, from whom, and how he learns. The ultimate goal is just to increase the level of his knowledge in a manner that is most efficient and at the same time most comfortable for the learner.

LITERATURE

- [1] Howard E. Gardner, *Frames Of Mind: The Theory Of Multiple Intelligences*, Basic Books; 10th edition, 1993.
- [2] K. Solez, "The Emerging Digital Intelligence", http://www.internetevolution.com/author.asp?section_id=567&doc_id=143168 august 2011.
- [3] U. D. Ehlers, Web 2.0 – e-Learning 2.0 – quality 2.0? Quality for new learning cultures, <http://www.emeraldinsight.com/journals.htm?articleid=1801285>
- [4] S. Tavales, S. Skevoulis, Podcasts: Changing the Face of e-Learning, <http://www1.ucmss.com/books/LFS/CSREA2006/SER4351.pdf>
- [5] E. Jokisalo, A. Riu, Informal learning in the era of Web 2.0, <http://www.elearningeuropa.info/files/media/media19656.pdf>
- [6] Ch. M. Tham, Designing and Evaluating E-Learning in Higher Education: A Review and Recommendations, <http://jlo.sagepub.com/content/11/2/15>, August 2011
- [7] C. M. Stracke, Quality Development and Standards in e-Learning: Benefits and Guidelines for Implementations http://www.qed-info.de/docs/Quality_Development_and_Standards_in_e-Learning_Stracke_20090721.pdf