

WCES 2012

Embracing Web 2.0 & 3.0 tools to support lifelong learning - Let learners connect

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Abstract

Today's students have grown up surrounded by the digital society, to them traditional teaching is poorly stimulating, for they are used to utilize simultaneously diverse types of media. Learning is within the distance of a click, for those digitally savvy enough. Although, to actually retain knowledge there is still the need to acquire digital skills, soft skills, have digital literacy in order to perform effective research, select information, reflect, collaborate, produce, learn and share knowledge. This article aims to ascertain if, and how, those having these competences with access to digital and virtual tools will be better prepared and motivated for lifelong learning.

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Keywords: lifelong learning, Web 2.0 & Web 3.0, e-skills, soft skills; digital literacy, higher education

1. Introduction

Web 2.0 and 3.0 are already making changes in the way students acquire knowledge and information. It's particularly attractive to younger students who have grown up surrounded by these technologies. To learners in the digital society, traditional teaching is poorly stimulating, for they are used to utilizing simultaneously diverse types of media. Education must therefore change, to be more personalized, reflexive, socially connected, involving and permitting instant gratification to embrace both native and digital immigrants (Prensky, 2001). Hence, like society, education needs to follow the shift towards and focus on, a knowledge-based approach.

According with European Commission (EC) (2003) lifelong learning is defined as “*all learning activity undertaken throughout life, with the aim of improving knowledge, skills and competences, within a personal, civic, social and/or employment-related perspective*”. Web 2.0 and 3.0 bring the opportunity for a closer contact with digital tools, virtual environments and immersive worlds that allow citizens to look for and gather information and therefore build knowledge and learning. Learning activities are just a click away, for the digitally savvy generation. Although, to actually learn and retain knowledge students must acquire relevant digital skills (e-skills), soft skills and have digital literacy. Only when those competences are developed will students be able to perform effective research, select information, reflect, collaborate, produce and share knowledge.

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This article aims to study if, and how, those having these competences with access to digital and virtual tools (web 2.0 and 3.0) will be better prepared and more motivated for lifelong learning. To achieve this goal a literature review will be presented along with examples for further implementation. The article is divided in four sections.

2. Learning in a digital and connected age - skills and competences

Learning in a digital and connected age does not depend on “*individual knowledge acquisition, storage, and retrieval; rather, it relies on the connected learning that occurs through interaction with various sources of knowledge (including the Internet and learning management systems) and participation in communities of common interest, social networks and group tasks*” (Siemens, 2004). Individuals need to acquire certain skills and competences, specific to a digital and connected society in order to “*effectively benefit from e-government, e-learning and e-health services, and participate actively in the knowledge society as co-creators, and not simply consumers, as highlighted by the European e-skills strategy*” (McCormack, 2010). Besides e-skills and e-literacy competences, soft skills (interpersonal) are also a demand. These skills and competences can be practiced and enhanced in social, collaborative and virtual environments. Individuals have access to communities of practice (Wenger, 1998), virtual worlds with role-play and simulations, social networks and a wide range of web 2.0 tools.

2.1. e-Skills

With a networked society (Castells, 2005) the demand for e-skills has been growing fast. These are “*crucial to boost competitiveness, productivity and innovation as well as the professionalism and unplayability of the workforce*” (McCormack, 2010). Although education does not cope with this demand, according to DIGITALEUROPE there is a correlation of 85% between e-skills and competitiveness and therefore “*Europe must move rapidly to improve the skills of its children, elderly, teachers, practitioners and public administrations*” (McCormack, 2010).

E-Skills are not simply those which allow people to send an email or play a video-game, process a text or use a spreadsheet. E-skills go significantly beyond basic ICT skills. Actually we can find three major types of e-skills: (i) ICT practitioner skills; (ii) ICT user skills; and (iii) ICT business skills.

The ICT practitioner skills can be defined as capabilities required to make research, designing and develop, managing and maintaining ICT systems. To do this one must have some level of academic qualification, for most of the times it requires profound knowledge of ICT systems. ICT user skills is the most common of all. It relates to the capabilities that allow an individual to use the ICT systems and devices, such as *digital literacy*. This gives the user the confident and critical use of ICT for work, leisure, learning and communication. ICT users should be able to apply these tools in support of their own work. ICT user skills also cover the use of common software tools. E-Business skills relate to the capabilities one needs to exploit opportunities provided by ICT, notably the Internet, to enhance the efficiency and effectiveness of an organizational performance in key business areas; this type of skill includes also the capability to explore new ways of conducting business processes and/or to establish new businesses.

On May 2010, EC approved the *Digital Agenda of Europe*², specifying seven priority areas to be developed. There were also specified some fields to be targeted, such as the:

- Digital Literacy promotion;
- Development of an European framework for ICT Professionalism, increasing mobility of practitioners throughout Europe;
- Creation of web-based training resources to promote a higher participation of women in the ICT workforce;
- Development of an online consumer education tool on new media technologies;
- Proposal of European-wide indicators of digital competences and media literacy;
- Systematically evaluate and facilitate accessibility.

² http://ec.europa.eu/information_society/digital-agenda/index_en.htm

It is also stated into this document that by the end of 2011 Member States should implement long-term e-skills and digital literacy policies, and that each country must make provisions to modernize educational training in eLearning, by providing high-speed Internet connection in schools until 2015, and also encourage teachers to modernize their teaching methods through digital technologies and update their training in ICT.

One important aspect mentioned is related to teachers and parents: few look to IT related jobs as a positive career choice, especially when it comes to women. Children look up to parents and teachers when it comes to career decisions, and so this must be solved, by giving teachers, parents and also children the information they need to actually understand the benefits and positive outcomes when choosing an ICT career, and acquiring e-skills.

Not only this should be a concern in basic education (at this level most importantly when students are choosing their future careers) but it is essential to take action at tertiary level. Lenvin is cited in the e-skills manifesto when stating that “*Europe’s future will be innovation-intensive. To make it successful, Europe needs to address its e-skills gaps in a determined, imaginative and ambitious fashion. Tertiary education is the right place to start, because it is the right context to think of generating not only the brains that Europe needs, but also the minds that it deserves*” (cited in McCormack, 2010).

It must be made clear to all, not only the existing gap in professionals in ICT, the need of this sort of professionals with e-skills competences throughout all Europe. This brings some fundamental questions: Why are these professionals so sought? Why does the industry need them so much? What makes them necessary to the economy? How do they contribute to the global European economy? Some answers are pointed out in the *e-Skills Manifesto* that demonstrates a relationship between IT (or digital technologies) and the growth of economy. According to this study, ICT and consequently e-skills powers productivity, growth and innovation. Perán states: “*The current context of economic crisis makes e-skills even more valuable, as they make up a very powerful engine for jobs creation*” (cited in McCormack, 2010). People with e-skills are capable of critical thinking, multitasking, collaborating in team work. Specifically those with e-business skills are very important to companies in promoting innovative marketing strategies and acquiring new clients. As McCormack (2010) says “*we need e-skilled people to provide the infrastructure and e-skilled people to use it. An e-skilled society is thus a precursor to a knowledge-based society*”.

2.2. e-Literacy or digital literacy

E-literacy or digital literacy is a group of competences that allows an individual to acquire knowledge through digital processes. According to the *Journal of eLiteracy*, digital literacy refers “*to the awarenesses, skills, understandings, and reflective approaches necessary for an individual to operate comfortably in information-rich and IT-enabled environments*” (Martin & Ashworth, 2004).

When trying to understand digital literacy, firstly it is important to understand the literacy concept. Before the 21st century we only knew literacy - the ability to comprehend what we read, to give meaning, to understand written language. One may still be illiterate if one knows how to read but without the capability to understand what it means. So being digitally literate does not only refer to the capability to use a computer or an email and understand what we read on the Web or in the computer, it includes being able to understand and interpret information available in all digital media. Being digitally literate gives us the ability to communicate and work more efficiently through efficiency in finding, using, summarizing, evaluating, creating and communicating information through digital technologies; this is more than just using the computer, it involves understanding how all digital devices work and how they can be used to interact with society. Digital literacy is “*A person’s ability to perform tasks effectively in a digital environment (...) Literacy includes the ability to read and interpret media, to reproduce data and images through digital manipulation, and to evaluate and apply new knowledge gained from digital environments*” (Kavalier & Flannigan, 2006).

For a person to be considered as digitally literate some competences must be achieved (*cf* Figure 1). These competences are related with some elements such as: Access and Information Management, Integration and Evaluation of accessed Information, Create or co-create Content and Information Dissemination.

BASIC ELEMENTS OF DIGITAL LITERACY		
Elements	Definitions	Competencies
Access	Knowing about and knowing how to collect and/or retrieve information.	Search, find, and retrieve information in digital environments.
Manage	Applying an existing organizational or classification scheme.	Conduct a rudimentary and preliminary organization of accessed information for retrieval and future application.
Integrate	Interpreting and representing information - summarizing, comparing, and contrasting.	Interpret and represent information by using ICT tools to synthesize, summarize, compare, and contrast information from multiple sources.
Evaluate	Making judgments about the quality, relevance, usefulness, or efficiency of information.	Judge the currency, appropriateness, and adequacy of information and information sources for a specific purpose (including determining authority, bias, and timelines of materials).
Create	Generating information by adapting, applying, designing, inventing, or authoring information.	Adapt, apply, design, or invent information in ICT environments (to describe an event, express an opinion, or support a basic argument, viewpoint or position).
Communicate	Communicate information persuasively to meet needs of various audiences through use of an appropriate medium.	Communicate, adapt, and present information properly in its context (audience, media) in ICT environments and for a peer audience.

Figure 1. Basic elements of Digital Literacy, in *California ICT Digital Literacy Assessments and Curriculum Framework*

Being in the possession of the above mentioned competences, a person will be able to learn, work, and interact in the digital networked society. They will have the life-long ability to locate, evaluate, use and create information - Information Literacy.

2.3. soft skills

Soft skills are personal attributes that enhance an individual's interactions, job performance and career prospects. So when trying to make a list of all the soft skills needed, there are so many, we can say it's almost an impossible task. Schultz (2008) narrowed down the list into two main and extremely important categories: personal traits and interpersonal skills. Furthermore he points out the three skills he considers the most important to have are:

- communication skills (for most people having proficiency in spoken and written language as well as to know what to say and how to say it in different occasions is the most important soft skill);
- critical and structured thinking along with analytical skills (so needed to problem solving capability);
- and creativity (when together with brainstorming and mind mapping gives the ability of “*thinking out of the box*”, which is often needed to find innovative approaches to problem solving in the business world).

To hold soft skills is therefore also important, to make them part of every students curricula. Integrating them into every curricular unit would make it possible to learn them and apply them in context. Soft skills are what shapes our personality, enable social competences, for they complement the technical skills required to do a job, and so are as equally important as to have technical and scientific knowledge.

3. Web 2.0 & 3.0 in Lifelong Learning context

As mentioned above, lifelong learning can be defined as all learning activity undertaken throughout life, whether formal, informal, non-formal or natural; and with the aim of improving knowledge, skills and competences, within a personal, civic, social and/or employment-related perspective (Harvey, 2004). In a digital and connected society, access to information and therefore to knowledge seem to be easier. Citizens have access to a wide variety of resources allowing formal, informal, non-formal and natural learning contexts, without leaving their homes. With the advent of Web 2.0, and lately of Web 3.0, citizens became more active and participative - they not only access content but also create and share content. They became proactive.

ICT has been a central element to the growth of lifelong learning that began in the mid 1990s with the understanding that email would contribute greatly to lifelong learning. Since then ICT has evolved, and with it the opportunity of accessing learning at a distance through online platforms has broken geographic and economic barriers for many, allowing a growth in lifelong learning as well. However, even though these resources exist it does not mean that actual learning takes place for everyone, for here some skills are required so that these learning experiences reach the high quality necessary. These skills are necessary for the student as well as for the teacher. In fact, most say the teacher plays a decisive role in raising the platform to its full potential. As Thorpe (2005) says: *“the promise of the new media is just that – a promise or potential that can only be realised through skilled and creative design and teaching, on the part of both the local tutor and the course team. (...) lack of success in use of ICT may result as much from cultural differences in how people expect to learn, as from any feature of the new media themselves”*.

In today’s digital society communication has evolved, and sending and receiving an email is a basic skill, the new media allows now live conferencing, video sharing, social networking, collaborative tools, that permit the student to create, work collaboratively and to communicate in a more direct way with their peers and their teachers. In fact, we can take a risk and say that lifelong learning has evolved with new media. Instead of merely searching for information, applications such as bookmarking, feeds, tweeter and pinboards, digital portfolios, etc., along with the possibility of creating your own personal webpage, gives also the chance to create a PLE - A Personal Learning Environment. As Attwell (2007) mentioned, a PLE *“recognizes that learning is continuing and seeks to provide tools to support that learning”*. In a PLE the individual is responsible for the management of their own learning environment and for the selection of tools and contexts where learning will take place.

Web 2.0 (or social Web) can be defined as the collaborative web - with an emphasis to online collaboration and sharing amongst users. As O’Reilly (2005) said, Web 2.0 is the *“collective intelligence of everyone who uses the web to upload, download, add comments, provide feedback, add tags and actively engage in the creation of new knowledge”*. Users are no longer passive receptors of knowledge, they are active participators. Users, by creating, sharing and commenting content contribute to mass collaboration or collective intelligence (Lévy, 1994) and for wisdom of crowds (Surowiecki, 2005). For this to happen, some principles must be implied (Tapscott & Williams, 2008):

- Openness - by opening door to external ideas and agents, schools will outperform those who keep relying solely on their internal resources and capabilities;
- Peering - peer-to-peer collaboration, in some tasks, might be more productive and knowledge generator than traditional hierarchical management;
- Sharing - schools have to share part of their intellectual property so they can actively collaborate and generate new intellectual property plus improve their position in the global economy;
- Acting Globally - globalization is nowadays a key concept, schools must act globally and in collaboration to stay at the top.

Higher Education Institutions can have a significant gain and take benefits by integrating Web 2.0 and 3.0 tools into their traditional structures and procedures. These tools are, by their nature, globalized and collaborative. Teachers and students can benefit from a learning strategy that includes online tools as a complement to face-to-face strategy.

According with Hayes (2006), Web 3.0 (or semantic Web) is related with immersive 3D virtual worlds where users connect, communicate and interact in real-time through their avatars. Users learn and share in an immersive way - learning in 1st person as opposed to 3rd. Some authors (Downes, 2010; Kop, 2010; Siemens, 2010; Wheeler, 2010) refer also to the eXtended Web (or Web x.0). Web x.0 seems to be directly connected with collective intelligence and the wisdom of crowds. The Web allows anyone to learn at anytime and anyplace and in a personalized way. These new potentialities require the above mentioned skills, specifically related with (Wheeler, 2011): (i) social networking; (ii) privacy maintenance and identity management; (iii) creating, organising, reusing and repurposing content;(iv) filtering and selecting information; and (v) self broadcasting.

Therefore, and according with Morrison (2011), graduates must be able to: (i) Function in a global economy for job success in the 21st century; (ii) Work effectively with people from different cultural backgrounds; (iii) Work as a team member; (iv) Use information technology tools effectively; (v) Function creatively and innovatively; (vi) Access, analyze, process, and communicate information; and (vii) Engage in continuous, independent learning.

4. Conclusion

Nowadays, society has changed with digital technology. Students have new learning profiles, new ways of creating knowledge and learning. Even today's economy has to gain with these new professionals, who master digital technology and its tools. Taking this into account, those who weren't "born attached to a computer" need to react to the market necessities and acquire these skills, adapting to this profile. Looking back to see this rapid changes, one can only question what changes are yet to come, and how fast are they coming.

Considering the profiles of today's students it is only expected that they have all the tools to be more prepared to lifelong learning, but we cannot forget that even if they are digitally savvy they need to acquire other sets of skills - such as the ability to discern what is important and valid, the ability to interpret information and be able to critically reflect, among other skills, that do not depend on technology but, are crucial to those who really create knowledge with digital technology.

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