IMMERSIVE LEARNING AND ENGAGEMENT: INVESTIGATING ONLINE RESIDENCY AND STUDENT LEARNING

Constantinos Iliopoulos
University of the West of Scotland
United Kingdom

Abstract

The proliferation of social Web 2.0 technologies in learners' personal lives has given rise to the expectation that social technologies will also be used extensively to support learning in higher education. A better understanding of learners' use of social technologies using the Visitor-Resident approach coupled with an understanding of learning theories and pedagogies can inform future learning designs, systems and digital literacies. It may also inform the delivery of rich, authentic, immersive and engaging learning experiences for learners.

Digital Literacies – Challenges & Opportunities

Important challenges for contemporary educators in higher education include the quest to maximise the benefits of learning for all learners, irrespective of learners' preferred mode/s of attendance and engagement with course or module learning resources and activities.   Forward-looking educators also aim to increase the quality and richness of the learning experience, cater for different learning modalities (learn everywhere, anytime, any pace, on any platform) and learning styles, and authentically engage learners. The previous challenges are underpinned by the need and opportunity to integrate the use of a significant collection of learning technologies in coherent and meaningful ways to support learning processes.

Learning Spaces &Technologies

The use of information technology is an integral part of higher education (Moloney & Oakley, 2010). The popularity of online learning (Jenkins, 2010) has led to wide spread adoption of it across higher education. Universities are also involved in online learning as a result of the realisation that there is an opportunity to increase the numbers of students registering in programmes, courses and modules and thus remain competitive in local, national, and international academic markets. A considerable collection of online learning technologies and applications have become available in recent times enabling educators to construct, orchestrate and facilitate sophisticated and comprehensive learning environments, catering for different learning modalities, preferences and styles. In many cases social computing, i.e., Web 2.0, applications are used to implement pedagogical strategies aiming to support, facilitate, enhance, and improve learning processes.

The technological context within which education operates and evolves is becoming increasingly multifaceted and complex.   This development poses new challenges but also offers new opportunities. Well established Web 2.0 applications (such as blogs, wikis, forums, e-portfolios, social tagging and

bookmarking, social networking, media sharing and document sharing), along with virtual worlds, simulations and micro-worlds, innovative human computer systems and interfaces, represent examples of technological trends that can influence future learning and education further.

Developments in the above fields particularly in the sphere of Web 2.0 applications have facilitated the emergence of new practices affecting education. For instance, sharing of rich content such as documents, images and videos is now possible without conventional, institution led and technology-driven learning environments, i.e., Virtual Learning Environments (VLEs), such as Moodle, BlackBoard, e-Class and others. Sharing content for learning via external Web 2.0 services such as SlideShare, YouTube, Flick, FaceBook, OneDrive, etc., is feasible as very little knowledge of used technologies is required. Also, there is an abundance of Web 2.0 services that are geared towards supporting content creation and dissemination, communication and collaboration. Blogs, micro-blogs, wikis, mashups, co-authoring and co-editing online applications, social tagging and bookmarking services, instant messaging applications and project management services are not far away from educators' and learners' reach.

Further, novel and innovative platforms can be used to enhance learning processes. For instance, virtual worlds and game environments offer rich and immersive learning environments (Childs & Peachey, 2013). Innovative combinations of conventional VLEs and virtual worlds are also possible. Another example is Sloodle (Livingstone, 2009). Sloodle represents an innovative and education-focused fusion between a conventional VLE (Moodle) and a Second Life (or OpenSim at present) based virtual world.

Conventional VLEs have become an almost indispensable part of the e-learning infrastructure of universities (Brown, 2010). VLEs are typically built around modules or courses and are under the control of faculties, universities and to a certain extent educators. VLEs have begun to include a few social media applications like wikis and blogs, but the central oversight and control of them as well as the underlying pedagogy have not changed much. The current generation of VLEs are built to support institutional processes and only a partial range of learning needs and underlying learning theories.

A different perspective is needed where the individual learner becomes an important focus and learners are empowered and encouraged to compose their own configurations of learning spaces to match their learning needs, styles and modalities. Using individual learners' needs as a starting point would lead to differentiated and more agile and highly configurable learning environments where learners compose their learning spaces using preferred technologies, applications, features and specific configurations. Although current research on individual/personal learning environments (PLEs) is encouraging, new implementation and integration frameworks are needed to integrate conventional VLEs with PLEs (Garcia-Penalvo, Conde, & Alier, 2011). Social, group, network, peer and project-based learning can also represent a departure from the current generation of closed-system based and institution led and managed VLEs.

In conclusion, the wide availability of social Web 2.0 and more immersive technologies such as virtual worlds and micro-worlds has created the expectation in learners for such technologies to be integrated in learning systems as used in higher education. Some of this enhanced functionality can be embedded in conventional VLEs whereas the rest of it may be based on different platforms at present. A significant evolution in thinking is underway in respect of learning spaces and technologies. A palette of learning services centred on individual and social learners would represent a significant paradigm shift that can inform the design of future learning spaces and technologies.

Learning Theories & Pedagogies

Current trends underpinned by technological advancements in fields such as Web 2.0, mobile learning, Massive Open Online Courses (MOOCs), games, virtual worlds and micro worlds, influence learners' perceptions and expectations from higher education. Such trends also necessitate revisiting and critically re-evaluating and re-prioritising pedagogical and learning approaches to help design learning spaces and systems in ways that are aligned with the above trends.

A multitude of diverse theories and frameworks supporting learning exist. Theories of learning have never been static, and they are often developed to support or inform specific types of learning. For instance, Wenger's (1998) theory of Communities of Practice postulates that learning occurs in specific situations and settings through social practice. The essence of a community of practice is joint engagement in some activities that help community members develop and share practices and thus learn. Web 2.0 environments have often been used to construct learning-oriented communities of practice. Further, cognition oriented theories of learning have also been widely accepted and used to support learning in higher education. For example, Kolb's Learning Cycle (Kolb, 1984) focuses on knowledge acquisition and information processing and learning as a series of cognitive processes. Some early VLE implementations aimed at shaping learners' cognitive processes by focusing on prescriptive guidelines, instruction and systematic guidance. Finally, associative theories of learning also exist where learning occurs through practice, drill and reinforcement. Learning here is seen as a series of activities and going through a series of structured tasks. Web 2.0 applications can support associative pedagogies by supporting the learning needs of individuals and groups.

Another learning typology that has stood the test of time is Benjamin Bloom's learning taxonomy. The taxonomy adopts a primarily cognitive approach and classifies thinking according to six hierarchically arranged cognitive levels of complexity. The lowest three levels are: knowledge, comprehension, and application. The highest three levels are: analysis, synthesis, and evaluation. The original taxonomy was updated in the 1990's (Anderson & Krathwohl, 2001) to adopt a more action-oriented form of thinking about learning. The revised taxonomy focuses on the following cognitive processes: remembering, understanding, applying, analysing, evaluating and creating.

The revised taxonomy serves as a learning compass and reference model for educators and learners alike. Bloom's revised taxonomy of learning represents a comprehensive and action-oriented learning framework that focuses on learning skills and educational objectives.

Bloom's revised taxonomy is not about technology per se, social or otherwise. Then again, it can inform the development and deployment of learning technologies and the creation of comprehensive and immersive learning spaces to facilitate learning.

In conclusion, learning theories can inform the future evolution of learning technologies including social Web 2.0 applications. When learning theories are used in conjunction with Web 2.0 applications, they show promise to improve learning and benefit learners.

Visitors & Residents – A New Approach

A number of developments and issues regarding learning spaces and technologies and learning theories and pedagogies were considered in earlier sections. Gaining a better understanding of learners' preferences and favoured Web 2.0 genres and specific applications and services can be supported by the new concept of *Visitors and Residents*. The concept of Visitors and Residents can be used to explore further learning theories and pedagogies and Web 2.0 technologies.

The Visitors and Residents concept was developed recently (White & Le Cornu, 2011), aiming to replace the previous dichotomy between digital natives and digital immigrants (Prensky, 2001), which preceded the advent of Web 2.0. Evolving technologies and in particular social Web 2.0 technologies have helped create a generation of Web *residents* who use social technologies extensively and tend to leave behind traces of their online presence. They also tend to expect technology use to seamlessly support their private lives as well as their lives as learners in education. They seem to have distinct expectations of education that include learning spaces that are personalised, accessible on demand, and available at any time, any place, any pace, on any device. Web residents are often contrasted with educators and parents, who are typically regarded as being Web *visitors* who understand the Web as similar to an untidy garden tool shed (White & Le Cornu, 2011).

Visitors tend to be task oriented and see the Web as primarily a set of tools to help manipulate content. Visitors tend to do their thinking off-line. Thus, visitors tend to see the Web as users of it rather members of it. Visitors are not necessarily less technically skilled than residents.

On the other hand, residents tend to see the Web as a place and in particular a social place, where they can share information about life and work with friends and colleagues. Residents are comfortable to express opinions and reveal their persona in online spaces. They use the Web to develop and maintain a digital identity and they tend to leave behind considerable evidence of their presence. Immersion in the Web tends to be the modus operandi of residents.

The Visitors and Residents concept is understood as a continuum (White, Connaway, Lanclos, Le Cornu, & Hood, 2012) rather than the two ends of a discreet, binary statement. Therefore, individuals can place themselves at a particular point along this continuum. They may also choose to place themselves at different points of the continuum for personal use of the Web and for educational use. They might also choose to use different Web 2.0 applications for personal activities and learning activities. A typical map representation of the Visitors and Residents approach when combined with the use of Web 2.0 applications may look like the following:
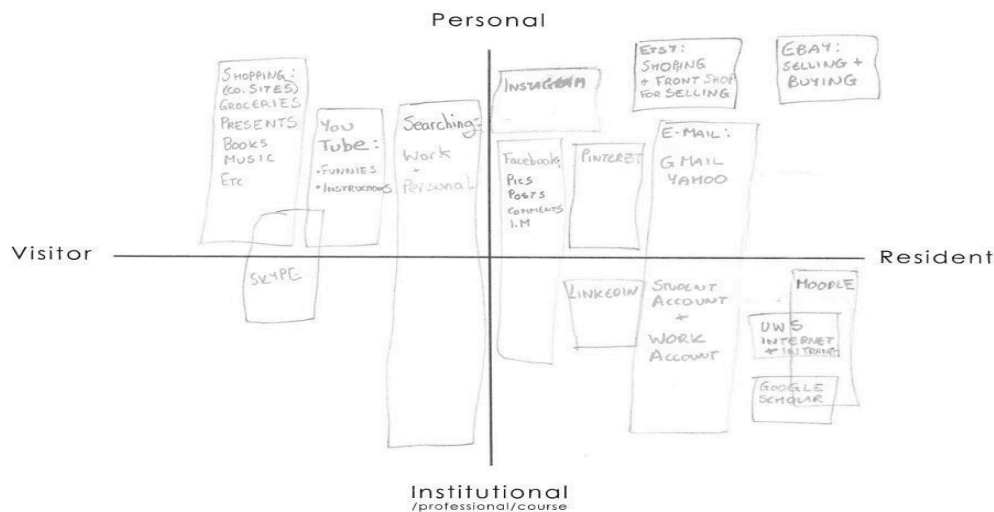
Figure 1. Visitors & Residents example.

The relative value of either the visitor or the resident approach has to be set against particular contexts and the pursued set of goals. An individual's placement point on the visitor-resident continuum is dynamic and is subject to change for a variety of reasons including context change, role change, motivation change, incentive change and others. It is therefore of importance to also observe the direction of travel from visitor to resident and vice versa to understand individual behaviour including learning behaviour.

Visitors & Residents – Research Study

The purpose of the primary research study was to utilise the Visitors and Residents approach and investigate the ways learners interact with new, social Web 2.0 applications and how this interaction might be changing the ways they learn. The research study also explored participants' patterns of interaction with social technologies in their private lives. Further, this research study has contributed to the UK Higher Education Academy research project "Working with new forms of online practice in the disciplines: The challenges of Web residency."

Primary data were collected from students in the School of Computing of the University of the West of Scotland, after an introduction to the research project. The introduction included a brief verbal presentation of the background and the key tenets of the research project. Two related video-based presentations were also used to explain the project further and illustrate

the mechanics of creating maps, using the Visitor-Resident approach. A post-mapping discussion session was also used to elicit further information about participants' views and preferences.

Analysis of study responses corroborated that study participants use a number of Web 2.0 applications for personal use. It was also identified that the majority of Web 2.0 applications for personal use were accessed in visitor mode. A few music streaming, photo posting and online movie watching services were also accessed in visitor mode. A small number of participants indicated resident mode of use for Facebook and YouTube.

Findings from the study also identify the use of a considerably different set of Web 2.0 applications and services when it comes to learning and professional use. Most participants indicated use of the Moodle VLE in resident mode. Use of email was also revealed to be a resident mode preference for most participants. Blogs were also indicated as being used in visitor mode by many participants. LinkedIn was also revealed to be used in resident mode by a number of participants. Xing was the preferred business networking service for a respondent spanning the whole of the visitor-resident continuum. Use of Web 2.0 services offered by Google was also indicated by a good number of participants. Amongst them the use of the Google search engine, Google Scholar, Google Drive and Google Docs were noted. Google Drive was used in resident mode by a number of participants.

During the post-mapping discussion sessions a number of participants indicated the willingness to use more Web 2.0 applications and services for learning, but they also felt that guidance would be needed. For example, advice and assistance would be needed to set up and use co-authoring and collaboration services for group projects, to help each other learn and to accomplish group tasks outside the institutional VLE. Being able to access Web 2.0 applications and services for learning on mobile devices was also considered to be desirable by many participants.

Epilogue

The thoughtful and careful integration of Web 2.0 applications when underpinned by relevant learning theories and considered learning designs shows promise in helping learners engage in authentic, rich and immersive learning experiences.

There appears to be an expectation from learners that social Web 2.0 applications will be part of the learning processes and such technologies will be used in higher education. For this to happen more comprehensively a shift is needed in the underlying learning theories and pedagogies. More explicit recognition and support of individual/personal and social learning appears to be needed. Also, new metaphors may need to be explored and used where not all learning is done alone and competitively.

Online residency supports the enrichment of modern, digital literacies. Online residency, as discussed earlier in the context of the Visitor and Resident approach, is also helpful in diagnosing the utilisation of Web 2.0 social

applications and services for learning. It is also useful in supporting the quest for new pedagogical approaches where communicating, sharing, co-ordinating and collaborating are integral parts of the learning process. The use of social Web 2.0 technologies presents an opportunity to put the learner in the centre of immersive and engaging learning designs, processes and technologies in higher education.

References

Anderson, L. W., & Krathwohl, D. R. (Eds.). (2001). *A taxonomy for learning, teaching and assessing: A revision of Bloom's Taxonomy of Educational Objectives* (complete edition). New York: Longman.

Brown, S. (2010). From VLEs to learning webs: The implications of Web 2.0 for learning and teaching. *Interactive Learning Environments*, *18*(1), 1-10.

Childs, M., & Peachey, A. (2013). *Understanding learning in virtual worlds*. London, Springer.

Jenkins, F. (2010). Online learning continues to gain popularity in 2010. Retrieved from http://ezinearticles.com/?Online-Learning-Continues-to-Gain-Popularity-in-2010&id=4805978

Garcia-Penalvo, F.J., Conde, M.A., & Alier, M. (2011). Opening learning management systems to personal learning environments. *Journal of Universal Computer Science*, *17*(9), 1222-1240.

Kolb, D. (1984). *Experiential learning: Experience as the source of learning and development*. Englewood Cliff N.J.: Prentice Hall.

Livingstone, D. (2009). Online learning in virtual environments with SLOODLE. *Computing and Information Systems Technical Reports*, *50,* 1-31. Retrieved from http://www.sloodle.org/research/

Moloney, J.F., & Oakley II, B. (2010). Scaling online education: increasing access to higher education. *Journal of Asynchronous Learning Networks*, *14*(1), 55-70.

Morgan, L. (2012). Generation Y learner autonomy and the potential of Web 2.0 tools for language learning and teaching. *Campus-Wide Information Systems*, *29*(3), 166-176.

Prensky, M. (2001). Digital natives, digital immigrants, part II. Do they really think differently? *On the Horizon*, 9(6), 1-9.

White D. & Le Cornu A. (2011). Visitors and Residents: A new typology for online engagement. *First Monday*, *16*(9), 1-10. Retrieved from http://firstmonday.org/ojs/index.php/fm/article/view/3171/3049

White, D., Connaway, L., S., Lanclos, D., Le Cornu, A., & Hood, E. (2012). *Digital Visitors and Residents, Progress report*, JISC, University of Oxford, OCLC, University of North Carolina. 1-41. Retrieved from http://www.jisc.ac.uk/media/documents/projects/visitorsandresidentsinterim%20report.pdf

Wenger, E. (1998). *Communities of Practice: Learning, meaning and identity*. Cambridge: Cambridge University Press.

Author Details

Constantinos Iliopoulos
Costas.Iliopoulos@uws.ac.uk