

# In search of the next generation online learning environment

## Ecto, LLC – Whitepaper

Stephen W. Becker, Ph.D.  
Truls K. Henriksen

October, 2006



For Information contact:  
Truls K. Henriksen, CEO  
[truls@ectoprep.com](mailto:truls@ectoprep.com)  
312.953.0102

Content in this document is  
licensed under a [Creative Commons Attribution 2.5 License](http://creativecommons.org/licenses/by/2.5).  
<http://creativecommons.org/licenses/by/2.5>  
Use of this paper in whole or in part is granted providing attribution is made to  
Ecto, LLC.



# In search of the next generation online learning environment

## Introduction

The shifting agenda in education toward personalized, collaborative learning and the widespread shift of web use to social software has produced a growing discourse surrounding the need for a next generation online learning environment (OLE). This learning environment would bear little resemblance to the LMS platforms currently in use. How must this new online learning environment operate in order to answer both the shifting agenda in education and shifting use of the web?

## Concurrent shifting forces – Social software and the new educational agenda

The evolving nexus of internet communication and classroom pedagogy is now characterized by two primary forces: the rise of social software and the move towards collaborative, constructivist-based teaching methods. Before exploring the situation created by these converging forces, we shall begin by briefly considering each phenomenon separately.

## The rise of social software: How has the Web changed?

In recent years, there has been marked interest in and widespread media coverage of an evolution in the use of the internet so profound that it has given rise to new name for the web itself: “Web 2.0.” The evolution centers around the rise of “social software.” The term “social software” came into parlance in 2002 and is attributed to writer/researcher/teacher, Clay Shirky. According to Shirky, social software is, essentially, “software that supports group interaction” (Shirky, 2003). Examples include:

- Synchronous and asynchronous online forums
- Social networking sites, such as MySpace and Facebook
- Sites that combine community file sharing with social networking, such as Flickr and YouTube
- Multiplayer online games
- Weblogs (Blogger/RSS) often involving audio and video elements
- Wikis
- Applications for social bookmarking, such as del.icio.us, and
- Video conferencing

As UK education researchers, Futurelab, point out, “new forms of collaboration tools are also emerging, where people can work together to build new documents or products” (Owen et al, 2006, p. 4). To help us better understand the commonalities of these examples of social

software, Futurelab reports several helpful descriptions of Web 2.0 offered by internet innovators at a 2005 conference; they included the following descriptive quotes (p. 10).

- “It’s made of people. It’s not content.” – Jeff Jarvi, Buzzmachine
- “People doing things together on the web.” – Mitchell Baker, Mozilla Foundation
- “Web 2.0 is the two-way web where content finds you.” – Ron Rasmussen, KnowNow
- “Web 2.0 is about platforms that other people can build on.” – Rajat Paharia, Bunchball

These quotes are instructive because they help us better define the phenomenon taking place; each is accurate in own way. What is most notable about Web 2.0 is neither the technological innovation of the software—the software is technologically simple—nor the content being exchanged. Rather, what is remarkable is the exchange itself and the organic growth of networks that support it. Of even greater importance is the value created when users share and evolve the information.

For education researchers, perhaps the most salient aspect of the rise of social software is that children and young adults on their own are acquiring new competencies for accessing knowledge and new roles in the development of knowledge.

Counterpoised to the 19th and 20th century model of accessing knowledge contained in, say, a set of encyclopedias (characterized by static, separate entries on each subject) are the new habits of young internet users, which involve creating and collaborating on wikis and blogs and contributing to the indexing of knowledge through social book marking. Also characteristic of these users is the perspective that knowledge does not in fact exist in the world as separate encyclopedia entries (or even as distinct disciplines within institutions) but as interlinked, overlapping, and ever evolving information fields.

## **The shifting educational agenda: How is education changing?**

Parallel to (and as we shall see, spurred on by) the Web 2.0 phenomenon has been a widespread move toward new teaching methods to supplement or replace traditional methods.

Throughout the 19th and 20th centuries, classroom pedagogy was characterized by one-way, teacher-centered/text-book-centered delivery of single-media information to students whose role was that of passive receptor. Although progressive educators in various circles have long advocated alternative methods and have posited theories (such as constructivism) to more accurately conceptualize the learner’s relationship to knowledge, it is primarily in the last decade that these methods and theories have begun taking hold. For instance, the past decade has seen considerable discussion of instructional models based on the social constructivist perspective, which stresses the need for collaboration among learners and interaction with actual practitioners (McMahon, 1997). Similarly, *Edutopia Magazine*, published a 2006 feature article on the proven value of Project Based Learning and the

widespread phenomenon of its adoption among teachers around the US. (Pearlman, 2006)

Since many of these methods and theories have existed for several decades, it is important to ask: why now are they being embraced to such a degree? Perhaps the most significant explanation has to do with the growing recognition among educators that a host of new learning competencies and information-sharing habits are developing among young people outside the sphere of education. Arising from the popular use of social software, these competencies are tangible, real world manifestations of what was formerly the province of the theoretical—especially, theories of social constructivism. These new competencies include: the social construction of knowledge, collaborative efforts to learn, communal efforts to facilitate information indexing/access, the natural blurring of disciplinary boundaries, and the interlinking of knowledge categories.

As Wenmoth points out, these changes in how we transfer or appropriate knowledge, “in turn influences the way we [educators] seek to ‘manage’ or ‘organize’ the learning environment” (2006). For instance, Victoria Nash et al, in their 2004 paper “Innovative Pathways to the Next Level of e-Learning,” produced by Oxford University’s Oxford Internet Institute (OII) find that when the “network communication model” is applied to the classroom, the central figure (the learner) naturally becomes the “orchestrator” of his or her own learning, “drawing on the appropriate combinations of people, information, services and/or technology as required.”

In addition to relocating the student at the center of an active learning experience, Nash et al find that the network communication environment creates valuable new pathways for teachers and students alike. These pathways include “new forms of peer reviewing, sharing teaching and learning experiences or gaining information and advice from peers, experts and other sources on a local or global scale.” (2004)

In light of these shifts in technology and pedagogy one might reasonably expect to find a software platform for use in one-to-one computing classrooms that is built upon the new ideas and emerging competencies. Where is it and what would it look like?

## **Is there a networked learning environment in the house? Anyone... anyone?**

The last decade has seen a massive rush to invest in classroom technology. Of special interest is the rise of one-to-one computing in the classroom—in other words, a wired classroom situation where each child possesses a laptop computer. In May 2006, eSchool News reported a survey by the Hayes Connection showing that of all 2,500 school systems in the U.S. with at least 4,000 students, more than 23 percent said they are implementing 1-to-1 computing programs in at least one grade; this is compared to four percent reported in 2003. (Staff, 2006)

To fully comprehend the significance of this investment and the situation it has produced, it is crucial to view it in light of the twin forces described

in the previous section: the change in web use and the shifting pedagogical perspective.

The eduBlog sphere, which is an arena of the best informed, most forward thinking educators, commonly views one-to-one computing as a window of opportunity for advancing modern learning methods through the classroom use of social software applications such as Blogs and Wikis. However, following NECC 2006, possibly the largest and most important education technology conference in the US, the eduBlog sphere was aflame with expressions of dissatisfaction over the current state of the LMS market and the quality of the discussion surrounding the use of new software tools.

One of the chief criticisms of the conference had to do with its perceived emphasis on the functionality of software products and Web 2.0 tools without attempting to understand their broader context and implications. The more important starting point for discussion, argued EduBlogger David Warlick, is to try “to understand the experience that our children have in the information landscape that technology [currently] provides” (2006). Others echoed Warlick’s sentiment, emphasizing that discussion about new features and products should follow from a prior discussion about the new technological environment.

At NECC 2006, many perceived the new opportunities fostered by one-to-one computing as unaddressed and even jeopardized by LMS products that dominate the marketplace. eduBloggers noted that as school districts rush into purchasing LMS products that are aimed at organizing and managing learning according to 19th/20th century pedagogical models, they are effectively foreclosing the potential of their technology investment.

Where was an LMS that was built, from the ground-up on modern assumptions about networked communication, collaborative learning, integrative of the widely-known social software applications, and apt for developing the new competencies surrounding knowledge acquisition and information sharing? Indeed, it was nowhere to be found. Teacher and education technology researcher, Jeff Utecht, stated, “I saw a lot of technology being used and sold in the same way it has been for the past 20 years. Maybe I wasn’t listening to the right conversations, but the feel of something different wasn’t there.” (2006)

## **What were they hoping for? The new online learning environment**

The aftermath of NECC 2006 intensified the discussion over what a new online learning environment would look like. Characteristically a pioneering group, some eduBloggers, advocated forging ahead without dwelling on the question of the ideal OLE and continuing to develop their own already successful ad hoc classroom uses of applications such as Blogger. Others discussed the features they hoped to see in a future OLE.

Based on these public discussions and on our own informal research, it is the goal of this paper to set forth some of the most important elements

of the next generation learning environment. The purpose of the list is open further space for focused discussion with the hope of advancing the cause of forward-thinking educators.

### **1. A learner-centric foundation**

The next generation learning environment should be learner-centric—or as some are now referring to the concept, a personal learning environment. (Wilson, 2006)

If the next generation OLE is to harness the new power of social networking, the following elements must form its foundation: the ability for the individual learner to create a unique digital identity (in the manner of social software applications such as Facebook and YouTube), the ability to maintain a portfolio of work, and the ability to asynchronously engage in a self-directed learning experience.

Only when the new online learning environment is built from the ground up with a learner-centric perspective in mind, do learning theories such as social constructivism finally and harmoniously become engrained in the OLE itself.

### **2. Flexible LMS functionality oriented to modern learning**

Although the new online learning environment is, at its core, learner-centric, it must also flexibly take into account the needs and roles of teachers. For maximum functionality and ease of implementation by teachers, the new OLE would need to be a centralized resource, easily accessible by teachers and students, offering complete a complete set of LMS features.

Beyond offering LMS features suitable for traditional teaching methods, the system would be especially designed to accommodate teachers who implement a collaborative, project-based pedagogy. The new environment would support a style of interaction between teacher and learner that is characterized by the teacher as resource and project guide. In turn, it would support progressive approaches to the organization and management of learning—for instance, grouping learners on individual projects, connecting student groups across the hall or across the globe, and the ability to organize feedback on project lessons.

It would also integrate comprehensive features for developing lesson plans, managing timetables, and conducting assessments. However, unlike previous learning environments, which have been organized around these traditional functions and institutional perspectives, the new online learning environment would have, at its heart, the active learner.

### **3. Facilitates project based learning**

As discussed earlier, educators are increasingly adopting project based learning methods. Moreover, at broader level, collaboration is a modality naturally engrained in the new world of social software. Unfortunately, there is currently no LMS on the market which facilitates project based pedagogy. The new OLE would offer functionality to assist teachers in creating, conducting, and assessing project-based lessons.

As a learner-centric/user-centric OLE—everyone (students and teachers alike) would have their own personal page; as with other popular social software applications such as MySpace and Facebook, groups could easily be formed. Although the most common grouping would be a typical classroom with the teacher as the administrator of the group, subgroups could be created for project teams. Moreover, student groups in classrooms around the world could easily connect to share information and work collaboratively.

#### **4. A vast open network for sharing knowledge and best practices**

To understand the nature of the new OLE's network, we must return to the world of Web 2.0 that is still almost entirely exterior to the world of education. One of the most distinguishing aspects of the Web 2.0 era is vast, open, ever-expanding, ever-refining community-managed libraries of multimedia information. Examples include YouTube, Wikipedia, and Flickr. YouTube is a user-centric community site with an exponentially expanding library of video files—70 million at present count. YouTube allows users to create their own personal pages/"channels" and then upload, share, comment upon, and broadcast video files. Another distinguishing aspect of Web 2.0 are the highly functional online community elements of commerce sites such as Amazon.com where user ratings and extensive comments facilitate the navigation of the world's largest stock of books, movies, recorded music, and other merchandise.

Similarly, the next generation online learning environment would be built on a vast, shared library of learning items and educational resource materials. The materials would be uploaded and tagged by the user community itself and would include everything from project-based lesson plans and course syllabi to exam questions and multimedia flashcard sets. As with Amazon, the material would be rated by a community of teachers and learners.

The widespread disdain among educators and administrators for costly, pedagogically-restrictive textbooks and their often awkward supplemental electronic features would finally be answered. In their daily practice most teachers employ highly refined, self-authored learning items and lesson plans. Within the new OLE these items would be shared with, refined by, and reused by the global community thereby unlocking the value of the material and increasing it exponentially.

#### **5. Capable of integrating familiar social software applications**

As discussed earlier, the rise of social software is changing how we access knowledge and developing new competencies for learning. Progressive teachers are recognizing this change and are already incorporating social software such as Blogs, Wikis and Podcasts into their courses. However, there is currently no OLE/LMS like the one we are outlining, which incorporates a full menu of such applications. Thus, one of the most important dimensions of the next generation OLE would be its flexible integration of the most commonly used Web 2.0 applications for the creation and sharing of learning items and lessons. In so doing, the new OLE takes on the following characteristics.

**a. Multimedia rich** – By setting podcasts, video blogs, and other audio/visual materials within a flexible, open-networked LMS, the new OLE embraces the shift in communication modality away from text-only toward multimedia.

**b. Collaboration oriented** – Similarly, by incorporating RSS feeds, the new OLE embraces the explosive growth in self-syndication, community discourse, and sharing of knowledge. Many teachers are currently finding blogs as class projects to be among the most valuable collaborative teaching tools. (Pearlman, 2006).

**c. Recognizes knowledge as socially constructed** – As discussed earlier, Web2.0 is characterized by social networks contributing, assessing, accessing, and refining information. As a result, the reality of knowledge as a social construction has perhaps become somewhat more apparent.<sup>1</sup>

By allowing teachers to more easily incorporate into their lessons exercises such as the collaborative creation of Wiki's, the new OLE would recognize knowledge as socially constructed and invite teachers to adopt a more authentic stance toward learning and critical thinking. As well, the vast, open, socially networked library of the new OLE would provide an alternative to hegemony of the major textbook publishers.

**d. Conducive to the development of self-expression** – Whereas traditional classroom learning has been heavily based on the one-way transmission of information from teacher/textbook to learner, new educational models place value on critical thinking and self-expression. To this end the new OLE would incorporate self-publishing applications such as podcasts and blogs as well as enabling the creation of a digital identity (i.e., Facebook).

## **6. Easy for teachers to implement on an individual basis**

All of the major learning management systems on the market are enterprise software solutions. As such, their implementation at a secondary school level usually requires an institution-wide, if not district-wide, investment. Furthermore these systems typically must be installed and maintained on the school's own server. By contrast, the new learning environment would be served by a remote host, thereby eliminating software acquisition costs, implementation and maintenance costs, and the need to invest in a specialized technology infrastructure. Moreover, individual teachers would have the freedom to implement the new OLE on a course-by-course basis.

## **7. Open architecture**

The architecture of the new OLE would be sufficiently open to allow innovative users to create their own new tools. The new OLE would contain an application programming interface (API) that would allow innovative community members to create new educational widgets. Such widgets might be used for the creation of new learning items or for new social networking purposes.

## CONCLUSION

The concurrent shifts in education (towards new learning methods) and web use (toward social software) should ultimately produce a networked personal learning environment that bares Web 2.0 characteristics and harmonizes with a social constructivist pedagogies. Outside the sphere of educational technology, children and young adults are acquiring, on their own, new approaches to accessing knowledge and new roles in the development of knowledge. However, as schools are contemplating purchasing LMS products that are aimed at organizing and managing learning according to 19th/20th century pedagogical models, they recognize that they are effectively foreclosing the potential of their technology investment.

This paper has attempted to help focus the vision for a next generation online learning environment by imagining how it might organically grow out of the new knowledge landscape. Although the paper sets forth a list of necessary characteristics for this next generation OLE, it does not claim that this list is exhaustive. It is the author's hope that the paper will inspire a discussion that expands or revises the list presented here. In turn, we encourage the teachers, researchers and the eduBlog sphere at large to apply the list against existing applications such as ELGG ([www.elgg.net](http://www.elgg.net)), Moodle ([www.moodle.org](http://www.moodle.org)), and Ecto ([www.ectoprep.com](http://www.ectoprep.com)) and explore how these applications measure up to the vision.

---

## ENDNOTES

<sup>1</sup>: In any era, the social production of knowledge is prefigured by the prevailing social/economic forces of time, which designate who may contribute and which topics are valid. The same social forces also typically function to obscure this truth and portray knowledge as a given--as static--as residing, for instance, in the authoritative confines of a mass-produced textbook or encyclopedia set. Although a thorough assessment is beyond the scope of this paper, it is a matter of common observation that the digital age and the Web 2.0 era in particular have, to some degree, begun to change this situation. For example, widely read blogs are published without printing presses or editorial boards and encyclopedia entries are authored and refined by networked users on Wikipedia.

## REFERENCES

---

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge, UK: Cambridge University Press.

McMahon, M. (1997, December). Social constructivism and the World Wide Web - A paradigm for learning. Paper presented at the ASCILITE conference. Perth, Australia.

Owen, M., Grant, L., Sayers, S., and Facer, K. (2006). *Opening education: Social software and learning*. Futurelab. Retrieved 10 Oct 2006 from: [www.futurelab.org.uk/research/opening\\_education.htm](http://www.futurelab.org.uk/research/opening_education.htm)

Pearlman, Bob (2006). New Skills for a New Century: Project-based learning teaches kids the collaborative and critical thinking abilities they'll need to compete. *Edutopia Magazine*, Retrieved 10 Oct. 2006 from: [http://www.edutopia.org/magazine/ed1article.php?id=art\\_1546&issue=jun\\_06](http://www.edutopia.org/magazine/ed1article.php?id=art_1546&issue=jun_06)

Staff and wire sources (2006). 1-to-1 computing on the rise in schools. *eSchool News*, May 1. Retrieved 10 Oct 2006 from: <http://www.eschoolnews.com/news/showstory.cfm?ArticleID=6278>

Utecht, Jeff (2006). NECC: All over but the flight. Was I expecting too much? July 9. Retrieved 10 Oct 2006 from: <http://jeff.scofer.com/thinkingstick/?p=261>

Warlick, David (2006). Hacking culture. July 7. Retrieved 10 Oct 2006 from: <http://davidwarlick.com/2cents/?p=493>

Wenmoth, Derek (2006). OLE scope. Whitepaper. Core Education Ltd. Retrieved 10 Oct 2006 from: <http://www.blog.core-ed.net/derek/archives/OLE%20Scope.pdf>

Wilson, Scott (2006) The personal learning environment blog. <http://www.cetis.ac.uk/members/ple>