The Learning Landscape: A Conceptual Framework for e-portfolios
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Abstract
In recent years, adoption of e-portfolio tools in higher education has occurred in individual courses, departments, schools, and across institutions. One desired learning affordance of an e-portfolio is its usefulness as a tool to support integration, synthesis, and re-use of formal and informal learning experiences. Therefore it is important to encourage students to recognize the value of e-portfolio software beyond simple course applications and outside the context of their undergraduate education. To facilitate this approach, this chapter will describe a conceptual framework for addressing these issues by relating to the expansion of e-portfolio technology to incorporate everyday web technologies. This learning landscape model allows students to view "learning" beyond the rigid structure of degree outlines and requirements while incorporating and overlapping experiences from a variety of learning contexts through social networking around faculty, mentors, peers, and employers and resources - it is all about making connections.

Keywords: weblog, social networking, e-portfolio, engagement, learner-centric, reflection, connections

Introduction
Portfolios have been traditionally used in fields such as art and architecture as individual records of work in a specific course (such as writing portfolios demonstrating progress over time) or program (such as portfolios for pre-service teachers in schools of education). In recent years digital portfolios (e-portfolios) have emerged as a more portable and accessible portfolio format.

Cite: Zubizarreta, any broad background on e-portfolios or portfolios, what they are, where they come from, etc.

More recently interest has developed in the use of e-portfolios to support all students in their review of their personal development as a result of the experiences that comprise not only their higher education but also their work and social lives. In the United States, these "learning career" e-portfolios have mainly arisen from career planning and development centers, and in the U.K., from the movement, supported by government and its agencies, towards personal learning or development plans (PLP, PDP). The development of e-portfolios has been particularly strong in professional education. For example, in teacher education where pre-service teachers in training prepare portfolios that incorporate evidence demonstrating fulfillment of criteria for teacher accreditation/credentialing, and in nursing, for students to integrate educational experiences and practice. At the University of Waterloo, a competency-based e-portfolio is being piloted in the accounting and financial management program, where students assemble e-portfolio collections to demonstrate evidence that demonstrates their competencies in professionally-designated skills as well as in the characteristics that the university has identified that each Waterloo graduate must possess (e.g. critical thinking).

Cite: Cambridge book for examples (nursing), need a cite for personal learning plan, Waterloo website, NCATE – cite Helen Barrett’s work

The Learning Landscape is a framework for thinking about student learning that recognises the broad environment that many students inhabit, and that includes: 1) the wide range of technologies and media that are part of most students’ daily lives; 2) the significant contribution made by co-curricular and out-of-class/social activities to students’ higher education experiences; and 3) the value of social interaction to learning and personal development. The Learning Landscape is about the importance of making connections between these experiences.

Current environment
Leading commentators (Seimens, Downes) are pointing out how learning is / has changed. The model of learning taking place solely in a classroom and physical library has long disappeared, however, some of the tools and approaches have not. Never has information been so plentiful and easy to get a hold of. The challenge is finding ways to harness this information and provide an engaging environment for learners to thrive in.

There is some evidence (put in ref) that e-portfolios promote self learning and increase student engagement and “the engaged learner, one who records and interprets and evaluates his or her own learning, is the best learner” (Yancey 2001, 83). A leading commentator (Baston) describes how e-portfolios can alter the dynamics of learning pedagogy as students are actively engaging in their learning not just the recipients of information. This is consistent with constructivist theory, which argues students actively construct their own knowledge rather than simply receive it from instructors, authors or other sources (Jonassen 1991, 8).

Given this thinking it is important to look at the trends in online communities thriving across the internet. We are seeing 'learners' actively contribute to knowledge, setting up communities of shared interests, the dissemination of reflective dialogue, making their own connections. With the explosion of weblogs (blogs) – to name one technology – people are able to distribute their thoughts and feelings quickly and easily and if their blog connects to others then the potential is there to reach a wide audience and create a whole new learning environment. This needs to be represented in learning systems and in particular the e-portfolio.

**Due to the e-portfolio**

The learning landscape framework owns much to the emergence of the e-portfolio. The e-portfolio has brought to the fore ideas relating to learner centric approaches, encouraging learner to look at their undergraduate degree course laterally instead of in silos, facilitating promotion of conceptual thinking.

*Integration into general education*

Research [ref] shows that student ownership of their e-portfolio results in greater student engagement. Through this engagement pedagogical benefits of the e-portfolio are more likely to be achieved. One of the key aspects of this process is having a clear purpose for use of the e-portfolio as this can really set a tone for students. It is also necessary to make sure that e-portfolio tools are engaging and useful.

The learning landscape model aims to look at the digital environment that students inhabit. By identifying the different aspects of students’ lives as well as how emerging technologies support what students want to do, we can then figure out how we can adapt these technologies to meet the desired goals of higher education.

*Moving control from the institution*

In order for the learning landscape to be effective it is important to think about the e-portfolio without too many institutions constraints. "As a personal life-learning tool, there is no place for organizational control." (George Seimens, 2004)

E-portfolios that are to be used for life-wide learning must not be ‘owned’ by institutions. An interested observer points out:

"My experience is that because of accountability issues portfolio ownership often implicitly gets transferred to the institution, which inevitably leads to the loss of control by the learner. So, more than often the student is being asked to answer accountability issues via the predefined portfolio
formats. It is no wonder that most students don't have very positive experiences with portfolios: it's not *their* thing.¹

Expanding the e-portfolio model: Using Web components to build a larger whole

E-portfolios are one component of the digital learning landscape that students inhabit. This section will describe the various technologies that will contribute to the Learning Landscape. There is no point reinventing the wheel and many of the following technologies, for example weblogging, have undergone extensive testing through social usage. Therefore, it makes sense to learn from these approaches.

The learning landscape concept encompasses a number of well-established Web technologies that have been proven on a large scale. Using established functionality allows systems to build on years of development as opposed to "reinventing the wheel"; standards already exist that can be "plugged in" and harnessed for educational purposes. This allows us to interact with both existing Internet resources and learning landscape systems within other units and institutions as opposed to building systems as if the outside world doesn't exist.

**Weblogging**

A weblog (commonly referred to as a “blog”) is a frequently updated website consisting of chronologically ordered text or photographs, most often displayed in a diary form. Due to the high quality and ease of use of the underlying technology, this has been incredibly popular; updating a website no longer requires technology-specific skills such as HTML or server maintenance. Some adherents have nicknamed the weblogging culture “Web 2.0”, which references the original concept of the World Wide Web as a medium to share information.

Many Internet users are familiar with some form of weblogging; in March 2005, the weblog indexing service Technorati was recording between 30,000 and 40,000 new weblogs each day with a total of 7.8 million (State of the Blogosphere, March 2005; [http://www.sifry.com/alerts/archives/000298.html](http://www.sifry.com/alerts/archives/000298.html); accessed May 18 2005). That's just a drop in the ocean; it should be noted that Technorati doesn’t track most weblogs at the popular LiveJournal, for example, of which there are another 7.2 million ([Livejournal.com](http://www.livejournal.com); accessed May 18 2005). Undoubtedly there are other equally popular, untracked services. Webloggers currently include members of government, renowned academics such as Noam Chomsky ([Turning the Tide; http://blog.zmag.org/TTT/](http://blog.zmag.org/TTT/)), businessmen (at the time of writing, Microsoft Chairman Bill Gates was said to be considering writing one) and entire corporations like Google ([Google Blog](http://googleblog.blogspot.com/)).

Two important features of weblogs are comments and trackbacks. The former is self-explanatory: readers of a weblog post can leave messages underneath the main post text, allowing for conversation regarding its contents. Trackbacks, less intuitively, allow a user to comment on a new post in their own weblog, and have an automatic link to the continued discussion appear on the original post. This allows the conversation to spread throughout the Internet, as opposed to the single Web page that comments are generally limited to.

A draft paper, ‘e-portfolios and weblogs: one vision for e-portfolio development’ (Tosh, Werdmuller, 2004) discusses incorporating weblogs, XML and e-portfolios and outlines the potential of this combination.

¹ ([http://elgg.net/misja/weblog/](http://elgg.net/misja/weblog/))
**Folksonomy and Social Networking**

In a folksonomy, a weblog post or an uploaded file will be marked by a number of keywords (or "tags"), which the user creates by typing free text. If anyone else has also marked posts or uploads with those keywords, the user will be able to see an aggregated list. Because an infinite number of keywords are theoretically possible, and all keywords have at least one attached object, the classification system is constantly adapting to the content on the site. This means the categorization system is efficient: a user clicking a keyword is always sure to find at least one object. Often there will be a page displaying either a set of random keywords or the most popular keywords, with the individual popularity of each indicated by that keyword's font size. Probably the most popular of these sites is the photography site Flickr (Flickr; [http://www.flickr.com/](http://www.flickr.com/)), which allows users to sort both their own and other peoples' pictures through tags.

Social networking is a Web technology which allows users to discover new business or personal contacts by traversing relationship links between people, and then keep track of their activity within a system. It is common for users to be found using a simple search function; alternatively, each user may have a profile containing embedded folksonomy tags. Someone can then look for anyone who has self-tagged themselves as having an interest in e-learning, for example. This can be combined with top-down categorization, allowing for hybrid searches such as “people in Canada [a top-down category] interested in e-learning [a tag]”. Flickr is also a social networking site: you can mark particular users as being contacts, and then keep track of their new photographs as they upload them into the system.

The social weblogging site LiveJournal (LiveJournal; [http://www.livejournal.com/](http://www.livejournal.com/)) allows users to mark other people as “friends” and then read all of their friends’ weblog posts on a single, aggregated page (the “friends page”). This useful feature can be pushed further with folksonomies; a user could filter their friends to only read their weblog posts concerning a particular topic, or view everyone’s weblog posts within a system concerning that topic.

During 2004 and 2005 the use of social software exploded; at last count (April 2005) there were around 380 different web services offering social networking ([Home of the Social Networking Services Meta List; The Social Software Weblog; http://socialsoftware.weblogsinc.com/entry/9817137581524458/; accessed May 18 2005]). Their importance has been underlined by high-profile purchases of social software by both Yahoo! and Google.

**e-portfolio**

The e-portfolio is an information management system that uses electronic media and services. The learner builds and maintains a digital repository of artifacts, which they can use to demonstrate competence and reflect on their learning. Having access to their records, digital repository, feedback and reflection, students can achieve a greater understanding of their individual growth, learning and career planning. Accreditation for prior and/or extra-curricular experiences and control over access makes the e-portfolio a powerful tool.

**Digital repository**

A digital repository refers to a personal, private area where a learner uploads and manages their digital artifacts. Typical repository functionality enables users to access, upload, search and manage their learning objects and artifacts. In their initial uploaded state all items in the repository are private to the student; the learner can then assign access privileges to any object, granting viewing to groups, individuals or the entire web community.

When combined with weblogging, folksonomies and social networking, this facility becomes more powerful; these features provide the mechanism by which the artifacts can be shared. A user can upload an artifact and then mark it with folksonomy tags so it can be found by category; they can also choose which of their contacts they would like to have access to it. Finally, they can make a
weblog post and embed the artifact. This might provide context and possibly allow for discussion regarding its contents. Trackback links could possibly also be created, indicating other users who have discussed that artifact on their weblog.

**Distributed systems**

So far we have painted an image of a learning landscape with integrated weblogging (complete with a “friends page”, comments and trackbacks), social networking, a folksonomy-based classification system and digital artifacts. However, what if a user wants to discover resources outside their institution? A distributed learning landscape would allow users to not just discover all the users interested in e-learning at their institution, but also throughout every learning landscape system. A user at Edinburgh could add a user at Stanford to their friends page, or allow them access to an uploaded repository artifact. In less ambitious terms, a user at a university’s medical school could add a user in the humanities system as a friend.

**Standards**

The need for standards then becomes clear. A global, distributed learning landscape can only be effective if it is not limited to a single piece of software installed on multiple servers; rather, all software using the same standards would be able to interact with each other. Additionally, this interaction should not be reliant on a centralized set of servers, in case these should be external to a particular system and one day disappear. “Peer-to-peer” is a technology that allows a global search to occur by passing requests to a server’s neighbours and aggregating the results. This methodology ensures that no school or institution is reliant on any other school or institution to remain part of the global learning landscape network.

**Syndication**

**XML**

XML – the eXtensible Markup Language - is an industry-standard, extensible format for self-describing data which allows for easy data transfer between computers, whatever the operating system or model. Due to its widespread use, it can be very easily written and read by a wide variety of clients. For compatibility reasons, it is therefore sensible to use standards based on this format whenever transferring data between servers on the Web. The following standards are all XML-based.

**Friend Of A Friend**

Friend Of A Friend (FOAF) is an XML standard that allows website owners to define who they are as well as their relationships with other website owners – effectively creating a wide area social network. Unlike traditional social networking software, FOAF does not require relationships to be within a single system; resources can be associated with each relationship within the XML, so while one relationship link might lead to a weblog, another might lead to a photo album or a portfolio page. Relationship links can also be made to individual objects.

While the programming overhead in including FOAF capabilities in software is very small. However, the benefits can be large; following the links in FOAF files and merging the data can result in a large, continually updated directory of users.

**RSS and Atom**

Really Simple Syndication (RSS) is an XML format for summarizing web content (usually of the chronologically-ordered kind, such as weblogs and newspaper articles). A site’s posts or content items are expressed using XML markup, and can then be imported into specialized RSS readers or themselves added to a user’s “friends page”. LiveJournal, for example, allows RSS feeds to be viewed and commented on as if they were just another user weblog within the system.

Atom is a more advanced XML-based technology that also allows users to syndicate and aggregate web content. However, it also allows users to post to the Web using third-party client
software. As there is a significant base of software growing, supporting Atom allows users to read, create and upload content using software they are already familiar with.

How this applies to e-portfolios

A redesign of syndication standards for portfolios

Rather than an XML file that stores summaries of weblog posts, the ePortfolio system might maintain a file containing identifying information about the user. XML files generally have a main tag, with all the other tags as children; this could simply be called “portfolio”, which might have the attribute “name”, containing the portfolio owner’s name. Another possibility may be a “portfolio-info” tag, which would contain sub-tags with the date the portfolio was created, the date it was last edited, the establishment it was last edited within and the software platform used. There would be another tag with “user-info” (or a similar name), containing contact details and so on. A sample portion of this part of the portfolio file might look something like the following, although the final XML schema would be significantly more sophisticated.

```xml
<portfolio name="John Smith">
  <portfolio-info>
    <date-created>March 07, 2004 20:45 +00:00</date-created>
    <date-last-edited>March 07, 2004 21:09 +00:00</date-last-edited>
    <establishment>University of Edinburgh</establishment>
    <software>Edinburgh ePortfolio System</software>
  </portfolio-info>
  <user-info>
    <born>January 07, 1979</born>
    <address>
      Moray House School of Education
      Holyrood Rd
      Edinburgh, EH8 8AQ
    </address>
    <country>UK</country>
  </user-info>
</portfolio>
```

XML allows for binary data to be stored within its tags: this allows for artefacts to be stored as embedded objects within an XML file. There could be a tag called “objects” (or similar), with sub-tags containing particular pieces of work that the portfolio owner might want to make available. Word documents; pieces of art; the type of file wouldn’t matter.

Incorporating into e-portfolios

Within the learning landscape there are three important aspects a system would need to encompass:

- **Reflection** – the student can map out his or her thoughts on a course, a piece of work, or more general experiences.
- **Communication** – the student can communicate, if they want, his or her reflections to other students, staff, tutors and lecturers.
- **Sharing** – the student can give selected other users access to their material – reflections, artifacts, resources.

Learning is not as effective in isolation; there is a great deal of discussion involved in traditional courses, this would need to be reflected in any electronic learning aid. The importance of linking together people, ideas and resources cannot be overstated.
**The Outcome: Creating a sense of community**

Social networking enables learners to create their own learning or social communities which can be an engaging environment – learners can use this for everyday activities, keeping in touch with each other, finding the latest resources and sharing their own experiences. Strength of belonging to a community and the ability to share problems, experiences, resources etc with other learners can harbour a sense of confidence. Learners participating in this process will gradually build up a trusted system, a network of knowledge transfer – the learner becomes a contributor and not just the recipient of knowledge.

**Deep learning through engagement**

Deep learning: "...learning that promotes the development of conditionalized knowledge and metacognition through communities of inquiry, this can further enhance with the advent of ‘knowledge rooms’, areas of cyberspace that allow students to collaborate"[4]

The use of e-portfolios to promote deep learning is intriguing - deep learning reflects a greater, more complex understanding of a subject. Some argue "the experience of deep learning better equips the learner to excel in future learning opportunities because the learner can discern both familiar patterns and critical variations in entirely new surface conditions. Thus, learning at both the individual and collective level involves coming to see familiar phenomena in new ways, ‘thereby widening the world we experience’"[5]

The combination of e-portfolios, social networks and weblogs may have immense benefits for the learner. These tools and the ethos behind them enhance the prospect for deep learning. Creation of a **learning landscape** where learners engage in the whole process both academically and socially should increase the opportunity to build one’s learning instead of just being the recipients of information. This ability to engage with other learners, pull in information from various resource sources, share thoughts and feelings, form communities of learning or social activity, interact with peers and tutors within one or more institutions, would create a milieu promoting user engagement and we feel, in turn, a level of deeper learning.

**Technologically we can do virtually anything with e-portfolios**

- but it still comes down to the pedagogy behind the use of the tool
- the purpose of the e-portfolio needs to be clear before the choice of tools, communicative or otherwise, can be decided on

**Conclusion**

The purpose of this chapter was to describe a Learning Landscape. The main driver is student motivation and engagement. Creating a framework where students **want** to engage with the system - creating an environment where learners engage in the process because they **want** to rather than have to is a powerful way to tap into the enormous potential of e-portfolios.

“Learning with computers is not about programming or drill and practice, nor about multimedia, nor about fast updating or cost-efficiency – it is all about humans sharing ideas.”

The social networking potential of the learning landscape and in turn e-portfolio could be the killer ap that really allows e-portfolios to be wide use by learners because they can see the value in the process – not just doing it because it is a course requirement.

**Bibliography**


