

## Personal Learning Environments - the future of eLearning?

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### Summary

This paper explores some of the ideas behind the Personal Learning Environment and considers why PLEs might be useful or indeed central to learning in the future. This is not so much a technical question as an educational one, although changing technologies are key drivers in educational change.

The paper starts by looking at the changing face of education and goes on to consider the different ways in which the so-called 'net generation' is using technology for learning.

It goes on to consider some of the pressures for change in the present education systems. The idea of a Personal Learning Environment recognises that learning is ongoing and seeks to provide tools to support that learning. It also recognises the role of the individual in organising his or her own learning. Moreover, the pressures for a PLE are based on the idea that learning will take place in different contexts and situations and will not be provided by a single learning provider. Linked to this is an increasing recognition of the importance of informal learning.

The paper also looks at changing technology, especially the emergence of ubiquitous computing and the development of social software.

The paper believes that we are coming to realise that we cannot simply reproduce previous forms of learning, the classroom or the university, embodied in software. Instead, we have to look at the new opportunities for learning afforded by emerging technologies.

Social software offers the opportunity to narrow the divide between producers and consumers. Consumers themselves become producers, through creating and sharing. One implication is the potential for a new ecology of 'open' content, books, learning materials and multimedia, through learners themselves becoming producers of learning materials.

Social software has already led to the widespread adoption of portfolios for learners, bringing together learning from different contexts and sources of learning and providing an ongoing record of lifelong learning, capable of expression in different forms.

The paper considers how Personal Learning Environments might be developed through the aggregation of different services.

The final section provides examples of practices that show how PLEs may be used in the future.

**Keywords:** personal learning environments, PLE, social software, net generation

### Introduction

The Association of Learning Technology's 2006 conference was dominated by discussions on how blogs and wikis could be used for learning. And there was a buzz around the idea of Personal Learning Environments (PLEs). Someone even suggested that in a few years time we would no longer need the Virtual Learning Environment. Yet for all the talk there was no consensus on what a Personal Learning Environment (PLE) might be. The only thing most people seemed to agree on

was that it was not a software application. Instead it was more of a new approach to using technologies for learning. Underpinning a number of the discussions was the issue of what role teachers and institutions would play if learners themselves developed and controlled their own on-line learning environment.

This paper will not answer all the questions. Instead we seek to explore some of the ideas behind the Personal Learning Environment and consider why PLEs might be useful or indeed

central to learning in the future. Of course this is not so much a technical question but an educational one, although changing technologies are a key driver in educational change.

The paper will start by looking at the changing face of education and go on to consider the different ways the so called 'net generation' is using technology for learning. We will go on to examine some of the issues around Personal Learning Environments and the emergent trends in the way PLEs are being introduced.

## Lifelong Learning

Lifelong learning is hardly a new idea. Arguably, the idea of lifelong learning was originally rooted in the workers movement. In the UK, the Mechanics Institutes, the Miners Halls and organisations like the Workers Educational Association organised the classes and courses for workers to improve their own education as well as providing access to learning resources and social activities. Whilst this provision might aim at developing technical and labour market related skills and knowledge, it was guided by a wider belief in the power of education for emancipation. The more recent focus on life long learning, in say the last thirty years, has been guided by a far narrower discourses. Driven by a shorter product life cycle, the increasing speed of adoption and implementation of new technologies in the workplace and the increasing instability of employment with the computer driven industrial revolution, it was reasoned that workers would need continuous learning throughout their work-life to update their occupational skills and knowledge or to learn new occupational competences. It was contestable as to who would be responsible for this. Whilst previously continuing vocational training had been the responsibility of employers, and the state was seen as playing a leading role in the provision of continuing education and training, it was now often argued that individuals were responsible for maintaining their own employability, albeit sometimes with the assistance of grants, vouchers and subsidised courses.

If not continuous, learning is now seen as multi episodic, with individuals spending occasional periods of formal education and training throughout their working life.

The idea of a Personal Learning Environment recognises that learning is continuing and seeks to provide tools to support that learning. It also recognises the role of the individual in organising their own learning. Moreover, the pressures for a PLE are based on the idea that learning will take place in different contexts and situations and will not be provided by a single learning provider. Linked to this is an increasing recognition of the importance of informal learning.

## Informal Learning

Informal learning is something of a conundrum. Fairly obviously, we learn throughout our lives, in all kinds of different setting and contexts. Most of this learning does not come from formal educational programmes. According to the Institute for Research on Learning, at most, formal training only accounts for 20 percent of how people learn their jobs. Most workers learn their jobs from observing others, asking questions, trial and error, calling the help desk and other unscheduled, largely independent activities (Cross, 2006). Yet there has been little attention paid to informal learning or to how it takes place (see below for more consideration of this).

In most European countries there has been some moves to recognise inform learning. However, most effort has been expended on trying to assess and certify informal learning, (Whether it then remains informal is a moot point, as is whether most people wish their informal learning to be certified).

There has been interest in informal learning from the corporate world, driven by the desire to capitalise on the intellectual assets of the workforce, to manage organisational knowledge and in recognition that informal learning may prove a cost effective way of developing competence.

In terms of educational technology, there has been little attention paid to informal learning. It is remarkable that formal learning technology and applications have only really been made available to those enrolled on an educational programme or to those working for larger enterprises.

The promise of Personal Learning Environments could be to extend access to educational technology to everyone who wishes to organise their own learning. Furthermore the idea of the PLE purports to include and bring together all learning, including informal learning, workplace learning, learning from the home, learning driven by problem solving and learning motivated by personal interest as well as learning through engagement in formal educational programmes.

Personal Learning Environments could also facilitate different styles of learning.

## Different styles of Learning

It is argued that we all have different styles of learning and approach learning in different ways. Although this would seem self-evident, attempts to theorise and classify such learning styles are less than convincing.. Personally, I do not think I have one particular learning style but use different learning styles and different ' intelligences' in

different contexts, different subjects and in different knowledge - domains and in response to different learning aims and goals. I might use a different style for solving a quick problem - say how to use Skype for my podcast - than for learning German.

Notwithstanding the problems of the the theoretical debate on learning styles, it would appear likely that learners will have preferences for different pedagogic approaches, in particular learning contexts.

All educational software, implicitly or otherwise, either enhances or restrains certain pedagogic approaches to learning. There is no such thing as pedagogically neutral software. A Personal Learning Environment could allow a learner to configure and develop a learning environment to suit and enable their own style of learning.

### **New approaches to assessment and the recognition of learning**

An important development in education in the past period has been the translation of qualifications into outcomes and competences. It is beyond the scope of this paper to explore the full implications of these developments or to go into the discussion over what exactly competence is. From the point of view of the PLE, the importance lies in the separation of the outcomes which form a qualification from the learning programme which develops competence for such outcomes. This means that learners are no longer necessarily locked in to a particular course in order to gain a qualification but are able to present their learning to prove they possess such competencies or are able to achieve those outcomes. This means that learners could select evidence and artefacts from the PLE for presentation for qualification purposes. It is also important to note that formal qualifications are increasingly only seen as one aspect of competence, at least for employment purposes. Employers also increasingly wish to see evidence of the ability to apply skills and knowledge in a particular context. PLEs could facilitate such presentations, in an extended form of an e-Portfolio and through links to an e-Portfolio.

### **Changing technologies**

In this section I will look at two developments in technology which I think are of particular significance for the development of Personal Learning Environments - ubiquitous computing and the development of social software.

#### **Ubiquitous computing**

The term ubiquitous computing refers to two technological developments. The first is the

growing ubiquitous nature of internet connectivity with the development of wireless and GSM networks, as well as the spread of broadband, resulting in connectivity becoming available almost everywhere in the future. It is also expected that devices will be able to search for and seamlessly switch to utilise available networks. The second and associated use of the term is for the many different devices now able to access the internet, including mobile communication devices such as PDAs but also household appliances and industrial and electronic tools and machinery.

The development of ubiquitous computing may offer new opportunities for the use of ICT for learning.

Previously occupational and vocational learning has been divided between the theory and knowledge base to be acquired in training schools and the practice which often takes place in the workplace. With the use of mobile devices and the spread of connectivity it is at least theoretically possible to bring this learning together and to access theory and knowledge in the context in which it is to be applied - in the work process.

Secondly - and possibly more important from a didactical point of view - is the embedding of computer based communication within the tools of the workplace. This offers the opportunity to develop learning environments whilst simultaneously accessing and shaping the production and business process through such interfaces.

In other words the context in which learning takes place becomes the context in which the learning is to be applied and the nature of the learning interface - or the learning materials become the occupational tools with which the (work process) knowledge is carried out.

Whilst ubiquitous computing is not yet fully developed, there are a number of pilot activities with the use of mobile devices and with new interfaces to learning and working.

Key to an understanding of the potential of such devices is the idea of being able both to shape the work process through the application of occupational knowledge whilst shaping the learning process through carrying out work processes.

It also facilitates participation in dispersed communities of practice and collaboration between different enterprises in providing training (although arguably such opportunities already exist without ubiquitous computing).

PLEs can develop this potential by facilitating access to learning in different contexts and using

different devices and interfaces. Secondly PLEs can bring together learning acquired in different contexts.

## The changing ways we learn

When any new technology is introduced we tend to ape older paradigms in implementation. Consider the motor car. It was initially called a horse-less carriage and the law demanded a man walked in front of it carrying a red flag. So it is with educational technologies. The development of the internet gave rise to the virtual classroom and the virtual university. Institutions sought to control internet based learning through Learning Management Systems and Virtual Learning Environments. Slowly we are coming to realise that we cannot simply reproduce previous forms of learning - the classroom or the university embodied in software. Such environments can be pretty sterile places. And of course young people realise this. Course based on bulletin boards can be very lonely.

Slowly we are discovering - or rather learners are discovering new uses of the technologies for learning. Instant messaging, file sharing, social networking. And of course blogging. A growing number of reports have documented how the so called net generation use computers in their everyday life. Moral panics have emerged about the amount of time spent in front of the computer and the dangers of open internet access. When researching this chapter, I found a newspaper article from the 1950s worrying over the time young people were spending outdoors playing sports! There seems to be a timeless pattern of new generations finding new trends about which to panic (my own parents railed against my long hair and my loud and strange music). As so often happens when confronted with something new, the reaction of the education systems is to control and to ban it. Young people are told to turn off their mobile phones to go into their lessons on communication! The US government is debating a law banning access to social networking sites in educational establishments.

But it is not just the appeal of communication which is drawing young people to these technologies. It is the ability to create, to share ideas, to join groups, to publish - to create their own identities which constitute the power and the attraction of the Internet for young people.

Of course it could be asked what this has to do with learning? To a large extent it depend on definitions of learning. If we say that learning is an activity which takes place within an institution and guided by qualified teachers, then of course it has little relationship. But if we take a wider definition of learning as purposeful activity which leads to

changes if behaviour, then a great deal of learning is taking place.

I am unconvinced this is a net generation thing. Research I undertook into the use of e-Learning in Small and Medium Enterprises found little take up of formal courses. But we found widespread use of the Internet for informal learning, through searching, joining on-line groups and using email and bulletin boards. Google was the most popular application for learning. Age was not a factor. In fact, there was a tendency for more use of ICT for informal learning by older workers, probably because they had more responsibilities in their work, better internet access and more opportunity to organise their own work.

There is a major issue in that everyday informal learning is disconnected from the formal learning which takes place in our educational institutions. For younger people there is a danger that they will increasingly see school as a turn off - as something irrelevant to their identities and to their lives. Personal Learning Environments have the potential to bring together these different worlds and inter-relate learning from life with learning from school and college.

## What does a Personal Learning Environment look like?

In the introduction I said that a Personal Learning environment was not an application. A PLE is comprised of all the different tools we use in our everyday life for learning.

Many of these tools will be based on social software. Social software is used here in the meaning of software that lets people rendezvous, connect or collaborate by use of a computer network. It supports networks of people, content and services that are more adaptable and responsive to changing needs and goals. Social Software adapts to its environment, instead of requiring its environment to adapt to software. Social software underpins what is loosely referred to as Web 2.0. Whereas Web 1 was largely implemented as a push technology - to allow access to information on a dispersed basis, Web 2.0 is a two way process, allowing the internet to be used for creating and sharing information and knowledge, rather than merely accessing external artefacts.

Social software is increasingly being used in education and training through such applications as web logs, wikis, tools and applications for creating and sharing multi media and tools for sharing all kinds of different personal knowledge bases including bookmarks and book collections.

If we are to use different applications, individually configured then standards are critical for allowing one application to talk to another. Rather than monolithic vendor driven and designed applications, Web 2 and social software is based on the idea of 'small pieces, loosely connected' utilising commonly recognised standards and web services for linking ideas, knowledge and artefacts.

Social software offers the opportunity for narrowing the divide between producers and consumers. Consumers become themselves producers, through creating and sharing. One implication is the potential for a new ecology of 'open content, books, learning materials and multi media, through learners themselves becoming producers of learning materials.

Social software has already led to widespread adoption of portfolios for learners bringing together learning from different contexts and sources of learning and providing an on-going record of lifelong learning, capable of expression in different forms.

The idea of a Personal Learning Environment is also based on being able to aggregate different services.

The list below is of the software I use for my personal learning environment:

- Word processor for writing papers like this - Nisus Writer Express
- E-mail client for communication - Mac Mail
- Diary for managing my work and sharing with others- iCal linked to my web site
- Audio for making podcasts - Garage Band
- Video editor for making multi media presentations - iMovie
- Weblog client for various blogs I contribute to - Ecto
- Content Management System for creating web sites - Jumbla
- Personal Weblog - Knotes
- Photo editing programme - iPhoto (and plug in for uploading to Flickr)
- Photo sharing service - Flickr
- Web Browser - Firefox
- Bookmark sharing service - Delicio-us
- Podcast publishing - Jumbla plug in

- Presentation software - Keynote
- Newsreader - Net Newsreader
- Instant messaging and VOIP - Skype
- Search engines - mainly Spotlight and Google
- FTP client for sharing multimedia files - FileChute

And a number of other applications for creating and editing graphics and a number of other services from different social software companies. And, of course, the operating system itself for managing and storing files. This is a lot of software. I use an Apple Mac with an OS X operating system. Apple has become increasingly good at allowing services between the different applications, but it can be a little unpredictable what will work with what!

This is a powerful personal learning environment. But, all this software takes a lot of setting up, configuring and maintenance. At the present time, it is probably beyond the average learner (or teacher). However, we are seeing the development of a number of applications which provide a framework and tools to facilitate the use and aggregation of different services. The open source Flock browser is one such programme. The ELGG environment is being widely implemented in educational institutions. ELGG is also a free open source application. Both Flock and ELGG are based on opens standards and open APIs allowing users to 'plug in' their own favourite tools and providing interoperability with other applications.

## **Personal Learning Environments - intent and use**

The development and support for Personal Learning Environments would entail a radical shift, not only in how we use educational technology, but in the organisation and ethos of education. Personal Learning Environments provide more responsibility and more independence for learners. They would imply redrawing the balance between institutional learning and learning in the wider world. Change is difficult but it is probable that the rapid development and implementation of new technologies and social change make change in our educational provision inevitable.

There are also many unresolved issues, including who provides technology services, security of data and of course the personal safety of students. Notwithstanding these issues, we are beginning to see how these new tools might practically be used in education, especially through wide scale experiments in the use of blogging.

Some education institutions are providing blogs for all students and encouraging their use. This is not linked to any course as such, but rather blogging is seen as an important activity for communication and the development of ideas. Launched under the banner of 'Persuade, Promote, Publish', Warwick University aimed to provide students and staff with an easy method of publishing a personal web site. "There are many different uses for blogs at Warwick", they say, "from developing an essay plan, to creating a photo gallery and recording your personal development process. Blogs have been designed as a tool that will be useful for staff in research and teaching, and have many different applications in e-learning." A publicity campaign was planned and delivered to coincide with the launch of the blogs system.

An important and brave part of the Warwick experiment, was that there is no limitations on how students use their blog. Subject to normal blog use rule, students are free to publish what they wish and there are a number of reports of flamewars having broken out! As of the 11 September 2006, there were 4042 blogs with 73380 entries, 9167 tags, 168753 comments and an amazing 99534 images.

Warwickblogs is built on the blogbuilder system. Similarly Brighton University in the UK is providing all students with an ELGG account from autumn 2006 which will be for their own personal use, independent of curricular activities. These developments are not confined to the UK. Graz University is also using ELGG to provide personal learning areas for all students.

Many institutions are experimenting with the use of blogs and other social software tools in a more restricted environment as part of the curriculum. One interesting issue is the extent to which 'communities' continue after the end of a particular course. This also raises questions about what responsibilities institutions and teachers or moderators have for supporting such learning, outside course times.

Other institutions are attempting to provide Personal Learning type environments linked to institutional Learning Management Systems. The New Zealand government has funded a project to provide an integration layer between the Open Source Moodle VLE and ELGG. The system is being piloted with nine institutions with the intention of rapidly extending provision following the pilots. "Our plan", they say "is to create a learner centred eportfolio system that sits outside of the Learning Management Systems. It will serve students from right across the sector and not be institutionally aligned. This is analogous to the informal learning that takes place outside of a classroom at a 'bricks and mortar' campus."

Course based learning outcomes can be exported directly into ELGG, with a single sign on providing access to both systems. One of the big advantages is that when students move institution they maintain their own ELGG account.

A fourth potential application for PLEs is for self supported and peer group learning. MIT have provided free access to all their course materials. The Open CourseWare is, they say "a large-scale, Web-based publication of the educational materials from the MIT faculty's courses. This unique initiative enables the open sharing of the MIT faculty's teaching materials with educators, enrolled students, and self-learners around the world. MIT OCW provides users with open access to the syllabi, lecture notes, course calendars, problem sets and solutions, exams, reading lists, even a selection of video lectures, from 1400 MIT courses representing 34 departments and all five of MIT's schools. The initiative will include materials from 1800 courses by the year 2008."

MIT do not provide any teaching or facilitator support for their courseware. But, from autumn 2006, they will launch a customised version of ELGG, allowing learners to develop their own portfolios and to gain peer group support through the networking functionality. This experiment may prove a model for how institutions can provide wider learning support for communities of practice.

A number of institutions are looking at the potential of PLE type applications for Continuing Professional Development. In large institutions there may be little interaction and communication between staff in different departments. In other dispersed institutions there are still greater problems in communication. Klagenfurt University is piloting the ELGG-Moodle integration for professional development for all staff in autumn 2006.

Indeed it may be that PLEs offer considerable potential for knowledge development and sharing and what has been called organisational learning. For some time, researchers have been aware that much knowledge in organisations is tacit. Nonaka and Konno (1998) and John Seely Brown and Paul Duguid (2002) amongst others have looked at models about how tacit knowledge can be externalised and how knowledge spirals can lead to the development and externalisation of new knowledge. However learning and knowledge development have been seen as laying in separate domains. PLE applications, used within companies, have the potential to facilitate training and development and at the same time develop organisational learning within the enterprise.

## Final thoughts

Personal Learning environments are not an application but rather a new approach to the use of new technologies for learning. There remain many issues to be resolved. But, at the end of the day, the argument for the use of Personal Learning environments is not technical but rather is philosophical, ethical and pedagogic.

PLEs provide learners with their own spaces under their own control to develop and share their ideas.

Moreover, PLEs can provide a more holistic learning environments, bringing together sources and contexts for learning hitherto separate. Students learn how to take responsibility or their own learning. Critically, PLEs can bridge the walled gardens of the educational institutions with the worlds outside. In so doing learners can develop the judgements and skills or literacy necessary for using new technologies in a rapidly changing society.

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Personal Learning Environments - the future of eLearning? Graham Attwell. Pontydysgu. Summary. This paper explores some of the ideas behind the Personal Learning Environment and considers why PLEs might be useful or indeed central to learning in the future. This is not so much a technical question as an educational one, although changing technologies are key drivers in educational change. A personal learning environment (PLE) is a solution for keeping up with the rapid pace of knowledge change. Some say it is a concept, while others say it is a technology. I think a good definition is this: a self-directed and evolving environment of tools, services and resources organized by a person seeking a way to accomplish lifetime learning, to create, and to connect with others of similar interests. Because it is personalized, everyone's PLE will be unique. Because it is collaborative, information may be continually created and shared. In the workplace, designing a personal learning envi... The learning environment can refer to an educational approach, cultural context, or physical setting in which teaching and learning occur. The term is commonly used as a more definitive alternative to "classroom", but it typically refers to the context of educational philosophy or knowledge experienced by the student and may also encompass a variety of learning cultures—its presiding ethos and characteristics, how individuals interact, governing structures, and philosophy. In a societal sense