

Horizon.au Project 2008 Short List

Key Trends

Critical Challenges

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- Virtual Worlds/Immersive Environments
- Cloud-Based Applications
- Social Bookmarking
- Alternatives to Copyright (*originally Creative Commons Licensing*)

Time-to-Adoption Horizon: Two to Three Years

- Geolocation
- Alternative Input Devices
- Open Education and Courseware
- Seamless Logon Integration

Time-to-Adoption Horizon: Four to Five Years

- Deep Tagging (*originally Tagging Within Rich Media*)
- Next-Generation Mobile (*originally Integrated Ubiquitous Technologies*)
- Lifestreams (*originally Life Portfolios*)
- Flexible Screen Technologies

Key Trends

Worldwide production of over 1 billion mobile phones per year is driving both innovation and adoption of ever more capable portable devices. These machines have the capacity to access the network, but they are not owned by the institution, a situation which is creating a policy/reality lag. In addition, this movement away from desktop computers and labs is shifting the locus of control over access to resources from central authorities to users, with a resulting shift in the ways learning spaces are conceptualised and designed.

There is an increasingly important set of influences from the workplace that are impacting how learning is designed and conducted. This is pushing a greater awareness of the value of hands-on, purpose-driven, authentic, and other active learning approaches. Increasingly the effectiveness of learning is being measured using concepts like engagement and time on task. The increased emphasis of the workplace on skills will fuel a greater focus on certifications, portfolios, and other ways that life experiences can be documented.

The increasing connectedness of people around the globe has and continues to dramatically reduce the costs of collaboration. The decline in these costs is paralleled by tremendous growth in the sorts of free and/or very-low-cost tools available to bring people together in real time, to share assets and resources, and to communicate.

As both computers and the network increase in connectedness and capability, the set of technologies available to educators grows ever richer. The ubiquity of these tools has lowered the cost of entry to use them, and is in turn opening up a range of new opportunities for e-learning and other forms of technology-mediated learning.

Critical Challenges

Protectionism limits access to materials, ideas, and collaborative opportunities. Security concerns too often go too far. Both policies and firewalls are severely limiting access to – and hampering the utility of – the Internet, the use of digital materials, and many benefits of social networking. Adding to this, the mindset of central network planners and administrators is often at odds with the increasingly user-centric nature of Internet applications and tools, limiting innovation.

Many teachers do not have the skills to make effective use of emerging technologies, much less teach their students to do so. The technical skills of teachers are too often out of step with those of their students. Related issues are the capabilities of the staff supporting teachers, which suffer from the same problem, limiting the options available for training.

Assessment continues to be a significant barrier to adopting new tools and approaches. In a sort of chicken-and-egg syndrome, there is a persistent need to have solid data on the efficacy of new tools and approaches that often limits the experimentation required to gain those data in the first place.

Poor quality broadband limits options at school and at home. Metering adds to this by discouraging network use: the more useful the network is, the more it is used, and the more expensive it becomes – a cyclical process that ultimately discourages greater utility of the network because it adds unmanageable costs.

Time-to-Adoption: One Year or Less

Virtual Worlds/Immersive Environments

Virtual worlds are richly immersive and highly scalable 3D environments created on computers and computer networks. People enter these worlds as an avatar, and move their avatar through the space as if they were physically walking — or in some cases, flying. The most popular virtual worlds are multi-user spaces, meaning that many people can be in the same virtual space and interact with one another in real time. While many popular games take place in virtual worlds, virtual worlds are not themselves games. Pure virtual worlds like Second Life® can be applied to any context, as opposed to game worlds, which generally have a fixed, goal-oriented purpose. It is quite common to find professional development activities like conferences and meetings taking place in settings such as the virtual world of Second Life and other venues. Among the many avenues that are now being explored and developed in virtual worlds are alternative learning experiences that cannot be replicated in the real world, and how to use them to stimulate critical thinking, exploratory learning, and experimentation.

A wide range of interest groups has sprung up around teaching and learning in virtual worlds, offering opportunities for networked and informal learning both about virtual worlds themselves and about discipline-specific content. The [Second Life in Education wiki](#), maintained by Jo Kay and Sean Fitzgerald, features a list of nearly 100 virtual worlds (active or in development) and links to a wide range of virtual world projects and resources. These spaces are used to train emergency response personnel, develop civic participation and leadership skills, visualise real time weather data, model complex mathematical functions, experiment with architectural models, and much more. Courses from dozens of disciplines are making use of virtual worlds at hundreds of colleges and universities.

Relevance for Teaching, Learning & Creative Expression

- Virtual worlds have obvious application for distance learning, connecting far-flung learning communities with each other and with expertise that may not be readily accessible locally.
- Flexible learning spaces, simulations, and alternative experiences allow students to take part in activities that are difficult to host in real-life classrooms, such as managing mental health or drug issues as a social worker, or touring a working industrial plant.
- Virtual worlds provide a rich environment for scenario-based learning, allowing learners to interact with – or even construct – places and objects of historical or scientific significance.

Examples

- The Virtual Classroom Project at Jokaydia in Second Life is providing a platform for educators to experiment with designing spaces for learning: <http://jokaydia.com/jokaydia-projects/virtual-classroom-project/>
- Several New Zealand institutions share an island in Second Life, Koru, that is populated with native plants and animals and used for teaching: <http://arwennastardust.wordpress.com/about/>

For Further Reading

The Metaverse Journal

<http://www.metaversejournal.com/>

The Metaverse Journal is devoted to reporting news, projects, events, and other items on the subject of virtual worlds — with a uniquely “down under” perspective.

Second Classroom

<http://secondclassroom.ning.com>

Second Classroom is an online community dedicated to exploring the ways that educators can use immersive media such as Second Life, multiplayer online games, and social networks with students to create authentic learning.

Time-to-Adoption: One Year or Less

Cloud-Based Applications

The emergence of server-side productivity applications such as Google Docs (<http://docs.google.com>), Google Apps (<http://www.google.com/a>), and Zoho Office (<http://www.zoho.com>) is beginning to change the way we think about software and files. Web services like Flickr (<http://www.flickr.com>), YouTube (<http://www.youtube.com>), and Blogger (<http://www.blogger.com>), as well as a host of other browser-based applications, comprise a set of increasingly powerful, often free tools that run from, and store data on, remote servers instead of local computers. Documents and other content created with these tools are easily sharable — not only via distribution of the finished work, but also through collaboration within a work group during creation. Applications such as those from Google easily import from and export to standard desktop file formats.

While direct applications for teaching and learning have not yet emerged, this set of technologies is clearly an enabling force in the mix, and could distribute applications across a wider set of devices that are browser-enabled and greatly reduce the overall cost of computing. In addition, the ease of group-work and collaboration at a distance could be a benefit applicable to many learning situations.

Relevance for Teaching, Learning & Creative Expression

- Cloud-based applications can provide students and teachers with free or low-cost alternatives to expensive, proprietary productivity tools.
- Browser-based applications are accessible for a variety of computer and even mobile platforms, making these tools available anywhere the Internet can be accessed.
- The shared infrastructure approaches embedded in the cloud computing concept offers considerable potential for large scale experiments and research that can make use of untapped processing power.

Examples

- Macquarie University has adopted the education edition of Google Apps and given each student a Gmail account: <http://www.pr.mq.edu.au/events/archive.asp?ItemID=3118>
- Waikato University and the University of Auckland are using Google Apps for email and productivity applications across campus: http://www.zdnet.com.au/news/software/soa/Largest-NZ-uni-picks-Google-Apps/0,130061733,339290511,00.htm?feed=pt_cloud_computing
- Collections of images can be used for research or learning in a wide range of disciplines; for instance, histology images on Flickr: <http://www.flickr.com/search/?w=all&q=histology&m=text>

For Further Reading

Computing Heads for the Clouds

http://www.businessweek.com/technology/content/nov2007/tc20071116_379585.htm

(Aaron Ricadela, *BusinessWeek*, 16 November 2007.) This article defines cloud computing and describes ways it is in use by IBM, Yahoo!, and Google.

Defogging Cloud Computing: A Taxonomy

<http://refresh.gigaom.com/2008/06/16/defogging-cloud-computing-a-taxonomy/>

(Michael Crandell, *Refresh the Net*, 16 June 2008.) This blog post includes a description of the layers of cloud computing: applications, platforms, and infrastructure.

Down on the Server Farm

http://www.economist.com/business/displaystory.cfm?story_id=11413148

(*The Economist*, 22 May 2008.) This article describes the infrastructure of Internet computing and its implications for the future.

Time-to-Adoption: One Year or Less

Social Bookmarking

The practice of bookmarking useful online resources is as old as the web browser, yet the browser approach forces a fixed hierarchy which becomes unwieldy as the collection grows. More recently, tools that allow sharing, publishing, and easy searching of bookmarks have added a social dimension to a once private task. Annotated, tagged lists are easy to create with tools like [Del.icio.us](#), [Bb Scholar](#), [Diigo](#), and [Zotero](#), and using them, class and study groups, communities of practice, and scholars can share and compare resources they have found. As these lists grow, many tools make it easy to see which materials have been linked to most often, providing an intuitive sense of value. Many tools also allow viewers to annotate links, and even content within websites, and share their annotations with others.

There is a downside to the uninformed use of these tools, however. Bookmarking is not reading or research; the simple sharing of links can be and often is a cursory, surface-level activity. If, however, social bookmarking is used as a way to share carefully vetted or considered resources, it is a very powerful and substantive tool. In the hands of students, it can also be a powerful way to develop information and knowledge management skills.

Relevance for Teaching, Learning & Creative Expression

- Social bookmarking harnesses serendipity for educational gain: scholars can spend less time searching and more time reading resources collected and marked by their peers, enabling them to discover sources they might otherwise have missed.
- Engaging in social bookmarking enables learners to develop their own information management skills and practices while also contributing to dynamic, collaborative collections with their peers.
- Curating a bookmark collection presents opportunities for students to reinforce knowledge and information management skills.

Examples

There are numerous examples of courses, professional organisations, and other educational groups using social bookmarking to create and organise resource lists – including the Horizon Project itself.

- A Trinity College course used [Del.icio.us](#) to create a reading list — and encouraged students to add to it: [del.icio.us/smartmobs](#)
- Attendees and staff of the NSW Learnscope 07 Conference bookmarked related resources on Technorati, Flickr, Slideshare, [Del.icio.us](#), and other sites: [nswlearnscope.com](#) (the tag is `nswlearnscope07`)

For Further Reading

How [Del.icio.us](#) Is Changing Academic Research

<http://landscape.blogspot.com/2007/03/how-delicious-is-changing-academic.html>

(*Jo Guldi, Inscape, 22 March 2007.*) This blog post discusses ways [Del.icio.us](#) is used for academic research.

Social Bookmarking in Plain English

<http://www.commoncraft.com/bookmarking-plain-english>

(*Lee LeFever, Common Craft, 7 August 2007.*) This brief (3.5-minute) video explains social bookmarking, using [Del.icio.us](#) as an example, in an engaging format.

Time-to-Adoption: One Year or Less

Alternatives to Copyright (*originally Creative Commons Licensing*)

As new forms of publication and scholarship begin to take hold, the academic world is examining standard forms of licensing and rights management and finding them lacking. While current copyright and intellectual property laws focus on restricting use of materials, authors are beginning to explore new models that centre on *enabling* use while still protecting the academic value of a publication. Some rights are still reserved, but some are proactively licensed at publication time to encourage reuse. These approaches make it clear which rights are licensed for various uses, removing the barrier of copyright and smoothing the way for others to access and use one's work.

One such approach is that taken by Creative Commons, an organisation that supplies easy-to-understand, "some rights reserved" licences for creative work. Authors simply review the list of rights they can grant or restrict, make their choices, and receive a link to a written licence that spells out how their work may be used. The licences work within current copyright laws but clearly state how a work may be used. Copyleft is another alternative approach; often used in open source software development, Copyleft describes how work can be used and also governs how derivative works are to be licensed as well. Models like these are beginning to gain acceptance among artists, photographers, and musicians; a few scholarly papers have also been released under alternative licences. The NMC, for example, releases all its reports and papers under Creative Commons licences.

Relevance for Teaching, Learning & Creative Expression

- Flexible licensing removes the burden of rights management from finding, using, customising, or creating derivative learning resources and related materials.
- The costs of open-licensed content are very low compared to the content typically available from traditional publishers, and it comes with far fewer restrictions on use.
- Sharing, collaboration, and scholarly interdependence are encouraged by open licensing models; the practice models a shift for students from being consumers of content created by others to becoming contributors in their own right.

Examples

- Australian Creative Resources Online (ACRO) is a collection of Creative Commons-licensed media that may be used for any creative or educational purpose: <http://www.acro.edu.au/>
- The AShareNet Licensing System, hosted by TVET Australia, provides a searchable database of learning materials licensed under a variety of flexible terms: <http://www.aesharenet.com.au/>

For Further Reading

Creative Commons Case Studies

<http://wiki.creativecommons.org/Casestudies>

Creative Commons is tracking projects around the world that use CC licensing models. View the list by country to see what is happening in your area.

Otago Polytechnic's Intellectual Property Policy

http://www.wikieducator.org/Otago_Polytechnic/Intellectual_property

Otago Polytechnic has adopted an intellectual property (IP) policy that protects the content creator while allowing material to be shared and used for scholarship and research.

Time-to-Adoption: Two to Three Years

Geolocation

Geolocation technology is not new, but it is now beginning to appear in a range of common devices like mobile phones, cameras, and handheld devices. Similarly, mapping geolocate data is not new; but the ability to easily create map mashups online using multimedia and geotagged data is. Now that geolocate data is becoming easy to capture and apply as tag data, we are beginning to see applications for research and learning that are quick and inexpensive but still very effective. Researchers can study migrations of animals, birds, and insects or track the spread of epidemics using data from a multitude of personal devices uploaded as geotagged photographs, videos, or other media plotted on readily-available maps. Many free or very low-cost tools to capture and display geolocate data are available online, and are much much easier to use than previously.

Geotagging, a subset of this technology, is being used to annotate maps with individual experiences and memories of a place. Google Maps (<http://maps.google.com>) offers a one-click way to overlay public, geotagged media onto the relevant section of a map as you view it; simply click the “more” button in the upper right of the map. Choose photos or videos; they will fall into place onto the map. With Flickr Maps (<http://www.flickr.com/map>), viewers can see at a glance what tags are currently being uploaded in a given region, or find locations in Australia where photographs of kookaburras were taken (around the southern and eastern coasts, incidentally) by searching on those terms.

Relevance for Teaching, Learning & Creative Expression

- Geolocation opens up opportunities for learning and data acquisition in the field for the sciences, social observation studies, and other fields.
- Mobile learners can receive context-relevant information about nearby resources, points of interest, historical sites, and colleagues, connecting all this with online information for just-in-time learning.
- Students can collect and mine geotagged information for research purposes.

Examples

- The Senseable City project at MIT seeks to create meaning, and art, from geolocate data: <http://senseable.mit.edu/>
- Students in an Oakland, California high school used locative media to create stories about their area, map content, and geotag it: www.locative-media.org/projects/C93/
- CommunityWalk provides a way to create and annotate custom maps, including geotagged data and photographs uploaded or pulled from Flickr: <http://www.communitywalk.com/>

For Further Reading

An ABC of Geotagging Photos on the Mac

<http://www.bioneural.net/2008/03/05/an-abc-of-geotagging-photos-on-the-mac/>

(Bruce McKenzie, *Bioneural.net*, 5 March 2008.) This blog post explains several ways to geotag photographs using Macintosh software.

GeoPodcasting – Adding Location to Audio

<http://www.randomconnections.com/?Fp?D1158>

(Tom, *Random Connections*, 1 November 2007.) This post describes ways to geotag audio material like podcasts.

What’s the Best Web Site for Geotagged Photos?

http://news.cnet.com/8301-17939_109-9847536-2.html

(Stephen Shankland, *CNET News*, 10 January 2008.) This article compares a variety of websites that allow users to geotag their photographs.

Time-to-Adoption: Two to Three Years

Alternative Input Devices

All around us, new interaction devices are changing the way we communicate with computers and other technology. First appearing in the gaming world, the Nintendo Wii and its “wand” controller broke away from the traditional handheld controller and keyboard/mouse models. Apple’s iPhone, and the emerging table-sized Microsoft Surface, broke similar barriers in the realm of interactive displays with their multi-touch screen-based controls. These two innovations – accelerometer-based devices and multi-touch screens – allow users to manipulate content intuitively, using natural gestures like flicking the wrist or sweeping the fingertips over a display.

Accelerometer-based devices use speed, direction, and momentum as inputs. The Wii-mote (the controller for the Wii) acts like an extension of the body, conveying arm gestures to the device’s sensors. Other devices like the Wii Balance Board detect body posture, allowing the system to react to the user’s entire body and enabling the simulation of physics concepts and principles of motion through kinaesthetic experience. Large multi-touch displays also open up possibilities for collaborative activity; only one person can use a mouse, but the Surface responds to several users at the same time.

Relevance for Teaching, Learning & Creative Expression

- Portable devices, especially those that can be used with one hand, increase the user’s mobility, enabling research like data capture and analysis to be done in the field.
- Multi-sensory input devices like the ones mentioned here engage the user on multiple levels, creating more immersive experiences for learners.
- Input devices that behave like instruments or artists’ materials enhance the transfer of real-world skills to computer-assisted music and art, enabling artists to experiment with a wider range of forms for creative expression.

Examples

- KDDI’s au design project is developing cell phones that double as musical instruments: <http://www.engadget.com/2008/08/19/kddis-au-design-project-creates-cellphones-that-double-as-instr/>
- The Wii Fit by Nintendo combines the Balance Board and the Wii-mote for exercise and entertainment purposes: <http://www.nintendo.com/wiifit>
- The Microsoft Surface is a tabletop, multi-touch interactive display: <http://www.microsoft.com/surface/index.html>

For Further Reading

Accelerometer

<http://en.wikipedia.org/wiki/Accelerometer>

(*Wikipedia.*) This article describes accelerometers and lists some applications for them, including the Wii and several mobile phones that use the technology.

Multi-touch

<http://en.wikipedia.org/wiki/Multi-touch>

(*Wikipedia.*) This article discusses the history of multi-touch technology and describes recent developments.

Top15 Interactive Display Technologies

<http://www.gizmowatch.com/entry/top-15-interactive-display-technologies/>

(*Naveen, Gizmo Watch, 15 May 2007.*) This article lists fifteen interactive display technologies, including tabletop and wall-mounted multi-touch screens.

Time-to-Adoption: Two to Three Years

Open Education and Courseware

Open education and courseware is not a technology, but a way for institutions to collaborate by sharing their instructional materials and syllabi. Open education resources that can be used for self-study or by faculty who want to integrate them into their courses are also not new, but traditionally faculty and higher education institutions have valued self-created materials more, especially for upper division and graduate work. Recently, a new attitude has been emerging based on the recognition that there is little downside for an institution to put course materials online — and in the case of the elite institutions, to even use the act of placing the materials into the public domain to make the case that the experience of attending that university transcends the materials they use in their classes.

The practice of sharing materials is still limited to only a few institutions among the thousands that exist globally. The Open CourseWare Consortium, a group of institutions that commit to releasing at least ten courses online, counts just 150 organisations of higher education among its membership.

These materials are seen as very valuable, however, by many potential user groups, especially in the developing world. Although there are still hurdles to face in the form of intellectual property issues, copyright questions, and institutional policies, progress is being made, and the release of open education materials appears to be a growing trend. As new services are built around the educational materials, such as tools for review and recommendation, progress tracking, creation and posting, and communication, this trend will likely accelerate.

Relevance for Teaching, Learning & Creative Expression

- The services and community tools that accompany open education content could enable the formation of communities of practice and scholarly interest groups.
- Open education resources can provide established and developing educational institutions with cost effective methods and resources for the creation, use, and reuse of educational materials.
- The use of open resources could free faculties to create custom teaching packages without the challenges of doing so that a traditional publisher would present.

Examples

- Otago Polytechnic maintains a wiki with online course materials in a variety of disciplines: http://wikieducator.org/Otago_Polytechnic
- CCLearn is a division of Creative Commons dedicated to supporting open learning and open educational resources: <http://learn.creativecommons.org/>
- The Open CourseWare Consortium encourages collaboration and sharing among its nearly 150 institutional members: <http://www.ocwconsortium.org>
- OER Commons provides a way to find and share open educational materials: <http://www.oercommons.org>

For Further Reading

Open Education Resources

http://en.wikipedia.org/wiki/Open_educational_resources

(*Wikipedia.*) This article describes open education resources (OER) and its relationship to open source.

Open Education Showcase: Initiatives in Australia

<http://commons.org/articles/open-education-showcase-initiatives-in-australia>

(*iCommons.org, 17 June 2007.*) This blog post discusses Free for Education initiatives.

Time-to-Adoption: Two to Three Years

Seamless Logon Integration

The concept of seamless logon integration, or digital identity management, focuses on the creation of a single digital identity that could be used in any place where a login is required to access a website or service. It is not a single technology, but a group of related technologies and ideas; it is also characterised as representing a different way to think about relationships and services. Rather than allowing many different content or service providers to each “own” a separate set of digital credentials, one’s credentials would exist outside of any system and would simply be recognised by whatever systems we wanted to interact with.

A number of approaches to seamless logon integration are in early development. While all these approaches have the same broad purpose of creating a sign-on system that is convenient and secure and belongs to an individual rather than to a company or organisation, ideas about what precisely defines seamless logon integration and how that would be implemented are still widely varied. There is very little indication that this group of technologies is currently developed to any significant level, and it is very difficult to establish a direct link to teaching, learning, or creative expression.

Relevance for Teaching, Learning & Creative Expression

The relevance of seamless logon integration to teaching and learning is, at best, indirect. Single sign-on would certainly be a convenience, but is an enabling technology rather than something that is likely to improve teaching and learning.

Examples

- OAuth is an open protocol for developers of single sign-on systems: <http://oauth.net/>
- The Australian Access Federation (AAF) Project seeks to facilitate electronic communications among higher education and research institutions in Australia and around the world: <http://www.aaf.edu.au/project>
- OpenID is a shared authentication scheme that simulates single sign-on for participating websites and services: <http://openid.net/>

For Further Reading

At a Crossroads: “Personhood” and Digital Identity in the Information Society

http://www.oecd.org/LongAbstract/0,3425,en_2649_34223_40207007_1_1_1_1,00.html

(Mary Rundle et al., *STI Working Paper 2007/7*, 29 February 2008.) This paper discusses digital identity management in the information society and recommends further investigation.

Managing Privacy in a Web 2.0 World

<http://www.cio.com.au/index.php/id;1453094165>

(C G Lynch, *CIO*, 31 March 2008.) This article describes an effort by IBM and partners to develop PrimeLife, a system to allow users to manage their identity across social networks and online communities.

Single Sign-On

http://en.wikipedia.org/wiki/Single_sign-on

(*Wikipedia*.) This entry discusses the benefits and criticisms of single sign-on, differentiates shared authentication schemes from single sign-on, and discusses configuration issues.

Time-to-Adoption: Four to Five Years

Deep Tagging (*originally Tagging within Rich Media*)

Tagging, the practice of attaching a descriptive word or phrase to a piece of online content for the purpose of linking it to other related content, has become a mainstream activity. A vision for the next generation of tagging is deep tagging, which would allow people to create a direct link to a small part of a larger piece of media, such as an image or a video. Others who search for those tags would be able to retrieve specific content via these tags, with the promise of facilitating just-in-time learning and creating new possibilities for research and scholarly work.

Real-time video annotation is already quite common, but currently requires the use of specialised tools that match the time of the annotation to the time on the clip where the reference occurs. If the capability for anyone to easily add and search for tags is developed as anticipated, images and video and audio clips would become as easy to find as text-based materials. As more rich media clips are released online, having a way to easily reference a particular segment of a clip could facilitate the creation of thematic resource collections.

Based on the age of the literature we were able to find, work in deep tagging appears to have stalled.

Relevance for Teaching, Learning & Creative Expression

- Deep tagging could increase the granularity of time-based media, allowing parts of media clips to be more easily remixed, linked, and reused.
- Many disciplines could benefit from video and audio libraries that are as easy to search and tag as text-based resources.
- Tagging within video and audio clips could facilitate the organisation and description of rich media in social software environments and enable users to co-create content by annotating the media.

Examples

Although the technology to support deep tagging has been in development since 2006, we were not able to find any educational examples of deep tagging (repositories, course materials, etc.). The following examples are software tools that can tag within video or other media.

- Gotuit makes software to manage video libraries by deep tagging: <http://www.gotuit.com>
- EveryZing provides a software solution for indexing, searching, and connecting multimedia content to search engines: <http://www.everyzing.com>

For Further Reading

All the Cool Kids Are Deep Tagging

<http://www.techcrunch.com/2006/10/01/all-the-cool-kids-are-deep-tagging/>

(Michael Arrington, *TechCrunch*, 1 October 2006.) Written when deep tagging was first introduced, this post discusses deep tagging and websites that offer it.

Deep Tag It

http://www.writetech.net/2007/03/deep_tag_it.html

(Michelle Lentz, *WriteTechnology*, 2 March 2007.) This blog post describes deep tagging, suggests ways to use tagged video, and describes a deep tagging product by Veotag.

Video Search Catches Up with Video Tagging

<http://www.clickz.com/showPage.html?page=3624735>

(Jeremy Lockhorn, *ClickZ*, 29 January 2007.) This article describes video tagging and outlines why it is useful, as well as identifying a few websites that offer video tagging.

Time-to-Adoption: Four to Five Years

Next-Generation Mobile (*originally Integrated Ubiquitous Technologies*)

A small army of technologies, including digital photography and videography, instant messaging, email, web browsing, geolocation, and voice calling, have converged in a tiny, pocket-sized device: the mobile phone. Better displays and new interfaces make it easier to interact with an ever-expanding variety of content — not just content formatted specially for mobiles, but nearly any content available on the Internet. Fuelled by advances in network technology like 3G, mobiles now keep us in touch in nearly all the ways that laptops do, anywhere we happen to be, without the need to find a hotspot or a power outlet.

Newer, longer-lasting batteries keep our mobiles alive for longer trips between charges. New 'push' technology allows manufacturers to send updates directly to our devices. Open APIs encourage the creation of custom widgets that will offer even more services; combined with webware applications that already exist, the capabilities of mobiles will soon rival those of a computer with a web browser. The continuing pace of innovation around mobile devices and software promises that even greater capabilities on the way, and ensure that mobile will continue to be a space to watch.

Relevance for Teaching, Learning & Creative Expression

- Nearly every student carries a mobile device, making it a natural choice for content delivery and even field work and data capture: mobiles and their networks are virtually everywhere.
- Language learners can install applications on their mobiles that let them look up words and even hear the word pronounced in the language they are learning.
- An application for the Apple iPhone shows the sky layer of Google Earth, providing a pocket astronomy atlas that can be used in the field to identify stars and planets.

Examples

- An Australian school is experimenting with allowing the use of mobile phones during exams: <http://www.smh.com.au/news/national/phone-a-friend-in-exams/2008/08/19/1218911717490.html>
- Monash University offers web-based courses and also formats the material for mobile devices: <http://walkabout.netcomp.monash.edu.au/walkabout/fit1011/index.html>
- Medical resources developed for the iPhone can be used by students and practitioners: <http://jeffreyleow.wordpress.com/2008/06/10/iphone-in-medical-education/>

For Further Reading

Next Generation Mobile Networks: Industry Leaders on Challenges Ahead

http://blogs.cisco.com/sp/comments/next_generation_mobile_networks_industry_leaders_on_challenges_ahead/

(Larry Lang, *SP360: Service Provider*, 28 June 2008.) This blog post summarises the remarks of several industry leaders in a session at the Second NGMN Industry Conference in June 2008.

Please Wait a Sec, Just Need to Check Training Info on My Mobile Phone

<http://aquaculturepda.edublogs.org/2007/08/21/please-wait-a-sec-just-need-to-check-training-info-on-my-mobile-phone/>

(Sue Waters, *Mobile Technology in TAFE*, 21 August 2007.) This blog post describes ways that training is being delivered on mobile devices.

So Much More than Phone Calls

betch.edublogs.org/2007/10/10/so-much-more-than-phone-calls/

(Chris Betcha, *Betchablog*, 10 October 2007.) An Australian educator shares the tools he uses on a broadband-enabled cell phone.

Time-to-Adoption: Four to Five Years

Lifestreams (*originally Life Portfolios*)

More and more of the products of our work and recreational lives are digital in nature and often stored in a variety of online locations; we blog, post pictures to Flickr or Picasa, comment on others' contributions, and report our status on Facebook and Twitter. Keeping track of the work we have done and where it resides is an increasingly difficult task, and the various pieces are rarely combined into a contextually related timeline. Taken together, those pieces represent our lifestream data, or the online record of our daily activities made up of blog posts, photos, social network updates, and the like.

Tools are available now that will aggregate a variety of lifestream data into a coherent flow: Swurl, Tumblr, Onaswarm, Jaiku, Lifestreams, and Strand are just a few. The tools collect contributions by gathering feed data from the various locations where activity takes place and displaying it on one page, allowing friends and others to follow the flow of information in almost real time. Educational uses of this concept are unclear. Unlike an e-portfolio, which is generally defined as a collection of one's work in an easily sharable electronic format, a life portfolio is much more like a multimedia diary. While lifestream data might be used in learning situations, questions arise around privacy and control of content. The emergence of social tools like those mentioned above may shed some light on these issues and contribute to the development of tools to create, share and manage life portfolios.

Relevance for Teaching, Learning & Creative Expression

- Lifestream data could enable more holistic assessment, as work would be seen in the context of a student's overall development.
- Scholars and researchers could use lifestream data to build credibility in their field, showcase their best work, and evaluate potential collaborators.
- It should be noted that tools for aggregating lifestream data have been available for well over a year; at the current time, however, ideas around the use or applicability of lifestream data for academic purposes were not found in the literature, and if they exist, are assumed to be very much in the earliest conceptual stages.

Examples

Numerous personal examples of lifestream data exist; however, we were unable to find any with direct educational application.

For Further Reading

How to Lifestream with WordPress

<http://www.builder.au.com.au/blogs/codemonkeybusiness/viewblogpost.htm?p=339271049>

(Brendon Chase, *Builder.au*, 22 August 2008.) Written for a moderately technical audience, this article describes how to create a lifestreaming system using WordPress, a popular blogging tool.

Lifestreaming: a ReadWriteWeb Primer

http://www.readwriteweb.com/archives/lifestreaming_primer.php

(Richard McManus, *ReadWriteWeb*, 14 January 2008.) This article describes several lifestreaming applications.

Strands: Friendlier than FriendFeed (Or Everyone's Lifestream Just Got More Valuable)

<http://siliconflorist.com/2008/05/29/strands-friendlier-than-friendfeed-or-everyones-lifestream-just-got-more-valuable/>

(Rick Turoczy, *Silicon Florist*, 29 May 2008.) This blog post describes lifestreaming and reviews a tool called Strands that is designed to pull together all of one's online activities.

Time-to-Adoption: Four to Five Years

Flexible Screen Technologies

Computer displays continue to develop in all dimensions – resolution, size (wall-size and hand-held), compactness – and now new flexible screens that can wrap around surfaces are in prototype. Related to this is the concept of electronic paper: a sheet of flexible material that both accepts input via touch and displays content. If developed fully, integrated interactive display devices like electronic paper would combine input and output in a single interface. Such technologies promise greater portability, ease of use, and economy for educational materials like textbooks and multimedia resources.

Manufacturers like Sony, Phillips, and Samsung are experimenting with prototypes of flexible and ultra-thin screens based on organic light-emitting diode (OLED) technology, in which the pixels emit their own light. The screens can be thinner, and embedded in plastic, because no separate light source is required. The technology is being used now to deliver slim television screens, but printing on flexible plastic is still in the very early prototype stage.

Relevance for Teaching, Learning & Creative Expression

Flexible screens and electronic paper could well be paradigm-shifting developments that redefine our view of a computer, but our review of the literature indicates that they are not yet in production, and the timeline for their entry into the marketplace is unclear. At this very early stage, we could find no direct examples of how they might affect teaching and learning.

Examples

- Sony is prototyping small, thin, flexible screens that are printed on plastic using organic light-emitting diode (OLED) technology: <http://www.break.com/usercontent/2007/7/Sony-Flexible-screen-329435.html>
- In 2008, Universal Display Corporation announced a prototype flexible OLED screen developed for the US Army: <http://blog.pcnews.ro/2008/04/24/novel-flexible-oled-display-only-for-us-army/>
- Microsoft Research is experimenting with a spherical computer: <http://news.zdnet.co.uk/emergingtech/0,1000000183,39453782,00.htm>

For Further Reading

Articles on Engadget Tagged with “OLED”

<http://www.engadget.com/tag/oled>

The articles cover prototype projects and future goals; a few products are on the market now, but they all involve slim televisions rather than flexible screens or electronic paper.

OLED-Info

<http://www.oled-info.com>

(Ron Mertens, editor). Established in 2004, OLED-Info is a portal for articles, research, and information about OLED technology.

Tripping the Lights Organic

http://news.cnet.com/Tripping-the-lights-organic/2100-1008_3-6111872.html

(Michael Kanellos, CNET News.com, 5 September 2006). As early as 2006, manufacturers were experimenting with OLED technology as a possible replacement for standard light bulbs.