that seek to optimise the flexibility to a diversity of learner types, in location, time, and type of media access to educational support.

The distributed learning opportunities within a course management system need to address the diversity of learners' requirements in terms of prior knowledge, learning styles, metacognitive skills, and cultural context. The new requirements of flexible course management systems and online social networking opportunities for learning have shifted the focus of the tutor from a teacher to a facilitator of learning.

Although some of the responsibilities of this new role remain similar—guidance, knowledge of the subject area, supervision, and advice on sources of knowledge—two areas in particular are new and potentially challenging for staff: (1) the power shift in favour of student-directed learning, and (2) the requirements to understand and master the full capabilities of the new technological applications.

In order to support both staff and students, educational institutions need to develop a support strategy for the use of their course management systems, and a realistic mechanism to adequately support this strategy.

"E-LEARNING AND SOCIAL NETWORKING HANDBOOK"

ROBIN MASON AND FRANK RENNIE (ROUTLEDGE, 2008)

3

SELECTING THE MEDIA PALETTE

So where do we start when we want to actively plan for the incorporation of educational technology in a course in order to facilitate learning, not impede it? The Electronic Training Needs Analysis (ETNA) in Scotland (Dailly & Price, 2007) surveyed the situation in the Further Education network and compared this with previous surveys in 2001 and 2003. Among the many conclusions and recommendations noted, three stand out as generalities that could be applied to the entire formal education sector:

1. The enormous development of the technical capacities of IT systems, even over the previous six years since the first survey;
2. The hugely improved access (individual and institutional) to online resources and networks; and
3. That "the rapid pace of change presents a challenge to staff in simply being aware of the possibilities presented by new technologies" (Dailly & Price, 2007, p. 7).

Two further points, explicit in this study—and reinforced time after time in interviews for this book—have a major importance for this chapter. Firstly, though most institutions now have a virtual learning environment (VLE) (some operate routinely with two or three platforms) staff are often confused over the function of the VLE and do not consider it essential to carrying out their role. Secondly, staff and students frequently have better (less restricted) access to online resources at home than from their institution, a cause for concern if we seek to relate learning to the real world and exploit the best of technology to improve education. We will come back to both of these points later.

The fact is that "the environment of higher education is changing rapidly. Costs are rising, budgets are shrinking, and the demand for new services is growing" (New Media Consortium, 2007). In a rare case of rhetoric living up to reality, increasing globalisation *is* changing the way that we work and communicate, and this means that research, scholarship, and learning are not exempt from the significant shifts that are being unleashed by web 2.0 and beyond. Philip (2007) tried to summarise these changes by what he calls the "knowledge building paradigm" and related this to his perception of the changes that are happening among "the Net generation" in business, society, and education. In particular, he noted earlier work by Tapscott (1998) that identified interactivity in the learning process as the key characteristic common to these changes, and listed eight areas for attention:

- From linear to hypermedia learning,
- From instruction to construction and discovery,
- From teacher-centred to learner-centred education,
- From absorbing material to learning how to navigate and how to learn,
- From schooling to lifelong learning,
- From one-size-fits-all to customised learning,
- From learning as torture to learning as fun, and
- From the teacher as transmitter to the teacher as facilitator.

Other researchers (Lohnes & Kinzer, 2007) emphasise the fundamental importance of the learning context, and caution us against making overly generalised assumptions about the learning preferences of even the digitally literate students—variously described as "the Net Generation" (Obliger & Obliger, 2005), "Millennials" (Howe & Strauss, 2000), and "Homo zappiens" (Veen & Vrakking, 2006). The latter authors also stress that learning is not simply a one-way process. In an attempt to tease this out, we propose the following matrix as an early working plan to identify various ways in which educational technology can be adopted to enhance the process of interactive learning (see Figure 3.1).

HOW CAN MEDIA BE BEST USED IN DIFFERENT CONTEXTS?

Not all learners want to engage with all of the learning technology resources, so it is important in course design to be clear about what is "need to know" (i.e. watching a chemistry experiment—face-to-face or on a video-clip) and what is "nice to know" (adding depth, offering

Interactive Learning
A Matrix of Educational Technology Options

Media	Basic	Intermediate	Advanced
Text	One-way **Print** Interactive **e-mail**	One-way **Webpages** Interactive **Computer conferencing**	One-way **Blogs** Interactive **Wikis Blogs**
Audio	One-way **Audio clips** Interactive **Telephone support**	One-way **Podcasts** Interactive **Telephone conferencing**	One-way **Ipod downloads** Interactive **Audiographics**
Images	One-way **Photographs** Interactive **Image banks, e.g., SCRAN, Creative Commons**	One-way **CD/ DVD** Interactive **Share and edit, e.g., Flickr, SplashCast**	One-way **Animations** Interactive **Simulations/games**
Video	One-way **Video clips** Interactive **Webcasts /TV**	One-way **Annotations?** Interactive **Skype**	One-way **Vods** Interactive **Videoconferencing**

Figure 3.1 Some examples of using educational technology for one-way and two-way learning

alternative explanations, or simply providing additional resources to allow specialisation). A good starting point for what can be considered effective practice in the utilisation of new media in an educational context is in the introduction of a report on this subject (Joint Information Systems Committee [JISC], 2004, pp. 10–11) that states:

> [effective practice] should;
> Engage learners in the learning process
> Encourage independent learning skills
> Develop learners' skills and knowledge
> Motivate further learning

Nothing new, you might say, that is not already covered by good 'traditional' education that makes little or no use of educational technology. The authors go on to add context by noting that:

...in the broadest sense, effective learning is likely to occur when opportunities to learn involve:

- The right resources
- The right mode [or blend of modes] of delivery
- The right context
- The right learners
- With the right level of support

Again, this could be considered a truism, but the crucial point to appreciate is that, in the Westernised countries at least, the changing nature of society means that what were 'the right resources, the right mode...' for learners 20 or 30 years ago are not necessarily the same for learners today. The reasons for this have been well rehearsed (e.g. Castells, 2001; Rheingold, 2000; 2002) so there is no need to go into the issues in depth here, but a few self-evident examples might refresh the memory.

- Even elementary school pupils are utilizing digital media resources in their learning activities and are approaching higher education with different aspirations than did their parents regarding course learning materials.
- Job mobility and skills transferability have created greater expectations of lifelong learning opportunities.
- Greater numbers of part-time and mature students are returning to learning in subjects or institutions previously dominated by residential, full-time students straight from high school.
- Financial considerations frequently mean that learners need to work full- or part-time, cannot/will not travel to study locations distant from their home/work, and want to pay for studying only what they consider useful for their personal or career ambitions.
- At the risk of using hyperbole, the Internet was in its infancy 20 years ago, and the web did not exist. Regardless of whether you think it is good or bad, it has changed the way that we think about and access information, not simply for education, but for entertainment and work as well.

There is a continuum between enthusiastic early-adopters of new technology who will immediately experiment with every new application and those who stridently (and unreasonably?) resist all forms of new fangled ideas and technology. We think that it is important not to fall into either of the two extremes: the teacher who appears to be infatuated with each new technology and experimentally tests it on learners without adequately weighing up the strengths and weaknesses; or the neo-Luddite who disadvantages the learners by eschewing *any* new technology and claiming his or her subject is "different" and that therefore it is not easy to incorporate new ways of utilising digital learning resources.

EDUCATIONAL ACTIVITIES TO ENGAGE LEARNERS

As we noted in chapter 1, the essence of online collaborative course design is the use of activities appropriate to the subject and level of the learner. For a course designer it is critical to think of pedagogic models in terms of, first, "What do I want the learner to be able to do?" (transferable skill, contextual understanding, etc.) and only then "What tools (technology?) do I have at my disposal that will help the learner complete these learning activities?" It is one thing to be aware of the strengths and limitations of a particular technology and another to be able to translate these elements into learning opportunities for a student.

In attempting to define a learning activity as "an interaction between a learner and an environment, leading to a planned outcome" the authors of the JISC report (2004) acknowledge that practitioners have always planned activities for learning but also that the new technology-rich environments offer a greater diversity of available options. Different approaches to learning concentrate upon different assumptions about how people learn, and different pedagogies that might support this learning process. This may lead to the adoption of different learning activities being prescribed (e.g. to include mobile or wireless technologies; see JISC, 2005) but there is a great deal of generic overlap that can be applied in varied educational situations and they have listed the associated pedagogy with four approaches to learning:

1. **The associative perspective**—based on the assumption of learning as acquiring competence.
2. **The constructive perspective**—assuming that learning is based upon achieving individual understanding.
3. **The constructive perspective**—assuming that learning is based upon social collaboration to achieve understanding.
4. **The situative perspective**—assuming learning as a social practice developed through participation in specific communities and practices.

It is important, however, not to be too simplistic in this and ensure that course designers do not select media simply in an attempt to replicate a digital version of the face to face environment with which they are

more familiar. We have chosen the term *distributed media* for this type of resource, meaning that the type of medium itself can support learner access across a wide spectrum of geographical locations and time constraints, thus effectively distributing the medium among many users. This distinguishes the resource from a non-distributed medium, such as a face-to-face lecture or conversation that *only* occurs at a particular locality, at a particular time, and, if it is not recorded or repeated, is not able to be distributed spatially and/or temporally. Each distributed media resource comes with its own set of strengths and weaknesses, advantages and disadvantages that when combined in a structured ecology of learning resources can produce quite a different effect from the original intention. In the following table we attempt to illustrate some ways by which generic learning needs can be matched to student learning activities, and how these activities might be facilitated using different levels of engagement with the media of distributed learning.

Three points should be stressed here: The table above is *strictly* to illustrate the possibilities. It is not a prescriptive document or a blueprint for course design. There is no presumption that the move from fundamental to emerging is either a more advanced trajectory or an inevitable progression for all courses. In reality, it is the learning activity that should dictate the outcomes, there may well be an intimate mixture of fundamental, extended, and emerging media used to provide a rich matrix of possible learning resources on any course or module.

HOW CAN DISTRIBUTED MEDIA BE BEST USED?

This is a difficult question because there is no single 'correct' answer. There *are* lots and lots of ways to combine distributed media, new technology (software and hardware) and educational applications, but there are so many variable factors that it is almost impossible to say "do this, and it will be successful." There are, however, some guidelines that can increase the chances of creating successful combinations of learning resources, while at the same time permitting modification or adjustment and encouraging innovation. The rest of this chapter will concentrate on how course designers can best utilise different media to present learning opportunities in different contexts.

To begin with, it is important for course designers to appreciate four fundamental 'rules' when considering the use of social networking technology to facilitate distributed learning.

1. **No panacea**—The adoption of new technology or social networking applications should not just be in response to perceived problems with an existing (face-to-face) course. It has become apparent to us

Table 3.1 Examples of the Application of Distributed Media to Learning Activities

Student learning need	Example of student activity	Level of distributed media resource		
		Fundamental	Extended	Emerging
Information handling skills	Web searching Using electronic libraries	Print	Webpages	e-books Digital repositories
Developing understanding	Linking information from different sources	Connected document (with hot links)	e-portfolios	Mashups
Linking theory to practice	Learning by doing	Online quizzes	Instant messaging tutorials	Screencasting
Practicing discussion and argument Sharing essays online	Presentation	CD/DVD	Photos/images Online debate using threaded discussion (Flickr?)	Vlog
Practicing articulation of ideas	Reflective journal	Computer conferencing	Blogs Videoconferencing	Podcasts
Rehearsing skills and procedures	Audiovisual essay	Audio clips (Powerpoint)	Video clips	Webcasts YouTube
Practicing teamwork	Group projects	Online games	Social book-marking	Wikis
Learning professional practice	Problem solving exercises	Role playing	Animations or audiographics	Simulations
Feedback	Interactive Tutorial	Telephone support e-mail	Telephone conferencing	Skype

in the research for this book that a substantial number of educators, upon realising that they have problems with an existing course that they teach (e.g. poor student retention, lack of student participation in assignments, poor attendance at lectures), decide to graft on a piece of new technology that they feel will solve the problem. As a result, handouts from lectures or tutorials are pasted onto a website without modification from the face-to-face class; discussion boards are established to force students to talk to each other; papers and articles are

posted online (on the VLE?) to encourage students to read more. This is the equivalent of throwing a lifebelt to a drowning man—it may work, but it is better to have prevented him from falling overboard in the first place. The introduction of distributed media resources needs to be a way of creating new opportunities for sharing and extending learning, rather than constraining learners into different forms of learning participation.

2. **Pedagogy first**—Before selecting your new technology for interacting and/or communicating with the learners, be sure that you fully understand your educational goal. The applications that we will describe in chapter 4 can be used in a variety of ways in different situations—what works in one context will not necessarily work equally effectively in another context. This does not mean that there is anything wrong with the application that you have selected, nor necessarily with your learners, but due to other factors, the combination may be inappropriate for the task that you would like the learners to perform.

3. **Initial induction**—Whatever combination you select, even if it is apparently a very user-friendly technology, such as contributing to a wiki, or using SMS text-messaging, which many people use in the nonacademic parts of their life, you need to provide some initial induction training for students. The key point is that learners should be completely comfortable with the new technology so that they can concentrate on the learning experience rather than being distracted by their discomfort with the technology interface. The induction to the ecology of learning resources need not be face-to-face, though some teachers argue that initial face-to-face contact makes subsequent online interaction less intimidating for some learners. Variations of online induction could include detailed written instructions by e-mail; a screencasting of the mouse movements to select menus, download software etc.; a little video clip or podcast talking the learner through an activity; or simply a telephone conversation (one-to-one or teleconference) with the learner to guide him or her through the initial process of gaining access to and navigating through a series of online resources.

4. **Need to be serious**—The applications of new technology and the learning activities that require the use of distributed media need to have a clear learning purpose that is transparently related to the course of study—they need to be real examples that are worthwhile doing. Students, particularly mature students and students that are paying their own way through university are increasingly strategic in the use of their time. If there is a point to the learning activity, and they can clearly see a link between the task that they have been set and the final assessment or grade that they are likely to get, then they will respond

enthusiastically. Otherwise they will spend their scarce time and attention elsewhere. As Goldhaber (1997; 1998) has argued in his work on "the attention economy", information is a commodity, and in the digital age we are often swamped by this commodity, so the more scarce resource (the ability to grab our attention) becomes the more valuable commodity. This is simply saying that the course assessments need to clearly relate to the intended learning outcomes of the course, but in the hurly-burly adoption of new technology this important aspect of course design often gets overlooked.

Let's look at how these guidelines might relate to practice by reference to a specific example. In Table 3.1, as an example of an emergent technology being utilised to support group project work, we proposed the use of a wiki. Although wikis have been around for a decade, their adoption for academic use has been comparatively slow—surprising considering their power and flexibility (Mader, 2006b; Notari, 2006). A wiki is simply a website that can be quickly and easily edited by many people so, as a piece of social networking software, it is ideal for encouraging group collaboration on a document or project (Mader, 2006a). But we are getting ahead of ourselves.

As noted earlier, the social constructivist approach or situated perspective of learning claims that, in general, learning is based upon social collaboration to achieve understanding. If this is our belief then we may want to construct a learning activity in which our students are required to work together, sharing tasks, to produce both a group product (say, a project report, or a group presentation) that will both demonstrate their team-working skills, but also provide evidence of their own individual contributions towards the product (perhaps a reflective essay, or a project diary). In the 1980s, the effective solution would probably have been limited to a process that brought the group physically together in the same room a few times, got them to discuss their ideas, partition the workload, probably go away somewhere else to prepare their individual contributions, then meet again several times to produce more refined iterations of their collective work. Today, this is still a viable option, but the application of this solution is more constrained, and other options are also available. It is constrained because it depends upon the students being able to physically get together at the same place and time—and for many students who are not co-located, and who have pressing work or family commitments, this is not a real option. Fortunately, the collaborative features of wikis make them especially suitable for use in co-operative learning environments (Schaffert et al., 2006).

In a review of the wiki as a teaching tool, Parker and Chao (2007) examined the current literature and gave numerous links to examples

of how wikis are being used in practice, and suggested some additional uses. Significantly, the situation has changed slightly since even their paper was accepted for publication, and some of the attributes that they list as problems in the use of wikis (such as not being able to lock certain pages against change; keeping a wiki private to a known group of contributors; and 'freezing' a wiki when it has evolved to suit its end purpose) have since been overcome and are freely available as management options on the newer versions of wiki software. Duffy and Bruns (2006) summarise the uses of a wiki as follows:

- To develop research projects—using the wiki for ongoing documentation of the work.
- Building an annotated, collaborative bibliography—using links to prescribed reading and also to summarised notes on the reading.
- For publishing course resources—teachers can post handouts and students can post comments on these to be shared by all.
- To map concepts—ideas can be posted and edited to produce a linked network of resources.
- As a presentation tool—photographs, diagrams, and commentary can be presented on the wiki, and then subsequently edited to produce a revised version.
- For group authoring—creating and editing a single document by many authors that represents the views of each individual, but achieves a consensus.

In each of these examples the educational process and the required output(s) come first, the wiki is just an alternative solution to face-to-face meetings, with the advantages that the wiki is asynchronous and builds a written record of the interactions.

In the first example above, on the use of wikis in groupwork, the individual students might be required to provide evidence of their own contribution to the group project. In the past this might have been done solely by producing a written justification, and while this is still an option, the use of a blog might be more appropriate. Unlike a wiki (which is normally multi-authored), a blog (from weblog) is usually the product of a single author, frequently presented like a diary, but a blogger has the ability to make links to other online resources and invite other bloggers to comment on their initial postings. As wikis and blogs converge, the barriers between them blur a bit, and now it is common for many blogs to provide an opportunity for other readers to make their own comments on the blog owner's comments, to link with their own blog spots, and to suggest links for like-minded readers

to investigate. For a real example of pupils and teachers talking about the use of blogging in their academic lives, see the short video illustration at http://thinklab.typepad.com/think_lab/2007/06/have-you-watche.html. The spread of blogging has resulted in two main types of blog, the one-to-many diary type conveying the owner's comments and opinions (with or without comments from other readers), and the many-to-many message-board type in which many readers respond to an original comment or article by posting their own comment, creating a rich dialogue of experience. The latter has been extensively utilised by news agencies to gather news from the grassroots, share it as it is happening, and seek comment from other readers (see the *Guardian* blogspot at http://blogs.guardian.co.uk/index.html).

To return to stages of course design, if we want to encourage our students to practice the articulation of their ideas, and to learn to share and comment on the work of their peers, then we start with this objective and consider what learning activities could help to achieve this. There are several ways to facilitate this of course. In a classroom we might stage a whole-class discussion, encouraging learners to offer different perspectives, answer questions, provide some answers, and generally share their experiences. In an online environment this might better be accomplished by using a computer conferencing system or a discussion board on a VLE, where learners and teachers can post their comments, responses, and questions on particular topics over a set period of time. If our preferred objective is to encourage the learners to produce a reflective journal as their learning activity, then a blog might be considered, with the added advantages that it can be shared with peers, and that both peers and teacher(s) can add helpful comments and/or questions, almost like footnotes to the main text. Similarly, if the main object of the learning activity is to encourage the student to practice the clear verbal articulation of their thoughts, then a podcast, a simple audio recording available over the Internet, might be an alternative to a conventional face-to-face presentation.

Each of the design solutions above, in addition to the previously stated advantages of enabling learner participation 'as and when' (i.e. asynchronous and not location specific) have the additional benefit for the whole group of learners that they can provide a detailed record of the learning activity. Unlike a face-to-face discussion in class, which is spontaneous and generally unrecorded, the online version generates a written (or audio) record and allows time for the learners to consider previous comments and offer thoughtful additions (unless, of course, a spontaneous live response is required as part of the learning activity, in which case a distributed live session such as a chat room, an instant

message session, or a Skype exchange could be selected). The written and audio records allow learners to reflect upon the learning session or topic, provide materials for slower learners or for revision, and can be archived for a period of time. With the addition of teacher notes to the learners' work, additional resources such as further reading, specific examples, and breaking news of relevant events can be made available for faster learners or those who would like to specialise in a particular aspect that is not fully covered in their present course.

To continue with our staged process of matching learning objectives and activities to more flexible uses of distributed media, the use of images is apparently particularly problematic. We say this because, although fully aware of the vibrant added-value that images (still and moving) can bring to a learning resource, we have also been struck by the apparent compulsion to use images in inappropriate circumstances. A classic example of this is the use of videoconference facilities. With the spread of the ability to link videoconference equipment over the Internet (IP connections) rather than by landlines, there has been a growth in the adoption of videoconferencing as a tool for teaching and the dissemination of research. While there are many fine examples of teachers playing to the strengths of this new medium—the ability to bring intimacy to a discussion among distributed participants; the ability to support multi-way interaction among the group; to bring in guest presenters from geographically distant localities; to record and archive the session for future re-use; there are also many examples of bad practice. Two bad examples stick out as being particularly common: the delivery of a video lecture, where the teacher simply talks at the students for an hour (or more!) in an attempt to replicate the experience of the lecture theatre. This completely ignores a key strength of videoconferencing, the ability to have quality time for visual interaction. Quite frankly, in many such cases there is no need to see the teacher at all, and the lecture could better be delivered as an audio file. If visual images are essential to such a presentation, then the session can be delivered once, recorded, and made available as a webcast on the course website (or on a DVD) for asynchronous, geographically distributed access. Alternatively, if the teacher really wants interaction with the learners and visual contact is not essential, then perhaps a scheduled teleconference is more appropriate, the telephone being more ubiquitous and more mobile than videoconferencing hardware.

A second example involves trying to run a videoconference session with the same meeting etiquette as a face-to-face meeting. The strengths of the medium, being able to participate live with peers and observe body-language/facial expressions without being co-located, need to be

balanced by an awareness of the disadvantages. Foremost among these, paradoxically, is the need to be inclusive in the group interaction process. The immediacy and collegial familiarity of the videoconference medium can sometimes lure participants into behaving as if they were in a face-to-face meeting, leading to several traps for bad practice:

- Bringing a handout to the meeting and passing it around the participants in the same room with you, but neglecting to circulate this in advance so that your distributed learners/colleagues could print it and bring it along to the videoconference.
- Failing to clarify the identity of everybody who is participating in the meeting and checking if they can all receive the signal clearly (we tend to assume that everyone in the same room can hear us when we speak).
- Asking undirected questions such as "Any questions on that?" When we ask that in front of a videoconference camera, who are we asking? Students either tend to hesitate and say nothing, waiting for someone else to speak, or else everyone speaks at the same time. Better to ask, "Any questions on that?" in each remote site.

Conversely, teachers and other confident speakers often seem to need to fill the quiet gaps by talking, making it difficult or awkward for other participants to interject. Normally on a videoconference the remote camera is open on the person who is talking, so we cannot usually see the body language of the other participants who are waiting their turn to speak. Tutors need to be sensitive and directive on this.

Unfocussed or rambling agendas are bad enough in face-to-face meetings, but their uselessness is magnified online. Videoconference sessions need to be more organised than face-to-face equivalents, not least because institutions that make heavy use of videoconferencing will have strict time slots and if you over-run your allocated videoconference session because you have allowed people to ramble on, you will be cut off at the end of your pre-booked slot. You will be cut off regardless of whether you have come to the end of your agenda, whether you are a professor or a first year student, or whether a participant is in mid-sentence or not.

Tutors need to be aware of these limitations and plan for them, and in the best of cases the good videoconference session can be transformational, but a bad session can be truly pointless. A key point to note here is that the introduction of web 2.0 technology (in this case the ease of introducing hyper-interactivity through Internet-based videoconference connections) is not enough in itself to bring about a pedagogic

change. The application of the new technology requires a corresponding shift in other components of learning and teaching (e.g. in this case, a shift from the tutors 'broadcasting' their own opinions as a video monologue, to a learning session where students are encouraged/facilitated to interact with the tutor and with each other to maximise the educational advantages of interactive 'live-time' sound and video).

The use of videoconferencing is a starkly obvious example of the need to combine changes in the manner of teaching and learning when changes in the media of communication and learning are introduced; but, though they may be more difficult to distinguish, similar lessons apply to using other forms of web 2.0 applications for education. We have previously described this as an ecology of learning with similarities to the functioning of natural ecosystems in that everything is connected to everything else and changes to one element will often have profound (even unpredictable) effects on another part of the system (Rennie & Mason, 2004).

Another familiar example in course design might be the use of still images and photographs as learning resources. Anyone who has used the web a lot will be familiar with the frustration of clicking on a web page and having to wait for ages while an embedded photograph is downloaded, only to discover that, apart from looking attractive, the photograph does not really add anything to the text. Broader bandwidth might allow us to download these images faster, and web 2.0 technologies might allow us to share and manipulate the images with online colleagues, but frequently we are still trying to graft new technologies onto old ways of thinking about learning resources. (A photograph looks good in a book at this point—to break up a long piece of text—so I will stick a photograph onto the website at this point.) As with our example of videoconferencing, course designers need to fundamentally re-think the incorporation of web 2.0 learning resources into the ecology of the overall learning experience. Consider the following real life example that was shared with us during the preparation of this book:

> I'm a Programme Manager on the **** e-learning team. I have responsibility for the **** e-learning transformational projects and some new projects in the innovations strand on gaming and mobile technologies. I am interested in the use of social software in a learning and teaching context and have worked with wikis and blogs in an HE institution. I am an addict of flickr.com, my del.icio.us and have just started a combined photo/text blog.
>
> I have done most of my recent and most effective learning in a very informal space—on Flickr. I could have taken a formal photography course and did consider doing so. However for me, in this instance, a qualification is not the important outcome—it is the learning. Flickr can be used in so many ways—as a store for images, as a social space, and as a place to share content.
>
> But it's the incredible power of the social aspects in self-organised groups that can be very powerful. There are groups that provide information (e.g. what kinds of films work in which contexts, or technical aspects of cameras), discussions (e.g. around the work of a particular photographer or genre), workshops where assignments/activities are set (sometimes with deadlines) and where we can comment or critique each other's work, games, competitions, combining creative writing with images, how to use Photoshop, etc. etc....
>
> What I love to see is where people work collaboratively to produce images, where people tag each other's images, where people link up with other people with similar styles.
>
> Not only that, I have made friends who I meet virtually and some who I now meet physically.
>
> Flickr is my own university where I have choice and control. You could argue that Yahoo (who have taken over Flickr) could take that away from me and my fellow Flickr learners. Yes, they could, but we would just find another way to do it with some other software. It's not the software, or even the service (which I do pay for) but the community of people that support my learning.
>
> Lou
>
> p.s. After posting it I was reflecting further, and what I wanted to add, but never did, was that—in that environment/learning space I am both a learner and a teacher, because I think that whole issue of blurry, moving roles is so very significant with web 2 stuff. The other thing I nearly added was that I'm 46—just to highlight the fact that it's really not only young people using social software in that way. (Lou McGill, personal communication)

There are many significant issues that emerge from this e-mail—the exploitation of informal learning; the interest in the learning rather than the qualification; the learning aspect of online communities of enthusiasts; the blending of online and offline relationships; the blurring of distinctions between learner and teacher; the significance of age and gender in the digital divide. A key point for us, however, is the recognition of the almost serendipitous learning experience that is enabled by the flexibility of the media resources. A person can embark upon a simple task, not necessarily related to learning—such as taking photographs and sharing them online. This may lead to the establishment

of online links to similar enthusiasts, and to the development of communities of interest or communities of practice. As the person pursues a particular personal agenda (e.g. how to improve the quality of their photographs) the online interactions become more specific, perhaps seeking help, or being referred to useful sources of information, or 'dipping into' more structured photographic information such as an online course or manual. The learning activities, and to some extent the learning experience as a whole, is shaped by the learner, rather than a tutor dictating what they feel that the learner should know.

There are limitations to this of course. The appropriate resources may not always be available, or the community may not know of the existence of relevant resources. The danger of just-in-time learning as opposed to just-in-case learning is that the experience for the learner may be partial, incomplete, or at worst misleading. A pick-and-mix education requires that the learner is facilitated/encouraged to have an analytical approach to his or her own learning, and to view each learning activity in an appropriate context—quite a difficult task to perform on your own. For the course designer the trick is to maintain the flexibility of the pick-and-mix counter to allow optimum opportunities for self-directed learning, while at the same time providing signposts to appropriate learning resources, giving feedback on learning activities and tasks, creating opportunities for the learner to contextualise new information, and providing support by enabling knowledge to be articulated, shared, and redefined.

Returning to the earlier mention of Goldhaber's "attention economy", the prime advantage of being able to use diverse types of distributed media learning resources is that they can grab the attention of students and provide alternative ways to promote concepts or share knowledge in ways that learners find easy to assimilate. Notwithstanding our earlier scepticism about the value of being over-focussed on identifying an individual's particular learning style, it is clear that we all assimilate knowledge slightly differently at different times, in different subjects, and in different contexts. The drive to provide learners with a more flexible and more diverse range of alternative learning resources is largely a drive to contextualise learning and to shift the responsibility away from being solely teacher- or institution-led learning to a relationship in which the learner has a far greater responsibility and shared control of the learning process.

So how do we know that distributed learning and social networking using web 2.0 is not just inundation by another new technology? Anyone who has come back from a few days holiday to discover 450 e-mail messages has a right to feel circumspect about being swamped

by the addition of new technologies. For anyone who experienced the early days of the Internet and can remember the delight in receiving a new e-mail from a distant colleague, or remember the awe of discovering the almost sci-fi technology of computer conferencing, the choice of technologies available today might seem to be a gimmick-driven overkill. But we are sure that this has been said of every new technology, as the car replaced the horse-and-cart, or the telephone replaced the telegraph cable, so the lesson is to look closely at the advantages and disadvantages of new forms of digital learning resources—not simply as stand-alone applications, but in combination with the other learning resources being proposed for the ecology of learning. We also need to be aware of the gap between the potential of technologies and their actual use, and we will try to address this in chapter 5.

Several authors have drawn attention to the fact that when the learner is given a greater diversity of choices, there is a correspondingly greater emphasis placed upon the teacher to be responsive to individual learning needs and to some extent personalise the learning experience, rather than just planning and delivering a set body of knowledge. Significantly, Collis and Moonen (2001) noted that:

> Thus more-flexible learning for the learner brings more options to the instructor as well, although not always reflecting the instructor's choice but rather in reaction to the learner's choices.. (p 14).

Certainly there are significant challenges in offering a diversity of learning resources to students while still keeping the course manageable for the teacher and the institution. Equally, although there are concerns regarding the inappropriate grafting-on of new technology to courses without careful consideration of how this might alter other elements of the course, the response is not simply to do nothing, ignoring the potential benefits of new applications to help learners understand through the contextualisation of different resources. It follows that the process of matching new technology applications to satisfy particular learning outcomes and carefully selected learning activities means that we need to be aware of the strengths and weaknesses, the advantages and disadvantages of each of the new forms of distributed media resources. We will try to summarise these in the following chapter.

One final point; resist the temptation to go for technology overkill in course design simply because you can. As we have tried to emphasise, the introduction of new technology and distributed media to course design can provide some very effective ways to communicate with students or colleagues and share powerful resources, but there is no compulsion to use all of these media on the one unit or module.

Although the incorporation of distributed media can provide alternative ways of learning, and can even improve learners' access to learning resources that have previously been restricted to specific places (e.g. by the digitisation of print resources commonly held only in a specialist library) these should not be regarded simply as a replacement for the main face-to-face delivery of resources. Rather, they should be a well-designed improvement that extends the range of learning opportunities to all students, regardless of their geographical location or their ability to attend classes in physical terms. This means that the introduction of wikis, blogs, podcasts, discussion boards, and so on needs to be carefully balanced as part of a symbiotic learning system that brings benefit to the learners, rather than confusing, intimidating, or undermining their confidence. Consider the important learning activities, match them with the strengths of a particular distributed medium, perhaps provide some alternative ways to interact with key resources (e.g. an optional blog to reflect on the whole course, or a formative assessment that enables room for an individual specialisation) then consider carefully how all of your selected media function collectively. Be realistic; do not be afraid to go back to the drawing board if the cumulative results are not what you would wish for as a course designer.

CONCLUSIONS

The design of the course as a whole is more important than the choice of specific tools or media. The choice of media needs to reflect the learning objectives of the course/module, not dictate the objectives. After the learning outcomes have been established, start with the learning activities and tailor the choice of distributed media to your course team's agreed purposes. The modes of interaction between the learners, and between the teacher and the learners should influence but not dictate the selection of distributed media.

Although a range of distributed media encourages the adoption of a range of learning strategies, more diversified and personalised learning models are more time-consuming for the tutor to construct and maintain. They do, however, firmly shift the emphasis towards student-centred learning, and should encourage learner interactivity and higher levels of active participation in the learning processes.

Good course design needs to 'open out' learning opportunities with the incorporation of new technology, not create additional constraints for learners and tutors, so the symbiotic relationship between the different components in the learning ecology needs to be carefully consider.

4

THE TOOLS IN PRACTICE

In this chapter we look in detail at a wide range of web 2.0 tools, considering their advantages and disadvantages and describing an actual education application.

The following is a list of the tools discussed:

- blogs
- wikis
- podcasts
- e-portfolios
- social networking
- social bookmarking
- photo sharing
- Second Life
- online forums
- video messaging
- e-books
- instant messaging
- Skype
- games
- mashups
- mobile learning
- RSS feeds
- YouTube
- audiographics

RESOURCE: BLOGS (WEBLOGS)

A blog is a type of web page that is simple to create and disseminate and that is used as a form of online journal by millions of users. Some blogs take the form of regular diary entries that are posted in reverse chronological order (newest at the top) and deal with the enthusiasms of the user (the blogger) who will combine personal opinions with links to other related websites, blogs, and other online articles. The ability for other users to leave comments on blog messages means that themed discussions can be built up very quickly and supporting information (other web articles, images etc.) can be shared with people who have similar interests. There are a variety of different services available on the web that enable one to set up a blog, and although some use hosted software (located at another location on the Internet) while others require you to install the software on your own computer, they are all basically very similar. Due to their simplicity of use and their flexibility, blogs have become a fast-growing feature of educational establishments, corporate businesses, and the public sector (e.g. news media sources such as the online *Guardian* or *New York Times*).

The Educational Challenge

Blogging offers opportunities to extend discussion beyond the classroom, or can add value to the online community in blended and distance learning courses. The immediacy of blogging encourages a very fresh approach to sharing information. While some blog spots can simply be a rant on a personal soap-box issue, most are genuinely interactive sites where like-minded users can share information and ideas. The many-to-many mode provides a learning framework that allows bloggers to acquire information very quickly, and to report on what they have learned. This can be easily used by tutors to both extend the subject matter and reinforce key learning points. As with other digital media available over the Internet, the challenge is to somehow separate the useful information in the background noise of tens of thousands of self-publicising blog sites. In order to try to minimise unhelpful blog messages (or just plain vandalism) some institutions have established blog sites that are open only to registered members (students and staff) of that institution, but this may be argued as being counterproductive in seeking to engage with the global learning community while still not being able to ensure the quality of the posted messages.

Strengths of the Resource

As personal, even reflective online journals, blogs can encourage the skills of writing and self-expression. New resources and ideas can be easily added to the discussion for sharing and further feedback, so blogs make it easy to access new resources very quickly. A general strength is the ability to make connections with experts and opinions outside the classroom/institutional circle, and though this requires a level of trust and openness, supporting evidence can be included to contribute to the construction of a themed archive of information. This leads to the ability to categorise learning and relate it to the experience of the individual, encouraging the learner to contextualise and personalise the learning activities in ways that strengthen learning and build confidence. The ability to request automatic feedback information when a user links to their blog (trackback) allows blog authors to keep a record of who is accessing or referring to their blogs, and to receive some acknowledgement of the value of their blog site. Potential benefits are that blogs can be used to promote critical and analytical thinking on chosen topics, and that the combination of individual working and social interaction can induce critical self-reflection in a rich learning environment.

Potential Disadvantages

Although extensively used in education, there are mixed views about the added-value effectiveness of the medium to enhance learning over other forms of electronic communication. Most blog spaces are public, even when contained within the firewall of a single institution and this may discourage less confident students from contributing to the blog, much less using it to 'think aloud' and expose their thoughts to scrutiny. While a strength of the blog is its immediacy, this also means that any lack of attention in maintaining a regular flow of messages may lead to the abandonment of the blog by readers, and therefore by contributors. Detractors of blogs and other online forums maintain that being unseen makes it easier for students to become lurkers that are not engaging with the learning community; but careful attention to the teacher moderation of the discussion can alleviate this to a large extent. Similarly, although the lack of technical confidence in using new software can be addressed through careful induction training for new students, as can concerns about the development of writing skills, there needs to be a strong motivation on the part of users to want to communicate and exchange ideas. This requires thoughtful course design.

Key Points for Effective Practice

1. Start your own blog related to your own course or subject area. Start small, but without regular entries, your readers will quickly tire and move somewhere else if you allow too much time to elapse before the next entry.

2. Give your students a list of some active blog sites and get them to look at other blogs before they start to post their own comments so that they get a feel for the medium.
3. Ask students to start a blog about a subject of particular interest to the individual student, and relevant to the course. It may be more efficient to provide students with their own blog site and ask them to maintain it.
4. Setting formative or graded assessments that require students to read (and comment upon) each others' blog sites and summarise the issues can be a good way to focus the learners' attention on the essentials.

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Institution: University of East London: Masters Degree in Learning and Teaching in Higher Education—Applications of Learning Technologies

How It Works in Practice The module is an entirely online masters level course which can also be taken as a free-standing professional development course for associate membership of the UK's Higher Educational Academy. Participants are required to maintain individual blogs to record their learning experience and the actions they will take in their own work context. The blog is also used for informal feedback and allows the course designers to adapt the course over time to the needs of the participants. The objective in using blogs on the course is to encourage students to reflect on their professional practice.

A set of guidelines is provided about what should be recorded in the blogs; for example,

- Your impressions of online learning to date
- Your most and least valued learning on the course
- Skills you need to learn or knowledge you need to acquire

Students are also advised as to the ideal length of entries (500 words), time to allocate (1–2 hours), and the need for clarity in writing.

Lessons Learned The blogs provided very useful feedback on the course; for example, regarding technical problems students experienced with the VLE used on the course, the need for a summary of activities at the beginning of each section and the lack of advice on how to avoid losing blog entries.

Students' experience of using a blog proved to be as valuable as the course designers anticipated, and sample blogs have demonstrated an increasing depth of awareness, real ownership of the process, and communal sharing of ideas about applying blogs in various teaching and learning contexts.

URL: www.uel.ac.uk/sdel/staff_development/accredited_courses.htm

RESOURCE: WIKI

Wikis are collaborative, web-based sites for sharing text and other resources. The significant feature of wikis is their open editing function that allows users to jointly create the resource. The information on a wiki can be edited by any and all users but can be controlled by allowing/denying password access. Superficially a wiki may appear not dissimilar to any other web page, but the ease with which the wiki web pages can be edited means that the application is very much more versatile than a conventional static web page. The medium deliberately encourages participation in the joint creation of content, and this may take place either by revising existing text or by adding links to other web pages (within the wiki or to external websites) to extend the information provided. Through the participation of many authors constantly adding and revising information, the wiki can be effectively self-policed to reduce misinformation through inaccuracy or malicious intent. The

rapid growth of Wikipedia, the free, online, multi-lingual encyclopaedia, has helped to popularise wikis as an effective tool for generating and sharing large amounts of complex knowledge. The wiki has given real substance to the shift of the web towards web 2.0—that is towards an online environment in which users are encouraged to contribute and interact with other users rather than be the passive recipients of static information. Another web 2.0 characteristic of wikis is that they encourage a different attitude to information: whereas print suggests that information is fixed and authoritative; wikis create an environment in which information is seen to be fluid and flexible, and even more importantly, communally constructed and owned.

The Educational Challenge

Wikis allow asynchronous peer-to-peer interaction, and with the convergence of digital media a wiki can include images and sound, as well as text. There are several crucial aspects of wikis that would seem to make them ideal for use in an educational environment. First of all, wikis are subject driven rather than time driven and can be adopted as repositories of information on specialist areas of interest, such as an academic course, a research group, or a corporate organisation with participating workers scattered across the globe. The fundamental premise of wiki construction is a belief in the shared construction of knowledge, and this is consistent with a constructivist pedagogy and a focus on encouraging learner-centred content rather than teacher-generated content that students are expected to read and digest. Wikis are very flexible in being able to adapt how information is organised, so that new pages can be added, the layout changed, and sections deleted by interacting to reach a common consensus. Most wikis will allow users to compare the current version of the text with previous versions in order to refine the text, and also will enable each amendment/addition to be traced to individual users. This facilitates wikis being used to build collaborative projects while enabling the contribution of individual students to be credited.

Because of their potential for dispersing disinformation, wikis offer an ideal opportunity for educators to help students gain the skills to differentiate and make their own judgements regarding the accuracy of information.

Strengths of the Resource

Wikis enable the users to generate web pages easily and to alter/amend the text in collaboration with peers in order to create a mutually agreed version that is commonly accessible. Information is not fixed (as in print) but flexible and changeable to meet the needs of the community of users. Wikis can be closed (only an agreed group of users can change the text) or open (allowing any registered password-holder to change text). Generally a wiki requires very little technical skill or training in order to use it effectively, allowing the users to concentrate on the contents and the context rather than being distracted by the technology. The resource encourages users to work in groups, to develop peer-to-peer generation of information, and to contextualise knowledge by linking text to other relevant resources. The ease and accessibility of the resource encourages wikis to be utilised for building common agendas, problem-solving, brainstorming and creating complex reference lists of hyperlinked information. The medium is ideal for creating group cohesiveness and commonly agreed definitions or information sources among online communities. Wikis allow the structured organisation of resources, as well as asynchronous editing and participation by geographically distributed users, and can link with other digital resources including image repositories and e-portfolios.

Potential Disadvantages

Some critics have argued that the ease of access to wiki editing, and the unmonitored open environment may lead to a very low level of content and no contextual relevance. There has been an extended debate relating to the accuracy of wiki contents, but educators have argued the importance of using the opportunities of this medium to educate learners to make their own judgements regarding the accuracy of information. The potential complexity of a site that has many authors requires care in the construction of the navigation to ensure that users are able to locate and extend the information in a systematic manner and without repetition.

Key Points for Effective Practice

Although wikis lend themselves to collaborative writing by groups of users, this requires a clear focus and an element of self-discipline. This has several points of advantage over traditional forms of writing, including the ability to trace comments and feedback from other users, and simple linking with other digital sources of knowledge. As with other forms of educational resource, a little bit of pre-planning and some clear guidelines on its use, can really help students to make the best use of the resource. The flexibility of the wiki can allow users to create some very effective, dynamic knowledge bases and to share these widely for further comment, and these can range from the trivial (a shopping list or 'to-do' list) to the very complex (a personal e-portfolio)

or the activities of an inter-disciplinary research group. One particularly valuable use of a wiki is for a group to think about how information is organised, especially in a large or complex area, and to consider how to present it in small, hyperlinked chunks.

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Institution: UHI Millennium Institute, Scotland: Greenspace Research Initiative

How It Works in Practice Greenspace Research is an initiative established to investigate ways to improve the planning and construction of low carbon buildings. From the start, the team has used a wiki to share information between researchers and to make this information available to the wider community of interest, including funders, architects, and renewable energy experts. As the project has grown and other partners have been attracted to join the work, the wiki has been extended to provide links to the new activities. The nature of the work and the interdisciplinarity means that researchers do not need to be colocated or sharing information in real time, but allows a repository of information and links to be built up as different areas of the project progress at different speeds. Researchers (staff and students) are allocated an individual wiki identity and encouraged to develop a particular area of the wiki that is most relevant to their own interests. In common with many other wikis, this site is a combination of some pages of very well developed thinking and other pages that are more like rough notes or early drafts of information that will be extended and replaced in due course as the wiki evolves.

Lessons Learned

- The uses and potential of wikis are endless, but this flexibility can itself be a problem, so for the best results a wiki should have transparently clear navigation from the outset.
- Having established some simple hierarchy of layout to launch your wiki, it is best to populate it with a few simple examples of text, images, links and so on to set the tone and encourage others to contribute.
- Although wikis can be used as a one-way application to express your ideas, they work best when there is open, multiple authorship around a central theme, so be sure to express your initial ideas clearly (e.g. "This wiki is about...").
- In advertising your central theme, try not to be too specific because this might discourage other contributors from thinking creatively and might restrict their contributions to a relatively narrow area that soon runs out of steam.
- Be prepared to inject enthusiasm by contributing strategically to the wiki as the enthusiasm of others rises and falls over time.
- Be prepared to be flexible, encouraging others to modify what you have written if it is relevant, and also to add pages/sections of their own as the wiki spreads it wings and becomes a wider repository of useful information on the central theme and its various subdivisions of knowledge.

URL: http://wiki.greenspaceresearch.uhi.ac.uk/index.php/Main_Page

RESOURCE: PODCASTING

A podcast is an audio file which can be downloaded and listened to either on an iPod or MP3 player for mobile study or a computer or laptop for location-based study. Video podcasts (sometimes abbreviated to vidcast or vodcast) are also possible, and useful for referring to visual material or for accompanying PowerPoint slides. A blogcast is a blend of two tools: blogging and podcasting. The blog contains associated text and makes the podcast indexable by search engines.

The term *podcasting* is a combination of iPod (Apple Computer's portable media player) and broadcasting. As with the term *radio*, podcasting can refer to either the content or the process. Anyone with access to

the Internet and the capability of playing audio files on a computer or any portable media device can listen to podcasts.

The Educational Challenge

Podcasting represents an exciting challenge in that it empowers students to create content and take part in authentic learning projects. In other words, students can be active learners, not passive consumers of information. There are uses of podcasting for assessment, as part of e-portfolios and as collaborative projects. For example, students can conduct oral histories and create podcasts which are then used to present their work. Other examples involve students creating reports, historical interpretations, or scientific narratives.

Universities can make podcasts of special lectures, cross-cultural exchanges, guest speeches or other events and make them widely available to students. A number of institutions are using podcasts of all lectures as a way of providing access for certain kinds of disabled students, and incidentally for all students as a method of review or access to missed lectures. For distance or distributed institutions, podcasting offers a way of providing a richer environment than text for remote students.

The ready availability of podcasts on the Internet provides a resource for teachers to add global perspectives to their teaching through adding podcasts to their reading lists.

Strengths of the Resource

- The ability to listen to material multiple times
- Flexibility and portability (when and where to listen)
- Audio resources for blind and distance education students
- Varied opportunities for student generated content
- Relatively low cost, low-barrier tool for both students and teachers
- Ideal for short pre-class listening segments; for example, to address students' preconceptions
- Good use of 'dead time' while travelling or even walking between classes.

Compared with written text, the spoken word can influence both cognition (adding clarity and meaning) and motivation (by conveying directly a sense of the person creating those words). Audio is an extremely powerful medium for conveying feelings, attitudes and atmosphere.

Listening to an iPod or similar device in public is now common practice and hence socially acceptable. These devices have a tremendous consumer appeal that works to their advantage, particularly for younger students who may be impatient with traditional forms of teaching and learning. For distance students, the strength of podcasting lies in the potency of voice communication, which cuts through the dense text of the Internet and offers a human connection. Tutors, professors and librarians have already begun using podcasting for myriad training and learning situations, for example, podcasts of academic journal digests, and vodcasts demonstrating how to use software and operating systems.

Potential Disadvantages

- The shortcomings of audio in general appear to be in the area of providing complex or detailed information that needs to be heavily processed, logically deconstructed, committed to memory, or otherwise requires a great deal of concentration.
- It is less good at conveying detail and facts, in that we do not remember facts and figures from audio as easily as general opinions and arguments.
- Unlike text, audio is hard to browse and hence is a less efficient use of study time than text.
- Copyright is a potential issue if podcasts are available outside institutional firewalls. Searchability is also potentially problematic as numbers of podcasts increase. Likewise, who and where will podcasts be archived?
- In higher education podcasting has been widely identified with recording lectures and then uploading them as podcasts. Unfortunately this single use of podcasting in higher education has seemed to become its identity. This perspective needs to be changed quickly, otherwise podcasting will become just another dissemination medium.
- If a transcript of the podcast is called for—and it usually is, both for deaf students and because students request it for easier access or review—this adds to the workload in preparing a podcast.

Key Points for Effective Practice

1. A podcast must be professional and compelling—not the equivalent of shaky home videos. Nevertheless, good podcasting is about the message, the content, not the technology, which should be transparent.

2. Podcasts are great for conveying passion, personality and a limited amount of content. Use text instead if there is a lot of material to cover.
3. Like all technologies, podcasting should supplement and enhance, not replace. The aim should be to more deeply engage the student with the concepts of the course, not to convey basic course material.
4. Tips for keeping the learners' attention include: alternating speakers, surprising turns in the conversation, changing the pace, relating the topic to learners' experience.
5. Devise relevant, authentic, and fun projects for students to make their own podcasts. Integrate with assessment if possible.

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Institution: University of Leicester: A Pilot Study to Investigate How Best to Integrate Podcasts into Online Learning

How It Works In Practice This pilot study took place within a research project entitled Informal Mobile Podcasting and Learning Adaptation (IMPALA). The aim of the Impala Project is to deliver a testable and transferable pedagogical model of podcasting for student learning in higher education.

The podcasts were designed to supplement the online course material delivered on the online learning environment. The content consisted of updates on the online material, guidance on the weekly activities, and motivational items such as relevant news items and a fun item such as a joke.

Through a questionnaire students indicated the most important contributions the podcasts made to their learning. The most common response was that the podcasts provided a good introduction to the week's work. Students used them to organise and plan their work, and to stay focused on the course. They particularly liked the informal tone.

A useful finding from this study was the relation between podcasts for entertainment and for learning. The latter requires more focused attention and usually being in a static place in order to take notes, at least for the first time of listening.

Lessons Learned This study showed that podcasting helps students at a distance develop positive attitudes towards the teacher and brings informality and fun to formal learning. Nevertheless, it also helps students engage deeply with the learning material. Based on this study, the conclusions are that podcasts should be:

1. integrated into online courses with strong links to other activities and resources, especially if they encourage active learning or collaboration with others;
2. recorded fresh each week and include up to date news and feedback;
3. partly reusable and recyclable by some sections not being dependent on news or feedback from that week;
4. downloadable onto any mobile device offering MP3 playback as well as tethered computers; and
5. follow a radio magazine style rather than a lecture.

URL: www.impala.ac.uk

RESOURCE: E-PORTFOLIOS

E-portfolios are electronic collections of documents and other objects that support individual claims for what has been learned or achieved. In higher education, e-portfolios can be used at course, programme or institutional level. There is still lack of clarity about whether the term *e-portfolio* refers to the software, a particular presentation of the contents or all of the contents.

The Educational Challenge

The primary challenge is in engaging students to maintain their e-portfolios. This is partly because of the tension between institutional control and student ownership of the e-portfolio. When the institution hosts the software and insists on its use either for assessment or accreditation, the student does not take ownership of the process. The challenge here is for course designers to find a way of integrating the use of the e-portfolio into the course and to motivate learners in maintaining them and to support them in understanding the value of reflection. The e-portfolio software is still immature: there are a few proprietary systems but many institutions are developing their own software, sometimes using open source approaches.

Strengths of the Resource

At an individual level e-portfolios could become a portable, lifelong record of achievements, and hence there would be many advantages for individuals in maintaining them. Not only would they contain a certified record of educational qualifications, but they would be a comprehensive resource on which to draw for job interviews and promotions.

At a course level, e-portfolios can provide a strong impetus for students to take ownership of their learning. Given appropriate course design, e-portfolios encourage reflection on learning and hence a deeper approach to learning in which learners relate new material to concepts with which they are already familiar.

At an institutional or programme level, e-portfolios are ideal for encouraging students to set their own goals. The role of the teacher is to monitor students' progress toward the goals and to advise on strategies and resources that would help students meet their goals. The e-portfolio provides the focus for reviewing and discussing student work as well as the record of progress toward the goals.

Through peer and self assessment, e-portfolios can also be used to help students develop generic skills, such as reflective and critical thinking, the ability to evaluate and provide thoughtful responses to different points of view, and the capacity to assess their own work as well as that of their peers.

As a presentation tool, e-portfolios provide the opportunity for students to make a selection of their work for specific purposes, such as a class presentation or job interview. The e-portfolio software allows different levels of access, so for example, users can make some parts available only to themselves, other parts accessible by their teacher and still others can be open to their classmates or the Internet generally.

E-portfolios can also be used for group work and there is no impediment technically to a group e-portfolio. The reflective element of e-portfolios bears some resemblance to blogging and e-portfolios can contain podcasts as evidence of learning. In short, there is convergence amongst many types of social networking.

Potential Disadvantages

The communication element of e-portfolios begins to blur the boundary with a virtual learning environment and hence cause confusion or overlap in trying to establish a central discussion area.

If an institution uses e-portfolios primarily for assessment and accountability, students soon cease to engage with e-portfolios as a lifelong learning tool and view it purely as a course or degree requirement.

Even so, teachers often need to be persistent, skilled and dedicated to develop reflective practices in their students. E-portfolios can all too easily be used as a 'dumping ground' for odd bits of multimedia and other course work without the student engaging with the issue of what constitutes evidence of learning.

Because e-portfolio development on a technical level is still immature, there is a major problem with compatibility, as students change institutions, graduate and move to employment. Will e-portfolios be held by the individual or the institution? What happens as systems develop over time? It is hard to imagine that e-portfolios can really be a lifelong learning tool either at a technical or a personal level, given the speed of technical advance. Yet this is how their full potential will eventually be reached.

Key Points for Effective Practice

1. Use formative or iterative assignments with comments from the teacher and peers.
2. Relate reflective activities to the learning outcomes of the course and prompt students to think further about issues and consider other perspectives.
3. Provide examples of reflective writing so that students understand what reflection means in an academic context and build activities around them.
4. Make it fun by giving students the tools to control the look and feel of their e-portfolio (and templates for those without the relevant skills).
5. Integrate the e-portfolio with the users' online workspace in order to encourage regular updating and seamless moving from course to portfolio.
6. Provide scaffolding, advice and resources on what constitutes evidence of learning.

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Institution: Woodbury University, Los Angeles, California

Woodbury is a college of 1500 students with a main and a satellite campus, using Nuventive iWebfolio software.

How It Works In Practice Woodbury University has adopted the use of e-portfolios primarily as a tool for helping students to succeed in securing employment in a highly-competitive job market. Secondly, e-portfolios are used to assist faculty in assessing and improving the quality of their courses.

The university offers degree tracks in specific high-demand fields such as architecture, interior architecture, animation, fashion design, graphic design, business, information technology and marketing, all of which have a strong visual component. E-portfolios provide a consistent method for presenting skills and accomplishments in a much clearer way than paper portfolios do, and have the added advantage of being available for the employer to look at and study before or after the interview.

Woodbury is carefully creating structured templates and examples of best practices to guide student efforts in evaluating their own progress over four years and in creating the best possible vehicle for demonstrating their true worth to prospective employers.

Lessons Learned

- E-portfolios have helped the institution increase consistency in assessing student work through developing criteria that apply to disciplines and departments.
- Woodbury discovered that they needed to alter the curriculum slightly to make sure the right data were being generated in the classroom that could be used as a basis for assessing effectiveness.
- Faculty members have asked to have the software for their own use in presenting their work, research, interests and educational history.
- Top-down commitment from the institution is vital for embedding the use of e-portfolios for both students and staff.
- The institution needs to provide a sharp focus for the use of e-portfolios; otherwise they are simply an electronic filing cabinet.

URL: http://www.sun.com/products-n-solutions/edu/success/pdf/woodbury_university_success_story.pdf

RESOURCE: SOCIAL NETWORKING SUCH AS MYSPACE AND FACEBOOK

Social networking sites have become incredibly popular with young people almost overnight. They offer an interactive, user-submitted network of friends, personal profiles, blogs, groups, photos, music, and videos internationally. There are many such sites, some more specialised than others and some very much more popular than others. MySpace.com is a popular, general social network that allows members to set up unique personal profiles that can be linked together through networks of friends. MySpace members can view each others' profiles, communicate with old friends and meet new friends on the service, share photos, post journals and comments, and describe their interests. Facebook is another resource, which was originally developed for college and university students, but has since been made available to anyone with an e-mail address. People may then elect to join one or more participating networks, such as a high school, place of employment, or geographic region. At the time of writing, Facebook has just become the number one site for photos, ahead of public sites such as Flickr, and is the sixth most visited site in the United States.

Bulletins are posts that are placed on an online bulletin board for everyone on a user's friends list to see. Bulletins can be useful for notifying an entire, but usually a portion of the friends list (depending on how many friends are added), without resorting to messaging users individually. Some users choose to use bulletins as a service for delivering chain messages about, for example, politics, religion, or anything else. They have also become the primary attack point for phishing. Bulletins are deleted after 10 days. Some systems offer a Groups feature which allows a group of users to share a common page and message board. Groups can be created by anybody, and the moderator of the group can choose new members to join, or to approve or deny requests to join.

Users can browse profiles by age, interests, subjects being studied or names of friends. Then private messages can be exchanged or public notices left on their profile.

In most cases, users are allowed to customise their user profile pages by entering HTML into such areas as "About Me" "I'd Like to Meet" and "Interests". Videos, and flash-based content can be included this way. Users also have the option to add music to their profile pages.

The Educational Challenge

The rationale for using social networking in education is that teachers have a responsibility to give students skills in how to cope with the vir-

tual relationships and to understand what friendship means in the new social culture created by the web 2.0 environment. It is a well-known fact that the social areas of forums used in higher education receive more messages and visits than the educational conferences. Since the introduction of educational forums in the 1990s, educators have begun to realise that social communication is an important aspect of learning.

Another rationale for the use of social networking in education is the opportunity it provides for student creativity, both in self-presentation through profiles, and in artistic presentation through photos and music additions to their profiles. In short, the use of social networking in education is an acknowledgement of the social change this phenomenon has spawned. As with the social forums in educational conferencing, networking sites give students the feeling of belonging and the chance to explore their own identity.

Strengths of the Resource

As with other web 2.0 tools, ease of use explains much of their success. Social networking is an asynchronous tool and has many of the same advantages as educational forums: allows flexible access and keeps a written record of communications. With social networking, virtual connections often lead to real, face-to-face connections.

Many observers claim that these types of networks are ingrained in Internet practice now and are here to stay, though the formats will change. The essence of them is the idea of joining online communities and being able to participate in them.

Potential Disadvantages

The volatility of the youthful user base means that social network sites are unusually vulnerable to the next 'new new' thing. As quickly as users flock to one trendy Internet site, they can just as quickly move on to another, with no advance warning. Already there is evidence of this in the rise of Facebook compared with MySpace.

On a more serious note, there is evidence of teachers and employers viewing the profile of a student or prospective employee, seeing a very different persona, which has had negative consequences.

There are also access issues due to the pages being designed by users with little HTML experience. A very large proportion of pages do not satisfy the criteria for valid HTML or CSS laid down by the World Wide Web Consortium. Poorly formatted code can cause accessibility problems for those using software such as screen readers. They can also freeze up web browsers due to malformed CSS coding, or as a result of

users placing many high bandwidth objects such as videos, graphics, and Flash in their profiles (sometimes multiple videos and soundfiles are automatically played at the same time when a profile loads).

Finally, social networking has become an addictive pastime for many young people as they keep monitoring their site for new activity or comments. Students even do this during lectures and seminars, a practice that has led at least one American university to ban laptops in the classroom.

Key Points for Effective Practice

- Rather than blocking students from using social networking in the classroom, teach them how to discern when, where, and for what purpose technology may be appropriate or inappropriate.
- Offer opportunities for students:
  - to discriminate content on social network sites,
  - not to accept profiles at face value,
  - to realise that in addition to one's peers, others—marketers, university authorities, law enforcement personnel can and do access profiles.
- Provide opportunities for discussion about profiles—how to construct them and what it means to 'present' oneself online.

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Institution: University of Pennsylvania Course: 'The Networked Life'

How It Works In Practice The course called 'The Networked Life' looks at how our world is connected—socially, economically, strategically and technologically—and why it matters. The course designer and teacher uses Facebook to teach concepts of social networking, demonstrating a more effective appropriation of Net Generation lifestyle to foster critical thinking among his students. In this course, which focuses on the social aspects of computer networks, students create their own

Facebook profiles and investigate the connections among their peers, which leads them to deep questions about how social networks tend to coalesce around a small number of privileged members.

Lessons Learned Students are encouraged to bring to the attention of the course teacher articles, demos, web pages, news events, and other materials that are relevant to course topics. Extra credit will be given if the suggested material is used in the course. The course has three mandatory participative experiments in addition to readings, lectures and assignments.

The lead professor runs regular feedback sessions at the end of the course in order to gather experiences from students which could improve the course.

URL: http://www.cis.upenn.edu/~mkearns/teaching/NetworkedLife/

RESOURCE: SOCIAL BOOKMARKING

In a social bookmarking system, users store lists of Internet resources that they find useful. These lists are accessible either to the public or to a specific group, and other people with similar interests can view the links by category, tags, or even randomly. Some allow for privacy on a per-bookmark basis. Users categorise their resources by the use of informally assigned, user-defined keywords or tags. Most social bookmarking services allow users to search for bookmarks which are associated with given tags, and rank the resources by the number of users which have bookmarked them. Many social bookmarking services also have implemented algorithms to draw inferences from the tag keywords that are assigned to resources by examining the clustering of particular keywords, and the relation of keywords to one another.

The increasing popularity of social bookmarking and the growth of competitor sites have led to services extending their facilities to offer more than just sharing bookmarks, such as rating, commenting, the ability to import and export, add notes, reviews, e-mail links, automatic notification, feed subscription, web annotation, and creating groups and social networks. Since the classification and ranking of resources is a continuously evolving process, many social bookmarking services allow users to subscribe to web feeds (see RSS) based on tags, or collection of tag terms. This allows subscribers to become aware of new resources for a given topic, as they are noted, tagged, and classified by other users.

Social bookmarking sprang mainly from academic roots and a personal desire to share links and bookmarks with like-minded individuals. Collaborative bookmarking has arisen predominantly from the organisational desire to glean information or knowledge from workers with the hope of storing and retransmitting that knowledge to other workers, particularly at the time that the knowledge or information is needed. Collaborative bookmarking is as much about linking people together as it is about linking people to relevant websites.

Tags are one-word descriptors that you can assign to your bookmarks. They are like keywords but are non-hierarchical. You can assign as many tags to a bookmark as you like and easily rename or delete them later. Tagging can be a lot easier and more flexible than fitting your information into preconceived categories or folders.

Collaborative tagging is regarded as democratic folksonomy metadata generation, i.e. rather than an individual controlling the metadata or tags about an article or other content, metadata is generated by both the creator and consumers of the content. This caters to the long tail of search terminology by deliberately introducing minority keywords and removes the restriction placed on the content of metadata by a controlled vocabulary. Although a collaborative tagging system is more likely to generate meta-noise (i.e. superfluous metadata), this adds to the usefulness of the metadata as it continues to cater to the 'thin end' of the long tail of system users.

The Educational Challenge

There are a number of ways in which social bookmarking can be useful in teaching and learning. Groups can set up a network to share resources they find over a period of working on a joint project. Experts can share their bookmarks with novices. Individual students can share their resources with their peers. Managing the mass of information on the Internet is extremely difficult and social bookmarking is a simple way for sharing the burden.

Social bookmarking is an ideal tool for research as it allows the user to keep track of all source materials and commentaries found online. The researcher can even tag the bookmarks with asterisks to indicate quality or usefulness.

In browsing the web, users finding a podcast they want to mark for later listening, can simply add it to their bookmarks.

Users of del.icio.us, a popular social bookmarking site can save interesting websites and add a bit of commentary to create a lightweight linklog. This can then be added to the user's blog or website.

Strengths of the Resource

Ease of use is again an important feature of social bookmarking, as it is with most of the other web 2.0 tools described in the book. An additional benefit is that the user's bookmarks can be accessed from any machine, whether at home, at work, in a library, or on a friend's computer. There is nothing to download or install.

Bookmarks can be shared publicly, so your friends, co-workers, and other people can view them for reference, amusement, collaboration, or anything else. Similarly, users can find other people who have interesting bookmarks and add their links to their own collection. Additionally, as people bookmark resources that they find useful, resources that are of more use are bookmarked by more users. Thus, such a system will "rank" a resource based on its perceived utility. This is arguably a more useful metric for end users than other systems which rank resources based on the number of external links pointing to it.

Social bookmarking has several advantages over traditional automated resource location and classification software, such as search engine spiders. All tag-based classification of Internet resources (such as websites) is done by the users, who understand the content of the resource, as opposed to software which algorithmically attempts to determine the meaning of a resource. This provides for semantically classified tags, which are hard to find with contemporary search engines.

Potential Disadvantages

There are drawbacks to tag-based systems:

- There is no standard set of keywords (also known as controlled vocabulary).
- There is no standard for the structure of such tags (e.g. singular vs. plural, capitalization, etc.).
- Mistagging takes place due to spelling errors.
- There are tags that can have more than one meaning.
- There are unclear tags due to synonym/antonym confusion.
- Some users provide highly unorthodox and "personalised" tag schemas.
- There is no mechanism for users to indicate hierarchical relationships between tags (e.g. a site might be labelled as both *cheese* and *cheddar*, with no mechanism that might indicate that *cheddar* is a refinement or subclass of *cheese*).

Social bookmarking can also be susceptible to corruption and collusion. Due to its popularity some users have started considering it as a tool to use along with search engine optimization to make their website visible. The more a web page is submitted and tagged, the more chances it has of being found. Spammers have started bookmarking multiple times the same web page or each page of their website using a lot of popular tags, hence obliging the developers to constantly adjust their security system to overcome abuses.

Key Points for Effective Practice

Use a folksonomy-based tool for research and take advantage of the insights of other users to find information related to the topic you are researching, even in areas that are not obviously connected to the primary topic. Develop activities for students in which they have to consider how information is or should be classified.

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Institution: UK Open University: Technology Course on Robotics

How It Works In Practice The course designer has added a feed from one of his del.icio.us tags, which allows him to get robotics related news items onto the course homepage without having to negotiate any institutional systems. The Robot newsfeed actually uses a del.icio.us linkroll Javascript include to pull in a javascript->html rendering of his last three del.icio.us bookmarks tagged as 'course news'. This means he can now add links to robot related news stories very easily indeed.

Why does he bother? He anticipates that the links will add an element of currency that might contribute to students' experience of the course in several possible ways, such as:

- by providing content that is up-to-date, and might potentially seed forum discussions;
- by adding a bit of color and a wider context to the course material, especially for students who do not participate in forum discussions.

Lessons Learned The course author is aiming to get students to bookmark and tag the links themselves as part of the assessment process and would like to work this into the course learning outcomes, thus

using social bookmarking to help students break away from the model of using private folders to organise information. Social bookmarking creates a true web of resources and connections, one that is not limited to individuals and their folders but represents the interests and judgements of a community of users.

URL: http://blogs.open.ac.uk/Maths/ajh59/004638.html

RESOURCE: PHOTO SHARING, FLICKR

Photo sharing is the publishing or transfer of a user's digital photos online, thus enabling the user to share them with others (whether publicly or privately). This functionality is provided through both websites and applications that facilitate the upload and display of images. The term can also be loosely applied to the use of online photo galleries that are set up and managed by individual users, including photoblogs. While photoblogs tend only to display a chronological view of user-selected medium-sized photos, most photo sharing sites provide multiple views (such as thumbnails, and slideshows), the ability to classify photos into albums as well as add annotations (such as captions or tags) and comments. Some photo sharing sites provide complete online organisation tools equivalent to desktop photo-management applications.

Flickr is currently the most popular site for photo sharing and, like other web 2.0 applications, has added features from other tools to make an online community platform. For example, the addition of tags which allow browsing of photos by categories has fuelled its popularity and the service is widely used by bloggers as a photo repository. It also has a lesser-known feature that has many potential uses for teaching and learning: the ability to add annotations to an image. Another feature is the facility for setting up groups which can either be public, public (invite only), or completely private. Every group has a pool for sharing photos and a discussion board for talking.

Flickr provides rapid access to images tagged with the most popular keywords. Because of its support for user-generated tags, Flickr repeatedly has been cited as a prime example of effective use of folksonomy. It was also the first site to implement the use of tag clouds which are a visual depiction of content tags used on a website. The more frequently used tags are depicted in a larger font or otherwise emphasised, while the displayed order is generally alphabetical. Thus finding a tag is possible by either alphabet or by popularity. Selecting a single tag within a tag cloud will generally lead to a collection of items that are associated with that tag.

Flickr also allows users to categorise their photos into sets or groups of photos that fall under the same heading. However, sets are more flexible than the traditional folder-based method of organizing files, as one photo can belong to one set, many sets, or none at all. Flickr's sets represent a form of categorical metadata rather than a physical hierarchy. Sets may be grouped into collections and collections further grouped into higher-order collections. Images can be posted to the user's collection via email attachments, enabling direct uploads from many camera phones and applications with email capabilities.

Privacy can be managed by setting each photo according to one of the following:

- *Privacy level*, which determines who can see the image
- *Usage license*, so copyrights are protected
- *Content type*, flags photos as either photos, artwork/illustrations, or screenshots
- *Safety level*, so other members only see images within their specified comfort zones

The Educational Challenge

Flickr contains imagery that can be used in every aspect of teaching to help develop visual literacy skills, and in the process, help students understand intellectual property rights, while contributing greatly to a host of learning applications. Every subject area can be enlivened by the appropriate use of images.

Flickr clustering allows clustering of ideas so that a particular word can be clustered in numerous ways. This feature can be the focus of a useful educational game whereby students list all the related tags (categories) that they can think of for a particular concept. Then, using the clustering facility, they analyse the different ways the word has been used by people to tag different concepts. This type of inference thinking helps to broaden the students' thinking and helps them to think in terms of connections instead of one isolated term. They have to compare and contrast tags.

Strengths of the Resource

Though there are many ways of using images currently within web-based teaching material, Flickr is a lightweight and simple tool that people can use to quickly add images to their courses.

Flickr has increasingly been adopted by many web users as their primary photo storage site, especially members of the weblog community. In addition, it is popular with Macintosh and Linux users, who are

often locked out of photo-sharing sites because they require the Windows/Internet Explorer setup to work.

Staff members who have a blog prefer to host their personal photos on a site like Flickr rather than on their institutional website.

Potential Disadvantages

Photo sharing is open to the problem of inappropriate and sexual images being easily available. While some people feel that this rules out sites such as Flickr for education, others think that a better approach is to discuss the issue directly with students. It helps them to think critically about something that is going to be a commonplace experience for them on the Internet. Despite the use of filters, students are going to encounter material that adults deem inappropriate. It is the job of educators to teach them how to deal with that. And unfortunately, blocking sites does not teach students what they need to know.

Key Points for Effective Practice

Use the notes facility of Flickr to encourage students to comment on an image, prompted by specific questions from the instructor. The students can then actively engage with the image and think about and discuss specific aspects.

Devise activities for students to create their own image sets and slideshows, and to make presentations to their peers. They can either use their own photos or take advantage of Flickr's tagging system to find images to use as content.

Develop activities in which students have to browse tags and set requirements to analyse how they have been used.

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Institution: Fashion Institute of Technology, State University of New York

How It Works in Practice This is an online course for distance students who use the commenting function in Flickr to add hot-spot annotations

to an image. Once an image has been published on Flickr, users can draw hotspots on the image and then attach a note to those hotspots. Whenever a user moves the cursor over any of the hotspots, the annotations appear. In this case the subject is art history and Flickr allows students to annotate famous paintings by attaching layers of notes and markings directly on the image. If asked to find the symbolism in a 15th century Flemish painting, students can create boxes around the portions of the painting they want to talk about and put comments on the picture. Other students can then mouse over the same picture and see the annotations or pull the mouse back and see the entire painting. The process can make grading and evaluating students a bit more complex, but this is a minor drawback because the visual dimension provides a more interesting, fun and useful way to learn. It breaks down the classroom walls and creates an entirely new collaborative experience for distance students.

Lessons Learned "The problem when you teach online is that you can't, for example, point to a part of a painting in the way you would in a face-to-face classroom," one instructor says. "So it occurred to me that I could use Flickr's annotation function to have students engage more directly with the work of art itself."

In addition to the use of Flickr, students enrolled in the e-learning courses have access to the other online services: bookstore, library services, online library, technology support, tutoring.

URL: http://www3.fitnyc.edu/historyofart/bigideas/caa%20article.pdf

RESOURCE: SECOND LIFE

First opened to the public in 2003 and designed by Linden Lab in California, Second Life is a 3-D multiuser virtual environment. It is a user-defined world, owned by its residents, in which people explore, communicate, and do business. Well over 7 million people around the globe inhabit Second Life. More surprisingly, Second Life supports a fully integrated marketplace in which transactions involving millions of US dollars a month are transacted. The residents create and retain intellectual property rights on their own virtual goods and services.

Given these components, it would not appear to have significant educational potential. However, the ease with which users generate content appears to be a particular draw for Second Life in a range of educational projects, especially business and marketing programmes. Each user creates an avatar and personalises it to represent them in this virtual world. Avatars walk, fly and gesture, and may resemble the user's

real-world appearance or appear very different. They can communicate by chat, share files and documents, and eventually voice teleconference. This kind of virtual presence helps the development of community especially for distance education. Second Life is not a game. It has no goal, and most resources are not restricted. Characters move through space or breathe water, and they never age or die. Massively multi-user virtual environments such as Second Life are a new type of collaborative workspace.

Adepts are convinced of the future applications of this first example of a mass market virtual reality. In fact, many see Second Life as taking web 2.0 into web 3.0 or even web 3.D!

The Educational Challenge

Second Life provides a unique and flexible environment for educators interested in distance learning, computer-supported cooperative work, simulation, new media studies, and corporate training. Using Second Life as a supplement to traditional classroom environments also provides new opportunities for enriching existing curricula. For distance education, Second Life offers an opportunity to weave in real-time activities.

Besides improving the quality of distance learning, educators are finding that Second Life is a good way to introduce international perspectives. Students from around the world can join in discussions and work on team projects. Unlike online forums, students in Second Life cannot 'lurk'. Their presence is visible to all. The quality of interaction in Second Life is what distinguishes it from online forums and online games—it does not replace face to face communication, but it is more engaging than text-based communication.

Second Life provides an opportunity to use simulation in a safe environment to enhance experiential learning, allowing individuals to practice skills, try new ideas, and learn from their mistakes. The ability to prepare for similar real-world experiences by using Second Life as a simulation has unlimited potential! Many predict that real and virtual worlds will merge, and we will become used to the 'Metaverse' as a part of our everyday life. More and more people will work in virtual worlds. Instead of frustrating hours in traffic jams to reach the workplace, work will take place in a virtual office, perhaps located at the other side of the world.

Strengths of the Resource

The wide availability, global reach, and low barrier to entry are the essential qualities that make it a useful educational tool. It offers

opportunities to use simulation and the immersion experience is very powerful.

Private islands provide the ability to create secure intranet spaces with restricted membership for students and faculty, or islands can open up to be accessible to everyone in Second Life.

Second Life has a Help Island with volunteer mentors to help students navigate, change their avatar's appearance, learn how to build, and so on.

Potential Disadvantages

While Second Life is relatively easy to use, without a solid foundation, students can struggle while trying to acquire the navigational skills necessary to complete assignments. Frustration can lead to disengagement and then it is hard to encourage students to re-engage. The benefit of being entirely user-driven has the disadvantage that it depends entirely on users to make it a learning experience. It is essentially a blank space.

At the moment, Second Life supports only text chat. Many residents interested in serious business and educational applications consider the lack of a native voice chat system a significant disadvantage and use Skype conferences to talk to other avatars.

While Second Life is a great first step in virtual world building, the environment looks cartoonish and there are rendering artefacts due to the need to balance realism with bandwidth and computing resources. Adepts predict that in a few years computer generated virtual worlds for end users will have photorealistic visual quality.

The appropriateness of some Second Life content for students is an issue. As with the web itself, there is a range of seedy activity available to users: gambling, stripping, and virtual prostitution are easy to find if you look for them. Partially because of that, Linden Lab has set up a teen version of the world, known as Teen Second Life.

Key Points for Effective Practice

Use the many available tutorials and Second Life support material (available in the references below) to help students become proficient users. Second Life provides an opportunity to think outside the box, to practice the true constructivist principles, and to empower students to learn rather than be taught.

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Institution: Ball State University: Freshman-Level Composition Class

How It Works in Practice Ball State University used Second Life to teach an English class focussed on writing for academic research in 2006. The course was a hybrid course with at least half of the class time spent online. The teacher applied the fundamentals of rhetoric to the research process, introducing students to methods of research. The many communities of Second Life provided students with rich opportunities for observation, research and interaction with other cultures, as well as many interview subjects for use in their writing.

By creating online versions of themselves, known as avatars, the students have visited ancient cities built in Second Life and have toured foreign communities, learning as they interact with local residents. The program provided transcripts of conversations, allowing students to incorporate these relationships into their research papers.

Lessons Learned In general, a student's ability to adapt to the Second Life environment was more dependent on attitude than technical skills. One major complaint about online courses is that there is no sense of community but Second Life changes that because by using an avatar, students feel as though they are there because they can 'see' and 'talk' to classmates in real time. Second Life was conducive to collaboration in terms of allowing all of the students to work successfully as a group. Second Life became a part of users' lives. They made friends, explored, and shared their work.

URL: http://www.educause.edu/ir/library/pdf/ELI07216.pdf

RESOURCE: ONLINE FORUMS

Online forums are also commonly referred to as computer conferences, web forums, message boards, discussion boards, (electronic) discussion groups, discussion forums, bulletin boards.

A forum is essentially a website composed of a number of threads. Each thread entails a discussion or conversation in the form of a series of posts written by the members. These threads remain saved on the forum website for future reading indefinitely or until deletion by a moderator. Most forum software allows more than one forum to be created. Threads in a forum are either flat (posts are listed in chronological order) or threaded (each post is made in reply to a parent post).

A forum administrator typically has the ability to edit, delete, move or otherwise modify any thread on the forum. Administrators also usually have the ability to close the board, change major software items, change the skin, modify the board, ban, delete, or create members. Moderator privileges are often able to be delegated to other forum members, for example, to students. Forums, unlike wikis, do not allow people to edit other's messages. The moderator or administrator is able to remove messages in case they contravene institutional regulations.

Unlike blogs, forums typically allow anyone to start a new discussion (known as a thread), or reply to an existing thread. While many blogs allow other students to post comments in reply, the number of people who can create entries is normally very limited, and the range of viewpoints and beliefs on a blog is also limited. When blogs are used on a course as well as online forums, students may experience a conflict regarding where to post their reflections or comments.

The Educational Challenge

Designing engaging and effective online activities is not easy, and while some generic types have begun to emerge in the literature, they are not always applicable across all disciplines.

Creating a sense of community amongst learners is a delicate matter, and the necessary trust can be undermined by one student posting unpleasant messages. There is no doubt that when a sense of community has developed, students feel that they learn more and benefit more from studying the course.

Online discussions can easily become disjointed with points being made in isolation from others and questions that have been posed never being answered. Perhaps worse, they can often remain superficial. Effective course design and good online moderating can help, but neither can guarantee high quality discussion.

Obtaining equable participation from all students is the ideal, but it is rarely reached. There are too many extenuating circumstances which account for the fact that most online forums are dominated by a sub-set of the students, though messages may be read by many more.

Strengths of the Resource

1. It is convenient in time and place. Flexibility and convenience for the learner are paramount especially if they have other commitments. Online forums are accessible 24/7.
2. Compared with face-to-face discussion, it is more equable—especially for quieter students. More students participate online possibly because, compared with traditional classroom settings, it minimizes fear and intimidation in front of colleagues.
3. Details of the discussion remain usually throughout the course. One can backtrack and reread a message.
4. The asynchronous nature allows time for a considered response. This leads to a more profound discussion of ideas than is usual in a face-to-face tutorial.
5. Online forums allow the more reflective student the opportunity to participate. In general students are more likely to express opinions and comment on each other's remarks than they would be in a lecture.
6. The lecturer is seen as a moderator, one of the group, rather than a teacher. Nevertheless, for many students, online teachers are more accessible than those in face-to-face lecture courses.
7. Online forums allow for discussion with students from other class groups.
8. The teacher can reply once to a query and all students can benefit. Online forums can also reduce time spent on other administrative course management duties.
9. Online discussion provides an opportunity for students to rehearse information and to formulate their thoughts, which is ideal practice for assessment.

Potential Disadvantages

In many ways, the advantages of online forums are also disadvantages.

1. The asynchronous nature of the medium provides flexibility, but also requires more motivation and self-discipline from students to log on and participate. It is all too easy for busy students to put off interacting online.
2. While the text-only nature of the communication benefits shy students or those who don't normally participate in face-to-face discussions, many others find online forums off-putting because they are unable to read face-to-face nuances such as body language.

3. The support for reflective messages means that there is no immediacy of response. Similarly, it is difficult to get an indication of depth of feeling in an online response.
4. Some students resent the fact that even the non-contributors get to benefit through reading messages.
5. While threading of messages is usually helpful, discussion threads can become confused, allowing discussion to go off-track.
6. The permanency of the record is also a disadvantage in that some students are reluctant to post a message knowing that it will remain throughout the course.
7. Collaborative work becomes very difficult to bring to a conclusion when some students have not contributed. It is difficult to interpret silence!

Key Points for Effective Practice

- Create a collaborative community spirit by requiring shared activities between students and teachers, ensuring constructive criticism, maintaining motivation, and providing assessment tools with timely feedback.
- Technical support services must be made available to train and provide ongoing support for both learners and instructor.
- Provide related links and resource listings to support discussions.
- Quantity of forum postings alone is not an adequate indicator of community development. Forums exhibiting a high volume of communication traffic do not necessarily equate to the establishment of a strong sense of community. Essentially, forums exhibiting a greater percentage of learner interactions (learner-learner and learner-content) demonstrate a stronger sense of community.

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Institution: The Open University: Masters Programme in Online and Distance Education (MAODE)

How It Works in Practice The MAODE is a totally online programme for students all around the world. It has been using online forums since

the mid-1990s and various innovative practices have been tried in order to improve student learning in general and to exploit the possibilities of online forums in particular. About 10 to 15 students are assigned to an online tutor, and each course will have three to seven different tutor groups, depending on the number of students enrolled. Students are given access to all the forums of all the tutor groups, though they are expected to contribute primarily to their own group. This allows students with time and motivation to observe discussions in other groups, but strategic learners or time-poor students know that they need only read and contribute to one forum.

Collaborative and individual activities are at the core of the course design method and tutors are very experienced at encouraging online interactivity. What is also significant for online participation is that both continuous and final assessments are usually built around online activities and students are encouraged to quote from online messages and use ideas from the online discussions in their assignments.

Extensive feedback has been obtained on the programme over the years and much is known about what does and does not work. The students are mostly in full-time employment as teachers or trainers, and are generally more sophisticated as learners themselves than students in other disciplines. The quality of discussion in the online forums is generally very high, though not all students participate equally. There are always champions of the online discussions who post regularly and others who merely lurk or who do the minimum. On the whole, those who contribute more, benefit more from the courses.

Lessons Learned

- Simply providing the opportunity to interact does not guarantee good interaction; most learners need a structure and a task within which to orient their contributions.
- Students using English as a second language may not be as articulate and as willing to take part in online interaction as mother tongue users.
- Grammatical and spelling mistakes are an accepted fact of online interaction, even amongst English speakers, and comprehensibility is the major focus in reduced bandwidths not correctness.
- Integrating some real-time events, using audiographics, Google or text-based chat, is welcomed by many students, especially when organised by students for project work or self-help.
- Archiving messages regularly helps to move students on to the next unit or activity.

- The time taken to participate in online interaction, especially collaborative activities needs to be factored in to the overall student study time (and probably means a reduction in the amount of material to be studied).
- The structure and timetable imposed by collaborative learning makes the course very much less flexible than traditional distance education.
- The schedules of busy professional people who are attracted to this programme mean that holidays, family crises, sudden job commitments etc. are a major hindrance to regular, sustained participation in group activities;
- Ironically, students definitely experience more guilt and stress about failing their colleagues in collaborative work than their tutors in individual work!

URL: http://iet.open.ac.uk/courses/postgrad/index.cfm

RESOURCE: VIDEO MESSAGING

There are a range of tools for easy videoconferencing and file sharing amongst a small group of people on the web. Windows Messenger is one example and FlashMeeting, designed by the Knowledge Media Institute at the Open University, is another. One of the benefits of these systems is that they are very easy to use from a pc over the web and do not depend on expensive equipment, support staff or installations. In this sense, they are more equivalent to instant messaging than to videoconferencing.

As with other web 2.0 tools, it is hard to find a term to describe these tools generically. This is partly because they are evolving so quickly and adding the features and functionalities of other tools, and partly because some names of specific tools come to stand for the whole activity; for example, iPods and podcasting. In this case, what we have called video messaging has characteristics of desktop videoconferencing, of whiteboarding, of instant messaging, of Voice over IP (VOIP) and of streaming video. As soon as one tool becomes popular, other very similar ones spring up overnight.

The Educational Challenge

These tools are ideal for small group tutorials and seminars where students are geographically distributed. Of course, they are real-time tools, but in the case of FlashMeeting at least, it is possible to record and play back a session. This is obviously ideal for students who are unable

to join the real-time session. Most of these tools allow only one speaker at a time, thus eliminating any overlaps and confusions. However, the other participants in the group who are not broadcasting may send text messages. FlashMeeting also includes other ways to communicate, such as shared URLs, emoticons, and voting (all things that have little impact on the bandwidth), that can be used while the main broadcast is streaming. The later versions of FlashMeeting also include whiteboard and file upload/download features.

Flashmeeting is already being extensively used by schools in Europe, the United States, and Asia, as it is free to use and offers a secure environment. FlashMeeting is ideal for pupils practicing their language or communications skills and for joint project work in many curriculum areas both on campus and in distributed classrooms.

Strengths of the Resource

Video messaging is a cost effective way of bringing an international partnership to life as it relies on a basic webcam rather than expensive purpose-built video conference equipment. Video interactions are much richer and more complex than text-only ones, particularly in individual desktop contexts where a number of other parallel communication forms and activities can be freely used alongside the audio-visual channel, in support of, or even antagonistic to it. For example, students can ask questions via instant messaging, or use text chat rooms, shared browsing, virtual whiteboards, and so on, whilst others are speaking over the main video channel.

Potential Disadvantages

Some of these tools are blocked by firewalls e.g. Netmeeting, but FlashMeeting has been designed to be firewall-friendly. Broadband is necessary for a video connection, so some students accessing from home will be disadvantaged if they do not have a high speed connection.

Key Points for Effective Practice

Devise peer-to-peer activities that benefit from real time interaction, so that students can experience both receiving and initiating live video.

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Institution: A Well-Respected Course on Animation Operated by a Prominent U.S.-Based Company

How It Works in Practice Over a six-month period a group of international students studying animation attended 99 live, online study group events amounting to around 120 hours of live broadcast meeting time. Some meetings were very large, with up to 34 participants, but the average participation was 10 students. These events were entirely self-organised, policed and managed by the student community. Some students emerged as natural mentors, and the group exhibited substantial supportive, mutually facilitative roles. The use of video meetings on this course was not part of the original design, but was instigated by one of the students. Despite the lack of formal course support for the activity, students operated the events very successfully, providing peer support for each other.

Lessons Learned The contrast between formal and nonformal models of learning is highlighted by this example. With the advent of newer web technologies that enable the Internet learner to seek content and assistance outside a formal program of learning, modes of non-formal work and learning are becoming increasingly interesting.

No external incentives, positive or negative, were provided to the students for the use of this system, and yet over the six-month sample period something like 100 different students spoke online to each other for 120 hours, with 27 of them attending more than 10 different events. They managed this substantial community themselves, taking on appropriate roles within meetings as required and supporting each other's work. Overall, the surprisingly symmetrical patterns in the log data clearly support the users' subjective experience that the events are remarkably peer-to-peer, and shared very evenly within this large community. Even without formal external drivers the students formed and managed a powerful learning model.

It may well be that the subject, animation, is particularly well suited to peer-critique learning, and indeed it does seem that this substantial community has made strikingly good use of it. The students said in interviews, and demonstrated through each event, that live online meetings are extremely powerful in helping them with their work in this non-formal, at-a-distance learning context. The analysis of the log data also clearly illustrates a substantial and longitudinal mutual support and shared use of each other's time and effort.

URL: http://kmi.open.ac.uk/publications/pdf/kmi-07-01.pdf

RESOURCE: E-BOOKS

At its simplest, an e-book is an electronic version of a conventional book that can be read on screen using a desktop computer, any portable device (e.g. laptop, PDA) or in some cases a dedicated e-book hardware device. There are many different kinds of e-books, varying in file formats, the diversity of functions, and their ease of use. The changing and often experimental nature of the e-book can be considered to be challenging the conventional idea of a book, as some e-books may contain audio and movie clips, as well as hyperlinks to other sources of information (which may themselves be regularly changed). Almost by definition, e-books are portable, but beyond that they vary widely in the variety of functions that they support. Some e-books simply allow the reader to browse through page after page of electronic text, most are searchable, and some allow users to annotate the text (and in some cases even to change it) or provide links to allow users to exchange electronic messages with each other. The e-book may be an electronic version of a text that is also available on paper, or may be published only in the electronic version (especially for very specialised subjects), but increasingly access to an e-book takes place on the Internet rather than as a separate device. Initiatives such as Project Gutenberg that aim to popularise e-books through extending a repository of digitised books have placed thousands of e-books in the public domain.

The Educational Challenge

This resource allows the rapid circulation (and rapid updating) of texts at comparatively low cost, particularly highly specialised texts and subjects that require to be frequently updated. The incorporation of links to participative tools, such as a discussion forum or an external wiki, permit author-reader interaction, sometimes leading to user generated content that supplements the original e-book. This shared construction of knowledge is an ideal resource in constructivist pedagogy, but some critics fear that it may undermine the authority and reliability of an e-book as a textbook or primary resource. Proponents of e-books claim that this resource can provide highly focused content for distributed learners, and that the egalitarian characteristics of e-books allow less established authors rapid access to a wider readership. This is especially true when considering that many traditional books now have very short print runs and so can go out of print very quickly—the e-book is seen by some as a promising source for materials that are no longer in print or to which access is impeded by the location of the student.

Strengths of the Resource

The resource enables the reader to search the text and to jump quickly between subject sections, for example to check references (which may also be linked by hypertext to online journals). Some e-books allow users to annotate and/or highlight the text, and a few may even allow users to add, or even change, text. The basic text can be supplemented with other digital resources to create a rich learning resource, including images (moving and still), sound files, and detailed links to other online sources of information that can supplement and add value to the original text. The ease of online publishing allows relatively inexpensive production, marketing, and subsequent updating enabling the text to be kept accurate and up-to-date. For some large paper books (e.g. medical reference books) the versatility of the e-book is an attractive alternative that can be searched and cross-referenced more easily and quickly than the conventional book. The ability to enlarge the electronic font, change the colour contrast, and even to utilise text-to-speech software enables the e-book to be more flexible than the conventional book for users with reading difficulties.

Potential Disadvantages

The ease of access may be a problem for some potential users (even the most user-friendly are less portable than a conventional book). In addition, the ability to copy and paste from digital sources has raised concerns about possible opportunities for plagiarism. Although the basic text e-books are straightforward to use, the versions that embed some of the more complex resources may be awkward or clumsy to use, and the overuse of sound or images for their own sake is likely to annoy regular users. As with wikis, the collective or collaborative authorship of e-books challenges many established notions of copyright and ownership of the text. The main limitations, however, are that even with the tens of thousands of e-books available, there is a strong likelihood that the book you are seeking is not available as an e-book, or perhaps not available in a format that the user can easily access due to file format differences. A second major limitation is the requirement, by definition, that the user needs a computer (or similar device) or Internet access to read the material. Despite the availability of text resources onscreen, many users still prefer to print out paper copies for reading and archiving, though this may change if and when the culture of reading directly from the computer screen becomes more firmly embedded in education.

Key Points for Effective Practice

1. There are various ways to utilise software in order to read e-books—students need instruction on effective use of the appropriate software.
2. Using linked documents within a course VLE, or links from a blog to specific e-books (or even relevant chapters) will help to direct students to particularly relevant information in the appropriate course context.
3. Remind students of appropriate keywords and phrases that can be used to search within e-books in order to make reading activities more strategic.
4. When permissible, downloading an e-book to a memory stick helps to make access less location dependant (e.g. the book may be read in a variety of different locations during the day, using different devices).
5. Encourage students to use linked documents to create their own notes and commentary on pieces of reading, with hot-links to the relevant sections of the e-book to support their notes.

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Institution: Belfast Institute of Further and Higher Education

How It Works in Practice There are a number of approaches to utilising the e-book in formal education, these can range from

- Adopting an e-book as a course reader and giving registered students access;
- Adding an e-book to the institutional library and using this in conjunction with a paper version (e.g. to allow access to the resource for off-campus students);
- Hyperlinking other electronic information, such as a tutorial on a VLE, to specific reference sections of an e-book.

The Belfast Institute has chosen to adopt an integrated approach to the use of e-books in their courses, with course teams working closely with library staff to identify, not just relevant e-books, but also specific chapters and sections that are particularly pertinent to the subject being studied. A link is then made from the course material on the VLE to the relevant section of the e-book and included in the recommended reading for that area of study. By encouraging easy direct access to recommended sections of e-books, the institute is attempting to illustrate to students just how easy it is to make use of this resource. The experiment is still in its early stages, but initial results are encouraging and seem to indicate that once learners have overcome their initial trepidation over using e-books (perhaps a fear of being overwhelmed by online information) by this method of directing them to specific pieces of relevant text, the learners appear more ready to return to use other e-books at subsequent stages of their studies. The initial up-front investment in e-books has proved to be well founded and plans are being discussed to extend the e-library provision on a regular basis.

Lessons Learned

- Simply providing an e-book section in the institution library is not enough to promote the widespread, regular use of e-book resources.
- It is never too early to begin discussions between the course team and the library staff about the purchase of centrally held e-books.
- In general, the e-book seems to be an ideal way of making scarce and expensive resources (books) available to greater numbers of students at multiple locations.
- Basing the e-book resource firmly within the library service, rather than within the course team or department, gives added benefits for institutional buy-in and adoption by staff across the institution, but close collaboration with the academics is necessary to identify specifically relevant resources and links.

URL: http://www.belfastinstitute.ac.uk/site_map.asp

RESOURCE: INSTANT MESSAGING

Instant Messaging (IM) is a simple form of synchronous online communication, allowing two (and with some software more) computer users to communicate across a network connection. The primary medium is text, although as with other web 2.0 tools, progressive convergence

has led to some IM networks providing facilities for audio and video. Most instant messaging applications include the ability to set a status message, roughly analogous to the message on a telephone answering machine, which indicates whether the user is available, busy or away from the computer. For these reasons, IM is more akin to telephoning than it is to e-mailing. On the other hand, people are not forced to reply immediately to incoming messages, and in this sense IM is less intrusive than phoning. Predictions are that IM will surpass e-mail as the primary online communications tool.

As thousands of people can be signed into a service at the same time, there are tools provided to organise IM contacts. These systems allow you to add user names to a "Buddy List" or "Friends List," which can be sorted into several sub-lists. When a user on a list logs on to the IM service, a notification message or sound is played; these notifications can be customised to the subgroup in order to give the user an idea of the importance of the new visitor. In addition, a user has the ability to block or ignore other users; this is an essential tool in dealing with spammers.

The Educational Challenge

The primary use in higher education is as a tool to encourage contact between students and faculty, usually as virtual office hours (although there is mixed evidence as to whether students do or do not prefer IM contact to face-to-face contact with their teacher). In addition, it is valuable for developing reciprocity and cooperation among students at a distance and is often used for collaboration amongst groups—usually to coordinate more sustained online work, to exchange URLs and other snippets of information. As a synchronous tool, it offers the benefit of prompt feedback and the convenience of being available from different locations. There are also administrative uses in recruiting and admissions, and as a mentoring tool or buddy system. Nevertheless, actual practice shows that the primary value is social—especially for remote students and both for student-student and student-tutor contact.

Strengths of the Resource

Given access to a computer, this form of communication is free, easy to use, immediate and widely accepted by users of all ages. It is particularly chosen as a communications medium by shy people and by those with a hearing impairment. For lecturers 'isolated' in their offices, it can be a positive communication tool, being more informal and intimate than the lecture hall. It is possible to save a conversation, so as to refer to it later. Also, the fact that instant messages typically are logged in a local message history provides some of the advantages of e-mails. Multiple conversations can take place between students or between students and the teacher without any of them being interrupted or disturbed.

Potential Disadvantages

The major disadvantage of IM is the security risks: message interception and infiltration of viruses. Hackers' use of instant messaging networks to deliver malicious code has grown consistently.

For instructors, having an instant-messaging program running in the background on the computer means that work can be interrupted at any moment. Instant messaging can disrupt a train of thought, and it is very difficult to delay responding in order to compose a well-conceived answer to a student's question. IM is seen as fuelling the expectation of ubiquitous instructor access. The time commitment, as with other web 2.0 tools, is a significant consideration.

In short, IM is viewed by many as a time-waster which encourages gossip, poor use of English and other negative behaviour, such as bullying and dangerous contacts with strangers.

Key Points for Effective Practice

1. Use IM to develop a stronger sense of community, especially in online courses where students are remote. IM chats can be considered the virtual equivalent of the kind of communication that typically takes place in the common spaces of a campus environment.
2. Set up IM to allow communication between members of different classes, allowing a much stronger sense of community to grow between students in the same programme who are not taking the same course.
3. Encourage students to use IM to coordinate their collaborative work.

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Institution: Syracuse University: Distance Education Course in the School of Information Studies

How It Works in Practice This study is based on a survey taken by 30 students of a core class for the Masters of Library Science degree at the Syracuse University School of Information Studies. The course was taught primarily through WebCT in an asynchronous manner, with discussion boards, written short lectures, regular small homework assignments, group work, and a large final paper. Training documents were created and presented to students via WebCT along with lists of the AOL IM user names of students who agreed to participate in the IM project. The instructor also participated in the IM service and was available for online consultation. At the end of the semester, the students were given a survey which looked at all aspects of communication used in the course.

Lessons Learned Students who used IM software reported communicating with more students each week than those who did not use IM. They found it easier to communicate about class material and easier to communicate in a social manner with other students. They also used the WebCT discussion boards and the telephone less often than students not using the IM software. However, there was not a clear difference in the frequency of e-mail use between the two groups.

One of the key findings was that students who used IM were more likely to agree with the statement that they felt a sense of community with classmates. While students who chose to use IM services felt it was easier to form friendships with other students, there was not a difference in how important they felt it was to form friendships and personal networks with other students.

As the WebCT courses are designed to encourage discussion only about a particular course, the IM service provided a place to talk about other issues that concern the students. The most frequent areas of discussion were topics about the Information Science school or Masters of Library Science programme in which the students were enrolled and social communication. Several students commented about using the service to discuss this class and other classes the students had in common in an environment not monitored by the instructor.

"I think it's actually the wrong technology to help facilitate learning, due to its inherent one-on-one nature," commented one respondent. Even though it was not used for course discussions, several students felt it was valuable as a social tool; in fact, one student called IM a "very fun waste of time."

Students felt that it "enhanced bonds" and "bonded us emotionally." One student appreciated the "social conversations about librarianship" and another felt that it "contributed to a sense of support, community and access." It also helped one student to "feel less isolated." Social communication came through as the most important and frequent topic of discussion through IM.

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RESOURCE: SKYPE

Although Internet telephony, or Voice-over IP (VoIP), has existed for some time, Skype is the first to make it a massively popular tool, no doubt because it offers unlimited free calls between online users, wherever they are in the world. Handsets have been manufactured for use with Skype that can be connected into computers. Skype has also developed a mobile offering as well as bundled video support into the software. Once the user has logged in, they can locate other users on the central Skype register and take part in an audio or video call across the Internet.

Skype is a form of peer-to-peer network although these are based on an ethic of participation, collaboration, responsible sharing and the contribution of content for others to enjoy. Skype is somewhat different from the likes of Napster and other sharing networks, as Skype users are sharing conversations and expanding their social networks through both its voice application and instant messenger (IM) function. It is, in some ways, like having e-mail, IM and a high-quality phone connection combined in one programme, which operates over the Internet through peer-to-peer networks.

Skype software is free and installs easily, and then with an Internet connection the calls using the system are free, and calls to others not on the system are just very low cost. Schools and colleges with Skype

installed and a Skype address offered will be readily identified by international students and enjoy competitive advantage in terms of both cost and accessibility.

Skypecasting allows phone conversations with up to 100 people. Skypecasting is a merger of Skype and podcasting, as the new service allows users to share recorded conversations as well as live conversations via Internet telephony. Skypecasting uses VOIP software to record teleconferences with many geographically distributed students taking part and to publish them as podcasts, which allow audio or video content to be syndicated over the Internet.

The Educational Challenge

Educational uses are many and varied:

One-to-one support for remote graduate students

- Authentic interactions with native speakers for language teaching
- Integrating a multicultural perspective through global interaction
- Useful research tool for telephone interviews or feedback from students
- Possibility of keeping Skype office hours especially for remote students
- Opportunities for inviting guest expert speakers into an online course.

Strengths of the Resource

The most obvious strength of Skype is that calls are free to other Skype users. Furthermore, Skype's sound quality keeps the high and low tones of sound, whereas telephones and other VoIP software/hardware clip out those parts of speech. This makes Skype particularly valuable for language learners.

As with other real-time technologies, Skype communications offer immediacy and opportunities for direct feedback. Skype also allows users to exchange large files e.g. photos. Although hardly a web 2.0 use of the tool, one-to-many audio lectures can be given to remote students. Finally, Skype allows you to expand your list of contacts and indicates when others in your social network are available to chat.

Potential Disadvantages

Skype, like most other network applications, has risks as well as benefits. The primary disadvantage of Skype is network security. The problem arises in Skype's use of peer-to-peer architecture, the same architecture used in many file-sharing systems. Skype uses it to route free calls between computers, and institutional administrators fear it may be used to illegally trade online movies and music. Another concern is that its end-user license agreement appears to permit legal use of university's networks by people outside the university. This has led many universities to ban Skype on campus networks.

A feature of Skype that may be very welcome to its users is that all communications are encrypted end-to-end between the two communicating clients. However, while it may be desirable to prevent telephone conversations being tapped, the encryption also applies to all other Skype activities such as file transfer and chat. This means that any filtering or protection for the user or their PC that is implemented on the organisation's firewall or network will be unable to inspect files or other content transferred to the Skype client. Skype effectively provides an encrypted tunnel through the firewall that could be used for attacks against the client PC and any other networked devices it can connect to in turn. Users and PCs must therefore be able to protect themselves against inappropriate or malicious content including viruses and other malware, or even attacks against the Skype system itself, without any assistance from other systems.

Although Skype will work over a dial-up connection, broadband is better, and this could disadvantage remote students without a broadband connection.

Key points for Effective Practice

1. Encourage students to use Skype for peer-to-peer contact.
2. Engage a guest expert to add a real-time input to the course.

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Institution: Lews Castle College, UHI Millenium, Scotland

How It Works In Practice The undergraduate degree program in Sustainable Rural Development is a fully online course with tutor support that is delivered to students throughout the UK at locations remote from the main teaching campus on the Isle of Lewis in the Scottish Hebrides. In addition to discussion boards and other asynchronous digitised resources on the VLE the tutors use instant messaging and Skype to offer some element of intimacy and synchronous short discussion sessions with the remote students. Students need to have broadband Internet access and are given guidance in the relatively simple task of downloading the proprietary software, but are thereafter able to make free calls to other users, including tutors and fellow learners. An icon can be set by the tutor to indicate when she or he is available to receive calls, and this icon can be seen on the desktop of the remote student. If they would like to discuss a particular item on the course, a call can be placed to the tutor simply by clicking a button. If the call is accepted both tutor and student can have voice, video live image, and live text chat in any (or all) combinations. Usually the sessions are fairly short (5–10 minutes) similar to a phone call rather than a set 'lecture' and are used to raise questions, clarify points, or put across a particular point of view. The chat sessions can be recorded and archived for future reference. The inclusion of video allows the participants to see each other in real time while they are talking and allows facial cues that greatly increase the sense of intimacy over simple telephone conversation. Prearranged mini-conference calls of three or four people can be used to have a group discussion on particular points that have a relevance to more than one learner.

Lessons Learned

- Keep the sessions short and focussed; the novelty of the situation sometimes encourages participants to become immersed in the discussion and if this is not properly directed can tend to ramble a bit.
- The tutor should set some time aside for incoming Skype calls and make this time known to the group of learners.
- The tutor should set his or her 'online status' icon to indicate availability for calls i.e. available, busy, or away, in order to avoid unwanted distractions by incoming callers.
- Use the Skype sessions to deal with individual problems and questions in order to add value to the other components of the course learning resources. This is especially important when not all students on the course have access to Skype, so the Skype contact should be regarded as an 'optional' extra for students rather than a mainstream method of tutor–student communication. In this case students without Skype can opt for other methods of personal communication—instant messaging, telephone, or other means that suit their needs better.
- If the online chat facility is used, save the conversation at the end and archive as evidence of the activity that can be called upon in future to help reflection, supervision, and other issues.

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RESOURCE: GAMES AND SIMULATIONS

Games and simulations are not new to education. However, information and communication technology have been added to them, giving them a different character. Computer games, for example, can be delivered to desktop computers, TVs, consoles or mobile devices via CD-Rom, DVD, cartridge or they can be online.

Simulation games allow players to control factors from populations to pollutants, transport systems to stock trading, theme park attractions to family relationships and football teams. Games tend to be less real but more fun; simulations usually have greater realism.

Most games have goals, rules and challenges; web 2.0 games have interactivity. For many popular games, the ultimate key to success lies in deciphering the rules, and not manipulating joysticks. Some games offer an immersive environment in which students become involved both intellectually and emotionally.

Computer simulations tend to be more open-ended and allow the players to do whatever they like within the confines of the virtual world. Simulations allow the user to dynamically explore the modelled domain, and within education, the interactive, dynamic and open nature of simulations puts the user in charge and creates a valuable learning experience. The value of 'sim' games is the extent to which games technology permits users to experience a simulated version of actual reality or practice.

The Educational Challenge

Interactive games allow students to compete not only against each other, but also against students distant from themselves. This results in opportunities to develop teams competing at a distance.

Good simulation games can exemplify effective learning principles that enable students to manipulate and evaluate rather than reproduce concepts. The game should be more than an exercise for students; it should allow them to share a common experience and use this as a basis for more detailed discussions.

Simulations are appropriate when there are underlying mathematical models, when a system can be simplified to investigate the effects of a few important criteria, and when our understanding of system properties benefits from their being examined dynamically. In management education, for instance, simulations are often built around role playing activities. The people of the organisation may be simulated with artificial agents whose actions are not determined and changes in the organisation result in a variety of consequences.

Strengths of the Resource

Problem-solving: One characteristic of games that supports learning is that they challenge and support players to approach, explore and overcome increasingly complex problems and thereby learn better how to tackle those problems in similar contexts in future. Good games should allow the learner to operate at the outer limits of their capability and to increase their limits with growing competence.

Alternative solutions: A second characteristic is that games offer the capacity for players to try out alternative courses of action in specific contexts and then experience consequences—in other words to understand how manipulating systems causes particular effects. In all simulations there are multiple paths students can take; students often play the simulation several times taking different paths to see how the results differ because there is not one right answer or one winner. The multiple decision paths allow them to enhance and expand their decision constructs.

Practice: Learning by playing games is a process of constant practice and interaction in progressively more challenging tasks through which players gradually come to understand underlying sets and systems of rules. Unlike reading a book, playing a game demands interpretive competence with images, sounds and actions as well as written words. Successfully playing a game depends on the player's ability to recognise the game's multimodal features and therefore to learn its underlying grammar and how it communicates meaning. Players probe the virtual world of the game, form hypotheses about it, re-probe it with those hypotheses in mind, and then, based on feedback from that virtual world, accept or re-think those hypotheses. This process is similar to the basic procedure of the scientific method.

Different identities: Games may offer the experience of exploring and developing different identities and the tools and practices that support these. Games are more than simply problems or puzzles; they are microworlds, and in such environments students develop a much firmer sense of how specific social processes and practices are interwoven and how different bodies of knowledge relate to each other.

Motivation: Students who use games find that difficult tasks can be engaging, intriguing and amusing when incorporated into a story and a meaningful context. Motivation and a sense of meaningfulness are aspects they appreciate about the games, and these in turn make learning more efficient. Collaborative learning can enhance the learning process as games encourage students to work together and suggest different strategies and solutions as they interact with the games' learning environment.

Multiple modalities: Students who are visual learners tend to like learning through games and generally games reinforce learning through print, sound, and image.

Potential Disadvantages

Achieving a balance between fun, game play and learning is a goal that is very hard to achieve. Many games are simply banal and others are overly complicated. Designing an effective game is a major challenge. Educational institutions usually do not have the resources of commercial game producers, but students will be accustomed to the quality and dynamism of commercial games.

All too often educational games are used as a fun diversion, a supplement to the curriculum, not a deeply-embedded, core learning element.

Commercial games tend to present stereotyped characters, genders and races. Educational games can correct this. However, the game play, interaction and story must support and be subordinate to the learning processes and knowledge objectives. The overall purpose is not to play a game but to learn in an engaging and effective way! Characters, story, and interactions must be relevant to the learning context of the specific subject or it will cause frustration.

Game playing can be addictive, and many commercial games are full of violence and aggressive behaviour. Educational games can

counteract this by being action-oriented—but not action as in violence or speed but as a constant encouragement to do things—to take action. The overall idea of gaming is to engage, to be active, to be someone, to perform some kind of mission, to reach goals, and be rewarded.

Key Points for Effective Practice

1. Games should stretch students' abilities.
2. Games should be rooted in some firm reality or present strong internal consistency and logic.
3. It is of vital importance that the user does not get stuck anywhere in the game—he or she must be able to quit the game, change strategy, use and "cross-use" different resources without becoming trapped in long sequences that are difficult or impossible to interrupt.
4. Structure and navigation must be crystal clear—no hidden features, buttons, or too many surprises! Avoid gadget and gizmo overload. The guiding principle of navigation design is simplicity and relevance—less is more. The learner should not concentrate his or her efforts on "cracking the code" of the game. And relevance and simplicity do not mean that navigation and structure cannot be elegant.

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Institution: Glasgow Graduate School of Law

How It Works in Practice Since 2000, the Law School has been developing a simulation environment of a town, which is part fiction and part historical fact. This is used on a number of different courses: it provides economic, professional and architectural issues. In time, the School wants to generalise the tool for any program that deals with client or patient: engineers, social workers, health workers, surveyors or accountants.

The simulation is based on the principle of transactional learning; that is active, involved learning from, in this case, legal action, not merely learning about legal actions. The work is intensely collaborative and reflective. Currently the School has formed a consortium to develop an open-source transactional learning environment, called SIMPLE.

Lessons Learned Large-scale simulations such as this need to enhance professional learning across a range of professions. It is not obvious how to do this effectively.

Professional educational simulations need to respond to the 'lived life' of the profession so that users develop the insights and modes of enquiry of the profession, as well as form the values and ethics in keeping with the profession.

The simulation designers need to develop narratives typical of the professional life they are simulating. Assessment is ideally part of the simulation.

URL: http://www.bileta2007.co.uk/papers/images/stream_1/MahargP_McKellarP.pdf

RESOURCE: MASHUPS

A mashup is essentially the creation of something new from parts of several separate sources in order to produce a single integrated whole. The name derives from the practice of mixing two or more songs. Typically a mashup combines bits from existing websites or applications, but the term is beginning to be used more widely for combinations of information generally. The first mashups tended to involve the integration of information with maps and this remains a useful educational application. However, many people are now experimenting with mashups using Google, eBay, Amazon, Flickr, and Yahoo's APIs and volunteer programmers are taking it upon themselves to combine and remix the data and services of unrelated, even competing sites. A further development is that services have appeared which allow users to create mashups without needing programming skills, so that for example, photos from Flickr can be laid onto maps showing exactly where the photo was taken.

The phenomenon of mashups reflects the prevailing environment of web 2.0: it is no longer just a collection of pages, as people are seizing far more control of what they do online. Creativity is the key watchword of mashups as users take bits and pieces from a number of websites and stitch them together in clever ways. In this sense, mashups merely reuse

information, but in the process, produce customised, personalised or novel functionality.

The Educational Challenge

As with the other tools discussed in this chapter, the educational use of mashups can be teacher-centric or student-centric. In other words, the teacher can retain control by designing applications that put students in the position of passive receivers, or can empower students to make the tool their own. Designed with care, mashups can be a powerful learning tool, and can further advance education towards massive personalization. Students can use existing mashups to create presentations based on small chunks of learning content composed of Wiki text, multiple choice tests, movies from YouTube, GoogleVideo, Grouper, and Slideshare presentations. The challenge for the teacher is to design subject-specific problems, issues or questions which motivate learners to create unique responses. As the features and functionality of existing sites grow, so too do the opportunities for new combinations of data.

Strengths of the Resource

Many mashups are visual and this is valuable for visual learners. Mapping mashups provide sophisticated yet easy-to-use tools for visualization—tools that clearly show spatial relationships. In many cases, rendering data or concepts in a visual form—as opposed to simple text and numbers—helps users see and understand more thoroughly the material being represented.

As with other web 2.0 tools, mashups can be useful both as tools other people have created and as something for students to create themselves. An example of useful existing mashups are the online mapping services which allow users to navigate most of the globe through a web interface, viewing varying levels of resolution through maps, satellite imagery, or a combination of them. Mapping mashups overlay data on those maps with clickable markers showing specific points of interest. As for student generated mashups, anyone with a browser can access vast stores of information, mash it up, and serve it in new ways—a sort of endless mix and match opportunity.

There are many administrative applications of mashups used by universities: campus orientation maps for students, locations of job opportunities and graduate programmes and maps for administrators showing the location of new student recruits.

Potential Disadvantages

As the concept of mashups becomes common, one of the dangers is that the mix and match aspect takes precedence over the value of the final product. In other words, it becomes a silly game without learning potential. The use of mashups by students, therefore, needs guidance and scaffolding by the teacher.

There are also institutional issues: as these web based services become the medium for learning, there is a need to provide a level of service and reliability over and above that required for a more passive, resource presentation approach to the web. Similarly, whilst such technology is essentially an empowering one for all learners, there are circumstances in which some students may not have access to the web from home, and some strategy for bridging this 'digital divide' should be in place.

These bottom-up efforts present tough challenges for the sites on which the new services are built. Mashups often use the data without asking first, then present it in unintended ways. Not surprisingly, some website operators have objected. Yahoo initially blocked one mashup site from using its traffic data with Google Maps (before relenting!), and Amazon asked a mashup designer to change how it made links to potential rival sites.

Key Points for Effective Practice

1. The use of mashups by students requires the teacher to adopt a 'fluid' attitude to information: that it is always changing, something that can be mixed in different ways to produce a new learning experience. For this reason, mashups represent a very different experience of learning from the traditional textbook, which presents information as static and unchanging.
2. Mashups should be viewed as a new way of presenting and analysing data, a multimedia experience to enhance understanding. For some students, the multimedia aspect of a mashup makes an otherwise abstract concept concrete, helping them see patterns and movements that explain ideas and their significance. In manipulating data and thinking critically about patterns and relationships, students can get a taste of research as well as experience authentic learning.

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Institution: Galson Estate Trust, the Isle of Lewis, Scotland

How It Works in Practice The Galson Estate in NW Lewis has recently been returned to community ownership and has as one of the key objectives in its business plan the promotion of tourism based upon the unique cultural, environmental, and historical assets of the area. A mashup of web 2.0 tools is at the core of the concept of bringing together the heritage assets of the community in order to increase informal learning about the area.

The long-term sustainability of the project is based upon the motivation of local businesses and enthusiastic individuals, under the co-ordination of Galson Estate Trust, to provide ongoing content management and development with minimal further external expertise or funding.

The community's acquisition of ownership of the Galson Estate coincides with the popularisation of a number of social networking tools which are ideal for developing a sense of community, e.g. YouTube, podcasting, Flickr, and Internet broadcasting. In this project, the aim is to 'mashup' these applications for the purpose of presenting the geographical community to visitors and tourists. The project builds on the fact that broadband is now available throughout the area.

The essence of the project is that, with training, the community can generate all of the content on the site and thereby experience informal learning in the process. Some funding has been secured for:

1. The initial setup, customisation, and inter-linking of the new technology applications that provide the platform (the network ecology) to enable the local community to interact with visitors and tourists both past and future.
2. Training of members of the local community (e.g. tourism micro-businesses, local societies involved in heritage and music, school children, and local volunteer enthusiasts) to manipulate and input data relevant to their own subject areas. A number of learning-by-doing workshops have been run.

Lessons Learned The main lesson from this project is that public participation needs time to gestate, and once it becomes established, it has its own momentum. The training opportunities were well attended and it was evident that the most effective training revolves around the most appropriate and not the most flashy applications.

Partly because of the speed with which mashups are appearing, and partly because of the developing community involvement, it is important to balance a vision of the project aims with a flexibility to respond to new initiatives, new tools and new participants. If a consultant had been hired to develop the website in a few weeks, it would have been a very different experience altogether. Community involvement and generation of content have made this an exciting and educational project.

URL: http://www.galsontrust.com/

RESOURCE: MOBILE LEARNING (M-LEARNING)

Mobile learning devices currently consist of cell phones, personal digital assistants (PDAs), MP3 players, portable game devices, handhelds, tablets, and laptops. However, what used to be separate devices are now converging onto one device. For example, Smartphones are integrated communications devices that combine telephony, computing, messaging and multimedia.

Wireless technology on campuses is becoming the norm, so that students are connected in the library, lecture theatre, cafeteria, halls of residence and even outside on the lawn. For students off campus, Bluetooth technology makes it possible to create personal area networks (PANs) among physically proximate devices, connecting headset device to phones, which can in turn connect to a computer, a PDA, and any other nearby Bluetooth-enabled device.

Currently, laptop computers used in higher education settings outnumber desktop and laboratory computers on campus, while notebook computers are ranked as the most important hardware issue on campus today, followed in second place by mobile telephones. In short, there are more wireless networks, services, and devices than ever before.

The Educational Challenge

Innovative uses of PDAs, mobile phones, and handhelds in education tend to be organisational, administrative and supportive, in other words, learning-related, rather than strictly learning applications per se. This is primarily due to the small screen and keyboard. However, there are many advantages to mobility that render these devices useful for education in almost every discipline. Mobile learning is considered the next step in a long tradition of technology-mediated learning which is heading towards ubiquitous, pervasive, personal, and connected learning.

Learning is a deeply personal act that is facilitated when learning experiences are relevant, reliable, and engaging. The promise of mobile devices is that they help the innovative course designer deliver appropriate strategies, tools, and resources for different kinds of learning.

Strengths of the Resource

The primary strength of mobile devices for learning is that so many learners own and use them already. This reduces the need for training and access, and adds to the rationale for integrating them into education.

Mobile learning is a response to pressures for on-demand access of learners in an information-centric world. It also connects formal educational experience (e.g. taking a class, attending a workshop, or participating in a training session) with informal, situated learning experience (e.g. field work, museums, and galleries). It also allows learners to study while travelling, commuting and at a distance from a wired computer. As campus-based students become more mobile in their learning, the divide that used to exist between distance and campus students ceases to exist. Distance learning is no longer second best. Wireless technology is improving in speed and security at the same time that it is dropping in price. There is increasing evidence that laptops encourage students to be more creative in their projects, as they can easily add photos, audio clips and details 'from the field'.

Potential Disadvantages

Mobile devices have limited storage capacities and batteries have to be charged regularly. Data can be lost if this is not done correctly. Laptops tend to be much less robust than desktops. Bandwidth may degrade with a larger number of users when using wireless networks.

There are disadvantages for teachers especially with the concept of being 'always on', and hence always available.

Questions have arisen about wireless devices enabling cheating on examinations, which has led to many institutions banning them in examination halls.

More challenging is the issue of whether brevity of expression, due to small screens and keyboards limiting the amount and type of information that can be displayed, lead to superficiality of communication and lack of real engagement with issues.

Finally, will the "filter generation"—learners who multiprocess and multitask using multiple media—learn how to think critically and communicate effectively while using mobile digital tools?

Key Points for Effective Practice

- Match the mobile device to the learning objectives.
- Design activities which are interactive, allowing a two-way flow of information.
- Investigate the hardware, software and bandwidth of the learners before planning and developing the activity.
- Keep pages to 40 kilobytes or less for online resources. The magic number appears to be about 15 seconds for the maximum time users will wait for a page to load.
- Keep fonts simple. San serif fonts like Arial and Helvetica are easier to read on screen. Arial is a very common font that will probably be available on most devices.
- Use moblogs (mobile weblogs) for field work and contexts where students are distributed. Each student can add descriptions from their own location.
- Use PDAs for remote students to contribute data to form a single project.
- Build activities in which students interact with each other, not just with the teacher e.g. sharing and commenting on each others' projects).

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Institution: University of Bristol, Graduate School of Education

How It Works in Practice Microsoft Pocket PCs and Palm OS based devices were given to 14 teacher training students to take on teaching practice. Although the course is supported by resources, discussions

and course documents on a VLE, students on teaching practice had difficulty gaining regular access to it. PDAs were considered to be a possible solution to this problem in order to enable their access to the VLE and Internet, and support their teaching and learning.

The project aimed to investigate the potential of the PDA in particular as:

- an e-book
- a source of dedicated science software
- an interface to the world wide web especially via a course-linked VLE
- a store of previously recorded pupil data
- a communications device for e-mailing peers and tutors.

Lessons Learned There is great potential for the use of hand-held, Internet-enabled devices to support students on teaching practice. Having the Internet available as a portable resource was very welcome; it was the software application that the PGCE students considered to be most helpful to both teaching and learning. It helped them maintain their feeling of being part of a community of learners while away from the university.

During the course of the year the most commonly used applications were the calendar or diary scheduler, the web browser and the e-mail client. The other applications that proved useful were software such as spreadsheets or markbooks for organising pupil data, and the word processor or note recorder to note information for future use.

Having the Internet literally in your hand enabled the PDA to act as a distributed memory system. The wealth of information on the Internet meant that students could answer virtually any question and whilst the GPRS signal was not as fast as a broadband connection the delay was acceptable both to the PGCE students and their pupils. Students also discovered that they could even use a PDA surreptitiously in a lesson or meeting to look up the topic under discussion or to chat with experts without overtly appearing absent minded or particularly unintelligent. Nevertheless, the experiment was only partially successful in the sense that, for these students, the use of the relatively unfamiliar PDAs tailed off as the pressures of the PGCE course increased.

URL: https://www.bris.ac.uk/education/research/sites/pda

RESOURCE: RSS FEEDS

Really Simple Syndication (RSS), is a set of web feed formats used to publish frequently updated content such as blog and wiki entries, news headlines or podcasts. The RSS feed contains either a summary of the content from the associated site or the full text. This explains the alternative meaning of RSS—Rich Site Summary. The value of RSS feeds is that they make it possible for people to keep up-to-date with their favourite websites in an automated manner rather than having to check them manually. In this sense, RSS feeds could be called a 'personal newspaper'.

The popularity of blogs and wikis has led to the increased use of RSS feeds; however, they can be used to deliver a great variety of content and even media types. RSS content is read using either a feed reader or an aggregator. The user subscribes to a feed by entering the feed's link into the reader or by clicking an RSS icon in a browser that initiates the subscription process. The reader checks the user's subscribed feeds regularly for new content, downloading any updates that it finds.

In many ways, RSS answers the question of how to filter and organise the vast amount of information on the Web. Internet users tend to settle on preferred sources of information, whether news sites, blogs, wikis, or other online resources that regularly update content. RSS allows users to create a list of those sources in an application that automatically retrieves updates, saving considerable time and effort. RSS feeds can be offered at varying levels of granularity, further enhancing users' ability to specify exactly what information they want to receive. For example, a college or university might offer one RSS feed for the institution's main news page, sharing information that concerns the institution broadly, and other feeds focused on the college of arts and sciences, the history department, or research being conducted by a professor of European history. Users can subscribe to feeds independently, tailoring the content they receive to their unique interests and needs. There are even feeds that aggregate other feeds.

Growing numbers of online resources offer RSS functionality. Because applications such as browsers and operating systems increasingly support RSS, the technology has the potential to become the primary vehicle through which users interact with the Internet.

An RSS file will typically display the most recent content of a website, usually 10 items or so, updated whenever a new item is added. An aggregator will check a large number of individual RSS files, returning to a given site once an hour or so. Consequently, when new material

is published to a news site or weblog, it is very quickly picked up and distributed.

Though most readers use RSS by turning to an aggregator website, many others use applications known as *headline readers*. A headline reader performs the same function as an aggregator, but is a stand-alone application that usually resides on the reader's own computer (though some, such as Bloglines, are stand-alone websites). Desktop readers, such as AmphetaDesk, FeedDemon and NewsGator, divide the screen into three panes:

- a list of RSS feeds to which a reader subscribes
- a list of titles from the currently selected feed
- the text of the currently selected item.

The Educational Challenge

Finding suitable news feeds is relatively easy; in many cases websites will advertise that they have available RSS news feeds and will also provide addresses, instructions and examples of their use. In addition there are directories of news feeds to find a suitable feed for a particular subject area.

Students involved in cutting edge research projects can use RSS to monitor news and search engines for specific keywords (like nanotechnology or coldfusion) by creating search feeds. Any time a mention of the keyword phrase occurs in a news piece the item will appear in the search feed. Furthermore, collaborative projects using online tools with a distributed team can use RSS feels to notify each other of new contributions to the site.

Students writing papers or working on research papers on specific topics can create search feeds, so that each time that topic is mentioned they receive notification in their custom search feed.

Strengths of the Resource

For users of RSS feeds the most commonly expressed benefit is convenience. RSS headline readers automatically flag new items, so users need not search through a number of websites looking for new content. Additionally, content is displayed first as a summary description, allowing users to browse quickly through numerous items. RSS readers also provide users with more choice and control because they can determine whether or not to subscribe to a given feed. And unlike e-mail newsletters, which RSS feeds most resemble, the feeds do not contain spam or viruses.

The strength of RSS is its simplicity, flexibility, and utility. Although RSS is not the semantic web originally dreamed of in the laboratory, it is currently the closest example and provides some of the benefits of the original dream.

A particular strength of RSS is that it effectively nullifies spam, which is an increasing problem with e-mail. Furthermore, users can easily opt-in and out of feeds that provide content of interest or importance. Compared with the relative difficulty of unsubscribing from e-mail lists, RSS feeds bring control back into the hands of the end-user.

Potential Disadvantages

To take advantage of RSS feeds, users must locate online sources they trust, which can be a time-consuming task. Even if a site is deemed reliable, it may not offer RSS feeds. Moreover, relying totally on RSS feeds reduces the serendipity that comes from browsing websites and finding unexpected resources.

Not all content is appropriate for RSS, and users need to set up their feeds with care by selecting sites which are frequently updated.

While there are no inherent accessibility problems with the RSS file format, the method by which an RSS feed is displayed does have accessibility implications. A wide range of applications exist that aggregate and display. How accessible they are will be dependent on the application themselves, the operating system on which they run, and, if applicable, the assistive device being used.

Key Points for Effective Practice

1. Use the many how to manuals, such as the one listed in the Selected References, to get started.
2. Search for sites useful to your subject matter.
3. If you have 20 to 30 students posting their work to a wiki, blog, flickr or other site, instead of checking all 30 sites, you can subscribe to their RSS feeds using an aggregator and view it all from the one place.
4. Encourage students to set up their own feeds, particularly when working on collaborative projects.

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Institution: Athabasca University, Canada: Combining RSS with Blogging Software

How It Works in Practice In 2001, Athabasca University's Centre for Distance Education made RSS conversions of all of its online materials that require occasional updating. Twenty courses, involving syllabi, assignment pages, and faculty bios, were installed at a private account on Blogger.com, using a common template developed for the Centre's website. Each page was made accessible to the faculty member responsible for its upkeep. Instead of having to send updated information to a programmer, the faculty member sends it directly to the web, without needing to touch any of its page code. The Centre set up a virtual server to receive these updates, in order to avoid compromising the file transfer passwords of the University's secure server.

Lessons Learned The result was an immediate increase in departmental speed and job satisfaction. For the webmaster responsible for maintaining the online course sites, the update process for each teaching semester was reduced from two weeks to a single day. For the individual faculty members, the amount of time spent on the updates was the same, though they now had ownership of them, rather than having to refer hack editing work to the media team. For the editing and programming mediators, the result has been an easing of their workload, and the ability to concentrate on developing new course design methods.

URL: http://technologysource.org/article/blogging_as_a_course_management_tool/

RESOURCE: VIDEO CLIPS AND YOUTUBE

The YouTube generation is a term that has been coined for the group of Internet users who are making use of today's technology of video sharing with the ease of personal video uploading. Vlogs are an offshoot of this group, allowing users to blog their lives and experiences in writing, and accompany the whole package with a video rendition of their travels. Video sharing is exploding into a variety of industries, including mass media advertising and music. YouTube allows the posting of copyrighted works but removes them once the copyright holder objects.

The Educational Challenge

This medium can enrich the learning experience of college students by providing video material to accompany their textbooks, in-class documentaries and course lectures. However, it is more in tune with web 2.0 approaches to devise activities in which students create the content. The web's shift from a tool of reference to one of collaboration presents teachers with some rich opportunities for e-learning.

Strengths of the Resource

Unlike more static and limited media, like PowerPoint and the decorative course web page, video and audio sharing help professors be more creative and ambitious in the classroom. Video sharing with classmates on the social front is easy, fun, and rising in participation. Education using multimedia and other visual aids has always been a strengthening component of many subjects' curriculum, and today's educators are taking steps to incorporate the Internet and media-based tools to improve participation and learning. Still, video sharing on a small scale could prove to have multiple benefits. Class projects that involve presentations or directions on how to do something could be enhanced with video uploading.

Potential Disadvantages

Infringements of copyright are a potential disadvantage of video sharing, although steps are being taken, for example, by Google, which has bought YouTube, to address the problem. Nevertheless good educational material can be made available, legally, on YouTube and other such services. As with other web 2.0 tools, it is incumbent on teachers to raise the issue of copyright with students and thereby encourage, enhance and empower critical thought.

Another unfortunate aspect of YouTube popularity is the misuse made of it by students videoing lectures without permission and uploading clips of their instructor doing less than appropriate things in the classroom.

Key Points for Effective Practice

YouTube is not necessary for good teaching, in the same way that wheeling a VCR into the classroom is not necessary, or bringing in PowerPoint slide shows with images, or audio recordings. YouTube simply makes more resources available to teachers than ever before, and facili-

tates engaging and active learning. Rather than use up valuable time in class watching a film or video clips, such media can be assigned to students as homework in the same way that reading is assigned. However, to make it work, faculty should keep in mind that the best way to deliver this content is through a course blog. YouTube provides some simple code that bloggers can use to stream the videos on a blog, rather than having to watch them within the YouTube interface, which has advertisements and occasional obnoxious comments.

Selected References

IERG on YouTube: http://ierg.net.weblite~dns.com/news-item/ierg-on-youtube

YouTube and Cultural Studies: http://insidehighered.com/views/2006/11/13/conway

Institution: University of Texas at Arlington: Senior Level
Literature Course on Chilean Nobel Laureate Pablo Neruda

How It Works in Practice For this poetry class, YouTube offered several useful media clips e.g. film clips of Neruda's poetry being used in a film, and music videos of Latin American singers using Neruda's lyrics. These clips illustrated both the reach and the enduring quality of Neruda's poetry even in North American culture. In addition, there were student-produced videos about Neruda, which were of poor quality, though arguably one can learn as much from poor quality when highlighted as such.

Lessons Learned A good video clip can truly convey more than 1000 words, especially in the realms of culture and poetry. Using video clips brings the course alive for the instructor as well as for the students.

URL: http://insidehighered.com/views/2006/11/13/conway

RESOURCE: AUDIOGRAPHICS OR INTERACTIVE/ ELECTRONIC WHITEBOARDS

The combined use of voice transmission and computer networking has been used in education for at least 15 years. Nevertheless, no one term has emerged to refer to this activity, partly because the technology keeps evolving. An early term was *audiographics*, but this is not widely used; *interactive whiteboard* is a more descriptive term but tends to be used for a large physical display panel that can function as an electronic copy board. Typically, interactive whiteboards are used in lecture or

classroom environments and the technology allows the lecturer to write or draw on the surface, print off the image, save it to computer and then distribute it over a network. By contrast, the term *electronic whiteboard* usually refers to a system which involves networked audio as well as screen sharing, and is more appropriate for distance or distributed learning.

Typical definitions are: real-time data conferencing combined with audio capability, or, audio conferencing on a personal computer. Whatever the name, this form of social software enables two-way communication as well as a shared screen for drawing, viewing photos or graphics, and in some cases, for sharing computer applications.

Audiographics facilitates a high degree of interactivity between students or between students and the instructor at the time the learning is taking place. The exchange of information is two-way. When students have questions about the material, they are able to ask the instructor for clarification and the instructor is able to respond in real time. In short, electronic whiteboards are a synchronous learning environment. There are currently two distinct kinds of applications in distance and distributed education:

1. The students are all together in a study centre sharing one screen and the instructor is remote.
2. All of the users are accessing through a personal computer and each has a screen and audio connection. This has only become possible with recent technology developments whereby both voice and computer can be connected through one phone line.

The Educational Challenge

Like all good teaching practice, the effective use of audiographics is directly proportional to the amount of effort that precedes the event. Therefore, when used as a tutorial, the instructor needs to prepare material in advance and load it onto the system so that it is easily accessible during the live tutorial.

Now that this technology can be integrated with a virtual learning environment and used with one phone line, it can also function as a communication medium amongst a small group of students for self-help or for working on joint projects. This frees its application from formal, planned tutorials to informal, spur-of-the-moment communications.

In large group settings, the main issue is turn-taking: how it is managed and controlled. Teachers can call on individual students to respond, but this can be daunting for some learners by requiring an immediate comment. Most systems also have a chat box which allows

text messages to appear on the shared screen. Some systems have a method of indicating that someone wants a turn to talk.

Strengths of the Resource

The main strength of audiographics is its application to visual and graphical subjects, such as mathematics and technology, and to auditory subjects like language learning. Text-based virtual learning environments are very limiting for these subjects, and audiographics offers a unique medium for students of these subjects studying at a distance.

The combination of audio and shared screen is beneficial in any subject for motivating and engaging remote students. The personal computer 'whiteboard' can help to enhance a student's retention capability as well as attention span by giving the student something to look at while listening. This is a tremendously important advantage of audiographics. It is also a very inexpensive way to reach out to a large group of remote sites. This cost-saving becomes especially apparent when it is necessary to provide updates and modifications to course materials. Audiographics then is one of the more cost-effective instructional delivery methods.

Studies have found electronic whiteboard activities to be highly motivating and learner-centred when integrated innovatively. They offer a powerful facility for enhancing content and supporting collaborative learning.

One major advantage of audiographics over other distance education techniques is that the tutorial can be modified during delivery e.g. elaborating on a point or skipping some sections. As a real-time technology, one of its most powerful features is the capacity to enable students to interact with the lecturer and each other. There are many combinations of tutorial design: for example, a session could begin with audiographics, then move to offline group work and finish with another connection, either by audio-only or by audiographics in which students can present their offline work.

Audiographics makes it easy for teachers to enhance presentation content by easily integrating a wide range of material into a lesson, such as a picture from the Internet, a graph from a spreadsheet, or text from a Microsoft Word file, in addition to student and teacher annotations on these objects.

Many systems have a voting facility which can be used for rapid learner feedback to the presenter.

Notes and resources from the session can be stored and made available to students who missed the session.

Potential Disadvantages

Multipoint conferencing becomes increasingly complex with the number of sites involved and participant interaction tends to decrease. It requires some skill on the part of the teacher to remember to include everyone. People new to audiographic conferencing often tend to teach or speak to one location (usually to those students on site).

Higher levels of audiographic interactivity require students to have the confidence as well as skills to use a computer at their 'end'. Students unfamiliar with audiographics need to be eased into increased involvement by gradually increasing their level of input.

There is considerable variation in functionality across available software packages. Useful features to look for include:

- Facility to print out or save the results to the computer.
- Support for remote voting or feedback.
- Facility to store sequences of screens for playback.
- Facility to control computer applications via the screen interface.

Key Points for Effective Practice

1. As with all slides, use large type and few words. Pictures add interest but must be relevant.
2. Combining media. Not all delivery has to be entirely by audiographic conferencing. Very effective presentations can be made by combining printed materials (distributed in advance), audio-only conferencing (for discussion), videotapes, computer based education, audiotapes, and e-mail.
3. Promoting interaction between students at all sites is as important as good graphics.
4. Have a back-up strategy in case of telecommunications failure (e.g. revert to audio-only).

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Rowe, S., Ellis, A., & Quoc Bao, T. (2006). The evolution of audiographics: A case study of audiographics teaching in a business faculty. In Proceedings of the 23rd annual ASCILITE conference. Retrieved March 3, 2007 from http://www.ascilite.org.au/conferences/sydney06/proceeding/pdf_papers/p194.pdf

Institution: University of Strathclyde: PgDip in Computer Aided Building Design

How It Works in Practice An electronic whiteboard on this programme is used to investigate the strengths and weaknesses of the Internet as a design communication medium and also to promote group working, peer learning and the development of students' ICT and organisational skills, while also encouraging cooperative and collaborative working.

The whiteboard was used for real-time sessions both amongst the design team and between the client and the design team, usually by importing and then annotating drawings (Jpegs) created on other CAD software. This ability proved very successful in the exchange of information. The drawing tools supplied with the whiteboard were rather primitive and best used only for marking up drawings created in more sophisticated packages. The students often used the text directly onto the whiteboard to add comments to the drawings rather than opening up additional text boxes which often reduced the size of the available viewable window on the screen.

Having text and drawings visible at the same time seemed essential for the development of the proposals. One criticism of working on the whiteboard was the difficulty in knowing who was in control and the students quickly had to establish a set of procedures for writing, drawing, and taking turns. Most students found it more effective to use chat messages and reserve the whiteboard for drawing.

When using the whiteboard, some groups agreed upon a colour coding system for different team members. Codes were established for ending messages in chat sessions in order not to waste too much time anticipating a longer response. Students were often misunderstood when engaging in their virtual communications. Difficulties were overcome in the strategic wording of communications by using humour and adopting a more informal approach to communication.

Lessons Learned Establish all technologies well in advance to ensure reliability. The latest systems are not necessarily the best—'tried and true' is more reliable.

- Allow for technical hitches and have alternative methods of continuing project work.
- Allow students time to familiarise themselves with the software being used.
- Do not overestimate what can be achieved.
- Prepare students for what to expect with team work and working in virtual environments.

URL: http://cebe.cf.ac.uk/transactions/pdf/HilaryGrierson.pdf