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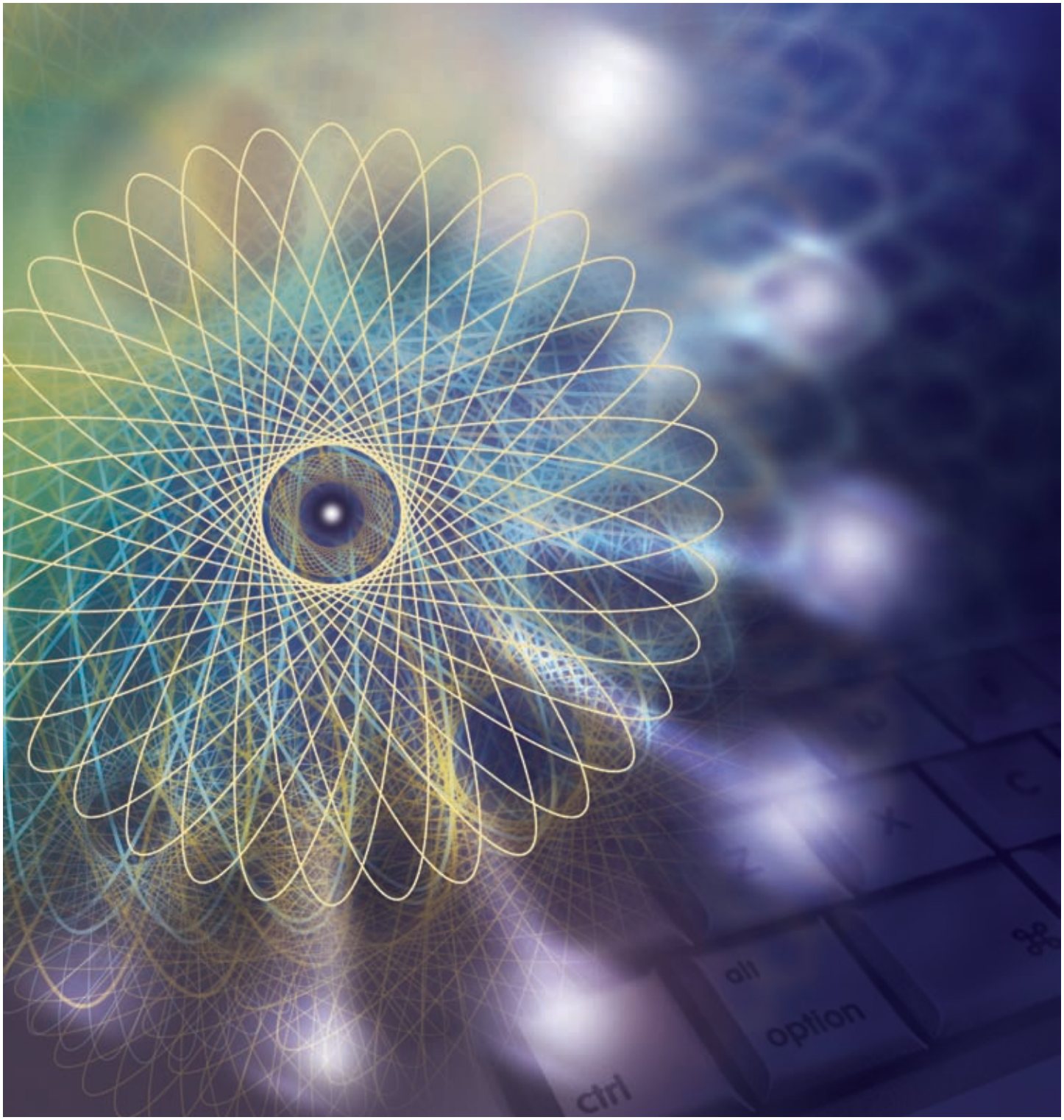
Effective Practice in a Digital Age

A guide to technology-enhanced learning and teaching



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www.jisc.ac.uk/elearningprogramme

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‘The future is not a result of choices among alternative paths offered by the present, but a place that is created – created first in the mind and will, created next in activity. The future is not some place we are going to, but one we are creating. The paths to it are not found but made, and the activity of making them changes both the maker and destination.’

John Schaar, American writer and scholar and Professor Emeritus, University of California

‘It’s no use going back to yesterday because I was a different person then.’

Lewis Carroll

Introduction

***Effective Practice in a Digital Age* is designed for those in further and higher education whose focus is on designing and supporting learning: academic staff, lecturers, tutors and learning support staff, facilitators, learning technologists and staff developers. What unites this diverse group is their interest in enhancing the quality of learning and teaching, and a curiosity about how technology can assist them.**

Much has changed since the publication of *Effective Practice with e-Learning* (JISC, 2004) – the first edition of this guide. National strategies for e-learning have now formally recognised the importance of technology in learning, teaching and assessment in all sectors of education in the UK, and in response many institutions have embedded the enhancement of learning and teaching through technology into their strategic missions.

As revealed by JISC research,[1] the social context in which learning takes place has also changed, and in ways that were not foreseen in the early part of the 21st century. Learners are increasingly dependent on technology to help them fit learning into their complex, demanding lives. Ownership of personal technologies – from computers to mobile devices – is now pervasive, and use of the internet, including Web 2.0 technologies, is commonplace.

Many learners expect to be able to access their personal technologies in institutional environments, and to personalise technologies provided for them by institutions. Flexible access to resources with opportunities for formative assessment and feedback are considered essential to support learning. Equally important is the ability to extend communicative and collaborative activity beyond the classroom.

For practitioners, the rapid adoption of technology presents many challenges but, by the same token, rich opportunities for enhancing their practice. Rather than replacing the teacher, technology has in many ways increased the focus on pedagogic skills. The art of the practitioner as instigator, designer and animateur remains key to the process of learning.

Effective Practice in a Digital Age, like its predecessor, is a guide for those who seek to understand better how to integrate technology into their teaching. The focus is primarily on institutionally based blended practice, while recognising that in some cases learners may be studying partially or wholly at a distance and/or engaged in self-directed collaborative learning as part of a taught curriculum.

Further information

Effective Practice in a Digital Age combines the outcomes of research with examples of current practice. To reflect the different starting points of readers, the case studies are divided into colour-coded sections to indicate the different degrees of access to technology and institutional support that practitioners may experience. Definitions of acronyms and technical terms are provided in the glossary.

The publication can be ordered in hard copy or downloaded in PDF and accessible text-only formats. In addition, a number of supplementary resources are available online in the Effective Practice Resource Exchange, including video clips, podcasts and extended versions of the case studies. All resources associated with this publication can be downloaded for use in educational contexts.

www.jisc.ac.uk/practice

www.jisc.ac.uk/resourceexchange

[1] JISC Learner Experiences of e-Learning theme, www.jisc.ac.uk/learnerexperience

Context

Considerable investment over the last decade and a half by UK universities and colleges suggests that the link between technology and the enhancement of learning and teaching is well established, yet research over the last five years indicates that the relationship between pedagogy and technology is not as simple as it first appears.

There is no doubt that learning and teaching in the sector now largely occurs in contexts rich in technology. The UCISA Technology Enhanced Learning surveys have charted the progress made by UK universities between 2005 and 2008[2] towards technology-enhanced learning. The 2008 survey results, for example, indicate that software tools for e-assessment, e-portfolios, blogs, wikis and podcasting are now often centrally supported alongside a Virtual Learning Environment (VLE), revealing the depth of UK universities' response to the national e-learning strategies produced from 2005 onwards.

Technology is also now deeply embedded in the lives of learners. Over eight in ten learners surveyed for the 2008 Becta report *Survey of FE learners and e-learning*[3] had access to a computer in the home, with the majority also benefiting from broadband connection to the internet. 62% of respondents stated they found it 'essential' to use a computer to study, and around three-quarters felt 'quite confident' or 'very confident' when using technology for tasks associated with learning. A parallel study[4] into the expectations of potential university entrants, commissioned by JISC from Ipsos MORI, further underlines the confidence with which younger learners embrace technology and the correspondingly high expectations they have of using technology, including Web 2.0 technologies, in higher education.

As a result of the pervasiveness of technology, the term 'e-learning' has come under scrutiny. Personal ownership of technologies coupled with access to social software means that all kinds of learning-related activity can potentially be e-enabled; e-learning can no longer be viewed as a purely institutionally based or narrowly defined set of activities. The 2009 revision to the HEFCE e-Learning Strategy, as a consequence, focuses not so much on e-learning as a specialist area as on the broader aim of 'enhancing learning and teaching through the use of appropriate technology'. The concept of e-learning is thus becoming subsumed into a wider discussion of how learning can be enhanced by more effective and far-reaching uses of digital technologies.

Yet technology-enhanced learning remains a source of concern for institutions.[5] This finding may reflect the extent to which supporting such practice makes demands on institutional resources, but also suggests a need to understand better how to design and support learning involving technology. Access, especially to the internet and

‘Our primary focus is on the enhancement of learning and teaching: this drives our approach. Technology supports this enhancement goal, and is therefore a factor in the development of effective learning, teaching and assessment strategies.’

Enhancing Learning and Teaching Through the Use of Technology: A revised approach to HEFCE’s strategy for e-learning (HEFCE, 2009)

social software, may have increased, but this does not mean that technology is always used to its best advantage, either by teachers or learners.

Research[6] commissioned by JISC and the British Library into the use of technology for research in higher education, for example, warns that, despite their familiarity with computers, learners lack the critical and evaluative skills required to interpret information found online. The second phase of the JISC Learner Experiences of e-Learning programme, reporting in 2009, also highlighted the need to support learners in developing digital literacy skills. In response, JISC programmes of research are focusing on learning literacies, course design and approaches to delivery in order to explore further what learning and teaching in a digital age entail.

The skill of the practitioner remains key to the effectiveness of learning – an unchangeable factor in a context of rapid change. However, practitioners now need to understand how to draw advantage from an increasingly diverse range of tools and media and select the most suited to their purpose; the appropriate integration or blending of technology-mediated activities with face-to-face learning and teaching is an important dimension of 21st century practice. When designing learning, practitioners must also be aware of the impact of technology on the way learners learn and make explicit for them the most effective learning strategies.

To further understanding of how technology may be best used in support of learning and teaching, *Effective Practice in a Digital Age* combines the work of individual innovators in institutional contexts with knowledge gained from JISC-funded programmes of research into the pedagogic potential of technology and into the factors involved in technology-mediated practice.

JISC has been at the forefront of research and innovation in technology-enhanced practice. Ongoing and recently completed programmes of research include:

- Institutional Approaches to Curriculum Design[7] – reviewing how course design and validation can be informed by technology (2008–2012)
- Transforming Curriculum Delivery through Technology[8] – investigating more flexible and creative models of delivery (2008–2010)
- Open Educational Resources[9] – supporting the open release of learning resources (2009–10, in conjunction with the Higher Education Academy)
- Learner Experiences of e-Learning – exploring how learners experience and participate in technology-rich learning (completed in 2009)
- Learning Literacies for a Digital Age[10] – researching into the competencies required for learning in a digital age and the support available to learners (completed in 2009)
- Design for Learning[11] – exploring how designing learning and the development of planning tools can be informed by effective pedagogic practice (completed in 2008)

[2] www.ucisa.ac.uk/publications/tel_survey
[3] http://tinyurl.com/qs2vuv
[4] www.jisc.ac.uk/publications/publications/studentexpectations
[5] www.ucisa.ac.uk/members/surveys/tc/tc2008-9/tc0809_ranked
[6] www.jisc.ac.uk/media/documents/programmes/reppres/ggworkpackagei.pdf
[7] www.jisc.ac.uk/curriculumdesign
[8] www.jisc.ac.uk/curriculumdelivery
[9] www.jisc.ac.uk/oer
[10] www.jisc.ac.uk/whatwedo/projects/elearningllida
[11] www.jisc.ac.uk/designlearn

Starting point

e-Learning = enhanced learning

'e-Learning' is still widely used to refer to the application of technology to learning. However, the term 'technology-enhanced learning' is gaining favour since it emphasises how technology adds value to learning by enabling:

- Connectivity to information and to others
- 24/7 access to learning resources
- Greater choice over the time, place and pace of study
- Alternative modes of study: distance, blended work-based, partially or wholly campus-based
- Knowledge-sharing and co-authoring across multiple locations
- Opportunities for reflection and planning in personal learning spaces
- Rapid feedback on formative assessments
- More active learning by means of interactive technologies and multimedia resources
- Participation in communities of knowledge, inquiry and learning
- Learning by discovery in virtual worlds
- Development of skills for living and working in a digital age

[12] Beetham, H. (2008) Review: Design for Learning programme phase 2, www.jisc.ac.uk/designlearn

Defining effective practice in a technology-rich context

Effective practice can be defined as employing a range of pedagogic skills to bring about the best possible learning for the widest variety of learners. This process undoubtedly draws on specialist skills and knowledge but in a digital age must also include the ability to *'design, plan and orchestrate learning activities which involve the use of technology as part of a learning session or programme'.*[12]

The technology-rich context of UK further and higher education provides much scope for thoughtful combinations of technology and traditional face-to-face practice in both the design of learning activities and of the wider curriculum.

In addition to specialist electronic equipment required by particular subject disciplines, an institution is likely to provide learners with 24/7 access to a VLE and to computers in sufficient numbers to meet demand for online learning. Portable devices, such as laptops, digital cameras and other handheld devices may be available on loan, while a variety of presentational technologies, such as interactive whiteboards, video conferencing facilities, electronic voting systems and display screens for distributed teaching, enhance many teaching environments. Furthermore, practitioners may choose to integrate Web 2.0 technologies and services available over the internet, where institutional policies allow.

Technology-enhanced practice is also likely to encompass a wide spectrum of activities: from supporting traditional practice to blended learning (the combination of traditional and e-learning practices) to learning that is delivered entirely online.

‘I’m still learning and still don’t see myself as a technical person, but I can see how all this makes a difference. That’s what motivates me to keep learning.’

Clare Treganowan, Greenwich Community College e-guide and course coordinator, Access to Nursing

The application of technology will not, as a result, be focused on any one mode of delivery – for example, distance or remote learning – but will be part of the mainstream provision for all learners.

Neither will the focus be solely on learning in formal contexts. The technology-enabled lifestyles of 21st century learners ensure that learning can also be accessed via their own personal choice of tools, ranging from mobile phones, MP3 players and handheld games consoles, to free online chat and telephony, social networking and media-sharing websites. Designers of learning in a digital age must therefore recognise that personal, informal technologies are likely to play a role in learners’ strategies for learning; learners with specific learning needs and disabilities may even depend on being able to access familiar software and hardware without which their ability to learn is reduced.

Despite the increased breadth of technology-enhanced learning, the key principles behind effective learning and teaching still apply: whatever the technology or mode of delivery, learning should be the key objective, and pedagogy rather than technology should drive the decision-making – whether the process takes place at the level of the individual practitioner devising activities or sessions or involves the work of a team or teams in remodelling a curriculum.

In brief, effective practice in a technology-rich context comprises a skilful combination of long-established and more innovative strategies in order to engage and empower learners and make learning more accessible, participative and rich.

Writing about practice

The aim of this guide is to provide an introduction to designing and facilitating learning that involves the use of technology.

Terms relating to practice can vary widely across the further and higher education sector. In general discussion, this guide uses the broadly based term ‘practitioner’ to cover the wide variety of roles involved in delivering and supporting learning, but this is replaced by the widely accepted term ‘tutor’ when specific examples of practice are described as, for example, in the case studies.

‘Learner’ has been adopted as the generic term for those undergoing a process of learning, and in the further education case studies, where ‘learner’ is often used by tutors when referring to their students. In the higher education case studies, ‘learner’ is replaced by ‘student’ as the more commonly used term in that sector.

‘Design for learning’ is used throughout to refer to the complex processes by which practitioners devise, structure and realise learning for others.

Designing for learning

Learning and teaching in a digital age are being profoundly altered in a wide variety of contexts by the additional potential offered by technology.

Approaches to learning

Before considering what is different or special about designing learning activities that incorporate technology, we must first explore what is understood about learning itself.

Designing for learning is likely to take place within the context of a preferred pedagogical approach, which in itself will be derived from a perspective on the nature of learning. It is possible to identify three broad perspectives: the associative, constructive and situative perspectives. (The constructive perspective can be further subdivided by focus.) Each of these perspectives makes fundamentally different assumptions about how learning occurs, as seen in Table 1, which also gives the identifying features and pedagogies associated with each perspective.

A perspective may have a particular accord with certain subject disciplines, categories of learner, or sets of values about what is important in learning. However, it is also likely that across a programme of learning more than one perspective will be adopted. It is quite possible, for example, that the design of a course, module or unit of learning will contain activities that reflect associative, constructive and situative approaches. It could even be argued that successful learning depends on integrating approaches associated with more than one perspective into the design.

Thus different perspectives and associated pedagogies should not be seen as being at odds with one another. All three perspectives place activity as central to learning – whatever the context of learning, learners need opportunities to reinforce their understanding and put newly acquired knowledge and skills into action. And no one pedagogical perspective (or combination of perspectives) is more or less likely to involve technology, as is shown in the illustrations of practice in the case studies in this publication.

Clear understanding of the approach or approaches to be taken and the underpinning perspective on learning enables the practitioner to make more appropriate decisions about the role that technology-enhanced practice, or any other strategy, will play in the design.

'It has been observed that the use of ICT fosters a more "planful" and even "design-like" attitude on the part of practitioners, who suddenly have to make explicit many aspects of their practice that would emerge ad-hoc in a live learning and teaching environment.'

Beetham (2008)

Perspective	Assumptions	Associated pedagogy
Associative perspective	**Learning as acquiring competence** Learners acquire knowledge by building associations between different concepts. Learners gain skills by building progressively complex actions from component skills.	• Focus on competences • Routines of organised activity • Progressive difficulty • Clear goals and feedback • Individualised pathways matched to the individual's prior performance
Constructive perspective (individual focus)	**Learning as achieving understanding** Learners actively construct new ideas by building and testing hypotheses.	• Interactive environments for knowledge-building • Activities that encourage experimentation and discovery of principles • Support for reflection and evaluation
Constructive perspective (social focus)	**Learning as achieving understanding** Learners actively construct new ideas through collaborative activities and/or dialogue.	• Interactive environments for knowledge-building • Activities that encourage collaboration and shared expression of ideas • Support for reflection, peer review and evaluation
Situative perspective	**Learning as social practice** Learners develop their identities through participation in specific communities of practice.	• Participation in social practices of enquiry and learning • Support for development of learning skills • Dialogue to facilitate the development of learning relationships

Table 1: Defining approaches to learning[13]

[13] Adapted from Mayes, T & De Freitas, S (2004)

Learning activity design

A practitioner has several issues to consider when designing an activity to engage learners and further their development. Figure 1: *A model of learning activity design* illustrates these issues more fully. In practice, the elements of design are closely interrelated, but the model can be used as a checklist to ensure that all four aspects have been considered and brought into alignment with each other and with the underpinning approach to learning.

Learners:

Their needs, motives for learning, prior experience of learning, social and interpersonal skills, preferred learning styles and expectations of the course and of the practitioner.

Intended learning outcomes:

The purpose behind the learning activity; internal or external goals and targets. In learner-centred approaches, intended outcomes will be strongly determined by learners' own goals or by learners' needs as diagnosed by a practitioner. In curriculum-centred approaches, formal outcomes will be more significant.

Learning environment (face-to-face or virtual):

Physical and virtual spaces; available resources, tools, artefacts and services (including digital ones). Tools and artefacts are said to 'mediate' learning and the ways in which aspects of the environment support learning are sometimes called their 'affordances' for learning.

Other people (co-present or mediated through technology):

Other people involved and the specific role they play in the interaction – for example, by supporting, challenging or guiding. Peers and collaborators are powerful mediators of learning and play an important role in supporting learners.

Within the context of any activity, the interaction between these factors will be dynamic and unequal. The decisions that underpin design in any particular context will involve a range of mediating tools and resources and a variety of interpersonal exchanges, and will be influenced by the practitioner's perceptions of the learners' needs and the intended outcomes. It is unlikely, therefore, that the interaction and the decisions made will be the same in all circumstances.

Essential to the enhancement of learning through technology is an understanding of the learning activity in its context, including the role of established tools and practices alongside more innovative approaches. Educational theory can help to define approaches that ought to work; educational research can help to describe approaches that seem to work, but only a skilled and reflective practitioner can decide which approach will work best in a given context. The complex art of choosing the best approach is termed 'design for learning'.

A learning activity is a specific interaction of learners with others, using specific tools and resources, oriented towards specific outcomes'

Beetham (2008)

A model of learning activity design

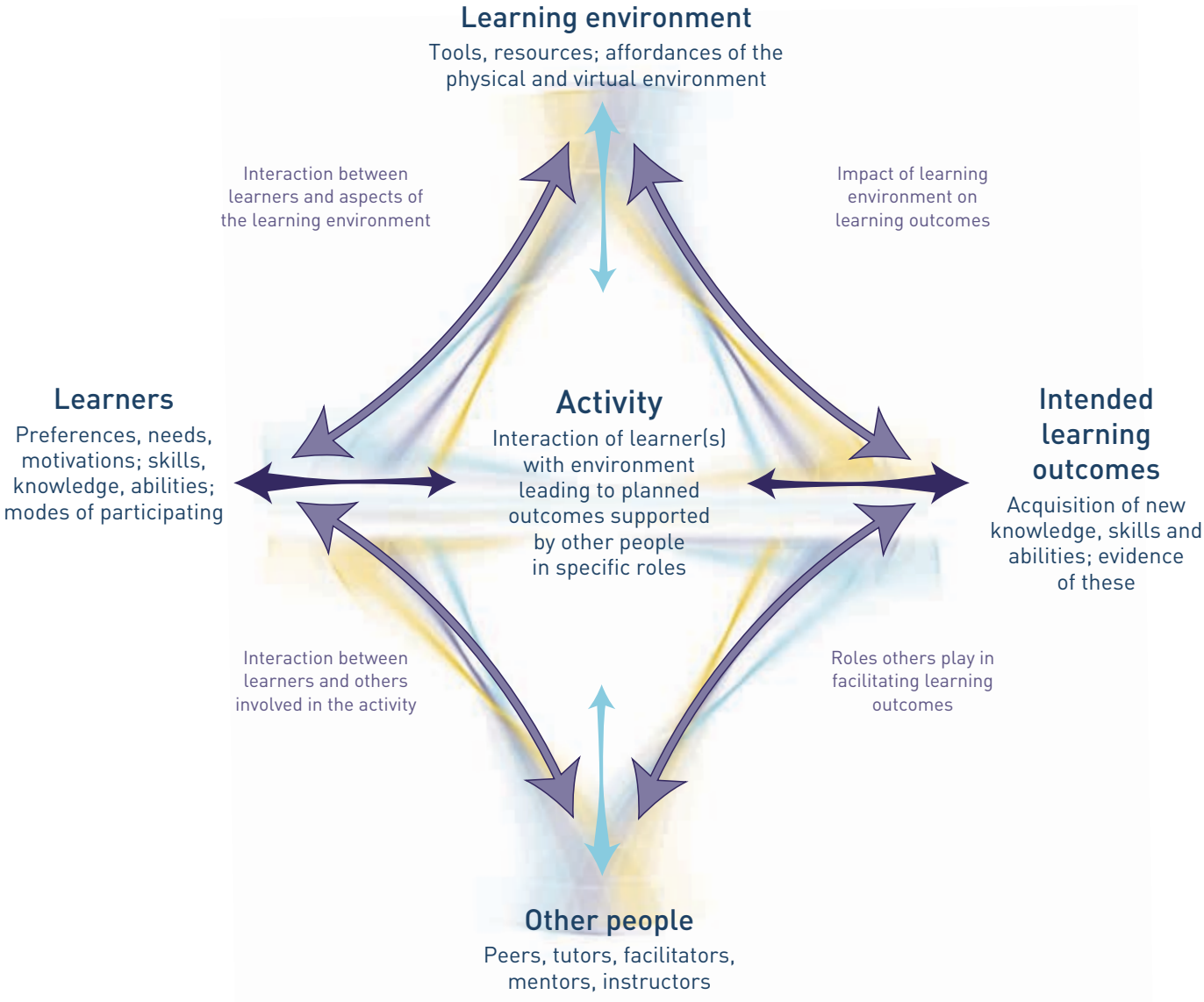


Figure 1: A model of learning activity design (Beetham, 2007)

Learning activity design in context

Designing learning activities takes place in real academic contexts in which any particular activity is likely to form part of a wider set of decisions involving the design of programmes, modules, sessions and individual resources. Figure 2: *Designing for learning in an institutional context* proposes four stages or levels at which design decisions are likely to be made:

Designing courses, programmes or modules of learning: A process of designing for learning can be initiated by the introduction of a new course, programme or module, by updating existing curricula (introducing, for example, learner-centred or blended learning approaches) or by changes to the assessment framework.

Designing sessions, lessons or units of learning: Session design involves breaking down the curriculum into episodes of learning in order to determine the detail of how learning will be delivered and assessed.

Designing activities: Within a session, a practitioner is likely to devise a number of tasks or learning activities – the things that learners actually do when following the curriculum.

Designing learning objects: Reusable items of digital content may be needed as part of the activities devised for learners. In learner-centred approaches, the role of the practitioner is likely to facilitate the development of content by learners as they construct their own understanding of the topic, rather than to develop content for learners.

The four levels are, to a greater or lesser extent, interdependent on each other, since decisions taken at the design stage at one level place demands on, or are constrained by, what occurs at another level. Taking the session level as an example, the intended outcomes are often inherited from the design of the whole course, but are also constrained by the availability of appropriate resources (or learning objects) or by what is possible given the nature of the learners and the learning environment.

Since designing for learning in an institutional context is likely to be a collaborative rather than a solitary process, the model may be used to consider roles, relationships and team interactions.

Practitioners designing learning activities for learners, for example, may be able to generate their own learning objects

to support these activities (such as podcasts or quizzes) but the development of more complex resources is likely to involve the skills of expert 'others' such as learning technologists, web designers and multimedia developers. The availability of skilled support for learning object development or session delivery will be part of the decision-making at the course design level, revealing the interdependence of one tier of decision-making on another in an institutional context.

The ten case studies in the next section illustrate how practitioners have designed meaningful learning experiences for their learners within particular institutional and discipline-specific contexts. These examples illustrate design decisions at some or all of these levels.

Figure 2: Designing for learning in an institutional context[14] (Beetham, 2009)

[14] Adapted from Beetham, H (2008)

Combine technology-enhanced options with the best of established practice and the practitioner has greater capacity to create meaningful and transformative learning experiences.

Understanding practice in a digital age

The search for effective pedagogies is of key importance since exciting learners' interest, retaining them on courses and enabling successful completion and progression are as vital to institutions and practitioners as they are to learners, but is it possible to identify features of effective technology-enhanced practice? What can the experiences of others tell us?

Outcomes from the Design for Learning[15] and Learner Experiences of e-Learning[16] themes of the JISC e-Learning programme offer some insights.

Extended access and choice: Learners benefit from choosing when, where and how they learn. Technologies that enable learners to manage the pace, time and place of their learning add real value to the experience of learning.

Exploration and inquiry: Technology can widen learners' access to information and facilitate learning in a range of environments. However, technology-based strategies add to rather than replace the best of established practice; face-to-face learning, where possible, remains of great importance to learners.

Communication and social interaction: In the world of work, learners are likely to collaborate with others – for example, through shared knowledge-building and the exchange of ideas. Web 2.0 technologies offer innovative opportunities for learners to collaborate and interact, and to develop evaluative, reflective and critical thinking skills.

Replicating the real world: Skilful management of digital resources can help replicate the scholarly or workplace practices associated with a profession or vocation. Using technology to reproduce real-world practices can bring learning to life and build learners' confidence as they develop professional skills.

Digital literacies: Technology does not in itself bring about successful learning. Learners in the main still depend on their tutors, mentors or facilitators to guide their use of technology for educational purposes. Even 'net generation' learners may need direction and support in identifying the most effective and appropriate strategies for using technology in learning.

Creativity and responsiveness: Bespoke learning experiences that involve well-judged, timely and sometimes innovative decisions about which technology to use, and how to integrate that technology with established practice, can still maximise learning potential.

The case studies that follow reinforce these findings. What also emerges is the uniqueness of each design; the interaction occurring between the key factors in Figure 1: *A model of learning activity design* – learners, learning environment, learning outcomes and others who play a significant role in the realisation of the design – produces an individual response born out of the practitioner's ability to successfully assess and manipulate the factors involved.

> Institutions and practitioners are at different stages in their adoption of technology and so the case studies reflect three levels of response: firstly, where the practitioner opts for technologies that are manageable with minimal help from others; secondly, where the practitioner can call on internal and external support to effect change or develop resources and, thirdly, where the practitioner is able to innovate within a highly resourced environment.

[15] www.jisc.ac.uk/designlearn

[16] www.jisc.ac.uk/learnerexperience

Choosing pathways

Which pathway shall I take?

Pathways	Case study	Summary	Learners and learning context
I prefer simple-to-use technologies.	**Case study 1** Building a learning community	Dispersed groups of learners acquire peer-to-peer support via an online community facilitated by a tutor.	Work-based foundation degree learners; online and campus-based learning
	Case study 2 Engaging learners in critical reflection	Assessed blogging helps to engage students in more challenging academic topics.	Undergraduate campus-based learners; blended learning
	Case study 3 Making assessment a learning experience	Digital audio recordings offer a more personal and potentially less time-consuming method of giving feedback.	Undergraduate and postgraduate campus-based learners; blended learning
I can draw on the support of others to take up a challenge.	**Case study 4** Blending digital with face-to-face learning	Online resources such as videos and self-assessment quizzes provide a more varied, flexible and engaging learning experience.	Level 3 campus-based learners; blended learning
	Case study 5 Supporting learning in authentic environments	Multimedia resources on mobile devices enable learners to enter more effectively into an established community of practice.	Undergraduate campus-based learners; mobile learning
	Case study 6 Redesigning the curriculum	Factual information delivered via podcasts enables face-to-face sessions to be more interactive. Rapid feedback via an EVS enables learners to self-assess.	Undergraduate campus-based learners; blended learning
Working in a highly resourced environment I can push the boundaries.	**Case study 7** Preparing students for a digital world	Learners develop critical and professional skills through use and evaluation of Web 2.0 technologies.	Undergraduate campus-based learners; blended learning
	Case study 8 Rethinking learning resources	Scenario-based online learning resources support the acquisition and assessment of professional and theoretical skills.	Undergraduate campus-based learners; blended learning
	Case study 9 Enabling autonomous learning	A free-standing e-portfolio tool provides continuing access to an online personal space for reflection and personal development and planning.	HNC work-based learners; online and campus-based learning
	Case study 10 Holding tutorials in a virtual world	Tutorial activities in a virtual world offer a greater sense of immediacy for distance learners.	Undergraduate distance learners; online learning

Associated learning goals	Themes	Technologies
Construct knowledge; share and discuss ideas	Active, collaborative learning Flexible access to self-paced, self-managed learning Clarifying the role of overlapping technologies	Wiki, VLE
Explore new concepts; critically review own and others' work	Active, collaborative learning Flexible access to self-paced, self-managed learning Assessment of learning Security and maintenance of content	Blog, VLE
Understand learning objectives; reflect on outcomes	Assessment of learning Improving the quality of feedback	Digital audio
Practise skills; construct knowledge and test understanding	Adapting and reusing content Flexible access to self-paced, self-managed learning Supporting change through a community of practice	Multimedia interactive resources on a VLE
Reinforce knowledge and skills; construct knowledge and test understanding	Flexible access to self-paced, self-managed learning Mobile learning	iPod touch, VLE
Organise own learning; build and test theories; reinforce knowledge and understanding	Flexible access to self-paced, self-managed learning Assessment of learning	Managed Learning Environment (MLE), podcasts, electronic voting system (EVS)
Create and innovate; present and discuss; critically evaluate own and others' work	Exploration of the digital self; learner-generated content Security and maintenance of content	Web 2.0 technologies: wiki, blog, media-sharing websites
Link theory to practice; explore and evaluate performance in role; solve problems	Sharing and reusing content Flexible access to self-paced, self-managed learning	Scenario-based multimedia resources in a VLE
Learn through experience; plan, review and reflect on learning	Clarifying the role of overlapping technologies Flexible access to self-paced, self-managed learning	e-Portfolio and personal learning system: Pebblepad
Negotiate learning goals; explore concepts; solve problems; create and innovate	Active, collaborative learning Flexible access to self-paced, self-managed learning Exploration of the digital self	Multi-user virtual environment (MUVE): Second Life

Building a learning community

Northumberland College

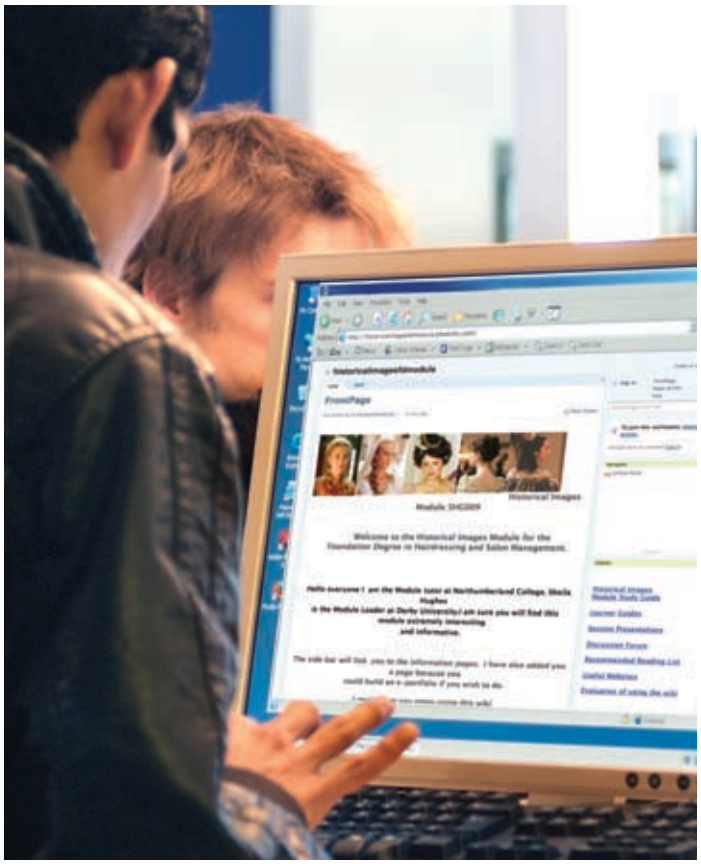
Challenge

For learners studying partially at a distance and combining their studies with work and family commitments, such as those following foundation degree programmes, becoming part of a learning community can be as important to their progress as the availability of learning resources.

e-Learning advantage

Wikis enable groups of learners based in different locations to collaborate on the research and production of assignments. A wiki is an online resource that is easily created and updated and, since its content depends on the activity of the group, a wiki can build a sense of community among its users.

In this example, a wiki tool is used alongside the college's Virtual Learning Environment (VLE), Learnwise, to support the coursework module on a foundation degree programme, each tool having a slightly different purpose: the VLE carries static resources relating to the whole course and is used most heavily during revision periods, while the wiki supports module-related activity such as the development of coursework and the dynamic exchange of ideas. The community that develops on the wiki discussion forum provides vital peer-to-peer support – learners post research findings that might be of interest to other members of the community as well as comment on their own progress, thus helping to build the knowledge of the whole community.



Tutors also contribute, making the wiki the focal point for the module. At the start of the week, tutors upload resources in preparation for sessions during learners' one day a week attendance in college. An increasing number of learners log on to review these resources immediately before a face-to-face session so that they can participate more actively when in class. Discussions started in class are likely to be continued on the wiki discussion forum during the week, showing the value of a wiki in supporting a dispersed group of learners.

What is a wiki?

A wiki is a series of web pages which users can add to or edit via any internet browser. Wikis used for collaborative activities can be password protected to restrict entry to members of an online community, and can include a discussion forum and facilities for user tracking and access controls.

The following three case studies illustrate how practitioners have utilised readily available technologies to enhance and extend learning.

‘Being able to access the wiki at any time of day is imperative, as most of us use our computers at anti-social times! Thanx for being great mates everyone!’

Louise, foundation degree student, Northumberland College

Background

Northumberland College offers a two-year foundation degree in hairdressing and salon management in partnership with the University of Derby. Students, who attend college for one day a week, come from a wide geographical area and combine their studies with work in the industry.

Transforming practice

Theresa Thornton, e-learning champion at Northumberland College, sets up a password-protected wiki for each new cohort of foundation degree learners to support collaboration on research during the production of a coursework module. The wiki gives essential information relating to the module, but its primary purpose is to provide learners with personal pages on which to develop their coursework, supported by a discussion forum. Learners are able to view each other’s personal pages – in fact they are encouraged to do so – although exchange of comments and ideas can only occur on the discussion forum.

The forum plays a vital role in supporting learners’ progress. Everyone knows by email alert when a comment or query is added and this simple reminder of being part of a collaborative team adds to the powerful sense of community that is generated by the wiki:

‘You can see learners moving to support someone who had been absent with suggestions and general advice. I don’t think they did that in the same way before we introduced the wikis...’ Theresa Thornton, e-learning champion, Northumberland College

Tutor contributions are vital, particularly while the community’s ground rules are being established. Theresa adds her own profile to the wiki to situate herself within the learning community and emphasises the importance of a tutor’s willingness to participate in discussions: *‘Learners can learn from your comments to other learners.’* However, a tutor may also contact learners personally by email – for example, to offer unseen support to learners experiencing difficulties.

Evaluations have showed that learners are comfortable with using different tools for different purposes, but some have found the wiki simpler to use than the VLE as it involves *‘fewer clicks to get to what you want’*. There has been no evidence that learners are unable to gain access to the wiki outside college; those without a home computer have used community venues such as public libraries to connect to the internet.

Key points for effective practice

- A wiki can establish a sense of community and task ownership. The usefulness of sharing ideas on a wiki increases if the tutor contributes, but avoids taking charge.
- Learners’ confidence in and access to IT can vary, so the choice a tutor makes from available technologies should take into account learners’ lifestyles and learning preferences.

Final word

Peer-supported learning is more likely to occur if learners feel at ease with the tools they use, but clear instructions are needed about the security of content hosted outside the institutional network.

See also the video clip: Relating research to practice
www.jisc.ac.uk/resourceexchange

For detailed case studies, visit **www.jisc.ac.uk/practice**

Engaging learners in critical reflection

University of Edinburgh

Challenge

Tutorials and seminars are part of the culture of a research-led university, yet students are often ill prepared to take advantage of the opportunities afforded by small-group teaching. Less confident students avoid taking part while stronger contributors tend to dominate face-to-face discussions. Tutors may have no knowledge before a tutorial or seminar of how well learners have understood a topic, nor can they assess in advance which strategies to use to sustain discussions.

e-Learning advantage

Blogging is a well-established vehicle for personal reflection and commentary, although less frequently used under assessed conditions. Nonetheless, blogging can play an effective part in the delivery of formal curricula. In this example, a VLE-based blogging tool has been used to enhance the dynamics of tutorials and seminars and to improve the consistency of students' engagement with more challenging elements of the curriculum.

In this example, reflective blogging, carrying 10% of the total assessment, has replaced an assessed oral component on some courses. Students are aware that commenting on each other's blogs is assessed and so contribute readily. However, there have been other positive outcomes from the activity, notably greater confidence in undertaking critical evaluations.

Students who, for example, dislike open discussion or have imperfect written skills are able to prepare their comments in advance before pasting them into the blog. Normally reticent students feel more able to contribute, even to challenge others unseen in a blog. Hence a deeper level of discussion develops – both on the blog and in the subsequent face-to-face sessions.

Tutors have also found advantages. By monitoring postings on the blog, they have better knowledge of how students are progressing and can assess in advance how to approach face-to-face sessions: *'You hit the ground running, so the level of discussion... is at a much deeper level.' Tutor*

What is a blog?

A blog (web log) is an online reflective journal in which other internet users can post comments. Blogging tools integrated into VLEs allow access to be restricted to members of a closed group (for example, a course, module or tutorial group) to support formal learning activities.

‘Taking part in the blogging exercise has been helpful ... [It] gives your brain the right to have your own thoughts.’

Clare, undergraduate divinity student, University of Edinburgh

Background

Students on courses in the University of Edinburgh’s School of Divinity include undergraduates on four-year MA (Hons) degree courses and postgraduates following a taught Masters programme. Following successful trials commencing in 2005, the School of Divinity has used blogging as part of a wider blended learning strategy to develop skills of critical thinking and reflection.

Transforming practice

An assessed blog on a text of the week has been introduced on some courses. (A course at Edinburgh is the equivalent of a module.) Each week a student takes up the role of blog writer to provide a commentary on a selected document or historical text, while the remaining students comment on the blogger’s analysis. Because the aim is to develop critical thinking skills, students are asked to avoid agree/disagree responses, but instead to pose questions, point out omissions, correct false premises or challenge preconceived ideas.

To enable everyone to gain confidence, a more colloquial style of writing is encouraged (although text speak and abusive language are ruled out). All students participate in introductory sessions in the university computer labs and are supported, post induction, by how-to guides on the VLE.

Evaluation of the scheme has involved tutors as well as students. Feedback reveals that undergraduates are especially enthusiastic about blogging – they find the tool easy to use and are engaged and stimulated by taking part: *‘It’s great fun! Encourages everyone to contribute each week’... ‘[It] pump-primes discussion – gets ideas going.’ Student comments*

The blogging exercise enables students to prepare for a tutorial or seminar at their own pace, yet also imposes a discipline: *‘I start thinking and [can] see other people’s arguments before the tutorial – I’m better prepared.’* Blogging may also help students prepare for written assignments by enabling them to take incremental steps towards expressing opinions and challenging others’ viewpoints.

From the tutors’ perspective, there have also been clear advantages. Group blogging helps to unite a diverse body of students and makes it easier to identify individuals’ difficulties. The quality of discussion on the blogs is often high, with more competent students raising the performance of weaker students, and contributions made as part of these discussions can later become aids for revision. The time involved in monitoring blogs has not proved excessive – in fact, the blogging activity may have reduced the time spent supporting students experiencing difficulties.

Key points for effective practice

- Assessed blogging can help to engage students in more challenging academic topics.
- Integrating comments from the blog into tutorial discussions extracts full value from the activity: a course blog should be central rather than peripheral to a course.

Final word

Trials with postgraduate students, in which the blogging activity was not assessed, were less successful. It is possible that students view blogging as an additional burden if it is not an assessed component of a course.

See also the video clip: Responding to learners **www.jisc.ac.uk/resourceexchange**

For detailed case studies, visit **www.jisc.ac.uk/practice**

Making assessment a learning experience

Leeds Metropolitan University

Challenge

Assessment and feedback have been cited by students as the least satisfactory aspects of their university experience (National Student Survey 2008). Assessors also record dissatisfaction with the time spent in giving feedback and the low level of response their comments elicit. Against this background, the JISC-funded Sounds Good project[17] set out in 2008 to establish whether feedback by digital audio files could make an improvement.

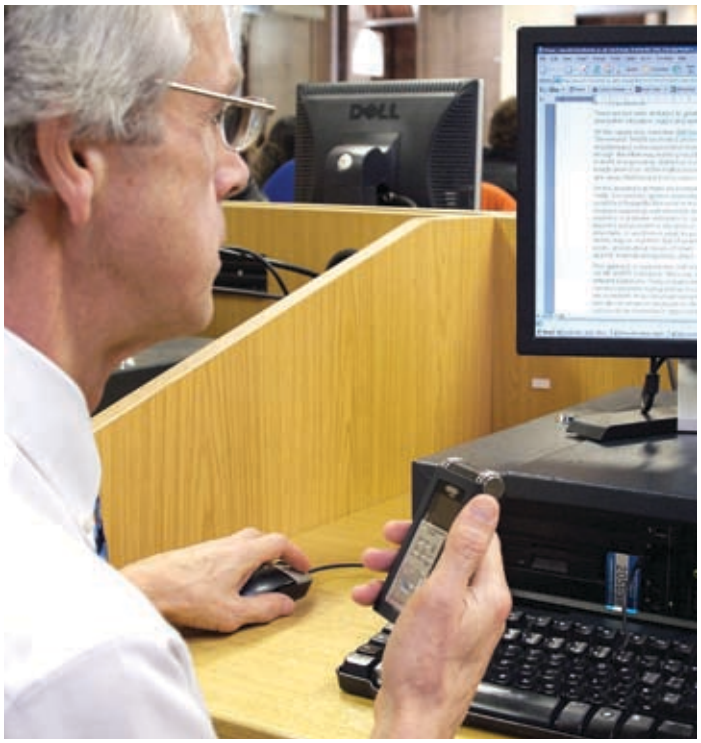
What is digital audio?

Digital audio files enable sound information to be stored or played on a computer or mobile device and shared electronically with others. A digital audio recorder that records to MP3 format and has a USB port to upload files to a computer is one option. Another is to download audio recording and editing software such as Audacity®.

e-Learning advantage

The outcomes of the Sounds Good project have been largely positive. In comparison to written feedback, most tutors found that audio recording took the same amount of time or less. The quality of feedback also improved – the opportunity to add further examples and/or more detailed explanations was likely to give students a more supportive and meaningful experience of assessment.

Approximately 90% of students responded positively to receiving audio-recorded feedback. Although some students stated they would prefer a combination of written and audio-recorded comments, most found audio feedback more personal and relevant to their needs. Some also understood better why a particular mark had been awarded.



Audio feedback was especially helpful for those students for whom English is a second language, and some dyslexic students also found the audio option beneficial. When students expressed dislike of the approach, it was often due to the length of recordings: *'... if they are too long, you tend to switch off and miss information.'*

Digital audio files, like any pedagogical tool, need to be used appropriately: the most likely application is when detailed, time-consuming feedback is normally given. Audio feedback may not be a 'magic bullet' solution for all assessment issues, but is likely to provide a more personal, accessible and relevant experience for students. It may also in some circumstances save staff time.

[17] www.soundsgood.org.uk

‘As I am dyslexic, this has helped me because I find it easier to listen than to read.’

Michael, sports science student, Leeds Metropolitan University

Background

National Teaching Fellow Bob Rotheram, based at Leeds Metropolitan University, has explored the use of audio feedback on students’ assignments in the Sounds Good project.

Transforming practice

Tutors volunteering for the project were recommended to select coursework-based modules on which formative and summative feedback is normally given.

The selected modules included a Level 1 sports-related module which involved a laboratory report written in a scientific format. This provided an additional opportunity to use audio recording – because many first-year students have little experience of writing formal scientific reports, they benefit from feed-forward guidance via audio file, as well as feedback on their completed work.

Using Audacity sound-recording software, the sports science team produced three files: the first recording noted points of importance and common pitfalls when writing scientific reports, the second explained the assessment framework and the third gave feedback on the individual’s work. The team then held a face-to-face group session to ensure that all students had grasped the rationale behind the marks they had received.

The approach taken by the sports science team was highly praised in student evaluations. From everyone’s perspective, time spent in developing the feed-forward files, which could be used again and again, had been well spent:

‘It [sound recording] was always there: they [students] could use it as a template, go back to it time and time again.’
Dr Steve Cobley, senior lecturer in sport, exercise and physical education, Leeds Metropolitan University

Most tutors who took part in the trial have continued to give feedback by audio. Where recording sound files initially took longer, tutors recognise that their skills will improve over time. Tips include keeping the assessment criteria on hand to refer to while recording, jotting down key words as prompts, and using the pause button to record feedback in stages.

Where briefer feedback is needed, or where tutors can type as fast as they speak, there may not be a significant advantage. However, by helping students understand better what is required of them, audio files may still save time in the long run.

Key points for effective practice

- Feedback is essential to student learning. Providing feedback in different media reinforces the message and gives students a more personal learning experience.
- Administrative approval should be obtained if audio files are used to give comments and marks on summative assessments.

Final word

Students need sound cards, speakers, access to email or the VLE and suitable software to play back digital audio files. However, in case of difficulty, the VLE can become a holding place for feedback, with links rather files being emailed to students.

For detailed case studies, visit **www.jisc.ac.uk/practice**

Blending digital with face-to-face learning

Greenwich Community College

Challenge

Many learners on the first year of a two-year course – such as the Level 3 CACHE (Council for Awards in Children's Care and Education) diploma course in child care and education – experience difficulties in making the transition between different levels of study. Unit 2 of the CACHE diploma at Greenwich Community College is studied part way through the first year and requires learners to demonstrate skills in assessing a child's development alongside knowledge of theories and government policy. Initially, learners – typically school leavers with limited prior experience – found the unit challenging.

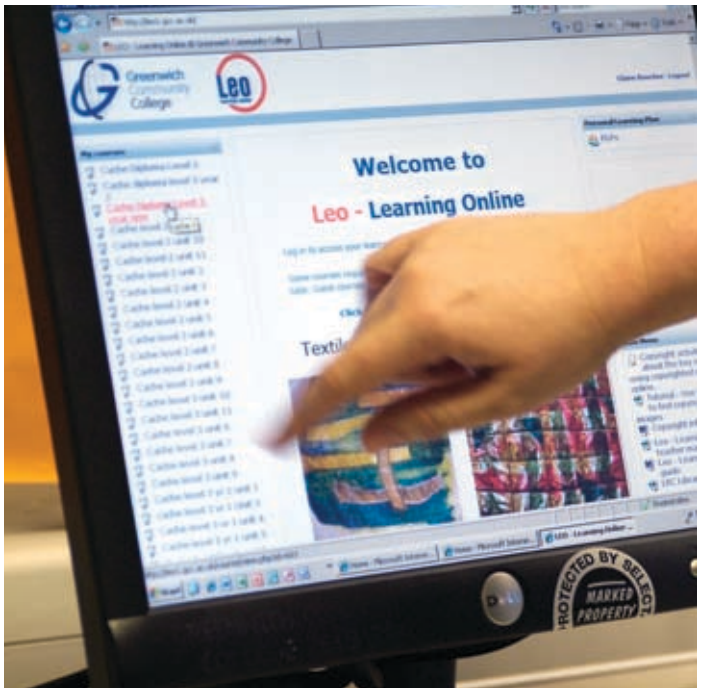
e-Learning advantage

In this example, the course tutor drew on institutional support to create and adapt resources for a course site on the VLE to give learners more control over the pace, timing and location of their learning.

Developing a course presence on a VLE has many advantages. Online resources extend learning beyond the classroom. Learners are better able to take a more active role in managing their learning – for example, by accessing learning materials at a time or in a place convenient to them, testing their knowledge and receiving feedback via online quizzes, and gaining support from discussion forums and blogs, now commonly integrated into VLEs.

Schemes of work located on a VLE make the structure and learning objectives of a course more transparent to learners. Links to online resources within a scheme of work provide additional opportunities to develop or reinforce learners' skills and conceptual understanding. Additional resources can be included to extend the potential of stronger learners and support the progress of less able learners.

The initiative at Greenwich had a notable impact in the classroom. Whereas previously the CACHE diploma classes were dependent on PowerPoint® presentations, a livelier variety of digital and face-to-face activities has enhanced the experience of learning.



What is a Virtual Learning Environment (VLE)?

A VLE is an online system comprising a range of tools to support learning and the management of learning. For example, VLEs provide online access to learning resources and support peer-to-peer and learner-to-tutor communication.

The following three case studies illustrate how specialist expertise within an institution can support more complex e-learning initiatives.

'I really feel that if other subject[s] were put on in this way it would help with the subjects that some students find difficult.'

Sarah, CACHE child care and education learner, Greenwich Community College

Background

As part of the JISC-funded eLIDA CAMEL[18] project, tutors at Greenwich Community College have developed sequences of activities based around resources on the college's VLE, known locally as LEO – Learning Online. Tutors have worked within a community of practice, with additional support from the college e-guides – skilled members of teaching staff supported by college management to champion e-learning initiatives.

Transforming practice

CACHE diploma lecturer Clare Boucher began by seeking help from an e-guide to locate, adapt or create digital resources. Using a team approach that combined pedagogical expertise with technical skills, resources have been devised to match course objectives, in particular focusing on making difficult aspects of the curriculum more accessible.

The resources have been integrated into an online scheme of work, which enables learners to manage their own progress on the course. However, significant changes have occurred during the face-to-face sessions – with the online resources in place, new learning sequences have developed that blend digital with face-to-face activities. For example: using an online forum on LEO, questions are posed before a class to seed debate and prepare learners for the next day's session. Self-assessment quizzes are used as reinforcement activities, both during a class (on an interactive whiteboard) and after a class (on the VLE), and the outcomes tracked to provide a record of learners' progress. Video clips, embedded into PowerPoint presentations, enable learners to extend their understanding through discussion before testing their child-assessment skills.

Learners have responded positively to the variety of digital and face-to-face strategies. Now that the unit is being taught for the second time, there is also a stronger sense of benefit for tutors, including a noticeable shift in the locus of control between tutor and learner:

'I feel this has provided learners with a much more positive learning experience. Because they can interact with the materials, it's become part of their own learning. The learners run with it, and we facilitate their learning. It all makes more sense now.' Clare Boucher, lecturer, CACHE Diploma in Child Care and Education, Greenwich Community College

The availability of online learning resources has not diminished the importance of the tutor's role; designing and supporting different sequences of activity provide as much evidence of a tutor's expertise as does the ability to transmit information.

Key points for effective practice

- e-Learning content frequently requires adaptation for use in another context. Helping tutors to resource their courses appropriately is as important as developing their ICT skills.
- Skilful combinations of online resources and face-to-face activities can promote independent, self-directed learning.

Final word

Expert colleagues acting as mentors can be vital in the early stages of adoption of new techniques. The best mentors may not necessarily be those with the greatest IT skills – what matters is their approachability and willingness to share their knowledge and expertise.

For detailed case studies, visit **www.jisc.ac.uk/practice**

[18] www.jisc.ac.uk/whatwedo/programmes/elearningpedagogy/elidacamel

Supporting learning in authentic environments Southampton Solent University

Challenge

Some aspects of professional and vocational training must take place in real-life contexts – it is only by learning in authentic contexts that students are able to experience the cultural and professional practices of their chosen fields. Through real-life interactions, for example, students develop the complex interpersonal, ethical and professional skills they need in the workplace. However, learning on the job must not place students or their clients at risk.

e-Learning advantage

To help undergraduates develop professional expertise in sports-related professions, video tutorials demonstrating procedures followed in tests or treatments have been created at Southampton Solent University with the assistance of a centralised university support team. The tutorials are formatted to play on commonly used mobile phones as well as on an Apple® Mac® or PC and, for the purposes of the pilot scheme, on an iPod touch®.

What is an iPod touch?

An iPod touch is a pocket-sized media player and Wi-Fi mobile platform designed for viewing multimedia productions. Like the iPod, the touch provides access to online resources in multiple locations, including academic content available free via the iTunes U service.

Mobile devices enable learning to be timely, spontaneous and flexible: the voice of a tutor talking through a set of procedures not only instils confidence at the point of need but also ensures that training can translate safely into effective professional practice. Multimedia resources such as video tutorials are also valuable for students with poor memory or time management skills, or those who have a visual learning preference, and thus have application in a range of contexts and across the full spectrum of educational provision.

A mobile device can, however, open up opportunities that extend beyond a purely associative approach to learning. Students at Southampton Solent have also used the iPod touch for self-directed exploratory learning activities – for example, accessing resources on the university's VLE, myCourse, or browsing the internet from any Wi-Fi-enabled location. Students taking part in the pilot recorded satisfaction with the performance of the device in all aspects of their learning, and their marks were on average higher (although not significantly so) than those of other students.

‘Our aim is to give students exposure to real patients and clients while they are learning – there is no better way to learn. Part of our function is to prepare students for the outside world.’

Dr Stewart Bruce-Low, senior lecturer in applied sport science, Southampton Solent University

Background

The BSc (Hons) degree in applied sport science at Southampton Solent University prepares students for roles associated with participation and performance in sport. Students’ ability to carry out procedures competently and ethically forms the basis of their professional accreditation by the British Association of Sport and Exercise Sciences (BASES).

Students practise their professional skills by testing athletes at the university or by working with patients referred for treatment by general practitioners, physiotherapists or chiropractors. Client safety is of high importance, and students must work at all times within the BASES code of conduct.

Transforming practice

Resources that can be played on handheld devices provide the benefit of just-in-time learning – students in workplace contexts learn by doing and need training materials that are accessible at the point of need. Flexible access to key elements of learning enhances all students’ professional competence, and may even improve the performance of weaker students.

The iPod touch proved well suited to this context. Student feedback shows that watching the video tutorials on an iPod touch compared well with doing so on a desktop computer. Most students found it easy to use the iPod touch to locate and open resources on the VLE, including text-based resources. The Wi-Fi functionality of the iPod touch also opened up some new learning strategies, providing opportunities for:

- Short-term research or revision in response to an immediate need
- Accessing learning resources in ‘dead time’ such as during breaks or while travelling
- Reinforcement of newly acquired knowledge and skills
- Social learning – the iPod touch enables students to access resources in any Wi-Fi enabled context including social environments.

The video tutorials have been produced internally to a professional standard for use on a variety of platforms, including an iPod touch, and key learning resources such as PowerPoint presentations and lecture notes have been reformatted and exported as PDF files for use on a small screen. To sustain use of the video tutorials beyond the pilot scheme, an iPod touch may be added to the list of essential equipment – including tracksuits and textbooks – that students taking a sport science degree at Southampton Solent University are required to buy.

Key points for effective practice

- Multimedia resources accessible on mobile devices support situated learning and provide opportunities for reinforcement and revision.
- Video tutorials can level the playing field for students with some disabilities and those dependent on a visual learning style.

Final word

The iTunes U section of the Apple music downloading service is prompting academics and universities in Europe and the USA to make and distribute free video and audio material for use on iPods – for example, lectures by leading experts. This is a further potential role for an iPod or iPod touch in education.

See also the podcast: Learning with mobile technologies **www.jisc.ac.uk/resourceexchange**

For detailed case studies, visit **www.jisc.ac.uk/practice**

Redesigning the curriculum

University of Hertfordshire

Challenge

Wider participation in higher education and a greater diversity in students' educational backgrounds have made it difficult for tutors to assess the quality of learning in large-group contexts; lectures delivered to large groups present challenges when it comes to identifying and supporting students with specific needs. Students have limited opportunities to interact with one another or to check their understanding of a topic.

e-Learning advantage

A blended learning approach – one that combines established ways of learning and teaching with the affordances of technology – can introduce opportunities for interactivity and self-directed, self-paced learning. In this example, the curriculum for a module taken by students preparing for work in the health and emergency professions has been redesigned to take advantage of technology-mediated learning. Podcasts and small-group activities, some involving the use of electronic voting systems, have replaced lectures to enable a more agile response to students' needs and to introduce a more active and constructivist approach into the design of learning activities.

What is a podcast?

A podcast is a recording, for example of the content of a lecture, made available for download from a website or VLE by syndication – a process of making content available to other sites by means of RSS feeds.

The podcasts carry the theoretical and factual knowledge required by students but, unlike face-to-face lectures, can be accessed from any location, paused and replayed as necessary. RSS feeds alert students to the availability of new podcasts, so that, by using computers on campus or their own personal technologies, students can learn at a time and in a place convenient to them.

The podcasts are released before rather than after a face-to-face session to enable students to prepare in advance. Evidence suggests that many students appreciate the flexibility this offers them and spend longer with the content of a podcast – for example, replaying the presentation or researching recommended links – than the two-hour lecture the podcast replaces. The face-to-face session then follows up on questions that students' deeper engagement with the theoretical content has generated – podcasts often conclude with tasks and prompts for further research.

‘I felt I could do more to improve the quality of the students’ experience. I just wanted to find a better way of teaching.’

Jenny Lorimer, senior lecturer, School of Health and Emergency Professions, University of Hertfordshire

Background

The School of Health and Emergency Professions at the University of Hertfordshire offers a BSc (Hons) course in diagnostic radiography and imaging. Students have 24/7 access to resources such as podcasts on the university’s Managed Learning Environment, StudyNet, a personalised portal to course information and learning resources.

Transforming practice

Until 2006, the module on anatomy, physiology and pathology for imaging on the BSc (Hons) course in radiography was delivered in two two-hour lectures which provided the only face-to-face contact that this large cohort of students had with their tutors.

With the help of colleagues in the Blended Learning Unit, tutor Jenny Lorimer has split the content of the first two-hour lecture into shorter sections and recorded these as MP3 files to accompany a PowerPoint presentation. Students’ needs when assimilating unfamiliar content are considered throughout. An initial slide in each presentation gives a list of terms and concepts that may be new to the student. The next slide gives an overview of key concepts. At this stage, the recording pauses and students are advised to take the opportunity to familiarise themselves with the new terms and concepts. The presentation is similarly divided into sections of around 20–30 minutes to enable students to take a break before continuing.

The combined presentations and podcasts are uploaded to StudyNet a week in advance of the second two-hour session, now redesigned as a sequence of face-to-face, small-group activities. During this session, students rotate in groups to undertake three or four different activities – for example, testing their recall of the newly acquired anatomical and pathological terms by using multiple choice quizzes in conjunction with a voting system, discussion activities or peer marking of essay outlines.

The use of an electronic voting system not only gives students opportunities to assess their understanding of the podcasts, but also enlivens the face-to-face sessions. Majority verdicts from multiple choice questions embedded in a presentation, for example, can open up exploration of the consequences of the decision in subsequent slides. Students can become deeply engaged in the debates that ensue – unlike students in large lecture theatres, those working in small groups are more likely to interact with their tutors and with each other.

Key points for effective practice

- Podcasts in themselves do not enhance the learning experience. More important is the coherence of the blend between technology and traditional aspects of learning and teaching.
- Instructions should be included in a podcast to assist students in using audio files for learning.

Final word

Introducing blended learning – for example, combining podcasts and voting systems with face-to-face small-group activities – can transform the experience of learning a factually-based subject discipline.

See also the video clip: Redesigning the curriculum **www.jisc.ac.uk/resourceexchange**

For detailed case studies, visit **www.jisc.ac.uk/practice**

Preparing students for a digital world

University of Salford

Challenge

Media production and distribution have undergone rapid change as a result of the impact of the internet and the emergence of Web 2.0 technologies. Now almost anyone can publish their work online without knowledge of industry-standard production software or publishing protocols. Students, especially those aiming to work in IT-related industries, need to understand how to work appropriately and professionally in an environment influenced by a Web 2.0 culture.

What are Web 2.0 technologies?

Web 2.0 technologies enable users to be contributors to the internet as well as consumers. Web 2.0 tools and services include media-sharing websites, social networking sites, collaborative publishing tools, such as wikis and blogs, and social bookmarking tools such as del.icio.us.

e-Learning advantage

Helen Keegan, coordinator of an advanced multimedia module on the BSc (Hons) degree course in professional sound and video technology at the University of Salford, recognised the importance of including in the curriculum the personal publishing tools and media-sharing websites commonly used by students. Redesigning the curriculum to include Web 2.0 technologies has enabled Helen to demonstrate the importance of appropriate self-presentation on the web and, at the same time, develop the critical and evaluative skills of students.

In the redesigned curriculum, students present examples from blogs and media-sharing websites to one another and discuss issues that arise, ranging from design features and technical matters to the management of the 'digital self'. By shifting the focus of control between students and tutor, so that both become co-investigators of the impact of Web 2.0, Helen has also deepened students' observation and interpretative skills and given students a voice in the development of their own curriculum.

Contributing to the curriculum engages students' interest and sharpens their understanding of issues relating to the worldwide web – for example, the ownership of content and the management of digital identities. In the process, students also become more able to question the authority and value of what they find online and make better-informed judgements about which tools to select when working and publishing online.

The following four case studies show practitioners in well-resourced contexts using tools and technologies in innovative ways.

‘It’s about being informed and making the right choices. We need to educate students to make sound decisions.’

Helen Keegan, lecturer in interactive media, University of Salford

Background

The BSc (Hons) in professional sound and video technology at the University of Salford is a course in production skills for the broadcast industries. Students, who are typically in their early 20s, aim to work full time as engineers, designers or technicians.

A module in advanced multimedia taken during the final year was initially designed to refine skills in print- and computer-based applications. However, preparing to work in a Web 2.0 context – in which content can be shared freely but may be ‘mashed up’ with other content, used, shared and even repurposed – also entails competence in a range of digital and information literacies.

Transforming practice

Following a redesign of the curriculum, Web 2.0 tools and services such as the media-sharing sites, Flickr® and YouTube, are now included. Students’ searches for items on blogs and media-sharing websites lead to well-informed discussions of Web 2.0-related issues – for example, how to create and manage digital identities, the technical and production skills evident in videos on YouTube, the types of licence under which videos have been published, who ‘owns’ videos once shared on YouTube, and how else they might subsequently be used:

‘There is great value in bringing YouTube into the classroom. If students select an item for discussion, they have more ownership of the issues it presents… and potentially a better grasp of the viral nature of the web.’ Helen Keegan, lecturer in interactive media, University of Salford

The greatest enjoyment, however, comes from the creative potential of technology. Students hone their skills as media producers in group research projects authored on wikis, which they present to one another via a web conference.

These activities feed into an individual assignment – My digital self – which carries 50% of the assessment for the module and requires students to develop and design a website to showcase their work. The assignment forms the crux of students’ learning about designing for and publishing on the web and provides professional statements about the students and their work in preparation for the real world of work; hosted on WordPress, the website can be found by any internet user, including potential employers.

On completion of the module, students are more effectively prepared to use the internet as a platform for promoting their achievements and more aware of the issues of working beyond the ‘walled garden’ of the institutional VLE.

Key points for effective practice

- Web 2.0 technologies provide innovative opportunities for critical reflection. A platform-agnostic approach appears to foster greater learner autonomy.
- Using external websites as host platforms for production work presents potential risks. Backing up files located outside the institution’s VLE is recommended.

Final word

Many agencies now see digital and information literacies as a priority for students. In 2008, JISC published Web2Rights[19] – an online animated guide to issues relating to the use and reuse of content in Web 2.0 technologies and, in 2009, a study of learning literacies in a digital age.[20]

For detailed case studies, visit **www.jisc.ac.uk/practice**

[19] www.web2rights.org.uk

[20] www.jisc.ac.uk/whatwedo/projects/elearningllida

Rethinking learning resources

Birmingham City University

Challenge

Many students find it difficult to make connections between the different elements of their course. The student perspective tends to be one of discrete chunks of knowledge acquired module by module, yet for nurses, as with all medical professionals, being able to combine knowledge with practical skills is an important outcome from a course of study.

e-Learning advantage

Virtual scenarios that replicate complex real-world situations help to establish the connections between theoretical knowledge and practical expertise. In this example from Birmingham City University, students taking a community mental health nursing module undertake problem-solving scenarios based around a virtual caseload of clients.

Credible, coherently structured resources form the basis of such approaches to learning. Each example in the virtual caseload includes a video depicting a fictional client's symptoms and in some cases, the reactions of family members. The videos form part of a suite of resources that includes case notes, letters and PowerPoint presentations outlining the underpinning theory, ethics, policy statements and points of law associated with each case.

What is digital video?

Digital video resources meet a wide spectrum of educational needs, from illustrating what cannot be experienced firsthand to developing specialist skills. The in-house production of video for educational purposes has been made easier by portable digital cameras and digital editing software.

The virtual caseload has extended the potential for learning in a number of ways. Both face-to-face sessions and assessments can now be made more relevant as students take the role of clinical practitioners making decisions about clients, yet can learn from their mistakes with impunity. Students' understanding of the wider issues involved in a course of action is also more stringently tested – the virtual caseload offers opportunities for innovative forms of assessment, and more challenging opportunities for self-assessment.

The narratives may also become the basis for cross-disciplinary learning and teaching if integrated into modules for other health-related courses or used within disciplines in which mental health awareness is important. For example, the fictional caseload may be relevant to the training of social workers, architects and town planners, as well as healthcare professionals.

‘This was really good. I can link theory and practice together more easily... It would be useful to still be able to access it after we have qualified.’

Janet, mental health nursing student, Birmingham City University

Background

Andrew Walsh, module leader on the community mental health nursing module at Birmingham City University has worked in conjunction with the university’s Learning Technology Development Unit (LTDU) to produce fictional client narratives illustrating mental health issues. Located on the university’s VLE, Moodle™, the resources can be accessed whenever and wherever students want to study.

The LTDU is now developing a virtual town, Shareville, using Cheetah3D modelling software – an innovative development which opens up the prospect of cross-disciplinary learning and teaching. To enable more students to experience learning in authentic contexts, simulations in digital video format are being created by other subject disciplines to join the virtual clients in this Macromedia® Flash®-based replica of an inner-city environment.

Transforming practice

Andrew divided the community mental health Moodle site into sections to build up the resources that form the basis for the scenarios. Central to each scenario is a video of an actor depicting the fictional character or a family member whose story prepares students for the challenging real-life issues they will face as clinical practitioners:

‘The need to engage with things on an emotional level is important for our students... they are dealing with often hurt, troubled and traumatised people, and it is necessary to also try to consider the emotional aspects of this.’ Andrew Walsh, senior lecturer in mental health nursing, Birmingham City University

Use of the scenarios in assignments and formative assessments accelerates students’ ability to form connections between what they have learnt at different points in their course. In a module assignment, for example, students first study the information available about a character, and then participate in a session during which they role-play a clinical practitioner. To complete the assignment successfully, students need to draw on a wide knowledge base and show understanding of the ethical, social and wider family issues involved in a particular course of action. ‘Meeting’ the service users on video prevents this from being purely a paper exercise.

The development of the virtual caseload has taken place over three years and has involved considerable background research, but has helped students understand clinical practice better: student evaluation data shows that routine use of the resources has increased from 88% in 2007 to 100% in 2008. There has also been an 18% increase between 2007 and 2008 in the number of students who say they use the resources ‘a lot’ as opposed to ‘sometimes’.

Key points for effective practice

- Problem-based learning scenarios based around virtual resources enable students to learn from their mistakes in safety.
- Simulations can be significantly enhanced by evidence on video; as a medium, video can evoke powerful affective responses but requires careful planning and attention to quality.

Final word

Digital resources may have applications beyond their immediate context of use: sharing of resources creates the potential for creative pedagogic approaches, including cross-disciplinary learning and teaching.

See also the video clip: Rethinking learning resources **www.jisc.ac.uk/resourceexchange**

For detailed case studies, visit **www.jisc.ac.uk/practice**

Enabling autonomous learning

Thanet College

Challenge

Mature part-time learners are likely to have acquired a range of learning experiences, both formal and informal. Much learning in fact occurs outside institutional contexts but learners may not recognise the relevance of their wider experiences to their studies. Drawing together different facets of learning into a coherent whole is an increasingly important aspect of managing lifelong learning.

e-Learning advantage

e-Portfolios can add value in this context by providing a single focal point for all types of learning: at the heart of an e-portfolio is an online personal space in which learners can reflect on their personal development planning and wider experiences. This record can be edited and updated, eventually forming the basis for presentations to external audiences at key points in a learning journey – for example, when applying for employment or further study.

Many e-portfolio tools and systems support activities associated with the process of learning such as creating action plans, reflecting on progress, sharing experiences with peers and tutors, submitting assignments, receiving feedback and celebrating achievements.

In this example, the PebblePad personal learning system is introduced alongside the institution's VLE to enable work-based learners to take greater ownership of their learning and apply their formal learning to their workplace experiences. Since it is possible to link from PebblePad to content stored elsewhere on the web, formal and informal aspects of learning can be combined. Communication tools also support an online tutorial process.

The VLE and e-portfolio tool are of equal importance in this vision for online learning, but operate in different ways: the VLE is institutionally owned, course-centric and of value while the learner studies at the institution; the e-portfolio tool, on the other hand, is personal, dynamic and encompasses all forms of learning.

What is an e-portfolio?

An e-portfolio is a body of digital evidence assembled and managed by a learner to demonstrate abilities and achievements and/or to reflect on experiences and plan for the future. A range of tools and systems are available to support the processes involved; some systems include communication tools so that the user can benefit from collaboration with and feedback from others.

‘It would be a good idea if there was one main place where we can do everything.’

Sue, first-year HNC computing student, Thanet College

Background

The Level 4 Edexcel BTEC HNC course in computing at Thanet College is equivalent to the first year of an undergraduate degree and prepares learners for the skills they need when progressing to full-time higher education.

All learners at Thanet have 24/7 access to the college’s VLE, known locally as The Learning Curve. Introducing an e-portfolio system alongside the VLE has required thoughtful implementation since learners use both online systems in parallel.

Transforming practice

Tutors on the BTEC HNC course promote the formation of connections between what is learnt during the course and experiences acquired in the workplace and elsewhere. Since e-portfolios act as crossing points between different aspects of learning, learners developing e-portfolios are more likely to make the rich connections that benefit both their formal learning and their progression onto further stages of education and training.

So that the e-portfolio is at the centre of the learning experience, PebblePad is designated the single online location for all tutorial activity, including reflection on learning and submission and storage of assignments. Learners receive a face-to-face, one-to-one induction into the system, during which the objectives of the course and the role of e-portfolios are explained. Subsequent tutorial activity takes place online, but both tutors and learners find initial face-to-face contact valuable.

Developing e-portfolios instils the habit of reflection. To get the process underway, the induction session includes initial diagnostic assessments that are shared with the tutor then stored and reflected on by learners as their first ‘assets’ in the PebblePad accounts. Tutors set up a blog within PebblePad for each unit of learning so that learners have access to continuing tutor and peer support during each stage of their course. Outcomes for each unit are set as profiles and learners asked to evaluate how far they have met the criteria, providing evidence from their e-portfolios.

While the VLE supports the institutional and public aspects of learning – for example, college news, course handbooks and module or unit resources – an e-portfolio uniquely provides a learner-owned space in which to record and reflect on all significant learning experiences:

> *‘The e-portfolio is the central and common point for the student learning experience... It is a reflection of the student as a person undergoing continuous personal development, not just a store of evidence.’ Geoff Rebbeck, e-learning coordinator, Thanet College*

Key points for effective practice

- Learners need assistance in understanding the advantages and disadvantages of using different platforms for their learning. Pedagogy rather than technology should be the guiding factor.
- Opportunities for self-evaluation need to be introduced early to help learners grasp the importance of reflective, e-portfolio-based learning.

Final word

Since e-portfolios are owned by learners and provide a record of their unique learning journeys, it is important that learners have access to their e-portfolios after the completion of a course.

For detailed case studies, visit **www.jisc.ac.uk/practice**

Holding tutorials in a virtual world

The Open University

Challenge

Open University (OU) students living in dispersed communities often find difficulty in attending face-to-face tutorials. Online group communication tools, such as chat and discussion forums, and social software, such as blogs and wikis, offer alternatives but lack the immediacy of face-to-face encounters. Tutorial activities – for example, ice-breaker activities, research and investigation tasks, discussion, collaborative interaction and role play – can seem constrained by the inability to interact with others in real time.

e-Learning advantage

In a 3D multi-user virtual environment (MUVE) such as Second Life, discussions become more real as a result of the presence and movement of avatars. Tutors can situate learning within a context devised for that activity. Students presented with challenges to solve, or hypotheses to prove are more likely to define their own pathways to their learning goals, collaborating and interacting with others as necessary.

What is a multi-user virtual environment (MUVE)?

A MUVE is a virtual world in 3D or with graphic animations that can be accessed simultaneously over the internet by many users. MUVEs such as Second Life® offer virtual spaces in which educators, groups or individuals can purchase and design their own environments and interact with others as avatars (virtual people).

Learning in a virtual world enables students to discover new forms of understanding through playful interactions with the environment and with others: models of, for example, how the internet works can be 'walked through' to gain a clearer understanding of what a student needs to know; research activities can take the form of quests or journeys; and, through avatars, hidden or new representations of the self can be explored. This combination of playful and purposeful activity is a benefit from MUVEs that is increasingly recognised.

In this example, student feedback suggests that Second Life provides a greater sense of physical presence and proximity than online discussion forums, and so offers an acceptable alternative to meeting face to face: *'It's as though you have been with other people'* is a commonly expressed view.

Students taking part in the OU tutorials start with average IT skills but must have access to an internet-connected computer with a high-specification graphics card and fast broadband connection.

‘Second Life’s breadth and flexibility allowed my tutor to personalise sessions on the fly... ultimately going where no chat room could: on an impromptu field trip.’

John, T175 student, The Open University

Background

In 2006, the OU purchased islands in Second Life to explore the potential of MUVEs to support learning and teaching. Tutor Anna Peachey and colleagues in the OU’s Centre for Open Learning of Mathematics, Science, Computing and Technology (COLMSCT) recognised that tutorials held in a virtual world could offer significant benefits for distance learners.

Following a pilot scheme, Anna offered the option of a tutorial group based wholly in Second Life to students enrolling for the T175 Level 1 module in ICT – *Networked living: Exploring information and communication technologies*. 40% of those enrolling in 2007–2008 took up the Second Life option until capacity was reached.

Transforming practice

Before entering Second Life for the first time, the students create avatars that become their inworld selves. Students decide how to represent themselves – selecting a different gender, age group and fashion style is not uncommon, and some opt for a non-human form. Meeting for a tutorial then acquires a sense of actuality: meetings are held in a virtual room, on the beach or by the sandpit where students practise their building skills.

Initially, group ice-breaker activities are devised to help students orientate themselves in a virtual world. For example, in 2007, Anna held a two-day induction event in Second Life for the T175 students. A seating area was built so that students and tutors could discuss issues such as how to present themselves online. The event also included a visiting lecturer. However, Second Life is essentially a non-directive world – no narrative or sequence is imposed on any subsequent activities. The learning that takes place is proactively managed by students, although facilitated by a tutor. The text-based chat option is used for communication between peers and tutor, resulting in a slight time lag between postings, but the ability to see the interaction between avatars – including elements of non-verbal communication – makes the experience not dissimilar to being in the same room.

As a result of the freedom of choice that students have in a virtual world, student behaviour initially was an unknown factor, especially as Second Life users can adopt different personas to match their newly created avatars. However, there has been little evidence of the T175 students hiding behind new identities. Group interactions for study purposes depend on a level of honesty and trust, and students have found it important to maintain their out-of-world selves when working collaboratively in Second Life.

Key points for effective practice

- A MUVE such as Second Life offers fertile ground for problem-based approaches to learning. Students can investigate solutions to questions and hypotheses, test out and compare different perspectives, and reflect on individual choices without moving out of the virtual world.
- Students quickly adapt to operating within Second Life. However, large groups are challenging to facilitate and too many participants can prevent successful interaction.

Final word

The sense of curiosity and challenge generated by virtual worlds provides a powerful drive to learn.

See also the podcast: Learning in a virtual world and video clip: Relating research to practice **www.jisc.ac.uk/resourceexchange**

For detailed case studies, visit **www.jisc.ac.uk/practice**

Technology-enhanced practice

Case studies have the capacity to inspire but also to provoke and challenge. The institutions, practitioners and learners represented in *Effective Practice in a Digital Age* have their own stories to tell; their solutions do not fit all contexts and should not be seen as definitive accounts of how particular challenges should be resolved. Rather they provide insights into how integrating technology-enhanced practice with traditional approaches can produce designs for learning that are apt, imaginative and enabling.

Key messages from this body of evidence, and the relationship between these findings and those of other recent studies, are summarised in the next two sections.

Drivers for change

Practitioners in the case studies were motivated to explore applications of technology by the needs of their learners or by challenges inherent in the mode of delivery. Hence adoption of technology frequently occurred when face-to-face contact with tutors and peers was constrained by distance or time, as in **case studies 1**, **9** and **10** which describe work-based or distance learning. But this was not exclusively the case. Wider participation in higher education, coupled with implementation of more active, learner-centred models of learning, prompted adoption of technologies that gave learners more control over how, where and when they studied.

Transformative practice, including investigation of technologies on the edge of mainstream practice, was more likely to occur where institutions actively supported change. In a similar way, the TESEP (Transforming and Enhancing the Student Experience through Pedagogy) project[22] found that that the adoption of new forms of learning and teaching can be driven by an institution-wide focus on the principles of learner-centred learning. A supportive community of practice was another vital ingredient: **case studies 4** and **6** highlight the extent to which practitioners rely on the support of mentors and peers when making the transition into technology-enhanced practice.

Designing active learning

Designs for learning that challenge and extend the cognitive and professional skills of learners often demand innovative uses of technology. In **case studies 8** and **10**, for example, high-specification multimedia resources formed the basis for problem- or scenario-based models of learning in which learner-led investigations were facilitated rather than directed by tutors.

'The most amazing and satisfying thing for someone like me, who is leading learning and teaching in a university, is the change that one can see... I have seen enormous change in people's attitudes, capabilities and enthusiasm towards technology, and blending technology with more traditional forms of teaching.'[21]

Professor Eeva Leinonen, Deputy Vice-Chancellor, University of Hertfordshire

In both cases, learning took on a purposeful yet game-like quality as learners rehearsed skills and understanding through virtual scenarios that replicated aspects of the real world. Located in one online environment, learning designs and resources could then be shared between subject disciplines, adding a further dimension to technology-enhanced practice.

Developing 21st century skills

Web 2.0 technologies in **case studies 1**, **2** and **7** developed skills of inquiry, critical thinking, communication and collaboration, and helped learners define their online identities. The findings of an independent committee of inquiry in 2009, as reported in *Higher Education in a Web 2.0 World*,[23] similarly support the view that the skill set derived from engaging with the Social Web matches skills that are increasingly sought after in the 21st century.

Technology-enhanced practice equally demanded new skills from practitioners, reinforcing the need for institutional support for e-learning development and practice. Just as important to the success of a design, however, was the creative energy of practitioners – their message was consistent: think through what you want to achieve and with whom, then seek the most appropriate tool for the purpose, even if this means exploring unfamiliar territory.

Practitioner voice

Dr Judy Robertson lecturer in computer science, Heriot-Watt University

I want authoring tools to support a constructivist approach to learning and teaching, not just to help us do more of what we already do. In a third-year module, we have used an assessed podcast as part of an assignment to design a new user interface. As computing students, all involved in the activity were experienced IT users, well-equipped with personal technologies. As a result, most students used their own webcams to record their presentations, but some borrowed equipment from the university and went to great lengths to role-play how they envisaged their design being used. The commitment shown was impressive.

Were there any drawbacks? Well, it was a new experience for me, and I knew I had to tell the students that it might not work. I also had to accept that the students might know more than I did. They might be experts in gadgets and gizmos, but it's my job to find the best way of designing learning episodes, and I have to be prepared to take some risks to achieve that end.

[21] JISC (2009) Redesigning the curriculum, www.jisc.ac.uk/resourceexchange

[22] Smyth, K. et al (2007) From Bruised to Enthused: Tackling the challenges of championing online learning for personal and institutional change, http://tiny.cc/4y5aa

[23] www.jisc.ac.uk/publications/documents/heweb2

Technology-enhanced learning

The focus of this guide has been on the practitioner's role as designer of learning activities. Nonetheless, the case studies reveal much about the nature of learning in a digital age.

Learners of all ages are now likely to have access to computers and the internet in the home or in the community, and are increasingly skilled in their use of IT. Learners following a foundation degree in hairdressing and salon management in **case study 1**, for example, experienced no difficulty in accessing or using a wiki or the college's VLE. **Case studies 3** and **6** showed that learners were adept in using audio files and appreciated the flexibility and personal quality of audio-recorded guidance from their tutors.

Learners' expectations and needs

As experienced consumers of IT, learners had expectations that educational technologies were fit for purpose; duplication of effort could be unwelcome. If learning platforms with overlapping functionality were used in parallel – for example, an e-portfolio tool alongside a VLE as in **case study 9** – the rationale for using the tools needed to be clearly articulated to learners, with carefully scaffolded learning activities to demonstrate their value. The importance of effective induction when using unfamiliar tools was also signalled in **case study 2**, and by outcomes from the JISC Design for Learning theme.

Practice that made use of ubiquitous technologies or enabled flexible and timely access to learning was much valued by learners. In **case studies 1**, **3**, **5** and **6**, learners took advantage of technology-enabled opportunities to rehearse skills and reinforce knowledge and understanding by accessing learning resources before, during and after face-to-face sessions. However, the design of learning activities and resources remained the critical factor – in **case studies 4**, **8** and **10**, multimedia or virtual-world technologies lent a sense of actuality, but resources and activities were structured in ways that made learning manageable, satisfying and relevant.

Benefits and challenges

Case study 7 illustrates some of the benefits and challenges presented by the range of technologies, including social software, now available to learners. Choice provides increased opportunities but may result in inappropriate or unsafe learning strategies or an unsatisfactory learning

[24] JISC (2009) Responding to learners, www.jisc.ac.uk/resourceexchange

[25] www.jisc.ac.uk/whatwedo/projects/socialsoftware08

[26] https://kastanet.kingston-college.ac.uk

‘You have got to make sure that you are using the technology to enhance the quality of the face-to-face… It’s a blend of what the institution can sensibly provide, what is best done by the individual academic and what is brought by the students in terms of their expertise and interests.’

Professor Jeff Hayward, Vice Principal Knowledge Management, University of Edinburgh[24]

experience if the role of the technology is unclear, as indicated by a JISC-funded study of the effective use of social software in further and higher education in the UK.[25]

Learners clearly benefited from the use of collaborative, interactive technologies and the increased flexibility provided by online learning – having greater control over when and where they learnt was a powerful source of motivation and pleasure. **Case studies 1**, **2**, **4** and **5** indicate improved engagement and attainment linked to technology-enhanced practice; that their tutors understood more about how learners use and experience technology in their learning was perhaps a key factor in these achievements – learners are likely to learn better in well-resourced, effectively supported environments that are well-attuned to their needs.

Andrew Williams Director of ILT, Kingston College

The JISC-funded KASTANET project[26] has investigated how mobile technologies and podcasts help learners from a wide variety of backgrounds adjust to studying on a one-year access to science course at Kingston College.

By harnessing the ubiquitous ownership of mobile phones, we felt we could improve students’ attendance, study and time management skills and planned to buy one brand of mobile phone in bulk to sell on to students. This idea was quickly shelved when we considered the sustainability of the scheme – this is one of the largest access to science courses in the UK with around 260 students on the course per annum. The idea also met with rejection from students.

Students’ mobile phones are sacred to their sense of personal and social identity: in many cases, they have made a considerable financial investment in their choice of phone and selected tariff. Being supplied with a mobile phone by the college was not a desirable option. Instead, we have sent text messages to students’ own phones – for example, a welcome message after enrolment, updates to their timetables and alerts about the induction podcasts we have recorded.

Mobile phone ownership is a clearly lifestyle issue for students; it is not a simple matter to invade that aspect of their lives. You have to accept there are boundaries between personal and institutional technologies that it is not always profitable to cross.

Practitioner voice

‘I think blended learning will never go away... and for some courses, some contexts, a blend which is 90 per cent conventional and 10 per cent digital is probably right and you’d get the reverse for other kinds of course. So it’s entirely up to the particular context what kind of blend you have and we’ve just got to get practised at being able to find the right blend for the right course and context.’

Professor Diana Laurillard, Chair of Learning with Digital Technologies, London Knowledge Lab

Preparing for practice in a digital age

Introducing technology into learning and teaching appears at first to be a matter of applying a new tool to an old task: 'What can I achieve with it, what support will I require, what are the pitfalls, and will this tool be better for my purpose than others I have used?' are common first reactions.

However, fundamental shifts in pedagogic approach and in the learner–tutor relationship can result from the use of technology in everyday practice. At this point, both experienced and inexperienced teachers feel the need for guidance on how to integrate technology-mediated practice with other learning and teaching strategies.

What is this good for? What technology do I use for this?

The JISC Design for Learning programme has overseen the development of two prototype pedagogy planning tools – Phoebe[27] and the London Pedagogy Planner.[28] The tools – now the subject of further development[29] – support practitioners through the design process, focusing on critical design decisions including which technologies to deploy.

The London Pedagogy Planner was designed to help practitioners visualise how different teaching and technology options would be experienced in terms of the time spent on different tasks. Phoebe, which remains in use, offers guidance on the potential 'e-learning advantage' of a wide spectrum of technologies, and provides links to how-to resources and examples of learning designs.

Although no one tool can address all users' requirements, pedagogy planning tools are likely to form part of the future of designing technology-enhanced practice, perhaps as separate interoperable tools that users can aggregate to support their individual needs. Research completed under the Design for Learning[30] theme into pedagogic planning has helped to scope the issues and provide some partial solutions to the challenge of harnessing technology to support the design process.

Practitioner voice

Marion Manton e-Learning Research Project Manager, Technology-Assisted Lifelong Learning (TALL), University of Oxford

"Why do learning design tools matter? Teaching with technology, by its very nature, requires preparation in advance, so introducing technology into learning and teaching requires you to make explicit many of your tacit practices and, as a result, often makes people come to question more deeply what they are trying to achieve and why. And that has to be beneficial, since better-planned and more thoughtful pedagogic designs should mean better learning and teaching."

[27] http://phoebe-project.conted.ox.ac.uk

[28] www.wle.org.uk/d4l/index.php?option=com_frontpage&Itemid=13

[29] The Learning Design Support Environment (LDSE) project is developing further the outputs of the London Pedagogy Planner and Phoebe projects. For further information, see http://projects.lkl.ac.uk/ldse

[30] www.jisc.ac.uk/designlearn

Effective practice planning activity

Designing a learning activity for a technology-rich context

Use the Effective Practice Planner template to design, share and discuss a technology-enhanced learning activity for use in your context. Guidance on creating a learning design, and potential roles for a range of technologies, can be found in the Phoebe planning tool.[31]

The template used for this activity is based on the 2004 Effective Practice Planner, but incorporates elements used in the Phoebe planning tool. The template is available to download from the Effective Practice Resource Exchange[32] and can be freely adapted and distributed for wider use.

The activity provides a starting point for planning and sharing designs of your own. As indicated by the case studies in this guide, designing technology-enhanced learning is likely to be a team-based rather than a solitary activity, and involve multi-professional expertise. Planning tools that facilitate a collaborative, adoptive approach to designing learning activities, and support effective deployment of resources, offer a real advantage in this respect.

For a discussion of approaches to redesigning the curriculum, see the podcast, Disrupting the norms of curriculum design, which can be found in the Effective Practice Resource Exchange.

Issues to consider
Learners (e.g. their needs, motives for learning, prior experience of learning, social and interpersonal skills, learning preferences and ICT competence).
Intended learning outcomes (e.g. acquisition of knowledge, academic and social skills, increased motivation and ability to progress).
Learning environment (e.g. face-to-face or virtual; available resources, tools, learning content, facilities and services).
Curriculum aspects (e.g. approach(es) to learning, assessment criteria, formative assessment strategies; feedback).
Learning activity (description of activity; associated learning outcome; organisation: collaborative, pairs or individual; resources needed).
Support for learning (e.g. extension or reinforcement activities; involvement of others; accessibility considerations; learning preferences).
Evaluation (outcomes for learners; achievement of learning objectives; feedback from others).
Reflections (personal impressions; lessons learnt).

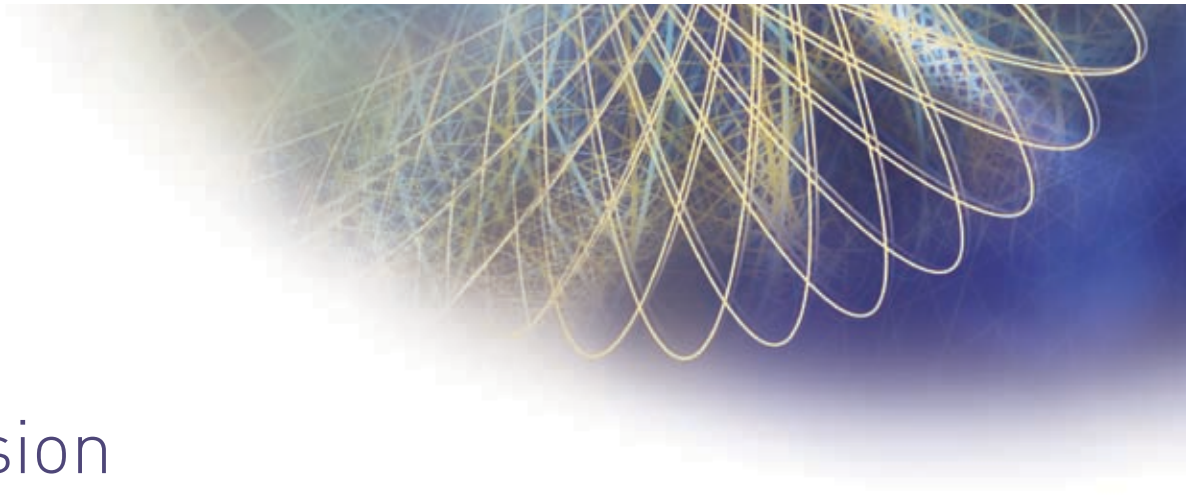
[31] www.phoebe.ox.ac.uk/browseGuidance.php

[32] www.jisc.ac.uk/resourceexchange

	Designing a technology-enhanced learning activity
	What are the curriculum objectives?
	What other outcomes are desired?
	Where will the activity take place?
	What resources are available?
	What technologies are available?
	What approach will be taken?
	What assessment strategies will be used?
	What feedback strategies will be used?
	Describe the learning activity and how it meets learning outcomes.
	Are there any follow-up activities?
	How will learners be supported during and after the activity?
	What additional support might some learners need?
	How effective was the activity?
	What have I learnt?

‘We still need constant innovation to see what’s over the horizon... Often the newer things bring something fresh and dynamic to meet students’ learning expectations.’[33]

Professor Gilly Salmon, Professor of e-Learning and Learning Technologies, University of Leicester



Conclusion

It is often stated that the introduction of technology into learning and teaching has by-products that are as important as the benefits of the technology itself: practitioners exploring new possibilities become more critically aware of their practice in general, and more conscious of the importance of planning.

Considering their practice in isolation, however, can only take practitioners so far. After a decade of research into the impact of technology-enhanced practice on pedagogy and institutional practices, a wide body of evidence and exemplars of practice are available to guide practitioners towards learning designs that are both effective and research-informed. While design for learning practices are inclined to be variable and influenced by factors such as established norms in the sector, institution or subject discipline, access to the knowledge and experience of others – whether experts or colleagues – is the final, and highly important, constituent of the design process.

The Effective Practice Resource Exchange enables you to continue further your investigation of designing for learning by providing a suite of supplementary resources that focus on key aspects of designing and implementing technology-mediated practice. Further information about these resources can be found on the final page.

[33] www.jisc.ac.uk/resourceexchange

The story of effective practice is an evolving one; this guide represents current views and practice which will continue to develop as those involved in designing learning push the boundaries in their search for new ways of improving the quality of learning and teaching by harnessing the potential of technology. As practitioners and researchers come to a

	Where did we start?	Where are we now?
Technologies	Internet, email, word processing, VLEs, video conferencing, presentational hardware and software.	*These and...* Web 2.0 tools and services; mobile access to email, the internet and multimedia resources; Twitter, chat, online telephony and other dialogic tools; personal learning spaces; tools for collaborative working...
Institutional perspective	e-Learning strategies, VLEs and MLEs introduced; targets for development of e-resources; institutionally owned hardware and software predominate.	e-Learning part of learning and teaching enhancement policies; institutional strategies for embedding blended approaches; cascading of effective practice derived from projects funded by Higher Education Academy, JISC and other agencies.
Pedagogical perspective	Widening participation, engaging learners, increasing motivation, but focus still mainly on transmission models of learning and teaching.	Greater understanding of principles underpinning technology-enhanced learning and teaching: technology-supported peer-to-peer and social learning, importance of dialogue in learning, widening use of emerging technologies in mainstream learning and teaching.
Learners' perspectives	Need for ICT skills; digital divide evident; improving opportunities for distance and flexible learning.	Development of skills for learning in a digital age; innovative uses of technology to manage time; blurred boundaries between living and learning; digital divide narrower but still evident.

‘This is not an automated version of what we can do in face-to-face teaching, but something that simply could not happen any other way.’

Professor Alan Staley, Head of Learning Technology Development Unit, Birmingham City University

clearer understanding of the most effective uses of technology in practice, key principles are emerging that will guide future innovations.

Key principles for designing technology-enhanced learning

- Blended learning exploits the affordances of technology to promote active participative learning in both face-to-face and online contexts.
- Practitioners teach and learners learn in a context of increasing choice. Effective practice in a digital age includes selecting the most appropriate tools for the purpose.
- Learners can be active makers and shapers of their own learning. They should be supported in using technologies of their own choice where appropriate.
- Even advanced users of technology look to their tutors for guidance on how to use technology in learning. Understanding how to learn in a digital world is a vital skill.
- When unfamiliar technologies are integrated into learning designs, the benefits need to be clearly communicated to learners.
- Benefits arise when there is coherence between technologies and media, the learning tasks and outcomes, and subject-specific demands of a course.
- Where technology is used, it extends the potential for learning and is not used for its own sake.

Glossary

Blog (web log): An online reflective journal in which other internet users can post comments. Blogging tools integrated into VLEs allow access to be restricted to members of a closed group (for example, a course, module or tutorial group).

Chat: Software that supports synchronous communication which is usually, but not exclusively, text based.

Design for learning: 'Design for learning is... the process by which teachers – and others involved in the support of learning – arrive at a plan or structure or design for a learning situation.' Beetham & Sharpe (2007)

Electronic voting system (EVS): A system in which computer software collects and records the responses made by learners using handsets to questions posed during a class, lecture or presentation. Percentage responses to options can then be displayed.

e-Portfolio: A body of digital evidence assembled and managed by a learner to demonstrate abilities and achievements and/or to reflect on experiences and plan for the future. A range of tools and systems may be available to support the processes involved.

HEFCE: Higher Education Funding Council for England.

ICT(s): Information and Communication Technologies.

ILT: Information and Learning Technology.

iPod touch®: A pocket-sized media player and Wi-Fi mobile platform with a multi-touch screen.

Managed Learning Environment (MLE): A system for managing student information, in which separate systems – for example, student record systems, library systems, management information systems, Virtual Learning Environments and timetabling systems – are joined up into one environment.

Media-sharing websites: Websites such as Flickr® and YouTube that enable users to upload and share digital content.

MP3: A digital audio encoding format.

Multi-user virtual environment (MUVE): A virtual world in 3D or using graphic animations that can be accessed simultaneously over the internet by many users.

PDF: Portable Document Format (a file format created by Adobe® Systems).

Pedagogy planning tools: Tools that support the design, structure and sharing of learning activities.

Podcast: A recording, for example of the content of a lecture, made available for download from a website or VLE by syndication – a process of making content available to other sites by means of RSS feeds.

Portal: A single website that combines a range of tools and sources of information to provide more efficient access to essential content and services.

RSS feed: A method of electronically aggregating and distributing updated content on designated websites to subscribers.

Social software: A range of software tools which allow users to interact and share data with other users via the Web.

UCISA: Universities and Colleges Information Systems Association

USB: An interface for attaching a peripheral device such as a memory stick or digital camera to a computer.

Virtual Learning Environment (VLE): An online system comprising a range of tools to support learning and the management of learning. VLEs, for example, provide online access to learning resources and support peer-to-peer and learner-to-tutor communication.

Web 2.0 technologies: Online collaborative tools and services – for example, media-sharing sites such as YouTube, social networking sites such as Facebook, collaborative publishing tools such as wikis and blogs, and social bookmarking tools such as del.icio.us.

Wi-Fi: A term for wireless local area networks which enable computers and mobile devices to connect to the internet in a given location.

Wiki: A series of web pages which users can add to or edit via any internet browser. Wikis used for collaborative activities can be password protected.

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http://pbwiki.com

For details of Blackboard® WebCT Vista™ used at the University of Edinburgh
www.webct.com/products/viewpage?name=products_vista

For details of EDIROL audio recording devices, and sound recording software, Audacity®, used at Leeds Metropolitan University
www.edirol.com and **http://audacity.sourceforge.net**

For details of audio recording devices and sound recording software used at Leeds Metropolitan University
www.edirol.com and **http://audacity.sourceforge.net**

For details of Moodle™ used at Greenwich Community College, Birmingham City University and Thanet College
http://moodle.org

For details of the iPod touch® used at Southampton Solent University
www.apple.com/ipodtouch

For details of TurningPoint® electronic voting system used at the University of Hertfordshire
www.turningtechnologies.co.uk

For details of WordPress used by students at the University of Salford
http://wordpress.org

For details of Cheetah3D modelling software used at Birmingham City University
http://cheetah3d.com/index.php

For details of PebblePad Personal Learning System used at Thanet College
www.pebblelearning.co.uk

For details of Second Life® used by students at The Open University
http://secondlife.com

Agencies offering guidance on technology-enhanced practice

Becta (FE and schools)
www.becta.org.uk

Learning and Skills Improvement Service (LSIS) Excellence Gateway (FE)
www.excellence.qia.org.uk

Higher Education Academy Subject Centres (HE)
www.heacademy.ac.uk/ourwork/networks/subjectcentres

JISC Regional Support Centres (FE and HE)
www.jisc.ac.uk/whatwedo/services/as_rsc/rsc_home

JISC TechDis (FE and HE)
www.techdis.ac.uk

Teaching and Learning Research Programme (post-compulsory and workplace learning)
www.tlrp.org

Sharing effective practice

Effective Practice Resource Exchange supplementary online resources

The online resources that accompany this publication offer alternative ways of researching the nature of designing for learning in a technology-rich age. Online resources provide flexible access to the views, achievements and aspirations of practitioners and open up additional opportunities to learn from the experiences of others.

The supplementary Effective Practice resources include video clips and podcasts which explore through different themes and viewpoints the elements that underpin transformative practice. In addition, short clips of practitioners' voices provide personal insights into the viewpoints of individual practitioners. Both video and audio files bring experiences more vividly to life and can be used as examples of particular learning and teaching strategies or as discussion points for use in a professional development programme.

All resources are provided in alternative formats. The publication *Effective Practice in a Digital Age* can be ordered online in hard copy or downloaded in PDF and accessible text-only formats. Full versions of the publication case studies can be downloaded and reproduced as required for educational purposes or read online. The four video clips and accompanying practitioners' voices are available as Windows Media® and QuickTime® files, with transcripts for users of screen readers.

The content of the Effective Practice Resource Exchange may evolve over time as new or updated content is added. It is currently structured into the following sections:

Introduction	
Publication	Available formats; ordering of additional copies
Videos	Responding to learners: University of Edinburgh Rethinking learning resources: Birmingham City University Redesigning the curriculum: University of Hertfordshire Relating research to practice: University of Leicester Practitioners' voices Transcripts
Podcasts	Learning with mobile technologies: Andrew Williams, Director of ILT, Kingston College Learning in a virtual world: Anna Peachey, Associate Teaching Fellow, COLMSCT, The Open University Disrupting the norms of curriculum design: Greg Benfield, Educational Developer, Oxford Centre for Staff and Learning Development (OCSLD)
Effective Practice planner	
Full-length case studies	

Acknowledgements

Effective Practice in a Digital Age and the accompanying video and audio resources have been funded on behalf of JISC by the Higher Education Funding Council for England (HEFCE).

Grateful thanks are due to the following for their involvement in this project:

Sarah Knight, JISC e-Learning Programme Manager, for guidance.

Helen Beetham, Consultant to the JISC e-Learning programme for her contributions and guidance.

Dr Shailey Minocha, The Open University, for assistance with case studies.

Review panel

The time and support of the review panel who steered the development of this publication have been much appreciated:

Dr Tom Browne, Research and Evaluation Advisor, University of Exeter

Andrew Comrie, Consultant in learning and teaching, Kerson Associates Ltd

Dr Peter Findlay, Assistant Director, Quality Assurance Agency for Higher Education

Julie Hughes, Principal Lecturer, University of Wolverhampton and ESCalate Academic Consultant

Ellen Lessner, ILT Development Coordinator, Abingdon and Witney College, and ALT

Professor Alan Staley, Head of Learning Technology Development Unit, Birmingham City University

Cam Swift, Senior e-Learning Advisor, JISC RSC Northern

Professor Tony Toole, Consultant, e-College.ac Ltd, and member of the JISC Learning and Teaching committee

Participating institutions

Sincere thanks are also due to the practitioners and learners in the following institutions who assisted with the production of case studies, video clips or podcasts, or who took part in photography sessions.

Birmingham City University

Greenwich Community College

Leeds Metropolitan University

Northumberland College

Southampton Solent University

Thanet College

The Open University

University of Edinburgh

University of Hertfordshire

University of Salford

Video case studies

Responding to learners: University of Edinburgh

Rethinking learning resources: Birmingham City University

Redesigning the curriculum: University of Hertfordshire

Relating research to practice: University of Leicester

Podcasts

Learning with mobile technologies:
Andrew Williams, Director of ILT, Kingston College

Learning in virtual worlds: Anna Peachey, Associate Teaching Fellow, COLMSCT, The Open University

Disrupting the norms of curriculum design:
Greg Benfield, Educational Developer, OCSLD

Photography

Greenwich Community College

Leeds Metropolitan University

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Effective Practice in a Digital Age

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