Writing a chapter on ‘e-learning’ is a potentially challenging task for two reasons: first, the pace of technological change and second, the scope of ‘e-learning’. Technology is changing so fast that, by the time books are published, much of the source material and technologies described are dated and have been replaced. The scope and range of learning activities, theories and technologies that come under this broad heading of ‘e-learning’ are overwhelming. E-learning in its broadest form can encompass anything from the use of laptops in classrooms, to the creation of videos posted on YouTube, to debates on the social impact of Facebook and other social networks on cognitive development, to privacy issues and concerns over the publication of open access resources, and, most fundamentally, to questions about what the purpose of formal learning institutions is in an age where access to knowledge and information is seen as ubiquitous. In this brief chapter, obviously it is not possible to explore all these issues in significant depth; however, what this chapter does is provide a commentary on some of the major areas, underpinning theories, and makes particular reference to e-learning as a pedagogical method for enabling active engagement and co-creation of learning between learners and teachers. It aims to give an introduction to some of the key issues and pointers to areas of further study or exploration.

E-learning is present, to a greater or lesser degree, in most levels of learning from primary school to workplace and vocational learning. In the UK, for example, agencies such as Becta,¹ have prompted the use of technology in schools and colleges. The Towards Maturity Benchmark (2010) reports that ‘organisations are embedding technology in more skills programmes than in 2008’ (p. 11), demonstrating the importance of e-learning to organisational learning and development strategies for staff, as well as the increase in usage. Much of the theory and context provided in this chapter, however, is grounded in experiences of e-learning at Higher Education level. The Higher Education sector demonstrates the full range of e-learning, from technology-enhanced classrooms to fully online courses. Before we look at this in more detail, though, it is necessary to be clear about what we mean by ‘e-learning’.

**Scope**

‘E-learning’ is a complex term and one that is constantly shifting in meaning and scope. At its most literal and simplistic, e-learning means learning that is supported via electronic means; however, this definition has been developed and redefined to denote an approach and a particular pedagogy around the use of technology to support and enhance education. The Higher Education Funding Council for England (HEFCE), as part of
its e-learning strategy, defined e-learning as ‘any learning that uses ICT [ … ] this will encompass flexible learning as well as distance learning, and the use of ICT as a communications and delivery tool between individuals and groups, to support students and improve the management of learning’ (HEFCE, 2005: 5). This definition is indicative of the broad notion of e-learning as an umbrella term that covers more than just the application of technology to learning, but considers the nuances and subtleties around what that application means in practice for both learners and teachers.

It is these complexities over what ‘e-learning’ actually means that has led to further redefinition and replacement of the term over time in order to make it more specific and relevant. The Higher Education Funding Council for Wales’ (HEFCW) definition in 2008 (para 1.2) is illustrative of this shift:

Rather than refer to e-learning, we have emphasised the enhancement of learning and teaching facilitated and supported by the use of information and communications technology (ICT). We will refer to this as technology-enhanced learning.

‘E-learning’, then, is often used interchangeably with not only ‘technology-enhanced learning’, but also ‘blended learning’ and ‘educational technology’. In the past, e-learning has been synonymous with distance learning, although now, with the pervasive nature of technology and ease of access to online resources for all, this is much less the case. There has been much debate, particularly within the Higher Education sector about whether e-learning could or should be defined by the technology or the pedagogy and how to denote that it is more than just technology (Collis and Moonen, 2001: 18).

This chapter will consider how ‘e-learning’ has developed as a pedagogic methodology over the last ten years or so by looking at those salient theories and frameworks that define much of the rhetoric around e-learning application and development, with a particular consideration of the impact of e-learning on learning generally; a brief consideration of the technologies that fall under the e-learning umbrella, including the notion of ‘m-learning’ – ‘the exploitation of ubiquitous handheld hardware, wireless networking and mobile telephony to facilitate, support, enhance and extend the reach of teaching and learning’ (MoLeNET, 2010) – and the potential impact of immersive technologies and virtual worlds on learning. So much of learning now is automatically mobile that the distinctions between e-learning and m-learning as concepts are becoming increasingly blurred. Obviously, technology is changing rapidly and the impact of social media and web 2.0 technologies is changing the face of all aspects of e-learning on a regular basis. In fact, one could argue that the advent of web 2.0 technologies in particular (coined by Tim O’Reilly in 2005 to describe the way in which the internet was changing to enable the creation of more user-generated content) has radically changed the underpinning potentials of e-learning as these technologies enable much more accessible creation of digital artefacts as well as easier communication and collaboration. This goes to the heart of e-learning pedagogy that enables active participation in learning:

E-learning [ … ] serves the very paradigm shift that educators have been arguing for throughout the last century. Whatever their original discipline, the most eminent writers on learning have emphasised the importance of active learning. The choice of language may vary [ … ] but the shared essence is the recognition that learning concerns what the learner is doing, rather than what the teacher is doing, and the promotion of active learning in a social context should be the focus of our design of the teaching-learning process.

(Laurillard, 2005)

As indicated above, e-learning cannot be considered in isolation, and indeed one could argue that e-learning should not be considered as a separate entity in itself at all, rather part of learning in general; however, there is a need to consider the potential revolutionary change that the application of technologies offers in more detail to understand how learning is changing. This chapter will take examples from the Higher Education
sector in particular to offer an overview of e-learning concepts and provide an introduction to the exciting and innovative effect that e-learning can have to revolutionise learning.

E-learning is difficult to quantify in terms of tangible benefits, but a number of perceived benefits or measures have been identified (JISC, 2008). Mobility is a key factor. Easy access to course materials and information, potentially anytime and anywhere, is a huge advantage for students, who increasingly have less time on campus. Arguably, e-learning provides the impetus for engaging in new forms of pedagogy and exploring more innovative forms of educational delivery. Many of the benefits focus on administration, rather than pedagogic issues, such as access to timetables and coursework submission, but the use of asynchronous and synchronous tools also can encourage groupwork, collaboration and peer-learning between students. There is a view that students are increasingly expecting to engage with learning online to a greater or lesser extent as part of their studies (JISC, 2007). This fits with the notion expounded by Prensky (2001) of students as ‘digital natives’, who see technology as an integral part of their daily lives.

Historical trends and theories

E-learning has been consistently associated with change (Laurillard, 2002; de Freitas and Oliver, 2005; Kezar, 2001; Stiles, 2003); however, as Garrison and Anderson caution, whilst the potential transformative nature of e-learning may not be disputed, ‘the transmission model that has dominated education has changed little’ (2003: 1). In other words, we may appreciate that e-learning can change the way in which students engage in learning, but e-learning can also be used just to reinforce the status quo and, in fact, increase the transmission model. Collis and Moonen (2001) demonstrate that there are four areas that need to be considered for the successful implementation of technology across an institution. These are: technology, pedagogy, implementation and institution. Although institutions may see technology as heralding change, if they do not engage the lecturers and academics, then that change will fail, as it is at the practitioner level that change can truly be enacted (Collis and Moonen, 2001; Jochems et al., 2004).

This notion of the ‘sage on the stage’ has long been critiqued as an effective pedagogic model for learning (King, 1993) and the advent of large-scale distance education has challenged this, as it requires a different model of interaction. During the 1990s much of the use of technology at this time, in relation to distance education in particular, was around computer-mediated conferencing or communication (CMC), a term that has now largely fallen out of use. The Open University in the UK was a large-scale user of systems such as FirstClass, which enabled learners and teachers to interact online via asynchronous discussion boards. By the late 1990s and into the early years of the twenty-first century, virtual learning environments started to rise in popularity as there was an increase in the take-up of online distance learning (encouraged in the UK by the UK eUniversity initiative⁴).

With the rise in distance learning there was a concern or belief that this mediated an inferior type of educational experience for learners. However, this view has been challenged through the research by Thomas Russell (2001). Russell’s work found that there was ‘no significant difference’ between distance and face-to-face learning based on a huge literature review that dated back to 1928 (No Significant Difference, 2010). With the application of technology to distance education the questions then moved to ascertain whether online distance learning actually had a positive impact on learning. Although undoubtedly online learning does mean a different experience of learning, this is not inferior to classroom interaction and in many places has some clear benefits. As Garrison and Anderson (2003) point out, although e-learning may be overhyped and unproven in many areas, ‘e-learning cannot be ignored by those who are seriously committed to enhancing teaching and learning’ (p. 2). This is because of the connection between pedagogy and e-learning: ‘while e-learning can support and even marginally enhance current practices […] the real impact will be to precipitate new approaches that recognize and seize e-learning’s interactive capabilities’ (Garrison and Anderson, 2003: 4). A further aspect of online education that prompted concern and interest was its borderlessness – the fact that you can deliver materials online means that you can,
technically, deliver them anywhere, even though, operationally, this may present a number of challenges (Meredith and Newton, 2004).

More interest was generated in how to apply the lessons from encouraging participation in online conferencing via discussion boards to face-to-face teaching and how to teach in mixed-mode environments with both face-to-face and distance learners. Gilly Salmon’s 5-step model for encouraging and scaffolding online participation was one of the early, influential models to attempt to bridge this gap between classroom and online interaction (2000). Salmon explored the notion of ‘e-moderating’ as a technique for learner engagement via the use of discussion boards and other asynchronous forums. What is interesting about Salmon’s work is the potential that this model of learning has to change the role of the teacher or lecturer. Picking up on the notion of the lecturer becoming a ‘guide on the side’, Salmon contends that the role of the e-moderator will rise in significance in order to support learners. What could be perceived as a potential threat to traditional academic staff is the notion that the e-moderator does not need to be a subject specialist, but a specialist in relation to synthesising and supporting learners online (Salmon, 2000: 90), which leads to the question – what is the role of the academic? Nearly ten years later and this model of the e-moderator has not really been realised; however, the question, What is the role of the academic or teacher?, still remains.

Around the same time as Salmon’s model, two other writers were attempting to describe new models of working with learners inactively and particularly through the application of technology to the learning process. Diana Laurillard’s conversational framework (2002) represents a model for understanding and improving teacher and learner interaction:

The Conversational Framework […] defines the structure of an academic dialogue and relates it to content in terms of a topic goal.

Her premise is that teaching in Higher Education must change and that educational technologies will be key to this change. Based on continual dialogue, the conversational framework uses the theories of Vygostsky and others to demonstrate a new form of interaction. Technology not only supports interactions, but it enables participation and reflection by engaging learners in new ways of articulating their ideas and encouraging lecturers to rethink the way in which they communicate with students, but giving them different modes of articulating their ideas and recognising the contributions of students. Laurillard’s model draws on a socio-constructivist approach to learning, which, it is argued, e-learning naturally enables to be articulated (2002: 87). The Conversational Framework provides a clear underpinning for how to relate educational technologies to learning activities (Laurillard, 2002: 182).

No commentary on e-learning would be complete without reference to the work of Etienne Wenger. Although Wenger does not specifically refer to e-learning in his work Communities of Practice (1998), his thinking on the creation and sustainability of communities has been extremely influential to e-learning practitioners and designers. Wenger draws on socio-constructivist theories in his work to identify significant characteristics for communities of practice and techniques to enable these to operate within learning environments and educational settings:

Communities of practice are about content – about learning as a living experience of negotiated meaning – not about form.

(Wenger, 1998: 229)

Wenger argues that we cannot design learning per se, we can only design the curriculum and the possible opportunities for learning (1998: 229). E-learning has made the realisation, creation and participation of communities of practice more accessible and this is even more so now with the rise in social networking. Wenger’s articulation of a community of practice, as built around engagement in a joint enterprise, shared
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interest and shared vocabulary, has significant resonances for how to build learning communities and engage students in these. Where problems often occur is that the technologies that support this are frequently inadequate to facilitate these interactions or not designed around a participatory framework or socio-constructivist model. In an earlier work, Lave and Wenger described how significant it is to ‘understand the technology of practice’, rather than just understanding how technology works, in order to understand the operation of communities within a particular cultural setting (1991).

Considering the pedagogical models that define e-learning methods and techniques is vital and something that commentators are consistently advocating (Collis and Moonen, 2001; Jochems et al., 2004). Defining how e-learning has impacted human learning is more complex and difficult to answer. The ‘no significant difference’ work considers how online learning differs from classroom interaction and attempts to define some of the psychological differences as to why. As we have seen above, much of the literature that explores e-learning pedagogical models is based around socio-constructivism and Vygostsky’s theories about human learning (Laurillard, 2002; Lave and Wenger, 1991; Wenger et al., 2002).

However, it is also worth spending some time outlining some of the key technologies in this area, including how changes to technology and particularly the rise in social media is changing this field.

Technologies

As referred to above, publishing any work on e-learning and referring to specific technologies is immediately problematic, as technologies change so fast (Collis and Moonen, 2001; Bates, 2005; and so on). Furthermore, the range and variety of technologies is vast – there is the obvious difference between hardware and software. Some writers have attempted to define e-learning from a technological aspect (Whang, 2009), whereas others would rather that we focus entirely on the pedagogy.

There is a huge range of hardware and software that has an immediate benefit for facilitating e-learning – both in formal and informal settings. The connectivity of the internet has undoubtedly made a huge difference to the facilitation of courses, but to be truly effective the web needs to be seen in its broad range of tools, including vod- and pod-casting, collaboration tools, gaming and computer-assisted assessment. One of the main technologies that has influenced the delivery and administration of e-learning programmes has been the virtual learning environment (VLE). A VLE is a collection of tools that can be accessed online to support study. These tools include discussion boards, chat rooms, online content, assessment tools, such as quizzes, and assignment submission facilities, ability to track interactions and so on. Universities have particularly adopted VLEs with vigour, for example, in the UK only 4% of responding institutions did not have an institution-wide supported VLE (Browne et al., 2008). Whether or not VLEs are good learning tools and encourage innovative pedagogies is hotly contested (Clay, 2009; Stiles, 2007), nevertheless VLEs do perform some core functions well – they provide a one-stop shop for students to access information related to their course, they enable academics to provide access to resources in a relatively easy fashion, they enable access to information from wherever a student is connected and they facilitate more-flexible learning through the use of online assessments and communication tools. Much of the debate around the use of VLEs has focused on the suppliers of the technology themselves, although these arguments have lessened in recent years as Blackboard has come to dominate the market and integrates other tools such as video conferencing. On the rise by many Universities is the use of Moodle, an open source VLE, which enables Universities to customise and extend their VLE to take on more of a student portal. One of the disadvantages of a VLE is that it is usually locked down within an institution, whereas many academics are now advocating for more open content.5 Moodle can facilitate more open access, but other Universities have gone further by offering all content online, such as the MIT OpenCoursWare initiative – see http://ocw.mit.edu/about.

However, the advent of social networking tools has presented a new dimension to the delivery of e-learning. Although VLEs may serve an arguable purpose, the advent of social media represents a more...
significant challenge to the use of VLEs and the curriculum delivery models of e-learning that currently exist. Social media is defined by Boyd and Ellison (2007) as ‘web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) articulate a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system’. Sometimes dismissed as tools inappropriate for learning by students (JISC, 2007), social media tools such as Facebook, Twitter, LinkedIn, YouTube, Flickr, Wikipedia and so are on are presenting challenges to the traditional dissemination models of information and knowledge promulgated by formal learning providers, particularly Universities. At the micro level, it is sometimes argued, students now find it easier to plagiarise and criticise their lecturers, as they are instantly able to comment and find out about them online. At the macro level, the fact that information can be accessed and created by anyone and potentially anywhere challenges the purpose of going to a formal institution of learning – what is the point of attending lectures if you can find everything on the web? On a more positive note, at the micro level students now have increased opportunities to engage with academics and students on a shared programme of study via easily accessible online tools such as Twitter, whereas on a macro level institutions can promote their star academics and collaborate with other institutions across the world via YouTube, iTunesU and so on. This argument may be naïve and polarised, but social media is raising considerable challenges to the status quo. And, yes, we may need to be careful about heralding a new technology set with hyperbolic potentials but it is important to understand the challenges and opportunities that it presents in relation to learning. Social media and the advent of increased mobile technologies have broken down some of the barriers between e-learning and m-learning. Most students can access social media via their portable devices, whether that be a smartphone or a laptop and most students have some device through which they can access the internet. A recent survey at City University, London found that over 95% of students had a device through which they could access the internet (Reader et al., 2010). These results are not atypical; the Educause ECAR survey of undergraduate students in the USA in 2009 found that laptop ownership was at 100%, with a further 50% owning mobile devices (Smith et al., 2009). This means that, rather than delivering specific m-learning, providers are exploring much more delivery-flexible content that can be accessed anywhere and having a more robust, responsive web presence. Universities such as the Open University in the UK and MIT and the University of Phoenix in the USA are actively producing content to meet the rising demands of this new market, and other Universities are following suit.

Social media has similar benefits to e-learning in terms of accessibility of materials and access to information. However, where social media is potentially more powerful is via the ability to create and access rapidly huge networks of people with similar interest to your own. The notion of ‘crowd sourcing’ – that is using such tools as Twitter for polling, gathering opinions or gaining information – is growing in popularity and can be very powerful. Social media also enables co-creation of knowledge and collaboration globally – as long as you have access to the internet, you can engage. For learning, this means that, potentially, students can gain access to expertise in their areas of study almost instantaneously and are exposed to a greater quantity of knowledge. Not all of this is of quality and the key is to educate students in how to use social media appropriately (Rheingold, 2010).

There are many reasons why e-learning providers need to engage with social media, some of which are explored above in relation to e-learning generally, but the fact that employers are also facing the challenge of how to engage with social media means that graduates will be expected to engage with them too. There are numerous news stories of prospective or current employees coming unstuck after an unfortunate social media incident (for example, a prospective Cisco employee commenting disparagingly on a job offer from them via Twitter (Poplin, 2009) and the case of the Virgin Atlantic staff who were fired after making ill-advised comments about customers on Facebook (BBC, 2008)). Therefore, for Universities in particular, preparing our students for this connected world is vital and we need to educate them about the transition from the way they may have used technologies in their private or school life to how
they will be using them in their professional lives. Despite the blurring of boundaries between the personal and professional identities via the advent of social media, this makes it even more important that users are confident in how to create their digital identity. Rheingold (2010) makes the argument persuasively that there are five social media literacies – participation, attention, collaboration, network awareness and critical consumption – that are vital for engaging with digital culture. His views represent an increasingly common acceptance that, although our learners may be used to technology, they still need educating in how to use it, particularly for learning. Prensky’s (2001) notion of ‘digital natives’, those students who ‘have spent their entire lives surrounded by and using computers, videogames, digital music players, video cams, cell phones, and all the other toys and tools of the digital age’ (as opposed to the ‘digital immigrants’ that teach them), is being increasingly challenged, as it becomes apparent that ability to use technology does not denote the innate ability to apply it.

Lessons – where next for e-learning? Key challenges

E-learning often fails to live up to the hype surrounding it (Conole, 2004) and often that is because the hype is just that – hype. Where there is evidence of need, well-thought-out pedagogic models, effective and supportive technology and a clear desire for change, then e-learning succeeds much more effectively. There have been some painful lessons learnt, especially in the UK Higher Education sector, around e-learning failure (for example the UK e-University (Bacsich, 2005; Select Committee, 2005)). That is not to say, though, that we should not learn from these lessons and consider effective e-learning as a key component for learning delivery in the years to come. In fact, one could argue that we ignore e-learning at our peril, particularly in Higher Education, where the competition and drivers are clear. There are some key challenges in relation to e-learning development in the future, which are outlined briefly below:

- ‘E-learning’ as a concept: it is likely that the notion of ‘e-learning’ as a separate entity will fade over the coming years, as all learning is supported with technology. Indeed, as outlined above, the fact that there are so many overlapping and changing terms that make the definition problematic is an indication that e-learning is changing and actually, as our understanding of the potential of education supported with technology grows, we will become more specific and talk about the use of more specific kinds of collaboration or engagement tools, such as blogs, wikis, etc, rather than the broad notion of e-learning.

- Future of technology: much is made of the role of technology in the future of learning (Facer and Sandford, 2010; Friedman, 2007), but how much will technology determine the future of education? And how much will we need to change our educational models to support society in the new digital world? In other words, what kind of pedagogies do we need now to both shape technology as well as enable learning to be more relevant? (Hedberg, 2006). And, of course, we cannot predict what new devices and connectivity we will have in five, ten, 15 years’ time, but we can be sure that we need modes of delivery that are flexible enough to encompass the needs of learners.

- Learner engagement and learning design: as Rheingold (2010) noted above, e-learning and, in particular, social media, can enable new forms of participation. We should be mindful still of the phenomenon of the ‘lurker’ (Salmon, 2000), but should consider a diversity of modes of learning engagement. Just as the rise of social media can enable participation, we should question its potential to increase accessibility and be mindful about inclusivity issues. A key element of learner engagement is the design of learning (Conole et al., 2004; Bentham and Sharpe 2007); if we can build more effective pedagogical models, enhanced by technology then we can ensure that learning becomes more effective as technology advances.

- Open educational resources: as access to resources, whether ‘valid’ or otherwise, becomes more ubiquitous, it raises questions around how much access formal learning institutions should give to their
resources. There is also a drive for open educational resources to support education in developing countries. Significant investment in the UK has been given to this activity under the JISC Open Educational Resources programme. There are many issues around publishers and licensing of content, but this is certainly an area to watch and one that could again have a profound effect on e-learning.

Conclusion

Siemans (2004) has argued that technology has impacted every aspect of our lives: it ‘has reorganized how we live, how we communicate and how we learn’. It is inevitable, then, that ‘the needs and theories that describe learning principles and processes, should be reflective of underlying social environments’.

E-learning is a complex term that has been conflated with other types of study – distance, flexible, blended – as well as being associated with technology and change, often in hyperbolic manners. This has led to the terminology often being misunderstood or appropriated in a variety of ways. Despite this, e-learning is here to stay, albeit in concept if not in name, as the notion of e-learning as a separate methodology becomes less and less relevant. There are very few University courses now, particularly in most UK Universities, that do not engage with technology to a greater or lesser degree. This may be via the use of the web in lectures or fully online programmes, where students and academics never meet in person, as well as the myriad of models in between. Are all these good models of e-learning? Perhaps not, but the increase in the application of technology to educational settings has meant that models and educational design are constantly changing and what we understand to be a ‘good’ model changes with the technology. Whether or not we as educators like it, technology will undoubtedly have a huge impact on education over the next 20 to 30 years. That is not to say that technology is the answer, and there are many other variables that will impact on this (Facer and Sandford, 2010), but we should understand both the opportunities that technologies offer to expand access to learning for all, as well as the challenges that are inevitable. We should not overstate change, but be mindful of the changed technological world that our learners now inhabit and the way in which technology is shaping the professional and personal environments. This chapter has considered the history of e-learning, a range of models and underpinning educational theories that have influenced its development and the technology that has supported or driven it (depending on your view), and taken a look at some possible future developments. E-learning is all around us and enhances our ability to all be lifelong learners. We may no longer speak of e-learning, but we are all engaged in its legacy.

Notes

1 The role of Becta (formerly the British Educational Communications and Technology Agency) was to lead the national drive to ensure the effective and innovative use of technology throughout learning’ with a particular remit for Schools and Colleges. However, in May 2010 the UK Government announced that Becta would cease to exist from December 2011. See www.becta.org.uk.

2 Useful definitions of these different aspects of “e-learning” can be found at www.uclan.ac.uk/information/services/ssq/quality/glossary_of_terminology.php and, for the notion of e-learning as more than just “‘electronic’”, see www.educause.edu/EDUCAUSE+Quarterly/EDUCAUSEQuarterlyMagazineVolume/ThinkExcitingELearningandtheBit199 372.

3 A further definition that encompasses the activity implicit within e-learning comes from New Zealand’s digital strategy: this defines e-learning as ‘learning that is facilitated by the use of digital tools and content. Typically, it involves some form of interactivity, which may include online interaction between the learner and their teacher or peers’ (2008); www.digitalstrategy.govt.nz/Resources/Glossary-of-Key-Terms.

References


Additional reading
