

## **E-Learning: The Hype and the Reality**

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### **Abstract:**

This paper considers the increasing impact of Information and Communication Technologies (ICT) and the associated rise in e-learning as a recognised and respected research area. The paper provides a summary of some of the current research areas under investigation and provides a list of characteristics of the area. The paper goes on to consider the professional identities of researchers in the area and the tensions which have resulted in terms of aligning with this new emergent group of professionals within existing institutional structures.

**Keywords:** E-learning, research questions

### **Commentaries:**

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## 1. Introduction

E-Learning is transforming education. It provides opportunities for learning anytime, anywhere. It provides access to a wealth of resources and new forms of communication and virtual communities. Sounds familiar? These are the sound bites that pepper research journals, conferences and the media. But the reality is that e-learning is still marginal in the lives of most academics, with technology being used for little more than acting as content repository or for administrative purposes. Think carefully, how many really innovative examples of the use of technology have you seen? So why the mismatch and are the claims about e-learning ever likely to be realised? Technologies do have great potential benefit to offer education, however this is a complex multifaceted area; we needed rigorous research if we are going to unpick the hype and gain a genuine understanding how technologies can be used effectively.

It is a fact that there is now a wealth of digital resources and Information and Communication Technology (ICT) tools to support learning and teaching. In the last decade we have seen a shift from a focus on information to an emphasis on communication and a realisation that the development of content alone does not lead to more effective learning, but we are still at the beginning of harnessing their potential (see for example Ravenscroft, 2003). The fundamental question is how can technologies be used to enhance learning? Furthermore:

- What are the technical, managerial and infrastructural requirements to develop effective learning environments?
- What protocols and standards are needed to ensure materials can be easily transferred between systems?
- How can we ensure accessibility and dealing with copyright and plagiarism issues?
- What new pedagogical models are possible and what is their impact?

These are just some of the questions being addressed by researchers in an area, which covers a spectrum of topics grouped around three main themes ? pedagogical, technical and organisational issues. E-Learning research has expanded significantly over the last decade. Its growth is due to the substantive impact of the Internet, fuelled by national e-learning initiatives and policy drives (Conole, 2002). An influx

of researchers from other disciplines (such as education, computer science and psychology) and a growth of new centres, dedicated conferences (such as ALT-C, EdMedia, Networked Learning, CAL) and journals (such as , ALT-J , Computers and Education and JCAL) has developed. It is eclectic in nature, covering a broad church of research issues and is as yet not a rigorously defined area (Conole, Cook and Ingraham, 2003). A key tension is the struggle for recognition alongside established areas, issues of shared dialogue and understanding for the area, and articulation of the different schools of thought. However e-learning research has not arisen in isolation and feeds on a number of cognate disciplines; research into technologies for learning per se has been an active area of interest with a long history (Mason, 2002).

In the next ten years we are likely to see the area diversify, although certain core foci of interest will probably emerge. Academics working in this area need to demonstrate that the research is methodological rigorous, building appropriately on existing knowledge and theories from feeder disciplines and feeding into policy and practice (Conole, 2004).

## **2. Research themes and questions**

This section outlines current research themes and questions in the field, a more detailed discussion is provided elsewhere (Conole, 2004). Early research work in this area tended to focus on technological aspects, in particular the development and use of multimedia applications and software navigation (Squires, Conole and Jacobs, 2000). Now there is a broader base of research which has expanded in part because of the impact of the Internet and the ways in which it can be used to support learning and teaching, but also because of the increased use of different learning management environments and systems. In particular there has been an expansion of research exploring the ways in which learning technologies can be used to support communication and collaboration, coupled with an increased focus on the associated pedagogical and organisational issues. Current research interests in learning technology can be grouped around three main themes ? pedagogical, technical and organisational. These themes sit within a wider socio-cultural of factors which inform and influence the research agenda.

The first of the these themes, is concerned with the pedagogy of e-learning, and in particular the development of effective models for implementation, mechanisms for embedding the understandings gained from learning theory into the design of learning technologies and their use in learning and teaching. This area also focuses on the guidelines and good practice to support the development of e-learning skills,

the literacy needs of tutors and students, understanding the nature and development of online communities and different forms of communication (and associated issues of overload) and collaboration, different mechanism for delivering and increasing flexibility and modularisation of learning opportunities and exploration of the impact of new emerging influences on learning, in particular the impact of gaming. This also covers the instructional aspects such as understanding effective design principles and promulgating good practice in the design and development of materials, exploration of different models for online courses, cultural differences in the use of online courses, requirements in terms of tutor support needs, time investments, mechanisms for improving the student learning experiences and improving retention rates.

The second area is research into the underpinning technology of e-learning, including the development of the technical architecture to support different forms of learning and teaching, different mechanisms of monitoring and tracking activity online, exploration of the nature of different types of virtual presence, context sensitive, mobile and smart technologies and the hardware and software requirements. There is now a substantive body of work on the development of technology standards, interoperability, learning objects and educational modeling languages.

The third area researches issues which arise at organisational level, including effective strategies for integrating online courses within existing systems, development of organisational knowledge, new methods and processes for developing a learning organisation and for the seamless linking of different information processes and systems.

### **3. Common themes across e-learning research**

Despite the fact that e-learning research covers a wide spectrum of topics, there are a number of common themes which link the different research areas (Conole, Ingraham, Cook, 2003), such as:

1. Interdisciplinarity and in particular the notion of multiple voices. This is concerned with how different research perspectives influence the area and also how problems in the practice of different disciplines differ in the adoption and use of learning technologies.

2. Access and inclusion, which includes issues around the widening participation agenda, equity, access to technologies, barriers to inclusion and issues around the nature and extent of the digital divide.
3. Change and in particular understanding its relationship to learning technologies. This is also concerned with motivational issues as well as exploring the drivers and rationale for change and the consequences and impact. This theme also addressed the strategies for managing and enabling change and mechanisms for implementation.
4. Convergence and interoperability, which includes exploration of different forms of convergence (technological, pedagogical, organisational, sectors, institutions, etc). This also considers issues associated with scalability and globalisation and the underpinning standards needed to support interoperability.
5. Interactivity and social interaction and in particular the multimodal and social dimensions of interactivities. This explores the interactivity of different tools and the nature of the medium. It also considers interactivity at different levels of organisations and the ways in which boundaries and functional groupings have blurred as a consequence of new technologies. Finally it considers the potential of technologies in terms of enhancing communication and collaboration and in building new communities and networks.
6. Politics is a very strong theme that runs across all learning technology research. This in part relates to the over hyping which occurs leading to an over expectation of what is possible, is in part down to different local agendas and infighting and partly arises from a recognition of the major changes and impact that technologies can have.

#### **4. The importance of e-learning research**

Why is e-learning research important? Firstly technology now has a significant impact on institutions, impinging on both organisational structures and individual functions (administration, teaching and learning, and research) (Beetham and Conole, 2001; Beetham, Jones and Gornall, 2001). However, little is understood about this or how organisations are being transformed (Littlejohn, 2003). Secondly, the variety and complexity of new technologies and the potential ways in which they

can be used is changing rapidly and little is understood about the affordances of different learning technologies (Conole and Dyke, 2003). Thirdly, partly because of the first two factors, more academics and support staff are now using technology routinely for teaching, administration and research.

Senior management need help in understanding the nature of e-learning to inform strategic decisions they are making in terms of thinking about how technologies impact on their business. Otherwise there is a danger that they will make ill-informed and rash decisions based on scant evidence. This surface approach is evident in the ways in which many institutions have choose and implemented Virtual Learning Environments (VLE): for example, where in some cases institutions naively decreed that all courses must use the VLE without considering whether it was pedagogically appropriate or appreciating the associated staff development needs and time implications. Similarly there has been an overemphasis on looking for evidence of the cost effectiveness of e-learning, when in reality we still have little understanding of the comparative costs of traditional teaching methods (Nicol and Coen, 2003).

If we accept the importance of e-learning research there are a number of issues which need to be addressed over the next decade. As a young field, it suffers in a number of respects. Firstly, it is still eclectic in nature, not yet clearly defined and scoped. Secondly, much of the current research is criticized for being too anecdotal, lacking theoretical underpinning (Mitchell, 2000). Rigorous research methodologies are needed to ensure valid and meaningful findings. A more detailed critique of the methodological issues of e-learning research and its epistemological underpinnings are discussed elsewhere (Oliver and Conole, 2004, forthcoming). This means more systematic research but also a better understanding of the benefits and limitations of different methods and more triangulation of results. The choice of methodologies has a critical impact on how well this is achieved, depending on both the nature of the questions being considered and stakeholders in the research findings. Broadly speaking there is a tension between the needs of policy makers/senior managers and academics/support staff. The former being more interested in potential efficiency gains and cost effectiveness, wanting to see evidence-based practice with comparison of the benefits of new technologies over existing teaching and learning methods, whilst the later are concerned with how the technologies can be used to improve the student learning experience. Thirdly, most institutions now have learning technology professionals within their support services and many offer e-learning masters programmes. Learning technologists are now recognized as an important breed of new professionals providing a valuable institutional role spanning the technical and

educational aspects of using technologies for learning. However, there is still a dearth of these professionals in senior roles or at government and policy level and there is an urgent need for better professional recognition for these roles. There is a real danger that if clearer career paths are not developed then the more senior learning technology specialists will find alternative career progression routes. Fourthly, the pace of change in terms of new technologies will continue; in particular mobile, smart and wireless technologies are likely to have dramatic effects. Finally, there is a need for current and future developments to feed in more coherently to policy and strategy discussions both at institutional and government level.

## **5. Towards a framework for e-learning**

As part of the initial work of the new HEFCE-funded e-learning research centre, a framework of substantive research questions for e-learning has been drawn up (Carusi, Conole et al, 2004). This consists of the follow twelve broad areas:

1. Approach to e-learning - How do we develop an approach (methods, terminology, models, etc) to provide precise, accurate and complete representation of the end to end e-learning domain?
2. Metrics - How do we develop an appropriate set of metrics to describe aspects of e-learning?
3. User requirements - How can we develop appropriate models, processes and techniques for gathering and understanding user requirements?
4. Evaluation - How do we design and build systems with inherent monitoring, feedback, evaluation and control?
5. Understanding the learning process - How do we develop appropriate metrics and models to characterise the learning and social practices of individuals and groups in learning situations and how do we characterise educational materials and contexts in ways which will relate to those aspects?
6. Understanding the learner- How can we develop better methods for understanding what learners are really doing online?
7. Pedagogical models and practice -What is the gap between the potential in the pedagogical models and what is being done in practice?

8. Capturing experience - How do we capture experience in a way that we build it back into design and implementation?
9. Ideas and practice - What is the gap between teachers' expression of their teaching ideas and values and how these are operationalised and translated into practice?
10. Intended and actual use - What is the gap between the intended uses and actual uses of online content in the context of socio-cultural differences and diversity?
11. Reuse- What are the success and failure factors for reuse of materials?
12. Assessment - Is there a gap between what we think we are testing and what we are actually testing?

The table below gives illustrative examples of specific questions across this framework of research themes around the four substantive areas of pedagogy, technology, organisational and socio-cultural issues.

Research Focus	Research themes and questions
Pedagogical aspects	<p><b>Understanding the learning process</b></p> <ul style="list-style-type: none"> <li>• Understanding what is effective pedagogy in using learning technologies</li> <li>• Can the use of ICT result in new forms of pedagogy</li> <li>• What are students experiences of using technologies a and which did they use and for what purpose</li> <li>• What was the breakdown of online activities between the different course activities</li> <li>• What are the inherent affordances of different technologies</li> <li>• In what ways can new technologies be used to support and enhance organisational learning</li> </ul>



	<ul style="list-style-type: none"><li>• What forms of collaborative activities were included?</li><li>• Were the teaching and assessment activities appropriate to the course content and at an appropriate level?</li><li>• Did the assessments enable the students to demonstrate what they had learnt?</li></ul> <p><b>Development</b></p> <ul style="list-style-type: none"><li>• What are the design and development issues associated with production of materials</li><li>• Who is involved in course development and what is their involvement</li><li>• How much time is spent on course development</li><li>• What pedagogical models are course development teams using, how explicit are they and how effectively do they translate in practice</li><li>• How are courses being design to address different learning styles and cognate levels</li><li>• What pedagogical models were used and how explicit were these?</li><li>• How well did the teaching and assessment methods map to the course learning aims and outcomes?</li><li>• What assessment methods are used?</li></ul> <p><b>Delivery and integration</b></p> <ul style="list-style-type: none"><li>• What are the best methods of integrating the use of ICT within the broader learning and teaching context</li></ul>
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	<ul style="list-style-type: none"><li>• Are there pedagogical models underpinning different elearning platform and how do this influence the way the system is used</li><li>• How are different tools available within learning platforms being used to support learning</li><li>• What are the students views of different learning systems</li><li>• How useful did the students find the resources, were they appropriate, usable?</li><li>• How much did they use additional resources and the internet?</li><li>• Was the course information well structured and organise, were information and resources easy to find?</li><li>• What are the students experiences of online courses</li><li>• Which aspects of the system are students using and for what purpose</li><li>• What communication mechanisms were used to support the course and for what purposes?</li><li>• What types and degree of interaction (administration, social, task related) did the students have with each other, with the tutor?</li></ul> <p><b>Support</b></p> <p>What new forms of literacy are emerging for students and teachers</p> <ul style="list-style-type: none"><li>• What effective mechanism can be used to provide support the enable teachers make effective use of technologies for their teaching</li><li>• What is the baseline skill set of staff involved in</li></ul>
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<b>Underpinning technology</b>	<p>development and what staff development needs are there</p> <ul style="list-style-type: none"><li>• What is the baseline skill set of students and what support mechanisms do they need</li><li>• What support mechanisms are in place to support the development and delivery of e-learning and how effective are they</li><li>• What are the initial entry skills of students and what forms of support do they need to use e-learning</li><li>• How do students receive feedback on their progress and is this appropriate</li><li>• What were the drop out rates on the course, how many completed?</li><li>• What elearning expertise do tutors have?</li><li>• What support did they have in the development of the courses?</li><li>• What online support was available, how useful was it, how much did the tutors use it?</li></ul> <p><b>Evaluation and quality assurance</b></p> <ul style="list-style-type: none"><li>• What methods are being used to evaluate elearning courses</li><li>• What quality assurance procedures are needed for course incorporating e-learning</li></ul> <p><b>Standards and architecture</b></p> <ul style="list-style-type: none"><li>• Development of underpinning standards and researching interoperability issues</li><li>• How interoperable is the system, how well does it</li></ul>
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	<p>link with institutional systems such as student records, finance, library, local VLEs and admission systems</p> <ul style="list-style-type: none"><li>• Development and testing of technical infrastructures and architectures</li></ul> <p><b>Tools and technologies</b></p> <ul style="list-style-type: none"><li>• What are the new and emerging technologies and how can they be used to support learning and teaching</li><li>• What learning platforms are being used and how do they compare</li><li>• Emerging new software and hardware systems</li><li>• Exploration of mobile and smart technologies</li><li>• In what ways are in-built tracking mechanisms within e-learning systems giving rise to surveillance issues</li></ul> <p><b>Functionality and uses</b></p> <ul style="list-style-type: none"><li>• Tracking and monitoring of materials use and navigational patterns</li><li>• How easy are different systems to navigate and use</li><li>• Understanding multiple forms of representation</li><li>• What functionality is used by tutors and students, for what purposes</li><li>• What do tutors and students think of different learning platforms and what are the perceived benefits and limitations</li><li>• How much multimedia is used and for what</li></ul>
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<b>Organisational issues</b>	<p>purposes</p> <ul style="list-style-type: none"><li>• What security mechanisms are included for authentication?</li><li>• Use of images to support learning and teaching</li><li>• Understanding the different characteristics of multimedia</li><li>• How usable are different learning platforms and how easy are they to navigate around</li><li>• How adaptable is the system to incorporation of new functionality and technologies as they emerge</li><li>• What tracking and monitoring mechanism are available and how are they being used</li><li>• How much multimedia is being used across the courses and for what purposes</li><li>• How usable are different tools and learning environments</li><li>• How well does the platform interoperate with institutional systems and platforms?</li></ul> <p><b>Users</b></p> <ul style="list-style-type: none"><li>• Understanding of how stakeholders (academics, support staff, administrators, senior managers and students) currently work</li><li>• Mechanism and procedures for developing shared knowledge banks of expertise and information</li><li>• Outline of roles and responsibilities for elearning activities? management, technical, research, dissemination, evaluation, training</li><li>• What are the different views of e-learning and its</li></ul>
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	<p>role? academics, vs support staff</p> <ul style="list-style-type: none"><li>• How are institutions dividing roles and responsibilities for e-learning and how much training and support are staff getting</li></ul> <p><b>Structures and processes</b></p> <ul style="list-style-type: none"><li>• Mapping of current structures and skills and roles towards new structures</li><li>• Understanding of how the university is currently structured</li><li>• How do elearning activities align with institutional courses and procedures</li><li>• Building a picture of what changes will be required to make the shift to using online learning systems to support elearning</li><li>• How is the knowledge gained from the development and delivery of elearning courses being used to guide elearning practice more generally across institutions</li><li>• How is experience gained on one course been translated to other courses</li><li>• What institutional issues are arising as a result of e-learning activities</li><li>• What institutional support issues arose as a result of the development and what are the strategic implications?</li><li>• What quality assurance methods were developed and used?</li><li>• What e-business modelling are being used</li></ul> <p><b>Context and culture</b></p>
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<p><b>Contextual factors</b></p>	<ul style="list-style-type: none"><li>• An analysis of the organisational issues and challenges associated with implementing a large-scale elearning initiative and in particular consideration of the particular local context and issues within which this takes place</li><li>• Documentation of information flow processes for different types of activities, such as assessment processes, student registration, and course management.</li><li>• How do we manage the bulk of existing materials and information on university web sites which have little or no coherence and consistency and how do we move from this to a working and integrated MLE.</li><li>• How can we ensure that different stakeholders interact with the MLE in a useful way, how do we manage the transition from existing practices and processes to effective use of the new system</li><li>• Research into understanding the accessibility issues associated with new technologies.</li><li>• Mechanisms for providing remote access to a variety of different users</li><li>• What are the institutional barriers and enablers to these kinds of developments?</li></ul> <p><b>Legal and ethical</b></p> <ul style="list-style-type: none"><li>• What are the legal and ethical issues (data protection, confidentiality etc) associated with the elearning</li><li>• How is plagiarism going to be detected and dealt with</li><li>• How are accessibility being addressed</li></ul>
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	<ul style="list-style-type: none"><li>• What are the ethical issues associated with elearning</li></ul> <p><b>Security</b></p> <ul style="list-style-type: none"><li>• What are the specific security issues associated with the platform</li><li>• How are students being authenticated and what are the potential loopholes</li><li>• How are different institutions dealing with the issue of copyright and ownership of material</li></ul> <p><b>Gender, discipline and culture</b></p> <ul style="list-style-type: none"><li>• Are gender differences emerging in the use of different components of the platform and different learning activities</li><li>• What are the cultural and linguistic issues and how are these being addressed</li><li>• What subject discipline differences are evident in the use of the tools and the types of activities associated with different courses</li><li>• How are the new disability laws being addressed in terms of e-learning activities</li></ul> <p><b>Government agendas</b></p> <ul style="list-style-type: none"><li>• In what ways is e-learning being used to promote widening participation</li><li>• How are special educational needs being addressed in e-learning</li><li>• In what ways is and might e-learning be used to support lifelong learning</li></ul>
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|  | <ul style="list-style-type: none"><li>• How does our e-learning developments compare with international developments and how does it position the UK in terms of global competition</li></ul> |
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Together these form an initial research framework which can be used as a starting point to more formally define and map the area of e-learning research in order to provide a mechanism for develop a shared understanding of and discourse for the area and enabling it to be positioned credibly alongside more established areas.

## 6. Conclusion

The next decade will be critical in terms of the area finding a clear niche and position alongside more established research fields. Research will offer us a real insight into the ways in which technologies can effectively support learning and teaching, and an understanding of how they can be used to improve organisational processes. We should also begin to see the development of new underpinning theories and models of explanation to account for the use of learning technologies, and perhaps even the emergence of new learning paradigms and working practices. Only time will tell.

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