



**How compelling is the evidence for the
effectiveness of e-Learning in the post-16
sector?**

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How compelling is the evidence for the effectiveness of e-Learning in the post-16 sector?

This briefing paper provides:

- An overview of the project,
- Identifies the focus of this second seminar,
- Summarises some of the background research and the findings from our first expert seminar in May 2004

1. Overview of Project

The Eduserv Research Fellowship was awarded to the University of Sussex to enable us to review the available research and answer the research question ‘How compelling is the evidence for the effectiveness of e-Learning in the post-16 sector?’

Initial activity for the project focused on the creation of our website and the hosting of our first expert seminar held at the University of Sussex on 7th May 2004 to seek the views of experts in the field of e-Learning. The Reveel website (**Review of the Evidence for the Effectiveness of E-Learning**) is now active and can be visited at <http://www.reveel.sussex.ac.uk>. We see our website not only as a dissemination tool with detailed information about the nature of the project and the research methodology, but also as a receptacle for other organisations’ reviews. If, as has been argued, there is too much evidence available, then the interlinking of information about reviews, new evidence and current articles is vital.

“... it is difficult to obtain an authoritative overview of current research and accordingly greater attention needs to be paid not only to providing integrated portals and directories and other ‘one stop shops’, but also to improve links and sign-posting between sites” (Candy, 2004 p 10)

2. The Second Reveel Expert Seminar (November 2004)

At our first expert seminar we discussed the definition of e-learning and the nature of evidence (see <http://reveel.sussex.ac.uk/consultation.php> and summary in Section 4). We concluded that we needed to narrow our focus and study two key areas of application and have selected Higher Education and Informal Learning.

At our second seminar we want to address the following key questions:

- *What are we going to include under the definition of ‘informal learning’? Are we talking about accidental learning, incidental learning, experiential learning, work based learning (other than training), self directed learning?*
- *What do we mean by effectiveness in Higher Education?*
- *What do we mean by effectiveness in informal learning?*

- *How can we find out about the failures as well the successes in order to understand more about what is effective e-Learning?*

This review will gather evidence, make decisions on the quality of that evidence, and review studies that have produced evidence for the effectiveness (or not) of e-Learning. This will address some of the concerns voiced by one participant at our first expert seminar, “There is a very big difference between counting all the instances in which there is evidence presented, whether it’s good, bad or indifferent about studies about the introduction of technology into education, and analysing that evidence.”

Focus of the seminar

The tension between the need for rapid dissemination and academic rigour is something that will prevail throughout the duration of our review. We hope that our seminars will take us some way in ensuring that we keep our focus and are not missing any important ongoing research.

We would request that participants in this seminar would give some thought to their own interpretation of what would be evidence for the effectiveness of e-Learning.

- *How would you plan an evaluation of e-Learning in higher education?*
- *How would you plan an evaluation of e-Learning in the informal sector?*

3 Some Evidence from Within the Higher Education Sector

Here we present an integration of a small selection of the papers we have found to date for the effectiveness (positive and negative) of e-Learning. At this stage we have not evaluated the quality of the evidence that the papers report. They are included here to give a sense of the kind of literature “out there”. Our initial focus is on higher education, because, whilst we accept that there is still a need for clarity about the measurement of added value, the notion of effectiveness is (slightly) clearer within this sector. Within the area of informal learning the issue of effectiveness and e-Learning is less clear cut and we welcome the opportunity that this second seminar gives us to gather the views of experts in this area.

Comparisons between online learning/distance education and lectures/traditional classes.

Allen, Mabry, Mattrey, Bourhis, Titsworth & Burrell (2004) in a meta- analysis comparing the performance of students in distance education and students in traditional classes found that distance education students slightly outperformed traditional students on exams and course grades. They argue that their results demonstrate ‘no clear decline in educational effectiveness when using distance education technology’ (p 402). The overall number in their sample was 71,731 however it should be noted that 63,516 were on a Tanzanian Teacher Training Programme. Although there seemed to be no decline in educational effectiveness, when the results were examined more closely it would seem that for military-related instruction the distance learning environment lowered performance and for the natural sciences and education courses the effect was practically zero. However, foreign language

instruction was more effective when technology was used. Allen et al. (2004) also found that there does not seem to be support for synchronous interactive technologies or classrooms to increase performance.

An interesting study by Guerandel, Felle & Malone (2003) found that students on a computer assisted learning programme in undergraduate psychiatry (CAL-PSYCH) gave higher ratings for quality and interactivity of lectures than students in the previous year who had not had the opportunity to use the CAL-PSYCH. It is difficult (often on ethical grounds) to set up studies where one set of students has an opportunity to use technology whilst another set of students does not. Therefore naturally occurring samples of students where technology is introduced but the feedback from students and the assessment remains constant across time are ideal situations where effectiveness of e-Learning can be tested.

Kekkonen-Moneta & Moneta (2002) compared students' learning outcomes in lecture (n=105) and online (n=309) versions of an introductory computing course. They found that lecture and online students achieved similar factual learning outcomes but the online students outperformed the lecture students in applied-conceptual learning. They conclude that 'the use of carefully designed interactive e-Learning modules fosters higher-order learning' (p 423)

One other study demonstrated that 85% (out of 150) of lecturers believe e-Learning improves teaching creativity and student learning success (WebCT survey, 2004). This is an example of research that has been carried out for a particular purpose and the findings need to be examined in detail before being included in the review. The issue with, what can be termed, 'grey literature' in the area of evidence of the effectiveness of e-Learning is that there will be some good quality research that has not yet reached a peer reviewed journal. We acknowledge that we will, on occasions, have to use our judgement and include some of this literature in our review.

A sense of community and connectivity

Uschi (2002) states that e-Learning offers an environment for interactive learning that can encourage communicative skills. He argues for the importance of creating connectivity rather than content. De Laat & Lally (2004) used content analysis to identify participant profiles in an asynchronous Networked Learning discussion in a higher education context. They demonstrated the importance of group process awareness and how this can be used and developed by participants in a group. Rovai (2001) looked at a 5 week graduate distance education course (with an equal number of males and females) and found that the online learners took advantage of the 7 days per week 24 hours a day 'learn anytime' element of the course. He found that 'classroom community' grew during the course with females demonstrating a stronger sense of community than males. Female students demonstrated a mainly connected communication pattern whilst the male student's communication patterns were mostly independent. Kreijns, Kirschner & Jochems (2003) urge a note caution, as although computer mediated networks *can* support communication and collaboration 'both research and field observations are not always positive about their working' (p 335).

4 The First Reveel Expert Seminar (May 2004)

Our first consultation document (<http://reveel.sussex.ac.uk/consultation.php>) outlined existing theories of learning within instructional contexts and presented a number of definitions of e-Learning for discussion in order to prepare the ground for the question of what counts as e-Learning. The goal of the first expert seminar was to

- agree a definition of e-Learning to be used in the review
- discuss the nature of the evidence for the effectiveness of e-Learning.

A New Definition of e-Learning

In our discussions at our first expert seminar we recognized that many definitions of e-Learning are ‘technology driven’. We wanted to emphasise both the learning aspect and the appropriate use of technology. The context, the sector and the task itself are essential variables when we come to look at evidence for the effectiveness of e-Learning.

A definition of e-Learning proposed within the expert seminar was:

e-Learning is the capability required of a learner/user in order that they can manage their own learning in the twenty-first century, using technology as appropriate to context, sector and task. (Reveel expert seminar, 2004)

We also considered the nature of post-16 learning. One of the first questions we addressed was ‘Is learning in the post-16 sector different to the learning that occurs in compulsory education?’ Laurillard (2002) suggests that a conversational framework model is needed in Higher Education. This entails a discursive, adaptive, interactive, and reflective approach by both the teacher and the learner. Comments on the **nature of post-16 learning** included:

“The (UK) national curriculum exists within the pre-16 not in the post-16 type of training and higher education. That in itself indicates that there is going to be a difference in learning.”

“There are differences between institutional and work-base learning....post-16 learning is less supported than that which goes on pre-16.”

“Theory and post-16.....Are we talking about learning processes? Are we talking about structured learning or just-in-time learning?”

In terms of the **nature of e-Learning**, comments included:

“Most children today don’t see it as different to the other sorts of learning that they do.”

“People like the term e-Learning because it puts the learning at the forefront. Lots of previous definitions have evolved with technology being so broad.”

“We thought it was important to make a distinction between what e-Learning is, the actual learning materials and the learning that is going on itself.”

“Some of the definitions almost assume that e-Learning is a positive thing before you start and that some of them have a strong sense of delivery and have a trusting

approach to e-Learning.”

“One of the things that came out of this was what does that mean for teaching skills in a new context? The new bit of e-Learning is about mobility, interactions and fragmentation, and we haven’t engaged with this fully.”

Evidence for the Effectiveness of e-Learning?

Much of the discussion at the first seminar highlighted the huge amount of literature about e-learning and the variety in nature and quality of the data sources and evidence it references.

“We tried to work out what were the road blocks stopping ICT developing around Europe. We came to the conclusion that it wasn’t lack of evidence - it was **too much evidence**. The problem was that the people who needed to make the decisions couldn’t get their brains around the evidence. Therefore, I think your greatest challenge is grasping this multi-dimensional beast ... It is the most uniquely complex area I have ever come across - this business of ICT and learning.” (First expert seminar participant, May 2004)

Another participant commented “The chances are, that if there is any evidence - it is positive evidence. If it is negative evidence then it has not seen the light of day or will be strongly outnumbered.” Another key point is about where the responsibility for successes or failures with e-Learning should be, as another participant pointed out “The current and reported successes and failures may not be successes and failures due to e-Learning but may be due to successes and failures within the teaching and implementation.” What measurement do we use to assess the effectiveness? Is it purely the comparison between online learning compared to face to face learning? As some people would argue, isn’t e-Learning more than this? What about innovation and creativity? Then there are the more pragmatic issues such as retention. As another seminar participant commented “How do you measure the added value of e-learning. That is something that is very problematic. How effective is e-learning in terms of retention? How do you measure that? How do you measure the impact of e-learning on the habits of the learner? That ought to be a key question.”

Many participants at our first expert seminar pointed out that in order to review the evidence for the effectiveness of e-Learning in the post-16 sector we needed to ‘narrow’ our review and look at specific key areas. We have therefore decided to produce an in-depth review of two areas: Higher Education and Informal Learning. However, we fully intend to keep track of reviews and research in the formal - FE sector.

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