RESEARCH

Impact of e-learning in Further Education: Survey of Scale and Breadth

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Executive summary

Introduction

Whilst there is apparent universal agreement that e-learning is becoming more important in the further education (FE) sector, there is a shortage of empirical evidence regarding the impact of these processes, and of variations across subject areas, within further education. It is in this context that the Department for Education and Skills (DfES) commissioned the National Foundation for Educational Research (NFER) to undertake a survey of all further education and sixth form colleges and to supplement a recent qualitative study of e-learning use in FE.[1] The research aimed to establish the scale and extent of e-learning use among FE lecturers in three subject areas, examine the associations between the use of e-learning and intermediate outcomes for learners and staff and explore the policy implications of the use of e-learning in FE.

Key findings

Use

- The majority of lecturers surveyed used e-learning in their teaching practice, most commonly to *research, access and create teaching materials* and *prepare lesson plans*. E-learning was used less frequently to communicate with learners, track learners' progress and provide one-to-one attention. Few lecturers used e-learning all the time for any task, while those using it over a wide range of tasks were also in the minority. This suggests that the pool of 'e-sophisticates' amongst FE lecturers is still relatively small.
- Use by learners showed some similarities to lecturers' use: overall learners were commonly reported to use e-learning to undertake research, present work and work independently, but less to catch up missed work, contact the lecturer out of class, or work collaboratively with peers out of class. These similarities appeared to be partly the result of a link between learners' and lecturers' use. For example, learners were said to use e-learning more to develop their understanding where their lecturers used it more in this way.

Impact

- A minority of lecturers reported that e-learning had increased retention (one fifth) or achievement (just under one-third) and there was limited evidence of a direct relationship between e-learning use (whether by learners or lecturers) and the end-point outcomes in the institutions as a

[1] Finlayson, H., Maxwell, B., Caillau, I. and Tomalin, J. (2006). Impact of e-learning in student intermediate and end-point outcomes in Further Education. London: DfES.

whole. However e-learning did appear to be having a noticeable impact on some intermediate learner outcomes and on some aspects of teaching practice.

- The teaching tasks where e-learning was felt to have most impact largely reflected those where it was most used. Lecturers reported themselves to be effective in *planning, preparation and sharing materials*. Fewer felt that they were more effective in meeting learners' needs, tracking progress or being more efficient.
- For learners, lecturers reported they were more effective at *researching and presenting work*, again reflecting use patterns, but also that e-learning helped in *reinforcing their knowledge and developing their understanding*. Fewer said that learners' personal organisation was more effective due to e-learning.

Attitudes and confidence

- Overall, lecturers were using e-learning and were *positive and proactive* in their attitude towards the role of e-learning in supporting their teaching practice. Around three-quarters said that they could *readily identify opportunities for using e-learning* and were *enthusiastic* about its use.

Factors associated with the impact of e-learning

- Lecturers' *use* of e-learning was associated more with their own *attitudes* and *confidence* than with their personal background characteristics or the context of their institution. In addition, the extent to which lecturers felt that they had sufficient access to e-learning resources, and support, were associated with having a positive attitude. These are not proven causal relationships but it seems likely that the interrelationships between use, confidence, attitude and access operate multi-directionally, working to reinforce one another, either positively or negatively.

Summary of research methods

This research was based on responses to a questionnaire survey from 2,295 lecturers in 319 general FE and sixth form colleges in England. Questionnaires were sent to lecturers teaching all levels and types of qualifications in three subject areas – business, health and social care and science in all 355 general FE and sixth form colleges in England, in October 2005. It is estimated that the response represents around 27 per cent of lecturers in the three subject areas. At least one response was obtained from 90 per cent of colleges.

The data were analysed using basic descriptive statistics and factor analysis and relationships within the dataset were examined using ANOVAs and logistic regression techniques.

Respondent characteristics

Half of the respondents were course leaders and around one-fifth were heads of department. Seven per cent said that they were coordinators of information learning technologies (ILT) in their department and a quarter did not undertake any of these roles. While the respondents were broadly representative in terms of gender, the majority (79 per cent) said that they were employed full-time while 21 per cent were part-time. This contrasts with the picture nationally where the majority of lecturers are part-time.

Analysis of the likely effect of this bias showed that, overall, the views of part-time and full-time lecturers did not differ markedly, but where they did, full-time lecturers used e-learning more and were slightly more confident and satisfied with access. While the associations in this brief take these differences into account, the descriptive analyses presented may reflect the slightly more positive perspective of full-time lecturers than would be the case were the responding sample more representative of part-time lecturers.

Findings:

Extent and nature of use of e-learning in further education

The majority of lecturers who were surveyed said that they were using e-learning in their teaching and learning practice. The most widely reported ways in which e-learning was used related to its use for *preparation and planning* for teaching. For example, around three-quarters used e-learning all of the time or frequently for researching and accessing teaching materials, and for creating teaching materials, and around two-thirds used it all of the time or frequently to prepare lesson plans and schemes of work.

E-learning was reported to be used less often to *facilitate and manage* learning such as to make course materials available to learners, or to colleagues, (each mentioned by around three-fifths of respondents), or to communicate with learners outside of the classroom (around one-third). E-learning was also used less often to manage individual target setting (one fifth) or track learners' progress (two-fifths). Moreover, while around half of respondents said that they used e-learning to develop their learners' understanding, fewer used it to deliver differentiated lessons (around two-fifths) or to provide one-to-one attention in the class (one-fifth).

Learners were perceived by their lecturers to use e-learning most frequently to undertake research, present work and work independently. Fewer perceived learners to use e-learning to catch up with missed lectures, contact the lecturer with queries, work collaboratively with peers outside of lesson time and to submit work on time.

Impact of e-learning on teaching

There were strong similarities between the areas where lecturers used e-learning and where they perceived it to be effective, with the most commonly reported impacts being on planning, preparation and sharing materials with lesser effects on aspects of the teaching-learning interface and the smallest impacts on administration and management or efficiency. For instance, around three-quarters of lecturers considered that they were able to prepare for teaching, through researching and creating materials, more effectively as a result of e-learning. A smaller proportion (around two-thirds) felt that they were more effective in presenting information in front of the class and in making course materials available to learners due to e-learning use, with around a half believing they were more effective at developing learners' understanding. However, just over a quarter felt they were more effective at tracking learners' progress, and only one third felt that e-learning had assisted them to save time.

Impact of e-learning on learners

There were also similarities between lecturers' use of e-learning and their perceptions of its impact on learners. The majority felt that e-learning had helped learners become more effective at creating visual presentations, presenting written work and researching topics. Seven out of ten thought e-learning had helped make learners more effective at reinforcing their knowledge, half felt that learners engaged more effectively with the subject in the classroom and nearly half felt that learner motivation had increased because of e-learning use. E-learning was less widely noted to have made learners more effective in working in collaboration with their peers either inside (37 per cent) or outside (35 per cent) the classroom.

Use of e-learning had a positive impact on some aspects of learners' ability to independently manage their own learning. Just over half of respondents felt that learners were more effective at working independently as a result of e-learning, and a similar proportion said that learners were better able to work at their own pace, and contact staff with queries. However, fewer felt that learners were more effective at catching up on missed lectures, organising their work, or submitting work on time.

The findings indicate that the majority of lecturers perceived an impact on some aspects of both their own, and their learners', teaching and learning experiences as a result of e-learning. However, they were more circumspect in their assessment of the impact on retention and achievement. One-fifth of lecturers said that retention had increased due to e-learning and just under one-third felt that achievement had increased as a result of e-learning.

Lecturers' responses indicated that learners with higher attainment and those with average attainment were more likely to be said to find e-learning helpful than learners with low levels of attainment.

In addition to lecturers' personal experience of the impact of e-learning, the majority felt that e-learning had potential to contribute to teaching and learning in the future. In particular, around eight out of ten lecturers believed that e-learning could help stimulate better understanding, increase flexibility in learning provision, and help equip learners more effectively for future employment. However, they were more uncertain about the potential of e-learning to help widen participation and to help tailor learning (around a quarter were uncertain) and were less likely to agree that e-learning had the potential to save lecturers' time.

Lecturers' attitudes and confidence

On the whole, most respondents to the survey indicated that they were confident in their use of e-learning to plan and prepare lessons, to communicate with learners and to teach in front of the class. However, fewer indicated that they were confident using e-learning to track and monitor learners' progress.

Overall, lecturers were positive and proactive in their attitude towards the role of e-learning in supporting their teaching practice. Around three-quarters felt that they could readily identify opportunities for using e-learning and a similar proportion said that they were enthusiastic about its use. Moreover, there appears to be an expectation that e-learning would be used in the majority of colleges. Nearly nine out of ten lecturers said that senior managers in the college expected lecturers to use e-learning and just over half felt that learners expected e-learning use. E-learning appeared, nevertheless, to be regarded as complementing other aspects of teaching practice, as nine out of ten lecturers said that it was only one useful tool.

Access to e-learning

The majority of lecturers who were surveyed (three-fifths or more) said that they had sufficient access to e-learning resources to *plan, prepare, share materials and communicate* with learners. However, around half said that the access that they and their learners had to e-learning resources *in the classroom* was insufficient.

Most of the survey respondents were satisfied with the support provided in relation to technical support and training. However, they were less satisfied with the reliability of equipment and, even less satisfied with the time provided to incorporate e-learning into teaching and learning.

Factors associated with the impact of e-learning

There was limited evidence of a direct relationship between lecturers' and learners' reported use of e-learning for a range of purposes, and the end-point achievement, retention and quality of teaching outcomes in the institutions as a whole. Although such outcomes were more closely associated with background and contextual factors at college level, there was evidence that

achievement in a college was higher where lecturers used e-learning more frequently for preparation and research for teaching.

The extent and nature of learners' reported use of e-learning was associated more with their lecturers' attitudes and use of e-learning than with background and contextual factors. The evidence suggested that there was an association between the way in which lecturers used e-learning and their learners reportedly using it in a similar way. More specifically, lecturers who used e-learning to support a learner-centred approach tended to consider that learners used e-learning more for independent learning and were more effective as independent learners as a result of e-learning.

There appeared to be a close inter-relationship between lecturers' confidence in, and attitudes towards, e-learning. Moreover, lecturers' confidence and attitudes were associated with their use of e-learning and perceptions of the outcomes for their learners. Overall, the evidence suggests that there is a complex inter-relationship between these factors and, therefore, that a change in any one could be associated with a change in a number of others.

Having sufficient access was also positively associated with the extent to which lecturers used e-learning when teaching to develop understanding and for sharing materials, suggesting that lecturers may use e-learning more in these ways where they have sufficient access.

Conclusions and implications

In a context of overall positive attitudes, on the part of lecturers, towards e-learning, the research findings indicated that there were some possible barriers and enablers to e-learning use in further education. These included:

- Having an **ethos and environment** within an institution through which lecturers can improve their confidence, see the potential for e-learning, and have a positive attitude towards its use, could contribute to increasing its use among lecturers and, in turn, learners.
- Ensuring that lecturers have **sufficient access** to e-learning resources to use in the classroom, in addition to outside class, could be a key enabler in developing lecturers' confidence in the use of e-learning and increasing its use at the teaching and learning interface. In turn, increased use by lecturers could lead to an increase in the use of e-learning in this way by learners.
- Providing sufficient **support** for lecturers, particularly in terms of providing enough time for them to develop and embed their use of e-learning in their everyday teaching practice, could be a key enabler for increasing the use of e-learning in FE and supporting the achievement of intermediate outcomes, such as the development of learner understanding and independent learning.

1. Introduction

1.1 Introduction

This report sets out the findings from a research study into the impact of e-learning in further education (FE) carried out by a team at the National Foundation for Educational Research (NFER) between August 2005 and February 2006. The study was commissioned by the Department for Education and Skills (DfES) in order to address the need for further empirical evidence regarding the impact of e-learning in FE, including variations across subject areas within FE colleges.

The research was based on a survey questionnaire on the scale and breadth of e-learning, sent to all general FE and sixth form colleges. The survey facilitated detailed exploration of the probable scale of impact of e-learning and the associations between various e-learning inputs and outputs. In order to cover in-college variations, the survey questionnaire was sent to staff in three different subject areas within each institution:

- Business
- Science
- Health and social care.

The detailed findings from the survey, including various forms of statistical analyses of the survey outcomes, are presented in the following chapters. This opening chapter sets out details of the context of the survey, the aims and objectives of the study and the research methodology used. The remainder of this report is divided into four chapters:

- **Chapter 2** *sets the context* by providing an overview of the extent and nature of the use of e-learning: it also presents findings on a variety of contextual factors, including respondents' perceptions of access to e-learning facilities and the levels of support received.
- In **Chapter 3** the focus turns to lecturers' views on the *impact* of e-learning: this includes consideration of their views of the impact of e-learning on their own teaching and on their learners.
- **Chapter 4** explores the factors which contribute to the impact of e-learning. This chapter examines the extent to which there appears to be a relationship between outcomes (achievement, retention, lecturer confidence, learner motivation and learning, quality of teaching) and a range of potentially influential factors.

- A final chapter draws all of this together and sets out the key conclusions arising from the research findings, along with a number of recommendations for policy makers and practitioners.

1.2 Background

The survey of e-learning in FE and sixth form colleges was carried out in a period when the FE sector was experiencing a period of considerable change. The changes that were occurring were of both a general nature and more specifically to do with e-learning and the use of information and learning technologies (ILTs).[2]

Many of the general discussions about the future of FE were stimulated by the publication of the Foster Review in November 2005. In his report, *Realising the Potential – A review of the future role of further education colleges,* Sir Andrew Foster summarises a broad review of FE and offers advice on *'the key strategic issues, challenges and opportunities facing FE colleges over the next five to ten years'* (Foster, 2005, p. v).

Whilst the review does not include a specific chapter on e-learning or ILT, Foster clearly acknowledges and recognises the importance of e-learning for the future of FE, particularly in relation to issues of infrastructure. He notes that: *'There is much scope for the use of e-learning to enhance the learner's experience…'*, and calls for *'more and smarter investment in networked colleges and systems'* (Foster, 2005, p. 66, para. 261). In addition, he reiterates the importance of the aims of the Harnessing Technology strategy and makes some specific suggestions about the kinds of ILT tools for which there is a need for further deployment in the FE sector:

> *The use of technology however is about more than capital investment and there has to be a strategic approach to staff development and the personalisation of learning through, for example, learner tracking tools, diagnostic tools and multi media approaches that improve recruitment, retention and achievement. Technologies should be harnessed to transform teaching and learning in the classroom and beyond... Developing tools and resources for practitioners must be a priority.* (Foster, 2005, p. 67, para. 262).

Foster's emphasis on harnessing technology is consistent with the official approach of promoting the importance of e-learning in recent years. The DfES

[2] *E-learning* can take many forms and can be the subject of a variety of interpretations. Throughout this report the term e-learning is used to refer to all those situations where tutors and/or learners use information and learning technologies (ILTs) in their various forms to assist with teaching and learning processes. The term 'information and learning technology' (ILT), as opposed to 'information and communication technology' (ICT), seems to be more popularly used in discussions about technology in the FE sector, though both terms are used.

document *Success for All* outlined a long-term reform strategy for the further education and training sector, and explicitly recognised the importance of the use of electronic technology to deliver, support and enhance teaching and learning:

> *E-learning continues to grow in importance in widening post-16 participation and in improving learner retention and achievement… Our aim now is to improve quality, raise standards and increase coherence in e-learning across all post-15 delivery routes* (DfES, 2002, p. 32).

A common theme in recent Government documents is to stress the ways in which e-learning can go beyond the traditional classroom context and engage many types of learners. E-learning is flexible and interactive and can shape the opportunities open to all learners to fit around their particular needs and preferences. As the DfES consultation document, *Towards a Unified e-learning Strategy*, noted:

> *It is relevant to all subjects and to learners at every stage of learning or training. E-learning can even reach out and re-engage people who are currently not involved in education because it is interactive, and can adapt to their needs* (DfES, 2003, p. 7).

More recently, in March 2005, *Harnessing Technology: Transforming learning and children's services*, was published. The e-strategy set out in this document describes the use of digital and interactive technologies to achieve a more personalised approach within all areas of education and children's services. The strategy is designed to harness technology to the needs of children, learners, parents, teachers, carers, employers and all stakeholders (DfES, 2005, p. 3).

Another aim stressed in the Harnessing Technology guidance on the development of the new technologies in learning is to do with *'the embedding of e-learning and ICT across the curriculum'* (DfES, 2005, p. 27). At a national level, the promotion of this new, broader emphasis on ILT has been called the Government's 'e-learning vision', which includes the development of 'e-confidence'. The principle of establishing e-learning across the whole curriculum, currently being promoted in both school and college contexts, is a response to the situation whereby the use of ILT can become 'locked in' to particular subject areas or departments.

While there have been several studies that have reported on various aspects of ILT within the further education sector, very few have collected data on actual levels of e-learning/ILT usage. Some recent empirically-based reports, however, appear to have started from the premise that, given that there has been a considerable public investment in e-learning and new technologies within the FE sector, it is worth asking what the evidence tells us about the

contribution of e-learning to improvements in the standard of teaching and learning in colleges. In other words, a view may be taken that a large part of the e-learning infrastructure is in place (though this needs a constant process of replacement and updating), but there seem to be considerable variations in terms of the effectiveness of use of this infrastructure. This raises questions about differences in the extent and the nature of use of e-learning across subject, departmental and institutional contexts, and about the capacity of colleges to use e-learning, along with variations in technological progress.

In relation to this issue, and the question of whether ILTs are 'embedded' in colleges, a recent report by the British Educational Communications and Technology Agency (Becta) for the Learning and Skills Council revealed that e-learning is still being used in conjunction with traditional teaching and 'blended learning' – where use is made of a variety of learning resources and techniques. Moreover the report suggested that:

> *ICT and e-learning are still largely peripheral to classroom teaching and are most widely used for additional support activities to extend independent learning* (Becta, 2004, p. 3).

The Becta research report '*ICT and e-learning in Further Education: the challenge of change*' (2005) found that:

> *The average number of staff considered to be competent or advanced in their personal use of ICT grew steadily after 2000 to a level of 77%. Alongside this an average of 59% of college staff were reported to be competent or advanced in using ICT with learners (e-learning skills)* (Becta, 2005, p. 5).

Another research report, *The developing impact of ILT*, produced by the Learning and Skills Development Agency (LSDA) and Sheffield Hallam University found evidence that while staff often had access to a wide range of technologies, students reported that '*many of them were only used infrequently*' and '*teaching staff never used many aspects of ILT*' (2004, p. 10). There is some evidence then, from a student perspective, that e-learning technologies are not being fully utilised.

This report also found that over two-fifths (42 per cent) of student respondents from the post-16 sector agreed or strongly agreed with the view that increased use of ILT would lead to higher grades (2004, p. 35). Furthermore, the ImpaCT2 study into the use of ICT in schools, commissioned by Becta, found that the new technologies in schools had a motivational effect on some learners, particularly on boys (Comber *et al.*, 2002). Another report from the ImpaCT2 evaluation (Harrison *et al.*, 2003, p. 5) found '*evidence of a positive relationship between ICT use and achievement*' in schools, although in some subjects '*the effects were not statistically significant*'.

Frequent reference is made in this report to the use of e-learning, but it needs to be remembered that the term 'use' here covers a wide variety of possible activities. A research team from Sheffield Hallam University, based on case studies of six FE colleges, have examined the various ways in which e-learning is put to use in an FE context (categorised as e-learning uses or 'ELUs'). These uses are based on the purpose for which the technology is employed and broadly fall into three main groups (Finlayson *et al.*, 2006, p. 9):

A. ***e-learning as a Medium*** *for facilitating and managing learning. This includes using a VLE [virtual learning environment]… or an intranet to access learning materials including video and online assessment, submit assignments electronically, and using email to send feedback and support…*

B. ***e-learning as a Presentation Tool****. This… includes teacher preparation of materials e.g. PowerPoint presentations, worksheets; and presentations on interactive whiteboards. It also includes student use of word processors, desk top publishers, and… presentations to peers and tutors…*

C. ***e-learning as a Learning Tool****. The focus here is the use of technology by the students in supervised or unsupervised sessions, with interactive use of interactive whiteboards or distributed computers using software for: engaging with information… calculations and predictions… online data collection… and modelling….*

These distinctions between ELUs have been used to inform instrument design in the present study and are also considered in the relevant sections on the findings from the questionnaire survey.

Another factor that may affect the use and effectiveness of e-learning and use in an FE or sixth form college is the extent of the institution's 'e-maturity'. The concept of e-maturity is currently an emerging theme in planning around the e-strategy and consequently features as a key concept throughout this report. It is useful to make a distinction between e-maturity and 'e-sophistication', another phrase that is used in this report. The former is mainly used as a term for the organisational, institutional or 'systems' characteristics of e-learning, whereas the latter term is used to describe how sophisticated individuals are as users of e-learning.

In the context of this project, the term e-maturity refers to where the college is in terms of the development and the embedding of its e-learning infrastructure and processes. The Sheffield Hallam University study mentioned above investigated the concept of 'maturity of ILT development' and found that:

> *A progression in maturity was generally evident… In more ILT mature contexts colleges have moved away from stipulating specific uses of*

> *ILT or targets for creating particular resources to focus on the development of ILT appropriate to the learning being supported. In less mature ILT contexts the focus tended to be on weak uses of ILT, such as use as a rather expensive filing system…*[and] *The college priorities for VLE and internet use, usually for management of learning rather than enhancement of learning…* (Finlayson *et al.*, 2006, p. 22).

The term 'e-enablement' overlaps with the notion of 'e-maturity'. An 'e-enabled' institution is one where: *'there is clear evidence of strategic thinking around the use of ICT,* [and] *self-assessment and future willingness to embed ICT are high'* (PricewaterhouseCoopers, 2004, p. 70). A research team from PricewaterhouseCoopers has recently investigated the importance of e-enablement in a school and college context, based primarily on a survey sent to 1,290 institutions (with a 29 per cent response rate) and 24 case-study visits. This study found that *'Schools all have different starting points…*[and] *a point that was made frequently is that planning must take account of the pace at which teaching and other staff can accommodate change'* (PricewaterhouseCoopers, 2004, p. 24). This point was also made by Finlayson *et al.* (2006) who noted that: *'Colleges in the study varied in how far they had travelled…* [and] *only in rare and isolated instances was the full potential of ILT harnessed to support teaching and learning'* (2006, p. 18).

All of this illustrates that there are a number of consistencies in the research and policy literature on the uses and effectiveness of e-learning in FE colleges. Common themes include a stress on the importance of harnessing technology for the benefit of teaching and learning, the need to integrate the use of technology in college planning and delivery, and the need to acknowledge variations in such factors as e-maturity and e-enablement. In addition, further themes include the contribution of e-learning to supporting personalised learning, learners' understanding and efficiency savings for staff and learners. These themes, however, need to be set in a context where there is still only limited research on the impact of e-learning in FE colleges, and where acknowledgement needs to be made that there are numerous complexities in the relationship between e-learning input and student and lecturer outcomes.

1.3 Aims and objectives

A key aim of the research has been to establish relationships between e-learning use and outcomes for learners and staff in FE. In addressing this aim, the research had the following objectives:

- to establish the scale and extent of the impact of ILT and e-learning among FE tutors in specific subjects

- to examine the associations between the use of ILT and e-learning and intermediate outcomes for learners and staff, taking into consideration a range of influential factors related to the institutions, teaching staff, subjects and learners
- to explore the policy implications of the use of ILT and e-learning in the FE sector.

As noted above, it needs to be acknowledged that the relationships between the use of e-learning and outcomes for learners are complex and influenced by a wide variety of factors. This makes it very difficult to measure, even indirectly, the impact of using these technologies on achievement and attainment. In exploring these issues the research has investigated a number of key research questions, including the following:

Research questions

- Does frequency of use have any impact on outcomes: e.g. does greater ILT use lead to better learner motivation?
- What forms of organisation of e-learning (or managed learning environments) are associated with more positive learner outcomes, e.g. use of a Virtual Learning Environment (VLE) or intranet?
- What are the patterns of ILT use and e-learning exposure across different subject areas and courses?
- What are the characteristics of tutors who are (a) most experienced in using e-learning; (b) more positive about the impact of e-learning?
- Are there any links between the levels of e-learning/ILT use within a college and other college level variables such as size of college, retention rates and average student points score?
- What relationships (if any) exist between tutors' confidence and ILT competence levels and their perceptions of student autonomy, skills and motivation?
- What are tutors' views regarding the advantages and disadvantages of e-learning over other types of learning? What are tutors' suggestions regarding maximising the uses of new technology in FE colleges?
- What constitutes good practice in e-learning? What forms of professional development and support would be most beneficial?

These questions illustrate the possible links and associations that could be made between the variables for which information has been provided. In addressing these questions, and others, this study has aimed (especially via the implications for policy and practice section) to provide some useful practical pointers, for policy makers, funders, college managers and tutors, regarding the future development of e-learning in the FE context. The research methods that were used to address these aims and objectives are set out in the next section.

1.4 Research methods

The questionnaire

The questionnaire was designed by the research team in collaboration with the steering group, and development was informed by a pilot exercise with 17 staff in three colleges. Questions for Heads of Department and teaching staff were integrated into one questionnaire. The questionnaire aimed to ascertain details of lecturers' use of e-learning and to explore their views of its impact on teaching and learning. The questionnaire consisted predominantly of pre-coded questions with two open-ended questions, and provided information regarding lecturers':

- background characteristics
- use of e-learning and their perception of learners' use
- perceptions of the impact of e-learning on teaching and learning
- views on their current experience and practice of using e-learning
- views on the potential of e-learning to improve teaching and learning.

The survey focused on three subject areas – health and social care, science, and business – in order to take into account possible within-college variations in the use of e-learning. Respondents had the choice of completing either a paper copy of the questionnaire or an online version.

As noted in Section 1.2, the research reported on here builds on the findings from a qualitative study of the use of e-learning in FE conducted by Sheffield Hallam University. This qualitative research also focused on three subject areas: health and social care, science and mathematics. (Business was substituted for mathematics in the present study because of the large numbers of lecturers involved in business and because business is an area of FE which includes high levels of e-learning and ILT use).

The sample

A total of 10,110 questionnaires were dispatched across 355 general FE colleges and sixth form colleges in England. Heads of Department in each of the three subject areas were identified and were each sent a batch of ten questionnaires. Their help was requested in completing a questionnaire and in distributing the remaining questionnaires to colleagues in their department. This approach enabled a large enough sample of lecturers to be surveyed to facilitate an exploration of the ways in which e-learning is used in the main types of further education providers.

Table 1.1 illustrates that the colleges that responded were representative of most providers of further education. Furthermore, at least one questionnaire was received from 90 per cent of all general FE and sixth form colleges.

Table 1.1 Sample breakdown

Type of institution	Number contacted	Returns (number)	Response (%)
General FE colleges	251	235	94
Sixth form colleges	102	84	82
Total	**353**	**319**	**90**

Source: NFER Survey of college lecturers, 2005.
The sample was derived from Edubase data held on all sixth form colleges (including voluntary aided and voluntary controlled) and general FE colleges (including tertiary colleges) in England. Sixth form centres and specialist colleges, including art and design colleges and agricultural colleges, were excluded from the sample.

Questionnaire returns and coverage of subject areas

The survey was undertaken between October and November 2005. Two reminder letters were sent, one with an additional copy of the questionnaire, and a targeted telephone reminder of non-responding colleges was conducted. A total of 2,295 questionnaires were returned, representing 23 per cent of all those dispatched. Five per cent of these were completed online (see Table 1.2 below).

Table 1.2 Questionnaire level returns by subject area

Department	Sent	Returned (paper)	Returned (online)	Returned (total)	Response (%)*
Business	3500	777	39	816	23
Health and Social Care	3420	764	30	794	23
Science	3190	645	40	685	21
Total	**10110**	**2186**	**109**	**2295**	**23**

Source: NFER Survey of college lecturers, 2005.
**The response rate is the resulting percentage of the number of questionnaires returned divided by the number sent out. The response rate can also be calculated by using the mean figure for the size of departments reported by Heads of Department in the questionnaire, divided by the number of completed questionnaires. This produces a total response rate of 27 per cent.*

As can be seen in Table 1.2, a similar response rate was achieved in each of the three subject areas. Overall, the response represents a good coverage of the departments and colleges.

The data gathered through the survey of lecturers was supplemented by key **institutional-level information**. In order to minimise the burden on college staff, and the risk of non-response, this information was gathered from public data sources. Adult Learning Inspectorate (ALI) reports and the DfES's college achievement and attainment tables were used to gather information relating to:

- size of institution (in terms of number of learners)
- average pass rates
- average retention rates
- assessment of quality of teaching in each of the focus subject areas.

The regional breakdown of those who responded, presented in Table 1.3, and the size of the responding colleges, detailed in Table 1.4, are further evidence that the responses received reflect the picture nationally.

Table 1.3 General FE and sixth form colleges by regional location

Government Office Region	Sent (number)	Returned (number)	Response (%)
West Midlands	45	43	96
East Midlands	29	27	93
North East	22	20	91
Yorkshire and Humber	31	28	90
North West	59	53	90
Eastern region	32	28	88
South East	59	52	88
London	47	40	85
South West	29	28	69
Total	**353**	**319**	**90**

Source: NFER Survey of college lecturers, 2005.

In general a higher proportion of colleges from the north of England and the midlands submitted responses along with a correspondingly lower proportion from the south. However, the general profile of the respondents is still representative of the sector in terms of institutional type and geographical distribution.

Table 1.4 shows the profile of colleges responding to the survey grouped according to the size of each college.

Table 1.4 General FE and sixth form colleges by size

Size of College*	Number contacted	Returns	Response (%)
Small	116	98	84
Medium	115	108	94
Large	116	108	93
Unavailable	6	5	
Total	**353**	**319**	**90**

**Using data from ALI/Ofsted, three designations for size of college have been established. A small college is defined as having fewer than 10,363 students, a medium sized college as having between 10,364 and 21,018 students, and a large college as having more than 21,019 students. No information was available for six of the colleges.*

This information indicates that the colleges from whom questionnaire responses were received were broadly representative of all colleges nationally. Therefore the views of the lecturers reflect the experience of those from a suitable range of institutions.

1.5 Profile of respondents

The following represents a summary of the main characteristics of the lecturers who responded to this survey: full details are outlined in Appendix A.

The majority of respondents were female (60 per cent), with 34 per cent male, and six per cent declined to answer. This proportion is broadly in line with national figures for FE colleges which are 59 per cent female and 41 per cent male. This contrasts with employment status where 79 per cent of respondents were full time and 21 per cent part time, whereas nationally in FE colleges 38 per cent are full time and 62 per cent part time.

It appears, therefore, that full-time lecturers were over-represented among the respondents to the survey. In order to explore the extent of any possible effect of this on the responses overall, the differences in responses of part-time and full-time lecturers to key questions were explored. This indicated that, on the whole, there were no significant differences between part-time and full-time lecturers in terms of the extent to which they felt that they had sufficient support, their perceptions of learners' use of e-learning or whether learners were more effective as a result of e-learning. Moreover, they did not differ significantly in relation to whether they were proactive or saw the potential of e-learning and whether a VLE or intranet made a difference to their teaching. However, it emerged that full-time lecturers were significantly more likely to indicate that they used e-learning to share materials, to develop understanding, and to feel that they were more effective at sharing materials and adopting a learner-centred approach due to e-learning. In addition, full-time lecturers

were significantly more likely to consider that they were confident in using e-learning and were more content with their access to resources.

These findings suggest that, while overall the views of part-time and full-time lecturers did not differ markedly, where they did, the full-time lecturers used e-learning more and were slightly more confident and satisfied with access. While the regression analysis presented in Chapter 4 takes these differences into account, the descriptive analyses presented in Chapters 2 and 3 may, therefore, reflect a slightly more positive perspective of full-time lecturers than would be the case were the responding sample more representative of part-time lecturers.

The majority of respondents (74 per cent) were based in FE colleges and 26 per cent in sixth form colleges. In terms of levels of experience, 49 per cent of respondents had over ten years of teaching in post-16 institutions overall and 33 per cent had this level of experience in their present college. Fifty per cent had ten years or less experience of teaching in the post-16 environment and 64 per cent had taught for ten years or less in their present institution. Lecturers had been teaching for an average of 12 years in the post-16 environment.

In addition to lecturing responsibilities, half of respondents were course leaders, 21 per cent were Heads of Department and seven per cent held the role of coordinator of e-learning within their subject-based department. This varied by subject department: in **health and social care** 57 per cent of respondents were course leaders and 17 per cent Heads of Department, whilst corresponding figures for **business** were 55 and 22 per cent. **Science** had the lowest proportion of course leaders (43 per cent) and the highest proportion of Heads of Department (30 per cent). Heads of Departments reported having an average[3] number of 13 full and part-time teaching staff in their department. Although the majority of respondents to the survey did not have an e-learning specific role, it is possible that lecturers who were enthusiastic about the use of e-learning may have been more likely to respond to the questionnaire. Consequently, the views of lecturers who responded to this survey may reflect a more positive and proactive viewpoint than may be the case among further education lecturers as a whole.

In terms of the Levels of qualification taught by respondents, Level 3 was the predominant Level as the majority of lecturers (82 per cent) reported doing at least some teaching at Level 3 and 51 per cent said that they taught predominantly at this Level. Level 2 was also important with over half (58 per cent) teaching at this Level and 13 per cent concentrating on it. There were diverse qualifications taught, with nearly two-thirds (64 per cent) of lecturers teaching NVQs, National Certificates and Diplomas and other vocational qualifications, and 44 per cent teaching AS/A2 levels and AVCEs. Other

[3] Median score.

qualifications taught by respondents included GCSEs (16 per cent), professional qualifications (15 per cent), Foundation degrees (12 per cent) and GNVQs and other Higher Education courses (nine per cent).

In order to explore the possible associations identified in the study's research questions, a variety of forms of analysis have been conducted. These include descriptive statistics, sub-group analyses, factor analyses, and multivariate analyses. The findings collected from these approaches are set out in the next three chapters and have been brought together in Chapter 5.

2. Extent and nature of use of e-learning

Key findings

- The majority of lecturers were using e-learning extensively as a **preparation and presentational tool**, and in some areas as a **medium for facilitating teaching and learning** (making course materials available to learners and sharing them with colleagues) and as **a learning tool** (developing learners' understanding).
- Lecturers' perceptions were that e-learning was being used by learners most for researching topics, and presenting written work and least for catching up on missed lectures, working collaboratively with peers outside of the classroom and contacting lecturers with queries.
- Nearly all lecturers reported that their institutions had used an intranet and two-thirds said that they had access to a Virtual Learning Environment (VLE).
- Most lecturers felt they had sufficient access to e-learning resources. However, lecturers appeared to be less satisfied with access to e-learning resources to use in the classroom.
- Lecturers were broadly satisfied with the support available, but were least satisfied with the amount of time provided to incorporate e-learning into teaching and learning practice.
- The majority of lecturers were positive about their current e-learning practice. Although many were determined to use e-learning to its full potential, nearly all pointed out that e-learning was only one useful tool.
- Overall teaching staff claimed to feel fairly confident about using e-learning in their teaching and learning with the notable exception of the activity of tracking and monitoring learner progress.

2.1 Introduction

Before exploring lecturers' perceptions on the **impact** of e-learning on their teaching, on learners and their **views** on the potential of e-learning (Chapter 3), it is necessary to explore the **extent and nature** of their use of e-learning. This chapter provides contextual information on the levels and patterns of e-learning use by lecturers and learners from the lecturers' viewpoint. It explores the potential explanations for the patterns of use from the contextual angle (for example, access to e-learning and support received) and also from the angle of tutors' personal factors (for example, their confidence with, and attitudes towards, e-learning). The extents of differences by subject and other key variables, for example size of college, are reported where appropriate and are summarised at the end of the chapter.

2.2 Frequency and nature of use by lecturers

Teaching staff used e-learning in a variety of ways as can be seen in Table 2.1 below. It is worth exploring these in light of the way Finlayson *et al.* (2006) categorised e-learning uses and in terms of how the uses outlined in Table 2.1 fit within these, as detailed below. It is worth noting that, the three categorisations identified by Finlayson *et al.* (2006) do not refer to lesson preparation as a single entity, but divide this between presentation and the management of teaching and learning (e-learning as a medium). However, lesson preparation in this survey was not divided in this way. Therefore, the classification of 'presentational use' has been extended in this report to incorporate lesson planning and preparation of schemes of work and is referred to as 'preparation and presentational tool'.

- e-learning as a **medium for facilitating and managing** learning:
  - make course materials available to learners
  - share course materials with colleagues
  - communicate with learners outside the classroom
  - manage individual target setting
  - test learners' understanding
  - track learners' progress.

- e-learning as a **preparation and presentational tool**:
  - prepare schemes of work
  - research and access teaching materials
  - create teaching materials
  - present information in front of the class.

- e-learning as a **learning tool**:
  - provide one-to-one attention
  - develop understanding
  - deliver differentiated lessons.

The three main ways in which lecturers used e-learning all of the time, or frequently, were to research and access teaching materials (79 per cent), to create teaching materials (76 per cent) and to prepare lesson plans and schemes of work (68 per cent). All of these uses, in addition to presenting information in front of the class (56 per cent), represent e-learning use associated with a **presentational tool** for teaching and learning. This suggests that lecturers perceived that their greatest use of e-learning was to prepare for teaching, particularly in the areas of research, and the creation of teaching materials.

Table 2.1 Frequency of use of e-learning by lecturers

Use of e-learning	All of the time %	Frequently %	Occasionally %	Never %	No response %
Prepare schemes of work/lesson plans	40	28	19	12	2
Create teaching materials	34	42	18	5	1
Research and access teaching materials	32	47	18	3	1
Make course materials available to learners	21	36	31	10	1
Present information in front of the class	18	38	33	11	1
Share course materials with colleagues	18	38	34	10	1
Track learners' progress	13	26	29	30	1
Develop learners' understanding of the subject	12	44	35	8	1
Deliver differentiated lessons	10	27	43	19	1
Communicate with learners outside of the classroom	9	22	40	28	1
Test learners' understanding	7	25	42	24	2
Manage individual target setting for learners	6	15	36	41	2
Assist giving one-to-one attention to learners in the classroom	5	15	41	38	1
N = 2295					

A series of single response items
Due to rounding, percentages may not always sum to 100
A total of 2292 respondents answered at least one item in this question
Source: NFER Survey of college lecturers, 2005.

Lecturers were using e-learning as a **medium** for facilitating and managing learning in some respects quite extensively, namely for making course materials available to learners (57 per cent were using it all of the time or frequently) and for sharing course materials with colleagues (56 per cent were using it all of the time or frequently). In both cases only one in ten respondents were never using e-learning for these purposes. On the other hand, the evidence points to less e-learning use in the areas of:

- Tracking learners' progress (39 per cent reported doing this all of the time or frequently and 30 per cent were never doing this)
- Testing learners' understanding (32 per cent reported doing this all of the time or frequently and 24 per cent were never doing this)
- Communicating with learners outside of the classroom (31 per cent doing this all of the time or frequently and 28 per cent were never doing this)

- Managing individual target setting for learners (21 per cent were doing this all of the time or frequently and 41 per cent were never doing this).

E-learning was being used as a **learning tool** in terms of developing learners' understanding of the subject (56 per cent were using e-learning in this way all of the time or frequently) and only eight per cent were never using e-learning in such a way. However, e-learning was not being used as extensively as a learning tool in other aspects, namely for delivering differentiated lessons (37 per cent were using e-learning in this way all of the time or frequently and 19 per cent were never using it) and for giving one-to-one attention to learners in the classroom (20 per cent all of the time or frequently and 38 per cent never).

This would indicate that although e-learning was being used quite extensively as a preparation and presentational tool, and in some areas as a medium for facilitating teaching and learning (making course materials available to learners and sharing them with colleagues) and as a learning tool (developing learners' understanding), it is not being used as comprehensively in other ways associated with use as a medium and as learning tool. The reasons for this disparity of use are explored in subsequent sections in this chapter and in Chapter 4.

2.3 Lecturers' perception of the frequency and nature of use of e-learning by learners

This survey was of lecturers in sixth form and FE colleges, and not of learners. However, in order to explore the extent of learners' use, lecturers were asked about their perceptions of the ways in which learners were using e-learning.

Lecturers' perceptions of learners' uses of e-learning, in the last academic year, revealed widespread use, as can be seen in Table 2.2 below. Nearly all learners were believed to have used e-learning, to some degree, to research topics (92 per cent), whilst e-learning was used least to catch up on missed lectures (57 per cent), an activity which may be facilitated by the presence of a VLE.

Table 2.2 Frequency of use of e-learning by learners in the last academic year

Uses of e-learning	All of the time %	Fre-quently %	Occas-ionally %	Never %	Don't know %	Not applicable %	No response %
Present written work/data	21	42	26	6	1	2	1
Research topics	18	49	25	3	2	2	1
Create visual presentations	11	31	39	14	2	4	1
Work independently	10	42	34	5	7	2	1
Reinforce knowledge	8	41	40	4	5	2	1
Submit assignments/ work on time	8	25	34	22	4	6	2
Engage with the subject in the classroom	7	31	41	13	3	3	2
Organise work	6	24	36	15	13	4	1
Contact lecturer with queries	6	18	45	26	1	3	1
Solve problems set by the lecturer	5	30	43	12	5	3	1
Work collaboratively with peers in the classroom	5	26	43	19	3	4	1
Catch up on missed lectures	5	16	36	30	7	5	1
Work collaboratively with peers outside of the classroom	3	14	38	25	16	4	1

N = 2295

A series of single response items
Due to rounding, percentages may not always sum to 100
A total of 2292 respondents answered at least one item in this question
Source: NFER Survey of college lecturers, 2005.

The two main ways in which lecturers perceived learners were using e-learning (presenting written work and researching topics) were ways associated with **low levels of interaction** (according to the conceptual analytical model adopted by Finlayson *et al.*, 2006). Of those e-learning uses associated with **medium levels** of interaction, only working independently (52 per cent using all the time or frequently) and reinforcing knowledge (49 per cent using all the time or frequently) were perceived to be used extensively by learners. Indeed two uses associated with medium interaction were perceived to be never used by around a quarter of lecturers, namely learners catching up on missed lectures (30 per cent never used) and contacting lecturers with queries (26 per cent). E-learning uses associated with **high levels** of interaction were perceived to be used by learners less frequently (working collaboratively with peers in the classroom 31 per cent all of the time or frequently and 19 per cent never and working collaboratively with peers

outside of the classroom 17 per cent all of the time and frequently and 25 per cent never).

It is worth noting that approximately one in five respondents felt unable to comment on the degree to which learners used e-learning to work collaboratively with their peers outside of the classroom or to organise their work.

The previous two sections have described the frequency and use of e-learning by lecturers and learners from the perspective of the lecturer. But what are the factors that influence these patterns of use? The following sections examine lecturers' perceptions of their access to e-learning facilities, their views on the support received, their current experience and their confidence in the use of e-learning. This examination goes some way to explaining patterns of use, but further illumination of these relationships is offered in Chapter 4.

2.4 Access to e-learning facilities

Nearly all lecturers reported that their institutions had used an intranet and two-thirds said that they had access to a Virtual Learning Environment (VLE), as can be seen in Table 2.3 below.

Table 2.3 Existence of VLE and intranet in college

	Yes	No	Don't know	No response
	%	%	%	%
Virtual Learning Environment (VLE)	66	16	13	5
Intranet	95	1	1	4
N = 2295				

A series of single response items
Due to rounding, percentages may not always sum to 100
A total of 2295 respondents answered at least one item in this question
Source: NFER Survey of college lecturers

There was evidence that a greater proportion of lecturers in larger colleges reported having an intranet or a VLE: this was particularly apparent with regard to the VLE, where 74 per cent of lecturers in medium and large colleges maintained that they had access to a VLE whilst 56 per cent in small colleges had access.

As can be seen in Table 2.4 below most lecturers felt that they had sufficient access to e-learning resources to plan, research and prepare their lessons (71 per cent), to share course materials with colleagues (70 per cent) and learners (63 per cent), and to communicate and provide support for learners (60 per cent). In addition, approximately half said they had sufficient access to

monitor and assess learners' progress (although one in ten either did not know or did not respond to this item).

Lecturers appeared to be less satisfied with the extent to which they had sufficient access to e-learning resources to use in **the classroom**. Two-thirds (66 per cent) reported that they had insufficient or no access to resources to ensure that learners could use e-learning whenever required in the classroom, or whenever lecturers wished to use it in the classroom (64 per cent). This apparent constraint on possible e-learning use in classroom-based teaching and learning activities may affect the extent to which lecturers and learners used e-learning in this way, and it seems that lecturers would like to be able to make greater use of e-learning in the classroom.

Table 2.4 Lecturers' satisfaction with access to e-learning resources

Sufficient resources to…	I have sufficient access %	I have insufficient access %	I have no access %	I don't know %	No response %
Plan research and prepare lessons	71	24	1	3	1
Share course materials with colleagues	70	24	2	4	1
Share course materials with learners	63	30	3	4	1
Communicate and provide support for learners	60	31	3	5	2
Monitor and assess learners' progress	51	33	5	9	2
Ensure that lecturers can use e-learning whenever wished in the classroom	31	54	10	4	2
Ensure that learners can use e-learning whenever required in the classroom	29	55	11	4	1
N = 2295					

A series of single response items
Due to rounding, percentages may not always sum to 100
A total of 2283 respondents answered at least one item in this question
Source: NFER Survey of college lecturers, 2005

2.5 Lecturers' views on support received

Table 2.5 shows that, overall, there appeared to be more satisfaction with the support available in terms of the provision of technical support and access to adequate and appropriate e-learning training than with other types of support.

Table 2.5 Satisfaction with the support available to assist use of e-learning

Satisfaction with support	Very satisfied %	Satisfied %	Un-certain %	Dis-satisfied %	Very dis-satisfied %	No response %
Provide technical assistance	15	49	17	14	3	2
Access adequate and appropriate e-learning training	12	45	22	16	3	2
Provide time for attending e-learning training opportunities	8	36	22	25	8	2
Provide time to incorporate e-learning into teaching and learning	4	22	22	37	14	2
Ensure equipment is reliable	7	36	23	24	9	2

N = 2295

A series of single response items
Due to rounding, percentages may not always sum to 100
A total of 2271 respondents answered at least one item in this question
Source: NFER Survey of college lecturers, 2005.

Dissatisfaction was apparent in terms of not having enough time to attend e-learning training opportunities and not having sufficient support to ensure the reliability of equipment (33 per cent dissatisfied or very dissatisfied in both cases). However, it is in the area of teaching and learning where most dissatisfaction was expressed, with around half of respondents unhappy with the amount of time provided for lecturers to incorporate e-learning into teaching and learning (51 per cent dissatisfied or very dissatisfied).

There was significantly more dissatisfaction shown amongst lecturers in medium and large colleges, than amongst smaller institutions, in relation to:

- the provision of time for attendance at e-learning training
- the provision of time for incorporating e-learning into teaching and learning practice, and
- the level of support to ensure the availability of reliable equipment.

Overall the findings in this section highlight the need for institutions to not only provide access to adequate and appropriate e-learning training, but also to provide time to attend these sessions and to subsequently incorporate any outcomes into teaching and learning practice. The findings also suggest that, although lecturers were broadly satisfied with the technical support they received, they were less satisfied about the underlying reliability of equipment which might otherwise negate the need for technical support.

2.6 Lecturers' views on current experience of using e-learning

On the whole lecturers were positive when reflecting on their current experience and practice of using e-learning. As can be seen in Table 2.6 below, 78 per cent of lecturers agreed, to some extent, that they could readily identify opportunities in their subjects for the use of e-learning and three-quarters (74 per cent) professed to be enthusiastic about the use of e-learning in teaching and learning.

Table 2.6 Lecturers' views on e-learning

	Strongly agree %	Agree %	Uncertain %	Disagree %	Strongly disagree %	No response %
There is an expectation amongst college management that lecturers use e-learning in teaching and learning	38	49	8	4	1	1
E-learning is just one useful tool for lecturers	33	61	3	1	<1	1
I am enthusiastic about the use of e-learning in teaching and learning	25	49	19	5	1	2
I can readily identify opportunities in my subject for the use of e-learning	23	55	13	6	2	2
I am determined to use e-learning to its full potential	19	42	28	8	1	2
Learners expect lecturers to use e-learning in teaching and learning	11	45	23	18	1	1
I don't know what I would do without e-learning	11	23	18	35	11	2
E-learning tends to be more relevant to particular departments/subject areas	10	38	19	27	5	2
E-learning is too time consuming to use in teaching and learning	4	16	22	44	12	2
E-learning has created more problems than it has solved (e.g. plagiarism and security issues)	4	15	33	37	9	2
E-learning has had little impact on me	3	12	12	49	23	2
I don't know where to start when it comes to e-learning	2	5	12	48	31	2

N = 2295

A series of single response items
Due to rounding, percentages may not always sum to 100
A total of 2269 respondents answered at least one item in this question
Source: NFER Survey of college lecturers, 2005.

Lecturers tended to agree (to some extent) that there was an expectation that they should be using e-learning in their teaching and learning, particularly from college management (87 per cent), but also from learners (56 per cent). And nearly two-thirds (61 per cent) were determined to use e-learning to its full potential. Furthermore, just seven per cent of respondents admitted that they did not know where to start with e-learning and only 15 per cent felt that e-learning had had little impact on them. This suggests that the majority of respondents to this survey were positive and proactive in their use of e-learning and intention to use it. Nevertheless, a notable minority were less confident and their views may reflect the experience of a wider cohort of lecturers who did not respond to the survey.

Despite their overall enthusiasm and positive attitudes, lecturers were aware of some limitations. More than nine out of ten lecturers (94 per cent) qualified their enthusiasm by agreeing (to some extent) that e-learning was just one useful tool for lecturers, nearly half (48 per cent) agreed that e-learning tended to be more relevant to particular subject areas and only a third (34 per cent) felt they didn't know what they would do without e-learning.

One in five respondents believed that e-learning was too time consuming to use in teaching and learning, and a further 22 per cent were uncertain about this. Plagiarism and other problems associated with e-learning were another area of unease: one in five lecturers believed e-learning had created more problems than it had solved and an additional one-third were undecided about this issue.

2.7 Effective use of e-learning

In response to an open question, two-thirds (63 per cent) of respondents provided examples of effective use of e-learning in their subject area. As can be seen in Table 2.7 below, the most effective ways of using e-learning were associated with: developing understanding (19 per cent), learners accessing resources or equipment (18 per cent) and learners conducting background research (14 per cent).

Table 2.7 Examples of effective use of e-learning

	%
Developing understanding	19
Learners access resources/equipment	18
Background research	14
Online materials/resources	13
Communication with learners	10
PowerPoint presentations	9
Learners' independent use	7
Sharing resources and practice	7
Data collection	6
Specific hardware/software	6
Helping learners present	5
Tutors' administration and management	5
Staff presentations	4
Developing skills	3
Quizzes	3
Data collection	3
Online specialist courses	2
No response	37
N = 2295	

Responses to an open-ended question
More than one answer could be given so percentages do not sum to 100
Source: NFER Survey of college lecturers, 2005.

As shown in Table 2.7, approximately one in five lecturers provided examples of effective use of e-learning which indicated a cognitive use, predominantly in the development of learners' understanding. Such uses included:

- the interactive use of e-learning, for example:

  We visit computer rooms during lessons so the students can use interactive sites to reinforce the subject material (science lecturer).

  We use interactive maths software to gain insight into graphs etc. (health and social care lecturer).

- learners' increased engagement with online provision, for example:

  Ten hours per week are devoted to online tutorial access for students. This has proved very effective (health and social care lecturer).

  Students with profound and multiple learning disabilities enjoy using forum and chat facilities and the interactive whiteboards have increased interest and learning greatly and provide stimulation for students (health and social care lecturer).

- animations/visual representations of complex concepts, for example:

  Animations showing processes occurring at a sub microscopic cellular level are a great aid to visualising activities which are too small a scale to be observed (science lecturer).

  We use medical animations to highlight particular processes in the body (health and social care lecturer).

- demonstrations of equipment/experiments that are not available in college, for example: '*Simulations of experiments we're not able to do in the lab'* (science lecturer).
- supports reinforcement, for example, '*We reinforce knowledge via summaries and revision using online interactive quizzes and multi-choice questions'* (business lecturer).
- demonstration of approaches/techniques/structure, for example:

  We demonstrate approaches, for example how to research subjects or topics and how to complete a spreadsheet or use formulae (business lecturer).

Many lecturers gave examples of effective use of e-learning which referred to learners' access to resources and equipment. These included references to accessing practice papers, online tests, course materials, including primary, secondary and extension materials, for example:

> *I have found putting resources on the VLE, particularly for GCSE Applied ICT, very useful as this saves them hunting around the examining body's website. It means I can also make it available in a compatible format* (business lecturer).

Another effective use of e-learning mentioned by a large proportion of teaching staff was background research. Many indicated that the internet was widely used for sources for coursework and essays, to obtain up-to-date information and to conduct independent research. Some lecturers mentioned the fact that they could direct learners to appropriate websites and embed links into their lesson materials.

2.8 Lecturers' confidence in the use of e-learning

Overall, teaching staff claimed to feel fairly confident about using e-learning in their teaching and learning, as can be seen in Table 2.8 below. More than four-fifths (83 per cent) of respondents were confident (to some extent) in using e-learning to plan and prepare lessons, and nearly three-quarters felt confident using e-learning in the classroom and to communicate with learners. It was, however, notable that a greater proportion of respondents either

disagreed (to some extent) or were uncertain about using e-learning to track and monitor learners' progress.

Table 2.8 Lecturers' confidence in using e-learning

I feel confident using e-learning:	Strongly agree %	Agree %	Uncertain %	Disagree %	Strongly disagree %	No response %
To plan and prepare lessons	44	39	9	6	1	2
To communicate with learners	31	41	16	9	2	2
With learners in the classroom	30	43	15	8	2	2
To track and monitor learners' progress	20	33	27	15	3	2
N = 2295						

A series of single response items
Due to rounding, percentages may not always sum to 100
A total of 2265 respondents answered at least one item in this question
Source: NFER Survey of college lecturers, 2005.

E-sophistication

Further analysis was conducted in order to gain an idea of how conversant lecturers were with digital technology in teaching and learning. To understand this, both the depth and breadth of their use was explored. Those who used e-learning extensively either in terms of the amount of time they spent using it (depth) or in terms of the range of uses to which they commonly put it (breadth) could be described as e-sophisticated. In terms of depth, the analysis examined whether there was a sub-group of lecturers within the responding sample who used e-learning as a medium, a preparation and presentation tool, or learning tool, all of the time. Where this was the case, these lecturers could be described as 'sophisticated' e-learning users. Conversely, the analysis explored whether there was a sub-group of lecturers who never used e-learning in the respects suggested by Finlayson *et al*. (2006). These lecturers could be described as not yet e-sophisticated.

The responses of lecturers to the groups of questions that were associated with e-learning use as a medium, as a preparation and presentation tool, and as a learning tool were examined. Although there did not appear to be a clear pattern of responses to the use of e-learning as a medium, it appeared that:

- eleven per cent of lecturers (241 individuals) used e-learning *all of the time* for all aspects of use as a preparation and presentation tool
- two per cent of lecturers (42 individuals) *never* used e-learning as a preparation and presentation tool
- three per cent of lecturers (77 individuals) used e-learning *all of the time as* a learning tool
- six per cent of lecturers (136 individuals) *never* used e-learning as a learning tool.

Further analysis revealed that just over a fifth (22 per cent) of respondents indicated that they used e-learning frequently or all of the time in most (between ten and 13) of the different ways identified in Table 2.1. Again, this suggests that there is a minority of respondents among this sample who are commonly using e-learning in a wide range of different aspects of their teaching and learning practice.

This suggests that lecturers' use of e-learning was not necessarily clustered such that they used e-learning all of the time in one particular way, nor that their range of use was all-encompassing, rather they used it in a limited number of associated ways. The factors that were associated with the frequency of use of e-learning in different ways are explored more fully in Chapter 4.

Subject differences

Lecturers in the three subject areas of business, science and health and social care were most consistent in their use of e-learning as a presentational tool (apart from in relation to presenting in front of the class, where fewer health and social care lecturers were using e-learning). In terms of e-learning as a medium for facilitating and managing learning, business lecturers were using e-learning more frequently and health and social care least frequently.

Business lecturers were also more open to using e-learning as a learning tool, with significantly fewer saying they never used e-learning to deliver differentiated lessons and to give one-to-one attention to learners than their colleagues in other departments.

Exploration of perceived learners' use in each subject area indicated that there was little evidence that lecturers from different subject specialisms perceived patterns of types of use by learners. However, it emerged that **science** learners were generally seen to use e-learning to a significantly lesser extent (with a few notable exceptions) than their contemporaries in the **health and social care** and **business** departments.

So could these variations in use be explained by different circumstances within the departmental areas? The remainder of this section explores this issue. The number of lecturers who reported having a VLE varied by subject department: whilst 71 per cent of **business** and 71 per cent of **health and social care** lecturers said they had a VLE, in the case of **science** a smaller proportion (66 per cent) reported having one.[4]

Exploration of lecturers' satisfaction with access to resources by subject department revealed some significant differences. Fewer lecturers in **health**

[4] Subject specific analysis excludes 'no responses'; this differs from national data which includes no responses. This explains the differences in percentages.

and social care, than in **business** or **science**, believed that they had sufficient access to e-learning resources in order to achieve all aspects of planning, managing and delivering their teaching. In addition more **science** lecturers felt they had sufficient access to plan, research and prepare their lessons and to share course materials with learners and colleagues than in other subject areas. However it was **business** lecturers who appeared to be the most satisfied with arrangements for e-learning access to:

- communicate and provide support for learners
- monitor and assess learners' progress
- ensure that learners can use e-learning whenever required in the classroom
- ensure that lecturers can use e-learning whenever they wish in the classroom.

The perceived lack of access to e-learning resources in the classroom, for both lecturers and learners, was particularly evident amongst **health and social care** lecturers (74 per cent for both) and was perceived to be least problematic amongst **science** (61 per cent for lecturers and 67 per cent for learners) and **business** (59 per cent for both) lecturers. Overall these findings suggest that **health and social care** lecturers expressed the most dissatisfaction with issues about access to e-learning resources. Indeed, when responses relating to access were grouped through factor analysis (see Appendix B) it emerged that lecturers in **health and social care** were significantly less likely to indicate that they were satisfied than their peers in other departments.

Although dissatisfaction with the provision of time for lecturers to incorporate e-learning into their teaching and learning was expressed in all departments, it was significantly more strongly felt by **science** lecturers (55 per cent), than by **business** lecturers (51 per cent) and **health and social care** respondents (49 per cent).

Further analysis of lecturers' views of e-learning by subject area revealed that **health and social care** lecturers were generally more negative in their attitudes towards e-learning in their current experience and practice than their contemporaries in other departments, particularly in terms of knowing where to start when it came to e-learning, readily identifying opportunities to use e-learning in their subject areas and feeling that e-learning had little impact on them.

In contrast **business** and **science** lecturers displayed a more positive attitude towards their current experience and practice with using e-learning. In particular a significantly greater proportion of **business** lecturers gave positive responses with regard to the following statements:

- I don't know what I would do without e-learning
- I am determined to use e-learning to its full potential.

This finding suggests that, for many of these **business** lecturers, e-learning had become embedded in their overall teaching practice and they had seen its value, and this was reflected in their determination to use it in the future.

Overall **business** lecturers were more confident in their use of e-learning than **science** lecturers, who were in turn more self-assured than **health and social care** lecturers. This was particularly noticeable with the use of e-learning with students in the classroom, where health and social care lecturers were significantly less confident than teaching staff in science or business departments. This is further supported by factor analysis which grouped variables relating to confidence and indicated that business lecturers were significantly more likely to indicate that they were confident than their peers in science or health and social care. These lower levels of confidence amongst health and social care lecturers may be associated with their lower use (in comparison to their colleagues in science and business**)** of e-learning in the areas of:

- sharing course materials with colleagues
- presenting information to the class, and
- making course materials available to learners.

Learner-centred learning

Overall, only a minority of lecturers were using e-learning in ways associated with learner-centred learning. For example, a total of 20 per cent were using e-learning all of the time or frequently to assist them in giving one-to-one attention to learners in the classroom, 21 per cent for managing individual target setting and 39 per cent for tracking learners' progress. Indeed, as can be seen in Table 2.1 significant numbers reported never using e-learning in such ways, implying that there is considerable scope for further development in this area, particularly in the spheres of **science** and **health and social care.**

2.9 Conclusion

E-learning was being used quite extensively as a preparation and presentational tool, and in some areas as a medium for facilitating teaching and learning (making course materials available to learners and sharing them with colleagues) and as a learning tool (developing learners' understanding). However, it was not being used as comprehensively in other ways associated with use as a medium and as a learning tool. In order to explain this disparity of e-learning use, factors such as access, support, tutors' attitudes and confidence were explored as summarised below and in Chapter 4.

Nearly all lecturers reported that their institutions had used an intranet and two-thirds said that they had access to a Virtual Learning Environment (VLE). Most felt they had sufficient access to e-learning resources to plan, research and prepare their lessons, to share course materials with colleagues and learners, and to communicate and provide support for learners. However, lecturers appeared to be less satisfied with the extent to which they had sufficient access to e-learning resources to use in the classroom. Although lecturers were broadly satisfied with the support available, in terms of the provision of technical support and access to adequate and appropriate e-learning training, many were not satisfied with the amount of time provided to incorporate e-learning into teaching and learning practice.

The majority of teaching staff claimed to be confident in their e-learning use and were broadly positive about their current e-learning practice. Most felt there was an expectation that they should be using e-learning and nearly two-thirds were determined to use e-learning to its full potential, however the majority also qualified their enthusiasm by saying that e-learning was only one useful tool.

3. Lecturers' views on the impact of e-learning

Key findings

- Many lecturers indicated that e-learning had assisted them as a **preparation and presentational tool** and had helped them as a **learning tool**. However, noticeably fewer indicated that e-learning helped them as a **medium** for facilitating and managing learning more effectively.
- The majority of lecturers were positive about the potential of e-learning to support teaching and learning.
- A notable minority of respondents (40 per cent) were not convinced that the use of online resources had the potential to save lecturers' time.
- Many lecturers indicated that e-learning had been effective in helping learners to **independently manage their own learning** and in **developing and reinforcing knowledge (understanding)**.
- **Business** lecturers were more likely to believe that e-learning was helping their students, and were most likely to report that e-learning had helped them to deliver learning activities more effectively. In contrast, lecturers from **health and social care** were least likely to say e-learning had led to improvements in teaching and learning and to believe e-learning had been of help to their learners.
- A notable minority of respondents said e-learning had increased **retention** or **achievement** rates (19 per cent and 31 per cent respectively), while nearly half attributed improvements in learner **motivation** to e-learning use (46 per cent).
- Lecturers identified **improved access to equipment**, **better training**, and **more time for lesson planning** as the three main aspects that would help them most in better facilitating the use of e-learning in their teaching and learning.

3.1 Introduction

As outlined in Chapter 1, one of the primary objectives of this research was to establish the scale and extent of the impact of e-learning among FE lecturers in the subject areas of business, science, and health and social care. Chapter 4 will explore the relationship between inputs and outcomes. This chapter focuses on lecturers' perceptions of the impact of e-learning on teaching and learning practices. Lecturers' reflections of their current experience and practice of using e-learning, and the extent to which it had helped them to be more effective, are reported. Respondents' views on the potential of e-learning to affect learners' and staff's experience of teaching and learning are also examined. The following sections explore these issues and, where appropriate, compare the extent of the differences by subject area.

3.2 Lecturers' views on the impact of e-learning on their teaching

Before establishing respondents' experiences of the impact of e-learning on learners, it is important first to establish their views of the impact that e-learning has had on the effectiveness of their own teaching. Details of their responses are set out in Table 3.1 below. It is important to note that the extent to which a lecturer considers that they are 'more effective' will be related to how effective they considered they were initially. Consequently, lecturers who said that they have become more effective may be at considerably different end-points. Nevertheless, their views will reflect the distance that they feel that they have travelled in their teaching practice as a result of e-learning.

Table 3.1 Impact of e-learning on lecturers' teaching and learning activities

Teaching activity	More effectively %	No change %	Less effectively %	Don't know %	Not applicable %	No response %
Research and access teaching materials	76	18	1	2	3	2
Create teaching materials	75	18	1	2	3	1
Present information in front of the class	66	25	2	2	4	2
Make course materials available to learners	64	26	2	2	4	2
Develop learners' understanding of the subject	57	34	1	3	3	2
Share course materials with colleagues	57	33	2	2	4	2
Prepare my scheme of work/lesson plans	53	38	2	2	5	1
Meet the needs of learners with different learning styles	47	40	2	5	5	2
Communicate with learners outside of the classroom	45	37	2	4	10	2
Deliver differentiated lessons	36	50	2	5	5	2
Test learners' understanding	35	50	3	4	6	2
Track learners' progress	33	52	2	5	7	2
Achieve more in less time	33	42	13	6	4	2
Measure learners' progress	28	55	3	5	7	2
Manage individual target setting for learners	22	58	2	7	9	2
Assist in giving one-to-one attention to learners in the classroom	19	59	4	8	9	2
N = 2295						

A series of single response items
Due to rounding, percentages may not always sum to 100
A total of 2273 respondents answered at least one item in this question
Source: NFER Survey of college lecturers, 2005.

It can be seen from Table 3.1 that lecturers had mixed perceptions of the impact of e-learning on teaching and learning activities. Using the categories of e-learning use identified by Finlayson *et al.* (2006) (and reported in Chapter 2), it is possible to group and so better understand these findings.

The majority of lecturers who responded indicated that e-learning had assisted them in ways which could be associated with using e-learning as a **preparation and presentational tool** for teaching and learning. Around three-quarters of lecturers said e-learning helped them research and access and create teaching materials more effectively, although around a fifth said

e-learning had not affected the effectiveness with which they undertook these types of tasks. In addition, approximately a half said e-learning had helped them to be more effective in preparing course materials and around two-thirds of the lecturers surveyed believed that e-learning had helped them to be more effective in presenting information in front of a class.

While e-learning had been perceived to be instrumental in helping the majority of lecturers to prepare and present more effectively, fewer reported that they were able to use e-learning as a **medium** for facilitating and managing learning more effectively. For example, two in ten lecturers said that because of e-learning they were more effective in managing individual target setting for learners, and approximately a third said that e-learning had helped them to test learners' understanding more effectively. A similar proportion (a third) said e-learning had made them more effective in tracking and measuring the progress of learners, while more than half said e-learning had not helped in either respect. Nevertheless, around two-thirds of the lecturers surveyed believed that e-learning had helped them to be more effective in making course materials available to learners, and more than half said e-learning had helped them to be more effective in sharing course materials with colleagues. In addition, almost half said they could communicate with learners outside the classroom more effectively because of e-learning.

Only a third of respondents felt that e-learning had been effective in helping them to achieve more work in less time, while just under half said they had saved no additional time through the use of e-learning. Furthermore, despite e-learning being reported as enabling the more effective development and sharing of teaching resources, a notable minority of respondents (13 per cent) said that they had been less effective in achieving more in less time as a result of e-learning. These findings suggest a perception that the use of e-learning may not always lead to efficiency savings, and that further exploration is required into the question of whether there is a limit of e-learning, or whether some teachers have yet to find the best way to use it to support them in delivering teaching and learning activities.

Many lecturers indicated that e-learning had helped them as a **learning tool**. For example, more than half said e-learning had helped them to develop learners' understanding more effectively. In addition, just under half felt that they could more effectively meet the needs of learners with different learning styles through the use of e-learning, while two out of ten lecturers said that e-learning supported them in providing better one-to-one attention to learners in the classroom.

Both of these findings suggest that many lecturers felt that e-learning solutions were effective in contributing to helping them meet the needs of a range of learners. Furthermore, just over a third said they delivered differentiated lessons. Interestingly, one in ten lecturers said that the latter activity was 'not

applicable', which may reflect earlier findings that in some instances lecturers did not have access to the same e-learning facilities and this may have contributed to their not using it to its full potential. Alternatively, the extent to which this was required may have differed in relation to the specific course or examination requirements. It should be noted that half the respondents said that e-learning did not help them in respect of delivering differentiated lessons.

While these findings are important for developing our understanding of lecturers' perceptions of the impact of e-learning in a range of contexts, it is also useful to explore the underlying ILT infrastructure that shapes these opinions. It was never the intention of this research to capture the full range of ILT resources available to colleges, although information was obtained regarding lecturers' perceptions of the effectiveness of college VLEs and intranets where they were present (see Table 3.2 below).

Table 3.2 Impact of VLE and intranet on respondents' teaching and learning practice

	To a great extent %	To some extent %	Not at all %	Not applicable %	No response %	N =
Having a VLE has improved my teaching and learning practice	16	52	27	4	1	1512
Having an intranet has improved my teaching and learning practice	20	55	21	1	2	2168

A filter question: all those who had a VLE or an intranet
A series of single response items
Due to rounding, percentages may not always sum to 100
Source: NFER Survey of college lecturers, 2005.

It could be hypothesised that the presence of a VLE or intranet is an important contextual factor in understanding the effectiveness with which lecturers perceived e-learning: but what does the data show? As indicated in Chapter 2, two-thirds of respondents (66 per cent) said that their institution had a VLE, and 95 per cent said they had an intranet (see Section 2.4). It is interesting to note, however, that only a minority agreed that having an intranet or a VLE had improved their teaching and learning practice to a great extent (20 per cent and 16 per cent respectively).

Over half of all responding lecturers agreed that having an intranet or a VLE had made a difference to some extent to their teaching, but a notable minority reported that VLEs and intranets had no impact at all (27 per cent of VLE users and 21 per cent of intranet users).

Exploration of the roles of respondents revealed, perhaps not surprisingly, that **coordinators of e-learning** were most positive about the impact of using a

VLE or intranet on teaching and learning practice, while Heads of Departments and course leaders were slightly less likely to indicate this. Those respondents who said that they did not undertake any of these roles were least likely to say that using a VLE or intranet had improved their teaching and learning practice.

3.3 Lecturers' views on the impact of e-learning on learners

This section explores the relationships between e-learning use and intermediate outcomes for learners, as perceived by lecturers. Details of lecturers' views on the impact of e-learning on learners' experiences of learning, over the last three years, are detailed in Table 3.3 below.

Table 3.3 Lecturers' views on the impact of e-learning on learners' experiences of learning over the last three years

Learning activity	More effectively %	No change %	Less effectively %	Don't know %	Not applicable %	No response %
Research topics	78	14	1	2	3	2
Present written work/data	70	22	1	2	3	2
Reinforce their knowledge	69	22	1	4	2	2
Create visual presentations	69	20	1	3	6	2
Develop their understanding of the subject	64	25	1	4	3	2
Work independently	56	32	1	6	3	2
Contact me with queries	51	36	1	3	7	2
Work at their own pace	50	37	1	6	4	2
Engage with the subject in the classroom	49	39	1	4	5	2
Achieve their qualification	47	39	1	7	4	2
Solve problems set by the lecturer	42	44	1	6	5	2
Catch up on missed lectures	41	42	1	5	8	2
Work collaboratively with peers in the classroom	37	50	2	4	6	2
Submit their assignments/work on time	35	51	1	4	7	2
Organise their work	35	49	1	9	4	2
Work collaboratively with peers outside of the classroom	35	42	1	12	8	2

N = 2295

A series of single response items
Due to rounding, percentages may not always sum to 100
A total of 2266 respondents answered at least one item in this question
Source: NFER Survey of college lecturers, 2005.

Lecturers reported that e-learning had impacted on learners' experiences of learning across a range of contexts. As can be seen in the table, around half or more of the lecturers felt that e-learning had helped their learners to research and present their work more effectively and to be more effective in reinforcing their knowledge, developing their understanding and engaging with the subject in the classroom. The impact of e-learning on learners' effectiveness in their personal organisation was less widely reported by respondents.

A number of themes emerged from lecturers' perceptions of the impact of e-learning on their learners. These are discussed below, and it should be noted that, because of the nature of these underlying themes there is some overlap in the items reported.

Independent learning

Around half of the respondents indicated that e-learning had been effective in helping learners to independently manage their own learning. More than half reported that learners were more effective at working independently because of e-learning (56 per cent), and half reported that learners were better able to work at their own pace because of e-learning.

Understanding

Many lecturers indicated that e-learning had helped learners to be more effective in researching topics, developing and reinforcing their knowledge and engaging with the subject in the classroom. This suggests that the majority of lecturers perceived a positive impact of e-learning on their learners' capacity to learn and develop their understanding.

Communication

Lecturers reported a mixed picture regarding e-learning use by learners associated with communication. For example, seven out of ten lecturers believed that e-learning had helped learners to be more effective in creating visual presentations and in presenting written work, but only about a third said e-learning had helped learners to undertake collaborative work, both inside and outside the classroom. Just over half said learners were more effective at contacting teaching staff with queries. However, approximately half reported that e-learning had made no change to learners' ability to submit work to staff.

The findings suggest that lecturers perceived e-learning to have different impacts on different types of learner activity. Each e-learning use may, however, individually contribute to enhancing the learning experience and lead to improved student outcomes, such as improvements in the end-point outcomes of retention and achievement.

End-point outcomes: achievement and retention

The extents to which lecturers felt that retention in their institution and achievement had improved, deteriorated, or not changed in the last three years, are explored in Table 3.4 below.

Table 3.4 Lecturers' views on the extent to which retention and achievement had changed in the last three years

Extent of change	Improved	Deteriorated	Not changed	Don't know	No response
	%	%	%	%	%
Retention has …	43	6	43	6	1
Achievement has …	52	4	37	6	1
N = 1761					

A series of single response items
A filter question, all those who had taught for more than two years
Due to rounding, percentages may not always sum to 100
Source: NFER Survey of college lecturers, 2005.

The findings reveal that more than half the respondents reported improvements in achievement over the last three years of teaching (52 per cent), while slightly fewer (43 per cent) said there had been improvements in retention. Further analysis reveals that significantly more **long serving lecturers**, that is lecturers with more than ten years' experience of teaching at the post-16 level, were sceptical about improvements in retention and achievement over the last three years, compared to lecturers with a shorter teaching history.

The extents to which these trends were perceived to be influenced by the use of e-learning, as well as the impact of e-learning on learners' motivation (intermediate outcome), are explored in Table 3.5 below.

Table 3.5 Lecturers' views on the impact of e-learning on retention, achievement and motivation of learners, in the last three years

Using e-learning in my teaching has:	Increased	Been unaffected	Decreased	Don't know	Not applicable	No response
	%	%	%	%	%	%
meant that **retention** has:	19	58	1	16	5	2
meant that **achievement** has:	31	48	1	15	4	2
meant that learners' **motivation** has:	46	35	1	14	4	2
N = 1761						

A series of single response items
A filter question, all those who had taught for more than two years
Due to rounding, percentages may not always sum to 100
Source: NFER Survey of college lecturers, 2005.

Almost two in ten lecturers reported that retention had increased due to the use of e-learning to support teaching and learning, and three in ten lecturers attributed e-learning to increases in the levels of learner achievement. In both cases, however, a notable proportion of respondents reported that e-learning had not made a difference (58 per cent and 48 per cent respectively). Additional analysis reveals that, of those who indicated that retention or achievement had improved over the last three academic years, approximately half said use of e-learning had contributed to such improvements (41 per cent and 54 per cent respectively). In other words, the proportion of those who see an effect of e-learning is greater when only those who reported an improvement in retention or achievement are considered.

Exploration of the roles of respondents revealed that **coordinators of e-learning** were most positive about the extent to which e-learning had affected improvements in retention, achievement and motivation on courses they had taught over the last three years, while Heads of Departments and course leaders were slightly less likely to indicate this. Those respondents who said that they did not undertake any of these roles were least likely to attribute improvements in retention, achievement and motivation to the use of e-learning.

Intermediate outcomes: motivation

Table 3.5 suggests that, while the extent to which retention and achievement had been positively affected by e-learning was perhaps modest, almost half the respondents (46 per cent) attributed improvements in learner motivation to e-learning use. This finding is generally supported by the research literature on ILT and motivation. Moreover, compared with the rest of the survey population, those lecturers who said that e-learning had increased learners' motivation were more positive about the impact of e-learning on the delivery of all the learning activities listed in Table 3.3.

Table 3.6 below provides further details about the types of learners that lecturers considered to benefit most from e-learning. It shows that a greater proportion of respondents considered that, in terms of **learners' attainment**, e-learning was helpful for learners of higher, or average, levels of attainment and fewer believed that it was helpful for those with lower attainment levels. Fewer lecturers appeared to consider that e-learning could be helpful to learners who could be described as having **challenging circumstances**. For example, around a fifth of lecturers stated that young people at risk of dropping out, those who cannot easily access college facilities and those from socially disadvantaged backgrounds did not find e-learning helpful at all.

Table 3.6 Extent to which types of learners find e-learning helpful

Learners:	Very helpful %	Quite helpful %	Not at all helpful %	Don't know %	No response %
with higher levels of attainment	51	33	2	10	4
with average levels of attainment	32	51	3	11	4
with low levels of attainment	26	42	14	13	5
who are male	32	36	2	25	5
who are female	29	42	2	23	5
who are mature learners	24	39	7	24	6
aged 14 to 16	22	24	3	43	8
who are at risk of dropping out	11	29	22	34	5
who cannot easily access college facilities	22	23	20	30	5
from socially and economically disadvantaged backgrounds	13	33	16	34	5
Others	3	3	1	17	76
N = 2295					

A series of single response items
Due to rounding, percentages may not always sum to 100
A total of 2211 respondents answered at least one item in this question
Source: NFER Survey of college lecturers, 2005.

It is interesting to note that in the combined experience of this sample of lecturers, approximately the same proportion of male and female learners were thought to find e-learning helpful, despite previous research pointing to e-learning as a tool favoured by boys (see for example Comber *et al.*, 2002).

A small proportion of respondents (six per cent) also suggested other types of learners who found e-learning helpful, including those with different learning styles. One respondent suggested that those learners with a more *'hands on'* approach to learning benefited most from e-learning, with the more *'theorist'* or *'reflective'* learner preferring to print things out. The same lecturer believed that this resulted in these learners never fully benefiting from the interactive learning opportunities offered by electronic resources.

Overall, these findings suggest that while some respondents had their misgivings about the help that e-learning provides to some learners, most agreed that e-learning was of benefit to learners across a range of contexts.

3.4 Lecturers' views on the potential of e-learning

Having established respondents' perceptions of the impact of e-learning on learners and their own teaching, it is important to consider their views on the

potential of e-learning, whether realised through their own experiences or not. Details of their responses are set out in Table 3.7 below.

Table 3.7 Lecturers' views on the potential of e-learning

E-learning has the potential to:	Strongly agree %	Agree %	Uncertain %	Disagree %	Strongly disagree %	No response %
increase the flexibility of learning provision	36	54	8	1	<1	2
help stimulate better understanding	30	53	12	3	<1	2
equip learners more effectively for future employment	28	52	15	3	<1	2
help widen participation in post-16 education	27	44	23	4	1	2
improve how staff communicate with learners	25	50	18	5	1	2
tailor learning to individual learners' needs	22	49	23	4	<1	2
save lecturers' time by using online resources	18	36	24	16	3	2

N = 2295

A series of single response items
Due to rounding, percentages may not always sum to 100
A total of 2257 respondents answered at least one item in this question
Source: NFER Survey of college lecturers, 2005.

The majority of respondents agreed or strongly agreed that e-learning had the potential to improve the teaching and learning experience in all the aspects listed above. In particular, approximately a third of respondents strongly agreed that e-learning had the potential to increase the flexibility of learning provision, and 28 per cent strongly agreed that e-learning had the potential to equip learners more effectively for future employment. A notable minority (19 per cent) felt that e-learning did not have the potential to save lecturers' time through the use of online resources, while almost a quarter were uncertain as to whether e-learning could lead to time savings. Nevertheless, just over half agreed or strongly agreed that the use of online resources had the potential to save time and thus make efficiency savings.

In response to an open question, lecturers identified aspects of provision that they considered would better facilitate the use of e-learning in their teaching and learning. The three most widely reported factors were:

- *improved access to equipment by lecturers* (39 per cent of cases), particularly to interactive whiteboards and data projectors. Some staff also highlighted the need for better systems for booking access to ILT resources

- *more time for lesson planning* (30 per cent of cases), including more time to prepare and develop learning materials, and to install resources on the college VLE
- *better and/or more training* (26 per cent of cases), including more hands on experience and the opportunity to study for qualifications pertinent to e-learning.

Other suggested improvements identified by respondents included:

- having access to more e-learning resources and more powerful hardware (16 per cent of cases)
- having access to more reliable and affordable equipment (12 per cent of cases)
- better sharing of teaching resources and of the knowledge and experience of 'what works' (six per cent of cases).

Of all the responses received to this question, including those detailed above, over half related to the desire to have more time (59 per cent). In addition to more time for planning, lecturers suggested that they needed more time for training on both software and hardware, as well as more time to develop innovative approaches to using information learning technologies. Thus, many lecturers believed that to make more effective use of e-learning they would need to have more time set aside to develop ways of using it to its full potential.

Subject differences

When the questionnaire items relating to the impact of e-learning on lecturers' teaching and learning activities were combined through factor analysis (see Appendix B), and the responses of lecturers in the three subject areas were compared, marked differences were found between the perceived effectiveness of e-learning across the three subjects. **Health and social care** lecturers were found to be significantly less likely to say that e-learning had helped them to support learner-centred learning or to assess learners' progress more effectively. Moreover, significantly more **business lecturers** than lecturers from health and social care and science said e-learning was helping their learners to a greater extent.

3.5 Conclusion

Nearly all of the lecturers who participated in the survey said that e-learning had helped both themselves and learners to be more effective in the classroom. In particular, many lecturers indicated that e-learning had assisted them as a **presentational tool** and in preparation for teaching and learning. It had also helped them as a **learning tool** in some ways, and in strengthening the

interface between lecturers and learners. Noticeably fewer, however, indicated that e-learning helped them as a **medium** for facilitating and managing learning more effectively.

Many lecturers reported that e-learning had assisted learners in the creation and presentation of work, and in developing and reinforcing knowledge, though noticeably fewer indicated that e-learning had assisted learners in undertaking collaborative work. The perceptions of learners' overall experiences of e-learning outlined in this chapter suggest that those in business were benefiting more from e-learning, compared with those in science and health and social care.

Despite e-learning being reported as enabling the more effective development and sharing of teaching resources, a notable minority of lecturers (13 per cent) said e-learning had been less effective in enabling them to achieve more in less time. Furthermore, the majority of respondents expressed the desire to have more time to make more effective use of e-learning. These findings suggest that many lecturers would benefit from being able to invest more time in e-learning in order to further the use of, and benefit derived from, e-learning, and to enable e-learning to support them better in delivering teaching and learning activities.

4. Factors associated with the impact of e-learning

Key findings

- The analysis revealed limited evidence of a direct relationship between lecturers' and learners' use of e-learning and **end-point outcomes** of achievement, retention and quality of teaching in a college. These outcomes were most closely associated with background and contextual factors at college level.
- There were indications, however, that achievement in an institution was higher where lecturers used e-learning for preparation and research for teaching more frequently. The quality of teaching in an institution was associated with the extent to which lecturers felt that they had sufficient support to use e-learning. However, it is not possible to observe whether lecturers using e-learning more in this way led to high achievement, or that lecturers in high achieving institutions were more likely to use e-learning in this way.
- The **intermediate outcomes** for learners were associated more with lecturers' use of e-learning and their attitudes than with background and contextual factors. There was evidence of an association between the way in which lecturers used e-learning and learners using it in a similar way.
- Lecturers who used e-learning more to support a **learner-centred learning** approach tended to consider that learners used e-learning more for independent learning and were more effective as independent learners as a result of e-learning. Lecturers who used e-learning more when teaching to **develop understanding** tended to consider that learners used e-learning more to develop their understanding.
- Lecturers' confidence in, and attitudes towards, the use of e-learning were closely interrelated and associated with each other. In addition, confidence and attitudes were associated with the extent to which lecturers used e-learning and the intermediate outcomes for learners. There appears to be a complex interrelationship between confidence, attitudes, use and perceived outcomes.
- These attitudes towards, and uses of, e-learning appear to be associated either with the access to e-learning resources or to the support available to lecturers. However, other background and contextual factors at college and lecturer level, were less strongly associated with e-learning use and intermediate outcomes than lecturers' attitudes and experience of using e-learning.

4.1 Introduction

As discussed in Chapter 1, the extent to which an institution is 'e-mature' is influenced by the leadership maturity, technical maturity and the maturity of the workforce in relation to e-learning use. As outlined in Chapters 2 and 3, the survey focused particularly on the workforce and the extent of their maturity in using e-learning.

In their case-study research, Finlayson *et al.* (2006) found that the pedagogical approach of the lecturer influenced the extent to which they used ILT resources, sometimes more than the technology available to them. They highlighted the importance of technical support and the time available for lecturers to integrate e-learning into their everyday teaching and learning practice and to explore how it could be most effectively used in their subject area. They characterised e-learning use into three main aspects which were as follows (see also Section 1.2):

- E-learning as a **medium for facilitating and managing learning** – whereby e-learning is a '*conduit*' for learning materials and the extent of its impact is dependent on the content of these materials.
- E-learning as a **presentation tool** – whereby e-learning is used as part of face-to-face sessions or for preparation of materials by teaching staff and learners. The impact of this type of e-learning is said to be contingent upon the pedagogical skill of the lecturer and the extent to which e-learning is used interactively with learners.
- E-learning as a **learning tool** – whereby learners use e-learning interactively, either supervised or unsupervised. Through this approach, learners are said to use e-learning as an integral part of their learning such as for engaging with information, calculations, design and modelling.

These uses varied in relation to the extent of learners' control or interaction with each of the uses. Thus e-learning could be used as a medium for facilitating and managing learning with minimal learner interaction, such as downloading materials for a VLE, or with a high level of learner input, such as participating in an active group discussion online.

Finlayson *et al*. (2006) theorised that the extent to which e-learning was used by lecturers at 'the teaching and learning interface' would be influenced by a range of factors. They presented a conceptual model of the teaching and learning interface which suggested that learners' acquisition of knowledge and skills, maturity and motivation as learners, while interrelated, would be influenced by their tutors' use of e-learning and belief in its effects, teaching style and intentions for the learners. Furthermore, the model suggested that these latter factors would be influenced by tutors' personal factors, and by the overall working context experienced by the tutor.

Analytical approach

The regression analysis of the survey, presented in this chapter, sought to explore further the relationships between the factors outlined in the conceptual model presented by Finlayson *et al.* (2006), in order to elucidate how they were interrelated and to identify which were more influential. In order to achieve this, an analytical model was devised which identified the key background, contextual and personal factors, the frequency and nature of lecturers' use of e-learning, and a range of intermediate and end-point outcomes for lecturers and learners. The analytical model adopted is outlined in Figure 4.1.

Figure 4.1 details the 'input variables' which are the background, contextual, personal and use factors that might be expected to be associated with the identified outcomes. As can be seen, some of the outcomes listed may also appear as input variables.

A detailed list of all the variables considered in the analysis is provided in Appendix C. Some of the variables included are based simply on lecturers' responses to individual questions (for example whether the college has a VLE). However, in order to create a more reliable measure of lecturers' attitudes and experience, factor analysis was carried out to derive composite variables. Technical details of the factor analysis, and the construction of the variables, are presented in Appendix B. Although all the factors are expressed in positive terms (for example lecturers have sufficient access to e-learning facilities) the variable does not include only those who gave a positive response. Rather, all respondents are included on a continuous scale from negative to positive.

It is worth noting that the analysis can only explore the effect of the available variables (see Appendix C) and there may be a wide range of other variables that influence the outcomes being examined. Indeed, the analyses suggested that around half of the variability of lecturers' responses to each of the outcomes presented in this chapter was *not* explained by the variables included in the analysis and the findings, therefore, may not reflect all of the factors of lecturers' experience that are associated with their use of e-learning, their attitudes towards it, and perceptions of its effect.

Figure 4.1 Analytical model

Input variables					**Outcome variables**	
Background factors	**Contextual factors**	**Personal factors**	**Use factors**		**Outcomes**	
			Lecturers' use	**Learners' perceived use**	**Intermediate**	**End-point**
Lecturer level • Subject area • Levels of qualifications taught • Type of qualifications taught	Institution-level • Type • Retention • Achievement • Quality of teaching for each subject • Size of college • Size of department • Have VLE • Have intranet • Management expectation that lecturers use e-learning.	Lecturer level • Employment status • Years teaching • Sex • Role in department • Sufficient support for e-learning • Sufficient access to e-learning facilities *Effectiveness as lecturers as a result of e-learning for:* • Preparation and teaching • Supporting learner-centred learning • Assessing progress • Sharing materials *Learners are more effective because of e-learning at:* • Being independent and motivated • Developing knowledge • Accessing information and communicating • Researching and presenting information • Types of learners who benefit from e-learning • Confidence in using e-learning *Lecturers' attitudes:* • Proactive and positive about e-learning • See potential of e-learning	Lecturer level • Using a VLE or intranet made a difference to teaching *Use e-learning for:* • Supporting learner-centred learning • Research and preparation • Share materials • Teaching to develop understanding	Lecturer perceptions *Learners use e-learning for:* • Working independently • Researching and presenting information • Developing understanding • Contact out of class	*Lecturers' use of e-learning for:* • Learner-centred learning • Research and preparation • Share materials • Teaching to develop understanding *Lecturers' attitudes* • Lecturers see potential • Lecturers are proactive and positive about e-learning • Lecturers are confident users of e-learning *Learners' use of e-learning for:* • Working independently • Develop understanding *Learners are more effective at*: • Being independent and motivated • Developing knowledge	• Achievement in the institution • Retention in the institution • Quality of teaching in the institution

Drawing on the analytical framework presented in Figure 4.1, the regression analyses sought to test a number of hypotheses and sub-hypotheses which were:

- that end-point outcomes of achievement, retention, and quality of teaching would be higher where lecturers used e-learning more and in particular ways (Section 4.2)
- that end-point outcomes would be higher where learners used e-learning more and in particular ways (Section 4.2)
- that learners would be more motivated and independent where lecturers used e-learning more and in particular ways (Section 4.3.1)
- that learners would be more motivated and independent where lecturers had a positive attitude to e-learning (Section 4.3.1)
- that learners would be more effective at developing their understanding where lecturers used e-learning more and in particular ways (Section 4.3.2)
- that learners would be more effective at developing their understanding where lecturers had a positive attitude to e-learning (Section 4.3.2)
- that lecturers would be more confident users of e-learning where they had sufficient access and support and used e-learning more frequently (Section 4.4.1)
- that lecturers would be more positive about e-learning and its potential where they had perceived an impact of its use (Section 4.4.3)
- that lecturers would use e-learning more where they had sufficient access and support (Section 4.4.5).

These hypotheses, and supplementary sub-hypotheses, are explored in Sections 4.2 to 4.4 below.

4.2 Impact on end-point outcomes

As illustrated in the analytical model (Figure 4.1), the analysis sought to explore the factors associated with **achievement, retention** and **quality of teaching** in the institutions: these are the end-point outcomes of the teaching and learning experience. Finlayson *et al.* (2006) found little evidence in the case-study colleges of the use of e-learning directly resulting in improved retention and achievement. Moreover, where they did find some evidence of a relationship between high e-learning use by lecturers and achievement, they suggested that this could be related as much to lecturers' pedagogical skill, as their use of e-learning.

This section explores the hypotheses that:

- achievement, retention and quality of teaching would be higher where *lecturers* used e-learning more and in particular ways
- and that these end-point outcomes would be higher where *learners* used e-learning more and in particular ways.

The main measures of achievement and retention in a college were taken from the ALI and Ofsted reports for the colleges. These provided details of the percentage of learners retained and the percentage who achieved their qualification in the most recent year before inspection. This information was matched to the colleges in the sample and grouped into three bands of high, medium and low achievement or retention. It is worth noting that the year that the data related to varied across the colleges based on the year of inspection (ranging from 2001 to 2005). Therefore, in some institutions, the outcomes may pre-date some e-learning use.

In order to explore attainment and retention within the focus subject areas, lecturers provided details of achievement and retention in the qualification level that they predominantly taught. As can be seen in Tables 4.1 and 4.2, the mean achievement rate was between 83 per cent and 89 per cent and the mean retention rate was between 81 per cent and 88 per cent. Nevertheless, the full range of proportions, from zero to 100 per cent, was represented in many levels of qualifications.

Table 4.1 Mean percentage of learners who achieved their qualification on courses taught by respondents

Level	Mean %	Min. %	Max. %	N
Entry and 1	87	5	100	337
2	83	5	100	813
3	88	0	100	1380
4 and above	89	0	100	405

Numerical data provided by respondents
A filter question: all those who taught at each level
Source: NFER Survey of college lecturers, 2005

Table 4.2 Mean percentage of learners retained on courses taught by respondents

Level	Mean %	Min. %	Max. %	N
Entry and 1	83	30	100	332
2	81	10	100	803
3	85	0	100	1371
4 and above	88	5	100	415

Numerical data provided by respondents
A filter question: all those who taught at each level
Source: NFER Survey of college lecturers, 2005

The regression analysis undertaken using the data provided by lecturers to explore the impact of e-learning on the achievement and retention of learners did not result in a sufficiently robust statistical model. Only 11 per cent of the variability in the lecturers' reported achievement, was explained by the variables included in the model. This suggests that there was a wide range of other factors that influenced their response to this question over and above the background, contextual, personal and e-learning use variables included in the analysis. Consequently, the analysis is not presented in this chapter which focuses instead on the ALI and Ofsted measures of achievement, retention and quality of teaching.

As discussed in Chapter 3, around a third (31 per cent) of lecturers indicated a view that achievement in their department had improved as a result of e-learning (see Table 3.5). The majority, therefore, either considered that achievement was unaffected (48 per cent), decreased (one per cent) or did not feel able to respond (21 per cent). The use of e-learning at this stage, therefore, may not yet have had an observable impact on the end-point outcome of achievement for learners. This is further reflected in lecturers' views of the impact of e-learning on retention. A minority of lecturers (19 per cent) said that retention on the courses that they taught had improved as a result of e-learning (see also Table 3.5). However, the majority (58 per cent) did not believe that this was the case, one per cent said it had decreased and the remaining 23 per cent felt unable to comment.

4.2.1 What factors were associated with higher attainment in the institution?

This section examines the evidence for the hypothesis that achievement would be higher where *lecturers* and *learners* used e-learning more and in particular ways.

The majority of the variables identified in the analytical model (Figure 4.1), and which related to the **use of e-learning** by lecturers and learners and **personal factors**, did not emerge as significantly associated with the overall achievement of the learners at the institution. These findings reflect those of

Finlayson *et al.* (2006), as noted above. Rather, **background** and **contextual** factors were the most influential factors associated with higher achievement. More specifically, the achievement of learners in an institution tended to be higher where:

- it was a sixth form college
- it did not have high retention of learners.

Overall, therefore, it appears that achievement in an institution was not directly associated with its lecturers' use of e-learning. However, the level of achievement of learners was associated to a lesser, but significant, extent with lecturers having indicated that they **used e-learning in research and preparation for teaching** more frequently. Although this could be described as one of the simpler uses of e-learning in teaching practice, it is also one of the more widespread and the detailed uses (to prepare work, research and access information and create materials) were used frequently or all of the time by the majority of lecturers (see Section 2.2). It may be, therefore, that some of the more interactive forms of e-learning, which were less widely used by respondents, were not yet sufficiently widespread to impact on college-level achievement. However, as noted in Chapter 3, they are helping the majority of lecturers surveyed to be more effective in their teaching.

4.2.2 What factors were associated with higher retention in the institution?

This section examines the evidence for the hypothesis that retention would be higher where *lecturers* and *learners* used e-learning more and in particular ways.

Retention in these colleges was not significantly associated with the **use of e-learning** among respondents to the survey or **personal factors**. Rather it was associated to a greater extent with **contextual and background factors**. Having higher retention in the institution was associated with:

- being a sixth form college.

To a lesser, but significant extent, higher retention was associated with certain other background and contextual factors:

- respondents not teaching national certificates
- having more staff in the department of the responding lecturer
- responding to the survey as a business lecturer
- having fewer years post-16 teaching experience.

4.2.3 What factors were associated with higher quality of teaching in the institution?

In their inspection reports, ALI provide a grade of the quality of teaching in each broad subject area. The grades range from outstanding (grade 1) to very weak (grade 5) and are provided separately for the quality of teaching for 16 to 18 year old learners and for those aged 19 and over, including work-based provision. This section explores the hypothesis that **e-learning use contributes to quality of teaching** in the three departments for teaching at 16 to 18.[5]

The quality of teaching at 16 to 18 was mostly associated with **background and contextual factors**. Teaching quality received higher scores in sixth form colleges and, in terms of the departments, the quality of teaching in business was greater than in science, and in science was greater than in health and social care. Institutions with high and medium achievement had higher quality of teaching scores than those with lower achievement. Colleges with high and medium retention rates were more likely to have better quality of teaching than those with lower retention.

On the whole, therefore, e-learning use and experience was not associated with quality of teaching, over and above the background and contextual factors considered. Nevertheless, to a significant, but lesser degree, the extent to which respondents felt that they had sufficient **support** in relation to e-learning was associated with the institution having a higher quality of teaching score across the three focus subject areas. This may suggest that ensuring that lecturers have sufficient e-learning support can have a positive effect on the quality of teaching in the institution.

4.3 Impact on intermediate learner outcomes

This section examines the relationship between the range of background, contextual and personal factors, and the nature and extent of use of e-learning by this sample of lecturers, as outlined in the analytical model (Figure 4.1) and **intermediate outcomes** for learners. The following hypotheses are the focus of this section:

- that learners would be more motivated and independent where lecturers used e-learning more and in particular ways
- that learners would be more motivated and independent where lecturers had a positive attitude to e-learning

[5] The analysis of the quality of teaching at 19 and over found that the variables included explained only 23 per cent of the outcome and this analysis is therefore not reported. In contrast, 62 per cent of the variability in the quality of teaching grades assigned at 16 to 18 is explained by the variables explored.

- that learners would be more effective at developing their understanding where lecturers used e-learning more and in particular ways
- that learners would be more effective at developing their understanding where lecturers had a positive attitude to e-learning.

The intermediate outcomes explored focus on lecturers' perceptions of learners' use of e-learning for working independently and autonomously, reflecting their self-motivation, and to develop their understanding of their subject. Four aspects of learners' use of e-learning are explored in this section. These are:

Independent learning

- Lecturers' perceptions of the frequency of **learners' use of e-learning to** work **independently** and be self-directed and self-motivated through using e-learning to submit work on time, organise work, work independently and solve problems (Section 4.3.1).
- Lecturers' perceptions of the extent to which learners were **more effective in being independent** and motivated through the use of e-learning in terms of submitting work on time, organising work, working independently, solving problems, working at their own pace and achieving their qualification (Section 4.3.1).

Learning and understanding

- Lecturers' perceptions of the frequency of learners' **use of e-learning to support their learning and understanding** through engaging with the subject in the classroom, using e-learning to reinforce their knowledge and working collaboratively in class (Section 4.3.2).
- Lecturers' perceptions of the extent to which learners were **more effective in developing their knowledge** through the use of e-learning by engaging more effectively with the subject in class, developing their understanding and reinforcing their knowledge more effectively (Section 4.3.2).

These outcomes were derived through factor analysis from lecturers' responses to the questionnaire survey. Details of the factor analysis are provided in Appendix B.

It has been noted previously (see Table 3.5) that 46 per cent of respondents felt that e-learning led to improvements in learners' motivation. As improvements in learners' motivation could lead, in turn, to higher retention and achievement, as theorised in the conceptual model of e-learning presented by Finlayson *et al.* (2006), this section examines the evidence from the survey of the associations between e-learning use and learners' motivation and independence as learners. In addition, although e-learning use did not appear to be significantly associated with learners' cognition, as measured by achievement in the statistical analysis, a further sub-section examines the

extent to which use was associated with lecturers' perception of developing learners' understanding.

4.3.1 What factors were associated with learners' independent learning?

Learners' use of e-learning to work independently

The extent to which lecturers believed that their learners used e-learning to work independently was most significantly positively associated with their **own use** of e-learning as lecturers. More specifically, lecturers tended to consider that their learners were using e-learning to work independently more often where they, as lecturers, used e-learning more often to:

- support learner-centred learning
- research and prepare for teaching
- share materials.

These findings provide some support for the theory proposed by Finlayson *et al.* (2006), that the way in which learners use e-learning is influenced by the approach of the lecturer. However, while this may be as a result of lecturers' intentions and directions for their learners, alternatively, it may indicate that lecturers' perceptions of learners' use are influenced by their own experience. The evidence suggests that, where lecturers use e-learning more for learner-centred learning and to share materials and communicate with learners outside of the classroom, they may be facilitating their learners' capacity to use e-learning to work independently.

In addition to lecturers' use, the analysis revealed that considering that lecturers and learners had sufficient access to e-learning resources was positively associated with the extent to which learners used e-learning to work independently.

Learners' effectiveness at working independently due to e-learning

The extent to which lecturers considered that learners were more effective at working independently as a result of e-learning was significantly positively associated with their view of the contribution of e-learning to their **effectiveness as lecturers** in some respects, **use of e-learning**, and **attitude**, more than with other background and contextual factors detailed in Figure 4.1. More specifically, lecturers tended to state that their learners were more effective at working independently as a result of e-learning where they:

- used e-learning more often to support learner-centred learning
- prepare and teach more effectively as a result of e-learning
- assess progress more effectively as a result of e-learning

- saw the potential of e-learning
- believed that learners used e-learning more often to work independently
- considered that e-learning had a positive impact on learners' motivation.

This may indicate that learners were more effective at working independently due to e-learning where their teaching staff saw the potential of e-learning and had incorporated it into their teaching practice in ways which would support learner independence.

4.3.2 What factors were associated with learners' learning and understanding?

Another key outcome for learners is the extent to which they use e-learning to develop their **cognition** in terms of their **knowledge and understanding** of their subject. This section explores the factors which appear to be associated with the extent to which learners were using e-learning in this way, and what contributed to their ability to develop their understanding more effectively as a result of e-learning.

Learners' use of e-learning to develop understanding

As was the case with the other intermediate outcome for learners (independent learning), the extent to which learners used e-learning to develop their understanding was significantly positively associated to the greatest extent with the frequency and nature of **lecturers' use of e-learning** and their **attitude**. More specifically, lecturers who considered that their learners used e-learning more often to develop their understanding tended to be those who:

- used e-learning more to support learner-centred learning
- used e-learning more often to research and prepare for teaching
- used e-learning more often when teaching to develop understanding
- considered that learners were more effective at developing their knowledge as a result of e-learning
- were proactive in their attitude towards e-learning.

These findings provide further support for the theory of Finlayson *et al.* (2006) that the way in which learners use e-learning is associated with their lecturers' approach to e-learning. For example, lecturers who considered that learners used e-learning to support the development of their understanding also tended to use e-learning directly in the teaching and learning interface for this purpose.

In addition to lecturers' use of e-learning, the analysis revealed that lecturers who felt that they had sufficient access to resources, which might also indicate that learners had sufficient access, were more likely to consider that learners

used e-learning to develop their understanding and were more effective at working independently as a result of e-learning.

Learners' effectiveness at developing understanding due to e-learning

Lecturers' perceptions of whether their learners were more effective at developing their understanding as a result of e-learning were significantly positively associated with their perceptions of their effectiveness as teachers, their attitude towards, and use of e-learning, rather than with background, contextual and other personal factors. The analysis revealed that lecturers who believed that their learners were more effective at developing their understanding as a result of e-learning tended to be those who:

- used e-learning to support learner-centred learning
- considered that they were more effective and preparing for teaching as a result of e-learning
- considered that they were more effective at assessing progress as a result of e-learning
- saw the potential of e-learning
- believed that learners used e-learning more often to develop their understanding.

It appears that lecturers' views on how much more effective they were as a result of using e-learning to prepare, and to assess learners' progress, was related to their view on how much more effective their learners were in developing their knowledge. This may suggest that a positive impact on lecturers' practice through using e-learning may contribute to a positive impact of e-learning on learners' knowledge and understanding.

4.3.3 Summary

Figure 4.2 summarises the main factors that were associated with each **intermediate outcome** for learners, as discussed in this section. It shows that, lecturers' attitude towards e-learning, and perceptions of its effectiveness, were more closely associated with intermediate outcomes for learners than background, contextual and other personal factors.

However, the extent to which lecturers and learners had sufficient access to e-learning resources was the one contextual factor that did emerge as associated with the extent to which learners used e-learning to work independently and to develop their knowledge. Thus, the survey of lecturers has provided support for the evidence gathered through qualitative case studies (Finlayson *et al.* 2006) which found that the way in which lecturers used e-learning could influence learners' use and that access to resources was a key factor that could impact on the extent and nature of use of e-learning.

Figure 4.2 Factors positively associated with intermediate outcomes for learners

	Learners use e-learning for independent learning	Learners are more effective at being independent learners as a result of e-learning	Learners use e-learning for learning and understanding	Learners are more effective at developing knowledge as a result of e-learning
Use and experience of e-learning				
Learners are more effective at working independently due to e-learning	*		*	
Learners use e-learning to work independently		*		
Use e-learning to support learner-centred learning	*	*	*	*
Use e-learning for research and preparation	*		*	
Use e-learning to share materials	*			
Lecturers prepare and teach more effectively as a result of e-learning		*		*
Lecturers assess progress more effectively as a result of e-learning		*		*
Learners use e-learning for learning and understanding		*		*
Lecturers use e-learning when teaching to develop understanding			*	
Learners develop their knowledge more effectively as a result of e-learning			*	
Personal attitudes				
Lecturers see the potential of e-learning		*		*
Lecturers consider that e-learning affected learners' motivation positively		*		
Lecturers are proactive in their attitude towards e-learning			*	
Contextual factors				
Lecturers have sufficient access to e-learning resources	*		*	
Personal background				
Lecturer is female			*	
Lecturer is a course leader	*			

Source: NFER Survey of college lecturers, 2005

** indicates a significant positive association between the two variables*

4.4 Impact on lecturers' confidence and attitudes towards e-learning

As discussed in Chapter 3, the lecturers who responded to the survey were generally positive about e-learning and its use to support their teaching and learning practice. This section explores the relationship between a range of possible factors which may be associated with lecturers expressing a more, or less, positive view of e-learning. It then examines the factors associated with the extent and nature of lecturers' use of e-learning. It explores three key hypotheses which are:

- that lecturers would be more confident users of e-learning where they had sufficient access and support and used e-learning more frequently
- that lecturers would be more positive about e-learning and its potential where they had perceived an impact of its use
- that lecturers would use e-learning more where they had sufficient access and support.

As outlined in the analytical model (Figure 4.1), two attitudinal outcomes were derived from lecturers' responses to the questionnaire: the extent to which they see the potential of e-learning and whether they were proactive users of e-learning. In addition, a composite which reflected lecturers' self-reported confidence in the use of e-learning was derived. Four variables reflecting lecturers' use of e-learning were also derived. The association between these, and the other background, contextual and personal factors, and lecturers' and learners' uses of e-learning are discussed in the following sections.

4.4.1 What factors were associated with lecturers' confidence in using e-learning?

As discussed in Chapter 2, the majority of respondents indicated that they were confident using e-learning, albeit fewer were confident using it to track learners' progress. Finlayson *et al.* (2006) theorised that each e-learning use at the teaching and learning interface, and therefore the extent to which each of these may impact on intermediate outcomes for learners, would be influenced to some extent by the technical and pedagogic skills of the lecturer. The regression analysis enables an exploration of the relationship between the range of factors outlined in the analytical model (Figure 4.1) and lecturers' levels of confidence in using e-learning.

Personal attitudes and experience of using e-learning in specific ways emerged as more strongly associated with lecturers' confidence than background and contextual factors. Lecturers indicated that they were more confident where they:

- were more proactive in their attitude towards e-learning use
- were more frequent users of e-learning to research and prepare lessons
- indicated that they were a more frequent user of e-learning to support a learner-centred learning approach.

Lecturers' confidence was associated to a lesser, but significant, extent by whether:

- they felt that they had sufficient access to facilities
- they could see the potential for the use of e-learning
- there was an expectation among management that lecturers used e-learning
- they considered they were more effective at sharing materials as a result of e-learning
- they considered that learners used e-learning for research and presentation.

This suggests that this sample of lecturers were indeed more confident where they felt they had sufficient access to e-learning facilities, as proposed by Finlayson *et al.* (2006).

It appears, therefore, that the extent to which lecturers are confident users of e-learning is associated more with their attitude towards e-learning and the extent to which they had used it, than by background, contextual or personal factors, other than attitudes. This suggests that any strategies to encourage the use of e-learning among lecturers might benefit from ensuring that lecturers are able to have direct experience of using it in their own teaching, and to learn from the experience of colleagues who could highlight why and how using e-learning had contributed to the learning process for their learners.

4.4.2 What factors were associated with lecturers' attitudes towards proactive use of e-learning?

As detailed in Appendix B, the composite variable which indicated the extent to which lecturers were **proactive users of e-learning** reflected their responses to individual questions. The questions explored whether they were enthusiastic about its use, were determined to use it and could readily identify opportunities for using e-learning. The majority of lecturers agreed or strongly agreed with these statements (see Table 2.6). This section explores the factors that appear to be associated with the extent to which lecturers had a proactive attitude towards e-learning. Such an attitude could reflect a belief in the effect of e-learning, which Finlayson *et al.* (2006) suggested would be influenced by personal factors, and could in turn affect the use of e-learning in the teaching and learning interface.

The extent to which lecturers indicated that they were proactive was more strongly associated with their **personal** attitude and confidence, and, albeit to a slightly lesser extent, their experience of **using e-learning** than with the background or contextual factors detailed in the analytical model (Figure 4.1). More specifically, lecturers who were more proactive were also likely to indicate that they:

- saw the potential of e-learning
- were a confident user of e-learning.

Furthermore, the extent to which lecturers indicated that they were proactive users was significantly associated with their current use of e-learning in some respects. Lecturers tended to be more proactive where:

- they used e-learning more frequently to develop understanding
- they felt sufficiently supported in their use of e-learning
- they used e-learning more frequently to share materials with colleagues and learners
- they considered that e-learning helped learners to develop their knowledge effectively
- they considered that learners used e-learning to develop their knowledge
- they used e-learning more often for research and preparation
- they used e-learning more often to support learner-centred learning.

It appears, therefore, that lecturers may be more likely to be proactive and positive in their attitude towards e-learning where they are confident, can see the potential for its use and have the necessary relevant support. It may also be the case that lecturers who actively use e-learning to develop learners' understanding, and see an outcome from this in the improved effectiveness with which their learners develop their knowledge, are more proactive. It was interesting to note, however, that there was a negative association between having a proactive attitude and considering that e-learning had affected achievement. This indicates that, although lecturers may be positive in their attitude and believe in the value of e-learning, they do not necessarily perceive an impact of its use on achievement.

One background factor did emerge as being associated with the extent to which lecturers were proactive in their attitude. Lecturers who were ILT coordinators in their department tended to be more proactive than those who did not have this role. A lecturer's positive attitude, of course, may be one of the reasons why they had undertaken this role in the first place, and it is interesting to note that having a positive attitude was more strongly associated

with overall attitude, confidence and experience of e-learning use, than with a lecturer's ILT-specific role in their department.

4.4.3 What factors were associated with lecturers' views of the potential of e-learning?

While the previous section explored the factors which were associated with the extent of lecturers' proactivity in their current use, this section examines the factors associated with lecturers perceiving the potential for e-learning. As discussed in Chapter 3, the majority of lecturers who responded to the survey indicated that they felt that the use of e-learning in teaching and learning had the potential to impact on the flexibility and capacity of post-16 provision to meet the range of learners' needs and aid communication. A composite variable was derived from their responses to this question which reflected their overall perception of the potential of e-learning (see Appendix B).

Personal attitudes and confidence, and **experience of using** e-learning were more strongly associated with lecturers perceiving the potential of e-learning than **background** and **contextual** factors. Nevertheless, as will be discussed below, these wider factors did emerge as being associated with lecturers' attitude towards e-learning potential.

The extent to which lecturers had a positive attitude towards the potential of e-learning was most strongly associated with:

- lecturers indicating that they were proactive in their use of e-learning
- and, to a lesser, but significant extent, the level of confidence of the lecturer in using e-learning.

Lecturers' **perceptions of learners' use** of e-learning were also associated somewhat with the extent to which they perceived potential. Lecturers who felt that e-learning had potential tended to be those who reported that learners were more effective in being independent and motivated through the use of e-learning and that learners used e-learning to research and present information. In addition, **lecturers' use of e-learning** in some respects was associated with perceiving the potential of e-learning. Those who saw potential also tended to indicate that they used e-learning more frequently to support a learner-centred learning approach.

In terms of contextual and personal factors, lecturers who taught in sixth form colleges, and lecturers who had spent fewer years teaching at the institution, were more likely to see the potential of e-learning than those in an FE college, and those who had been teaching for longer at the institution. There may be value, therefore in initially targeting approaches to raise awareness of the potential of e-learning at lecturers in FE colleges and at more long-serving tutors.

The analysis revealed that the extent to which lecturers were positive in their attitude towards the potential for e-learning was not always associated with other positive perceptions of e-learning use and its impact. For example, there was an association between having a more positive attitude towards e-learning potential and perceiving that e-learning had not affected retention. It appears that lecturers, while generally positive about e-learning, were not regarding it necessarily as a panacea and having a positive impact on all aspects of their teaching. One possible reason for this may be that lecturers felt that the full potential of e-learning has yet to be put into practice.

4.4.4 Summary

The summary diagram presented below (Figure 4.3) illustrates the finding that each of the three factors relating to attitudes and confidence were interrelated and influenced one another. Nevertheless, it is evident that lecturers' use of e-learning, and their views on whether learners were more effective as result of e-learning, were more closely associated with their attitudes and confidence than with wider contextual and background factors.

Figure 4.3 Factors positively associated with lecturers' confidence and attitudes towards e-learning

Factors associated with confidence and attitudes	Lecturers' confidence	Lecturers' proactive attitude	Lecturers see potential of e-learning
Personal attitudes			
Confident user of e-learning		*	*
Proactive attitude	*		*
Sees potential of e-learning	*	*	
Use and experience of e-learning			
Learners are more effective as independent learners			*
Learners use e-learning for research and presentation	*		*
Lecturers use e-learning to support learner-centred learning	*	*	*
Lecturers use e-learning for research and preparation	*	*	
Lecturers share materials more effectively due to e-learning	*		
Lecturers use e-learning when teaching to develop understanding		*	
Learners are more effective at developing their knowledge as a result of e-learning		*	
Lecturers use e-learning to share materials		*	
Learners use e-learning to develop their understanding		*	
Contextual factors			
Lecturers feel that they have sufficient support		*	
Lecturers have sufficient access to e-learning resources	*		
Expectation among college management that lecturers use e-learning	*		
Sixth form college			*
Personal background factors			
Fewer years' teaching experience			*

Source: NFER Survey of college lecturers, 2005
** Indicates a significant positive association between the two variables*

4.4.5 What factors were associated with lecturers using e-learning in different ways?

As outlined in Section 4.1, the ways in which lecturers used e-learning were put into four groups by means of factor analysis (see Appendix C). The groupings that emerged were not identical to the e-learning uses described by Finlayson *et al.* (2006) though they were broadly aligned as follows:

- lecturers' use of e-learning for research and preparation reflects e-learning use as a **presentation** tool
- lecturers' use of e-learning when teaching to develop understanding reflects e-learning use as a **presentation tool** and as a **learning tool**
- lecturers' use of e-learning to **share materials** reflects e-learning used as a **medium**
- lecturers' use of e-learning for **learner-centred learning** reflects e-learning use as a **medium** and as a **learning tool.**

This section explores the factors associated with the extent to which lecturers used e-learning in each of the four ways outlined above. In doing so it explores the hypothesis that lecturers would use e-learning more where they had sufficient access and support.

As will be discussed in detail below, the main factors that were associated with the extent to which lecturers' used e-learning related to the personal factors of their confidence and attitude, and their perceptions of learners' use of e-learning and how effective they were as lecturers as a result of e-learning.

The factors that emerged as significantly positively associated with lecturers' use of e-learning for **learner-centred learning** included lecturers:

- being more confident users of e-learning
- being more proactive in their attitude towards e-learning
- perceiving that learners used e-learning to support their learning and understanding
- perceiving that learners used e-learning for independent learning
- perceiving that learners used e-learning to contact their peers and lecturers out of class
- believing that they could assess progress more effectively as a result of e-learning.

However, there was a significant negative association between lecturers using e-learning for learner-centred learning and their perception of how effective they were as a result of using e-learning. More specifically, lecturers tended to use e-learning for learner-centred learning more where they:

- did not think that their learners were more effective at researching and preparing as a result of e-learning
- did not think that learners could more effectively access information and communicate as a result of e-learning
- did not think that they were more effective at preparing and teaching as a result of e-learning.

The extent to which lecturers used e-learning when **teaching to develop understanding** was positively associated with lecturers:

- being more confident users of e-learning
- being more proactive in their attitude towards e-learning
- perceiving that learners use e-learning to support their learning and understanding
- perceiving that learners used e-learning to contact their peers and lecturers out of class
- considering that they were more effective at preparing and teaching as a result of e-learning
- stating that they had enough access to resources for e-learning
- being an ILT coordinator in their department.

Again, lecturers' attitudes and perceptions of their learners' use of e-learning, specifically to develop their understanding, emerged as being associated with the extent to which lecturers used e-learning when teaching to develop understanding. This further supports the theory of Finlayson *et al.* (2006) that learners' use of e-learning is associated with the ways in which their lecturers use it. It is interesting to note that the extent to which lecturers used e-learning in this way was associated with their experience of accessing e-learning resources. Using e-learning when teaching to develop understanding is likely to involve using e-learning directly at the teaching and learning interface and ensuring that there is sufficient access to relevant resources for lecturers and learners appears to be a key factor in facilitating this.

The extent to which lecturers used e-learning to **share materials** was significantly positively associated with lecturers:

- being more confident users of e-learning
- being more proactive in their attitude towards e-learning
- perceiving that learners used e-learning to contact their peers and lecturers out of class
- stating that they had enough access to resources for e-learning
- being an ILT coordinator in their department
- considering that they were more effective when sharing materials as a result of e-learning.

The extent to which lecturers used e-learning to **research and prepare** for teaching was significantly positively associated with lecturers:

- being more confident users of e-learning
- being more proactive in their attitude towards e-learning

- considering that they were more effective at preparing and teaching as a result of e-learning
- being female
- having taught for less time in further education.

Although the use of e-learning for research and preparation was one of the most widespread uses of e-learning (see Section 2.2), most of the variables outlined in Figure 4.1 that might be related to this outcome did not emerge as being significantly associated. As discussed in Section 4.2, this e-learning use was associated with the achievement in an institution. The finding that using e-learning in this, and other ways, is associated with lecturers' confidence and attitude suggests that engendering such an environment in an institution could contribute to the overall achievement of learners.

4.4.6 Summary

Figure 4.4 summarises the main factors that were positively associated with how often lecturers used e-learning in each of the ways identified.

Figure 4.4 Factors positively associated with the extent to which lecturers used e-learning

Factors associated with use	Lecturers use e-learning for:			
	learner-centred learning	teaching to develop understanding	sharing materials	research and preparation
Personal attitudes				
Lecturers are more confident users of e-learning	*	*	*	*
Lecturers are more proactive in their attitude towards e-learning	*	*	*	*
Use and experience of e-learning				
Learners use e-learning for learning and understanding	*	*		
Lecturers can assess progress more effectively as a result of e-learning	*			
Learners use e-learning to be independent and self-directed	*			
Learners use e-learning to contact lecturers and peers out of class	*	*	*	
Lecturers are more effective at preparation for teaching as a result of e-learning		*		*
Lecturers are more effective at sharing materials as a result of e-learning			*	
Contextual factors				
Lecturers have sufficient access to e-learning resources		*	*	
Personal background				
Lecturer is female				*
Lecturer has taught for fewer years				*
Lecturer is an ILT coordinator in their department		*	*	

Source: NFER Survey of college lecturers, 2005
** Indicates a significant positive association between the two variables*

As can be seen in the summary table, lecturers used e-learning more in each way where they were more confident users of e-learning and more proactive in their attitude. While it is not possible to know whether they are more confident and therefore use e-learning more, or have become more confident as a result of using e-learning more often, it is apparent that a virtuous circle between use, confidence and having a proactive attitude may exist.

It also appears that having sufficient access was associated with the extent to which lecturers used e-learning when teaching to develop understanding and

for sharing materials. This indicates that the hypothesis that lecturers would use e-learning more where they had sufficient support and access was partially borne out by the evidence.

4.5 Conclusion – what was the impact of e-learning on intermediate and end-point outcomes?

The factors included in the analysis of the relationship between lecturers' experience and use of e-learning, their attitudes and confidence, and intermediate outcomes for students accounted for around half of the variance in lecturers' responses. This suggests that there are a range of other factors which are potentially influential on lecturers' views which are not reflected in this analysis.

This chapter has revealed that there was limited evidence, from this survey of lecturers, of a direct relationship between lecturers' attitudes, and their experience of using e-learning, and end-point outcomes of achievement, retention and quality of teaching. Nevertheless, there were indications that the extent to which lecturers used e-learning for research and preparation for teaching was associated with higher achievement in an institution, and that the extent to which lecturers felt supported in their use of e-learning was associated with higher quality of teaching. However, it should be noted that, while an association appears to exist, it is not possible to comment on whether lecturers' greater use of e-learning in this way had led to higher achievement in their institutions of whether lecturers in higher-achieving institutions were more likely to use e-learning in this way or to feel sufficiently supported.

There was evidence of a relationship between the extent and nature of lecturers' use of e-learning, and their confidence and attitudes towards it, and intermediate outcomes for learners. Moreover, the evidence supported the theory of Finlayson *et al.* (2006) that the way in which learners used e-learning was related to the way in which their lecturers used e-learning. The evidence suggests that learners were using e-learning as independent learners more where their lecturers used it to support learner-centred learning. In addition, learners were said to use e-learning more to develop their understanding where lecturers used e-learning when teaching to develop understanding.

Underpinning the extent to which lecturers used e-learning in a variety of ways, and the intermediate outcomes for learners, was lecturers' confidence in using e-learning and their attitude towards its use and potential. This supported the theory of Finlayson *et al.* (2006) that the use of e-learning at the teaching and learning interface was informed by lecturers' personal characteristics and their belief in its effects. The extent to which lecturers were confident, proactive and saw the potential of e-learning were interrelated and appeared to

influence one another. It may be, therefore, that engendering an environment within an institution where lecturers increase their confidence, become more proactive and see the potential of e-learning could, in turn, contribute to an increase in lecturers' use of e-learning and thus improved intermediate outcomes for learners. In order to achieve this, the findings suggest that providing sufficient access to e-learning resources may contribute to improving lecturers' confidence. Providing sufficient support, including technical support and time to embed e-learning use in teaching practice, may also help to encourage a proactive attitude towards e-learning amongst lecturers.

The evidence suggests that there are complex interrelationships, not only between lecturers' attitudes and confidence, but also in relation to other aspects of use and outcomes, and impact. There is no simple linear model whereby there is a direct and clear relationship between one action and another. For example, the extent to which a lecturer felt that they had sufficient access to e-learning resources was associated with the extent to which they used e-learning for particular activities, their confidence in using e-learning and the extent to which learners used e-learning to develop their understanding. In turn, lecturers' confidence was associated with the extent to which they used e-learning to support learner-centred learning, and their use of e-learning to develop understanding. Consequently, improving lecturers' access to e-learning resources may not lead to one clear measurable outcome, but rather have a number of varied effects and contribute to an overall virtuous circle of attitudes, confidence, e-learning use by lecturers and learners, and intermediate outcomes.

Finally, the chapter has revealed that, in general, background, personal and contextual factors were less strongly associated with lecturers' attitudes and confidence in relation to e-learning, or their views on the extent to which their learners used e-learning and how effective they were as a result. Rather, these were more strongly associated with lecturers' own use, and their attitudes. Focusing on encouraging and developing these among lecturers may lead to wider use and take-up of e-learning in further education among both lecturers and learners.

5. Conclusions

Overall, responses to the questionnaire survey suggest that this sample of lecturers in general FE and sixth form colleges were very positive about e-learning and its potential for the future.

5.1 End-point and intermediate outcomes

The ways in which e-learning was used to assist teaching and learning varied. There was also variation in perceptions regarding the impact of e-learning on end-point and intermediate outcomes for learners.

End point outcomes

- The majority of the lecturers surveyed did not perceive a direct relationship between the use of e-learning and improvements in end-point outcomes of **achievement** and **retention**.
- The analysis of the survey responses found limited evidence of a relationship between lecturers' and learners' use of e-learning, and achievement and retention. These end-point outcomes were associated to a greater extent with institutional-level **background** and **contextual** factors.
- There were indications, however, of an association between higher achieving institutions and greater use among lecturers of **e-learning for preparation for teaching**. However, this may reflect lecturers in higher achieving institutions being more likely to use e-learning more in this way.

Intermediate outcomes

- Nearly half of lecturers surveyed indicated that e-learning led to improved **motivation** among learners.
- Half of the lecturers surveyed reported that using e-learning had helped their learners to be more effective at **managing their own learning**.
- The majority of lecturers felt that e-learning had helped their learners to be more effective in **developing their knowledge** through their ability to research topics, reinforce their knowledge and engage with the subject in the class.
- The extent to which learners were **independent** and developed their **understanding** through the use of e-learning was associated to a greater extent with lecturers' use of e-learning and attitudes towards it, than by contextual and other background factors.

- There was evidence of an association between the way in which lecturers used e-learning, and the extent to which learners used it in a similar way. More specifically:
  - learners were said to use e-learning to a greater extent to **work independently** where lecturers used it to **support learner-centred learning**.
  - In addition, learners were said to use e-learning more to develop their understanding where lecturers used it to **develop understanding**.
- Lecturers' attitudes and confidence, which were associated with learners' intermediate outcomes, were more positive where lecturers felt that they had sufficient **access** to resources and were content with the **support** available to them to use e-learning.

5.2 Uses of e-learning

The evidence from the survey of lecturers provides an insight into the extent of e-sophistication among lecturers in further education, the ways in which it is used and whether any efficiency gains may result from e-learning use.

E-sophistication

- A minority of lecturers who responded to the survey used e-learning all of the time in a variety of ways as a **presentational tool** or a **learning tool**. There did not appear to be a large sub-group of lecturers who could be characterised as 'e-sophisticated' in so far as they used e-learning all of the time or across all aspects of their teaching practice.
- Greater use of e-learning to support learner-centred learning, to develop understanding, to share materials and for research and preparation was associated most closely with lecturers' **attitude** towards e-learning and its potential, and their **confidence** in using it, rather than with wider institutional-level and personal background and contextual factors. This suggests that engendering such attitudes among lecturers, and supporting their developing confidence in e-learning use, could contribute to improving lecturers' levels of e-sophistication in any institution.
- Lecturers tended to use e-learning more in the **teaching and learning interface** through developing understanding and sharing materials with their colleagues and learners where they felt that they had sufficient **access** to e-learning resources. Ensuring ease of access for lecturers and learners could, it appears, contribute to greater use of e-learning in the teaching and learning interface.

Personalised learning approach

- A minority of the lecturers surveyed were using e-learning in ways which could support learner-centred learning and a notable minority never used it in this way. It appears, therefore, that there is considerable **scope for further development** in the use of e-learning in this way.

- That there would be value in developing this use further is illustrated by the finding that learners were said to use e-learning more to be **independent as learners** where their lecturers had used it to support learner-centred learning.
- As lecturers tended to use e-learning for learner-centred learning more where they were more confident in its use and proactive in their attitude, further developing its use in this way may be facilitated indirectly by improving lecturers' **confidence and attitude** towards e-learning.
- The findings indicated that the extents to which lecturers were confident and proactive in their attitude were associated with the extent of their access to e-learning resources and sufficient **support**. Thus ensuring that these needs are met could indirectly support the use of e-learning for learner-centred learning.

Efficiency

- Although exploring efficiency gains was not a key focus of the research, few lecturers indicated that they had experienced **efficiency gains** as a result of the use of e-learning: however, more anticipated experiencing such gains in the future.
- A minority (13 per cent) said that they achieved more in less time as a result of e-learning and 54 per cent said that the use of on-line resources had the **potential to save them time**.

5.3 Differences between the three subject areas

Lecturers in the three broad subject areas which were the focus of the research had varied experiences of using e-learning and perceptions of its impact. Lecturers in **business** were at one end of the spectrum. Overall, they:

- were more positive about the **access** they had to e-learning resources
- were more positive and **proactive** in their use of e-learning, for example stating that they did not know what they would do without it and expressing a determination to use it to its full potential
- were more likely to use it in a **learner-centred approach**, such as for delivering differentiated lessons, communicating out of class with learners, providing one-to-one attention in the classroom, testing understanding and tracking progress and target setting
- were more **confident** with e-learning
- were more likely to indicate that their learners were **using e-learning independently** to catch up on lectures and contact them with queries
- were more likely to consider that their **learners were more effective due to e-learning** at working collaboratively, solving problems, working at their own pace and achieving their qualification

- were more likely to have achieved a higher score in the **quality of their teaching** from ALI, as a subject area as a whole.

In contrast, overall, lecturers in **health and social care** were:

- less likely to feel that they had sufficient **access** to e-learning resources
- less likely to indicate that they were **proactive**, including being more likely to state that they did not know where to start with e-learning, found it hard to identify opportunities to use e-learning in their subject and felt that e-learning had little impact on them
- less likely to **use e-learning** to share course materials, present information to the class and make materials available to learners
- less **confident**, particularly in the use of e-learning in the classroom
- less likely to consider that they were more effective in undertaking a **learner-centred approach**, such as tracking and assessing progress, providing one-to-one attention, and testing understanding
- less likely to consider that their **learners were more effective due to e-learning** at catching up lectures, contacting lecturers with queries or engaging with the subject as a result of e-learning
- more likely to have achieved a lower score in the **quality of their teaching** from ALI, as a subject area as a whole.

However, lecturers in health and social care were as likely to indicate that they saw the **potential** in e-learning use. This suggests that there is potential to further develop lecturers' use of e-learning in the health and social care sector and that these lecturers would be receptive to these developments.

5.4 Barriers and enablers to e-learning use in further education

The findings from the survey of lecturers provide some indications of the factors that may facilitate or inhibit the extent to which lecturers, and learners, use e-learning. The extent to which lecturers, and in turn learners, used e-learning was most closely associated with lecturers' attitudes towards, and confidence in using, e-learning.

Ethos

- As some of the main factors associated with the extent to which lecturers used e-learning, and intermediate outcomes for learners, were lecturers' **attitudes** and **confidence**, **engendering an environment** where lecturers can increase their confidence, become more proactive and be encouraged to see how the potential of e-learning could contribute to their use of e-learning and, in turn, its use by their learners.

Access

- Although lecturers were broadly content with the extent of their access to e-learning resources to plan, research and prepare lessons, share materials and communicate, they were less content with the **access to e-learning resources** for immediate use by them and their learners **in the classroom**.
- Lecturers identified **improved access to equipment** as a key factor that would help them to increase their use of e-learning.
- Having **sufficient access** was associated with greater **use of e-learning** by lecturers for developing understanding and sharing materials. It was also associated with greater **confidence** in e-learning use which, in turn, underpinned intermediate outcomes for learners.
- Therefore it appears that ensuring **sufficient access** to e-learning resources in the classroom, in addition to outside the class, could be a **key enabler** in increasing use of e-learning in further education.

Support

- Lecturers were largely content with the technical support they received and with the opportunities they had for formal training related to e-learning. They were less content with the **time provided to embed** their use of e-learning in their everyday teaching practice.
- Lecturers identified the provision of more **time for lesson planning**, in addition to **formal training**, as two of the main factors that would contribute to them further developing their use of e-learning.
- Lecturers who felt that they had sufficient support tended to be those who were more **proactive** in their attitude. Having such an attitude was, in turn, associated with the extent to which they used e-learning. A proactive attitude was also associated with the intermediate outcome for learners of greater use of e-learning to develop their understanding.
- Overall, ensuring that **sufficient support** is provided for lecturers and, in particular providing enough time for them to develop and embed their use of e-learning, could be a **key enabler** for increasing the use of e-learning in FE and supporting the achievement of intermediate outcomes for learners.

5.5 Implications for policy and practice

Implications for policy

The evidence indicates a range of implications which policy makers may wish to consider, including the following:

- The use of e-learning in further education may not yet have a direct association with end-point outcomes of retention and achievement but there may be some early indications that widespread use of e-learning by lecturers for research and preparation is associated with achievement.

Moreover, the perceived relationship between e-learning use and learners' motivation suggests that **continued support of the expansion of e-learning in further education is of value.**

- The finding that there is a relationship between lecturers' confidence and having a proactive attitude, and their experience of using e-learning, may indicate that there is value in enabling lecturers to see and experience the effects of e-learning to encourage its take up. A **strategy for sharing good practice** could usefully support the capacity for lecturers to learn from others' experience.

Implications for practice

The implications for institutional leaders are that they could usefully consider:

- Ensuring that **access** to e-learning resources is focused specifically in the classroom so that they can be used more at the teaching and learning interface.
- Providing **protected time** for lecturers to develop their use of e-learning and embed it into their everyday teaching and learning practice.
- Engender an **ethos** within their institution through which lecturers are encouraged to see the potential for e-learning, adopt a proactive and a positive approach, and are able to develop and build their confidence in the use of e-learning.
- Take into consideration differences in experience and use of e-learning in **different subject departments**, and any differences in attitude and confidence when targeting support to further develop e-learning use.

References

British Educational Communications and Technology Agency (2004). *ICT and e-Learning in Further Education: Embedded Technology, Evolving Practice*. *A Report to the Learning and Skills Council* [online]. Available: http://www.becta.org.uk/corporate/publications/documents/ILT%20in%20furthereducation.pdf.pdf [14 July, 2005].

British Educational Communications and Technology Agency (2005). *ICT and e-Learning in Further Education: The Challenge of Change.* Coventry: Becta.

Comber, C., Watling, R., Lawson, T., Cavendish, S., McEune, R. and Paterson, F. (2002). *ImpaCT2 – Learning at Home and School: Case Studies* (ICT in Schools Research and Evaluation Series No. 8). London: DfES.

Department for Education and Skills (2002). *Success For All: Reforming Further Education and Training. Our Vision for the Future* [online]. Available: http://www.successforall.gov.uk/downloads/ourvisionforthefuture-76-109.pdf [14 July, 2005].

Department for Education and Skills (2003). *Towards a Unified e-learning Strategy – Consultation Document* [online]. Available: http://www.dfes.gov.uk/consultations/downloadableDocs/towards%20a%20unified%20e-learning%20strategy.pdf [129 January, 2006].

Department for Education and Skills (2005). *Harnessing Technology: Transforming Learning and Children's Services* [online]. Available: http://www.dfes.gov.uk/publications/e-strategy/docs/e-strategy.pdf [14 July, 2005].

Finlayson, H., Maxwell, B., Caillau, I. and Tomalin, J. (2006). Impact of e-Learning on Student Immediate and End-Point Outcomes in Further Education. Unpublished report.

Foster, A. (2005). *Realising the Potential – A Review of the Future Role of Further Education Colleges* (Foster Report). London: DfES.

Harrison, C., Comber, C., Fisher, T., Haw, K., Lewin, C., Lunzer, E., McFarlane, A., Mavers, D., Scrimshaw, P., Somekh, B. and Watling, R. (2003). *ImpaCT2: the Impact of Information and Communication Technologies on Pupil Learning and Attainment. Full Report* [online]. Available: http://www.becta.org.uk/page_documents/research/report01.pdf [29 January, 2006].

Learning and Skills Development Agency and Sheffield Hallam University (2004). *The Developing Impact of ILT: Final Report* [online]. Available: http://www.nln.ac.uk/downloads/pdf/Finalreport_dec04_BM.PDF [30 January, 2006]

National Learning Network (2005). *National Learning Network* [online]. Available: http://www.nln.ac.uk/background.asp [14 July, 2005].

PricewaterhouseCoopers LLP (2004). *Moving Towards e-Learning in Schools and FE Colleges: Models of Resource Planning at the Institution Level* (DfES Research Report 601). London: DfES.

Appendix A: Profile of respondents

Table A1. Levels of qualifications currently taught

Qualification level taught	%
Entry level	12
Level 1	27
Level 2	58
Level 3	82
Level 4	25
Level 5 (including HE courses)	15
No response	3
N = 2295	

More than one answer could be given so percentages do not sum to 100
A filter question: all those who were working for qualifications.
Source: NFER Survey of college lecturers, 2005.

Table A1a. Predominant level of qualifications taught

Predominant level taught	%
Entry level	2
Level 1	4
Level 2	13
Level 3	51
Level 4	5
Level 5 (including HE courses)	4
No predominant level	4
No response	17
N = 2295	

A single response item
Due to rounding, percentages may not sum to 100
Source: NFER Survey of college lecturers, 2005.

Table A2. Types of qualifications currently taught

Qualification taught	%
GCSEs	16
AS/A2 levels, AVCEs	44
GNVQs	9
NVQs	16
National Certificates/Diplomas (e.g. BTEC)	46
Other vocational qualifications	25
Professional qualifications	15
Foundation degrees	12
Other	19
No response	1
N = 2295	

More than one answer could be given so percentages do not sum to 100
A filter question: all those who were working for qualifications.
Source: NFER Survey of college lecturers, 2005.

Table A3. Employment status of respondents

Employment status	Respondents %	Nationally in FE %
Part time (permanent or sessional)	21	62
Full time (permanent or sessional)	79	38
No response	1	
N = 2295		

A single response item
Due to rounding, percentages may not sum to 100
Source: NFER Survey of college lecturers, 2005 and LSC data.[6]

Table A4. Mean number of years teaching post-16: in total and at current institution

Number of years	Mean	Min	Max	Number of respondents
teaching post-16	12	0	40	2256
at this institution	9	1	40	2220

Numerical data
Source: NFER Survey of college lecturers, 2005.

6 Summaries of staff numbers and full-time equivalents (FTEs) employed in further education (FE) sector colleges in England from the 1994/95 teaching year to the 2003/04 teaching year http://www.lsc.gov.uk/National/Partners/Data/Statistics/StaffStatistics/StaffStatistics.htm

Table A5. Sex of respondents

Sex	Respondents %	Nationally in FE %
Male	34	41
Female	60	59
No response	7	
N = 2295		

A single response item
Due to rounding, percentages may not sum to 100
Source: NFER Survey of college lecturers, 2005 and LSC data.[7]

Table A6. Roles held by respondents

Roles held	%
Head of department/school or equivalent	21
Course leader	50
Coordinator of ILT/e-learning (in your department)	7
None of the above	27
No response	2
N = 2295	

More than one answer could be given so percentages do not sum to 100
Source: NFER Survey of college lecturers, 2005.

Table A7. Mean number of part-time and full-time teaching staff in total in the department

Number of staff	Mean	Min	Max	Number of respondents
Number of full- and part-time staff	19	1	250	466

Numerical data
A filter question: all those who were Heads of Department
Source: NFER Survey of college lecturers, 2005.

[7] Summaries of staff numbers and full-time equivalents (FTEs) employed in further education (FE) sector colleges in England from the 1994/95 teaching year to the 2003/04 teaching year http://www.lsc.gov.uk/National/Partners/Data/Statistics/StaffStatistics/StaffStatistics.htm

Appendix B: Details of factor analysis

Exploratory factor analyses were carried out to consolidate the data on the lecturers' questionnaire relating to lecturers' use of e-learning, their views on how much more effective they were as a result of using e-learning, and their perceptions of learners' use and effectiveness. Their views on the support received and sufficiency of access, and their overall attitudes towards, and confidence in using, e-learning were included in the analysis. These produced more robust measures of students' attitudes than a consideration of the individual items on the questionnaire alone. The factor analyses also allowed simpler analyses to be undertaken, comparing lecturers' attitudes with other variables (such as their subject area), than would have been possible if using each of the individual variables.

Factor analysis looks for variables and items that correlate highly with one another. The existence of such correlations between variables suggests that those variables could be measuring aspects of the same underlying issues. These underlying issues are known as factors. Thus, the aim of the factor analysis was to derive a smaller number of 'use' and 'attitude' composite variables from selected questions on the questionnaire which could be used to explore lecturers' experience of e-learning in further detail.

The factor analysis drew on responses to nine questions on the questionnaire. Items that appeared to relate closely to one another were grouped together as a scale, and after subsequent analysis 21 separate factors were identified relating to different aspects of lecturers' and learners' use of e-learning and lecturers' attitudes.

A description of the individual items on the questionnaire that made up each factor, and the reliability of the factors is presented below. As can be seen from this list of variables, some items that did not relate closely to the others in that factor were omitted, as they were measuring slightly different aspects of lecturers' use of e-learning or attitudes. It is also worth noting that items from a question do not necessarily appear within the same factor.

Lecturers' attitude towards e-learning

Factor 1 Lecturers **see the potential** of e-learning

- e-learning has the potential to stimulate better understanding
- e-learning has the potential to increase flexibility of learning provision
- e-learning has the potential to widen participation in post-16 education
- e-learning has the potential to tailor learning to individual learners' needs
- e-learning has the potential to improve how staff communicate with learners
- e-learning has the potential to equip learners more effectively for future employment
- e-learning has the potential to save lecturers' time by using online resources

Factor 2 Lecturers are **confident users** of e-learning

- Feel confident using e-learning to plan and prepare lessons
- Feel confident using e-learning with learners in the classroom
- Feel confident using e-learning to communicate with learners
- Feel confident using e-learning to track and monitor learners' progress
- (negative) I don't know where to start when it comes to e-learning
- learners expect lecturers to use e-learning

Factor 3 Lecturers are **proactive users** of e-learning

- (negative) e-learning is too time consuming to use
- I don't know what I would do without e-learning
- I can readily identify opportunities for using e-learning in my subject
- I am determined to use e-learning to its full potential
- I am enthusiastic about the use of e-learning in teaching and learning
- (negative) e-learning has had little impact on me
- (negative) e-learning has created more problems than it solved

Frequency of use of e-learning by learners

Factor 1 Learners use e-learning working independently and self-directed

- Learners use e-learning to submit work on time
- Learners use e-learning to organise their work
- Learners use e-learning to work independently
- Learners use e-learning to solve problems set by the lecturer

Factor 2 Learners use e-learning for **research and presentation**

- Learners use e-learning to present written work
- Learners use e-learning to create visual presentations
- Learners use e-learning to research topics

Factor 3 Learners use e-learning for **learning and understanding**

- Learners use e-learning to engage with the subject in the class
- Learners use e-learning to work collaboratively with their peers in the classroom
- Learners use e-learning to reinforce their knowledge

Factor 4 Learners use e-learning for **contact out of class**

- Learners use e-learning to catch up missed lectures
- Learners use e-learning to contact the lecturer with queries
- Learners use e-learning to work collaboratively with their peers outside class

Effectiveness of e-learning use by learners

Factor 1 e-learning helps learners be **more effective in working independently** and self-motivated

- learners are more effective submitting work on time
- learners are more effective organising their work
- learners are more effective working independently
- learners are more effective solving problems set by lecturers
- learners are more effective achieving their qualifications
- learners are more effective working at their own pace

Factor 2 e-learning helps learners to **develop their knowledge effectively**

- learners are more effective developing their understanding
- learners are more effective reinforcing their knowledge
- learners are more effective engaging with the subject in class

Factor 3 e-learning helps learners **access information and communicate** effectively

- learners are more effective catching up missed lectures
- learners are more effective contacting lecturers with queries
- learners are more effective working in class collaboratively
- learners are more effective working outside of class collaboratively

Factor 4 e-learning helps learners **research and present information** effectively

- learners are more effective presenting written work
- learners are more effective creating presentations
- learners are more effective researching topics

Frequency of use of e-learning by lecturers

Factor 1 Use of e-learning to **support learner-centred learning**

- Lecturers use e-learning to assist one-to-one in class
- Lecturers use e-learning to deliver differentiated lessons
- Lecturers use e-learning to manage target setting
- Lecturers use e-learning to test understanding
- Lecturers use e-learning to track progress

Factor 2 Lecturers use e-learning for **research and preparation**

- Lecturers use e-learning to prepare work
- Lecturers use e-learning research and access teaching materials
- Lecturers use e-learning to create materials

Factor 3 Lecturers use e-learning to **share materials** with colleagues and learners

- Lecturers use e-learning to make materials available to learners
- Lecturers use e-learning to make materials available to colleagues
- Lecturers use e-learning to communicate with learners outside of the classroom

Factor 4 Lecturers use e-learning to **teach and develop understanding**

- Lecturers use e-learning to present information in front of the class
- Lecturers use e-learning to develop learners' understanding of the subject

Effectiveness of e-learning use by lecturers

Factor 1 e-learning helps lecturers **prepare and teach** effectively

- lecturers prepare schemes of work and lesson plans more effectively
- lecturers research and access materials more effectively
- lecturers create materials more effectively
- lecturers present information in front of class more effectively
- Lecturers develop understanding more effectively

Factor 2 e-learning helps lecturers **support learner-centred learning** effectively

- lecturers assist one-to-one in the class more effectively
- lecturers communicate with learners outside of class more effectively
- lecturers deliver differentiated lessons more effectively
- lecturers manage target setting more effectively
- lecturers achieve more in less time more effectively
- lectures test understanding more effectively
- lecturers meet needs of learners' styles more effectively

Factor 3 e-learning helps lecturers **assess progress** effectively

- lecturers test understanding more effectively
- lecturers measure progress more effectively
- lecturers track progress more effectively

Factor 4 e-learning helps lecturers **share materials** effectively

- lecturers make materials available to learners more effectively
- lecturers make materials available to colleagues more effectively

Access and support

Factor 1 Lecturers have sufficient **access** to e-learning

- Lecturers have sufficient access to plan, research and prepare for lessons
- Lectures have sufficient access to share course materials with learners
- Lecturers have sufficient access to share course materials with colleagues
- Lecturers have sufficient access to communicate and provide support for learners
- Lecturers have sufficient access to monitor and assess learners' progress
- Lecturers have sufficient access to ensure that learners can use e-learning whenever required in the classroom
- Lecturers have sufficient access to ensure that they can use e-learning whenever they wish in the classroom

Factor 2 Lecturers have enough **support** to use e-learning

- Lecturers are satisfied with the technical assistance
- Lecturers are satisfied with the access to adequate and appropriate e-learning training
- Lecturers are satisfied with the time provided to attend e-learning training opportunities
- Lecturers are satisfied with the time to incorporate e-learning into their teaching and learning
- Lecturers are satisfied that equipment is reliable

Appendix C: Variables included in the regression analysis

A range of background, contextual and personal factors, and factors relating to the use of e-learning, were included in the regression analyses. These were principally drawn from the questionnaire survey of lecturers and supplemented with publicly available data contained in ALI and Ofsted reports. The variables are detailed below.

Variable	Label
FETYPE1	Sixth form college
Health1	health and social care
Business	business
RET1	medium retention in college
RET2	high retention in college
ACH1	medium achievement in college
ACH2	high retention in college
Science quality	ALI teaching quality score in science
Health quality	ALI teaching quality score in health and social care
Business	ALI teaching quality score in business
SIZE1	large college
SIZE2	medium sized college
Levels of qualification entry	lecturer teaches entry level
Levels of qualification 1	lecturer teaches level 1
Levels of qualification 2	lecturer teaches level 2
Levels of qualification 3	lecturer teaches level 3
Levels of qualification 4	lecturer teaches level 4
Levels of qualification 5	lecturer teaches level 5
PRED1	lecturer predominantly teaches level 1
PRED2	lecturer predominantly teaches level 2
PRED3	lecturer predominantly teaches level 3
PRED4	lecturer predominantly teaches level 4
PRED5	lecturer predominantly teaches level 5
GCSEs	lecturer teaches GCSEs
AS/A2	lecturer teaches AS/A2 level
GNVQ	lecturer teaches GNVQ
NVQ	lecturer teaches NVQ
National certificates	lecturer teaches national certificates
Other vocational qualifications	lecturer teaches other vocational qualifications

Variable	Label
Professional qualifications	lecturer teaches professional qualifications
Foundation degrees	lecturer teaches foundation degrees
Other qualifications	lecturer teaches other qualifications
Employment status	employment status 1 – part time, 2 – full time
Years teaching post-16	number of years teaching
Years at institution	number of years teaching at this institution
Q4ABand	number of years teaching ten years or more
Q4BBand	number of years teaching at this institution ten years or more
Sex	male /female
HOD	head of department
Course leader	Course leader
Coordinator ILT	ILT coordinator for department
None	no role other than lecturer
Staff total	number of staff in the department
VLE	College has VLE
Intranet	College has intranet
Extent VLE made a difference	having a VLE made a difference to teaching
Extent intranet made a difference	having an intranet made a difference to teaching
Support	lecturers felt sufficiently supported
Use supports learner-centred learning	Use supports learner-centred learning
Lec research and prepare	lecturers use e-learning for research and preparation
Sharing materials use	lecturers use e-learning to share materials
Teach and develop understanding	lecturers use e-learning to teach and develop understanding
Independent and motivated use	learners use e-learning to work independently
Ler research and present	learners use e-learning to research and present information
Learning and understanding	learners use e-learning to develop their understanding
Contact out of class	learners use e-learning to contact lecturers out of class
Access	lecturers feel they have sufficient access to e-learning facilities
Prepare and teach	lecturers are more effective preparing and teaching
Support ler centred learning	lecturers are more effective supporting learners centred learning
Assess progress	lecturers assess progress more effectively

Variable	Label
Share materials eff	lecturers share materials more effectively
Independent and motivated	learners are more effective at being independent and motivated
Develop knowledge	learners are more effective at developing knowledge
Access and communication	learners are more effective at accessing information and communicating
Research / present eff	learners research and present more effectively
Extent retention improved	retention improved in last 3 years
Extent achievement improved	achievement improved in last 3 years
Extent e-learning affected retention	e-learning has increased retention
Extent e-learning affected achievement	e-learning has increased achievement
Extent e-learning affected motivation	e-learning has increased motivation
Overall retention on courses taught – entry/level 1	% retention on entry and level 1 courses taught
Overall retention on courses taught – level 2	% retention on level 2 courses taught
Overall retention on courses taught – level 3	% retention on level 3 courses taught
Overall retention on courses taught – level 4 and above	% retention on level 4 and above courses taught
Overall achievement on courses taught – entry/level 1	% achievement on entry and level 1 courses taught
Overall achievement on courses taught – level 2	% achievement on level 2 courses taught
Overall achievement on courses taught – level 3	% achievement on level 3 courses taught
Overall achievement on courses taught – level 4 and above	% achievement on level 4 and above courses taught
Overall retention in department	overall retention in department
Helpful high attainment	how helpful to learners with high attainment
Helpful average attainment	how helpful to learners with average attainment
Helpful low attainment	how helpful to learners with low attainment
Helpful male	how helpful to male learners
Helpful female	how helpful to female learners
Helpful mature	how helpful to mature learners
Helpful 14-16	how helpful to learners aged 14-16
Helpful at risk	how helpful to learners at risk of dropping out

Variable	Label
Helpful cannot access facilities	how helpful to learners who cannot easily access facilities
Helpful disadvantaged backgrounds	how helpful to learners who are from disadvantaged backgrounds
Helpful others	how helpful to other types of learners
See potential	lecturers see the potential of e-learning
Confident user	lecturers are confident users of e-learning
Proactive	lecturers are proactive and positive about e-learning

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