Impact of e-learning on learner participation, attainment, retention, and progression in Further Education: report of a scoping study

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Summary of Findings

This briefing reports on a scoping study that investigated the implications for conducting a large study into the impact of e-learning in Further Education. Findings indicated that:

Key informants were positive about the effect of e-learning on participation, retention and attainment, with potential impact thought to occur by: creating a sense of engagement, excitement and involvement; the personalisation of the learning interface to individual needs; and by improving communication.

While technological infrastructure was now thought to be generally acceptable within FE, there was a view that there was still a need to develop teachers' skills and confidence in using e-learning across the curriculum, with implementation varying greatly between subjects and departments. Leadership and Management were seen as key to effective implementation.

Although it may be possible to show associations between effective implementation of e-learning and performance measures, the difficulties of isolating its distinctive impact from other influencing factors, and the consequent desirability of using a variety of methods of investigation, both qualitative and quantitative, are recognised.

Introduction

Recent and ongoing work has assessed progress in the provision of Information and Learning Technologies (ILT) to support e-learning in the UK Further Education (FE) sector. On the whole, this indicates that a strong infrastructure is in place with targets for student and staff access to Internet enabled computers being met in most colleges (Davies 2003, Powell and Davies 2002). Some investigations have been undertaken to review the extent of use of ILT for learning and teaching. These have, however, been at a relatively basic level, for example purely quantifying use of virtual learning environments (VLEs) for storing course documentation. Further, given the nature of data collection (in some studies one questionnaire per college) sufficient detail is not yet available to enable analysis of the impact of ILT or e-learning on such factors as attainment, retention and participation. In the light of the relative paucity of data in this area, and the complex nature of e-learning, it was decided to undertake a scoping study to determine the feasibility and possible strategies for investigating its impact in FE.

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Methodology

The Scottish Centre for Research into Online Learning and Assessment (SCROLLA) and the SCRE Centre at the University of Glasgow undertook a scoping study of the impact of e-learning on *participation, attainment, progression* and *retention* in Further Education. This study was intended to inform the development of a research design for a later large study of impact.

The study reviewed the academic and grey literature[4], and identified relevant existing data sets and appropriate variables within them. However, the bulk of the research focussed on key informant interviews and focus groups, with thirty key informants (KIs) being chosen from: national data gathering agencies; people with expertise in studying the impact of e-learning, or in studying attainment; as well as key players within the FE sector. Most key informants took part in a semi-structured interview either via telephone or face-to-face, with a small sub-group of FE staff participating in a focus group.

The remainder of this report outlines the generally agreed terms and definitions which were used throughout the study, describes a conceptual framework for e-learning which was used to structure interviews with key informants and gives the key findings which emerged from these interviews.

Terms and Definitions

While the measures used to assess participation, attainment, retention and progression have changed over time, and other interpretations of the terms of the study can be used, those listed below represent the general consensus and/or current practice as identified in the scoping study.

- ‘Participation’ can be thought of as the percentage of the whole population that takes part in education or training, or as the percentage of a particular age group that takes part.
- The preferred measure of attainment in FE colleges is the ‘success rate’, defined as that percentage of those who started a qualification who successfully obtain that qualification, excluding any students who have transferred to another course.
- The preferred measure of retention is the ‘completion rate’, defined as the percentage of starters who complete a course irrespective of their success in examinations.
- ‘Progression’ is less well defined than the other concepts here discussed. In one form ‘progression’ is a variant of ‘retention’. In another form it relates to the numbers of students who move on to a further course on completion of their existing course. Unlike the elements considered above, where data is nationally available either directly or in the form of proxy measures, data is not routinely collected on progression.

[4] i.e. literature which is not formally published in academic books and journals. It includes publications – reports, working papers, newsletters and conference proceedings, etc - issued by organisations such as government, business, and industry and academia.

- There was a consensus that "e-learning" should be broadly interpreted, being seen as *"any use of technology to support the learning process"* (KI 01), which could be used to support learning from traditional face-to-face through to a remote, purely online situation.
- In order to consider the impact of e-learning, we therefore need to consider a range of variables, such as those presented in the framework described below.

The Framework for assessing ILT in FE

There is an *"*absence of a widely established and practiced methodology by which rigorously to evaluate e-learning*"* (ALT, 2003). This is due, at least in part, to the difficulties encountered when defining e-learning. Definitions such as *"*learning in a way that uses information and communication technologies*"* (DfES, 2003) are difficult to operationalise because they cover such a wide and diverse range of technologies and practices.

Several frameworks have been suggested that attempt to break e-learning down into its constituent parts with the potential outcome of establishing measurable factors within each. ALT (2003) utilise a framework that consists of three inter-related areas:

- infrastructure;
- human and institutional development;
- and content and services.

Atwere (2002) provides an example of the application of the 'Transformation Model' developed by Massachusetts Institute of Technology (MIT), which indicates five stages of adoption of ICT/ILT (localised, co-ordinated, transformative, embedded and innovative). Atwere used this model as a basis for investigating current ILT learning activities in UK FE colleges. The views of senior management were gathered via a questionnaire on institutional policy and implementation strategy, with a second questionnaire on practice and provision completed by ILT champions. With responses from 185 colleges (37%), this study provides valuable background data. It does not, however, present a comprehensive coverage of all aspects of ILT.

Alternatively Lim (2002) proposes the use of 'activity systems' to provide the context of learning – highlighting that this can be influenced not only by the use of technology but also by classmates, class and peer rules, etc. The local context is thus incorporated, but as Lim notes a major limit of activity theory is "its narrow view of culture". Lim suggests this can be countered by considering the wider contexts in which an activity system is located, i.e. as well as the course of study, the school (or college), national education system, etc. This is valuable because it underlines the importance of context and the influence of factors outside of the classroom or e-learning setting. However, similar problems exist in practice to the approach outlined above, mainly that "the field still lacks sufficient methods and techniques that can be utilised directly to answer certain research questions of ICT in education" (Lim, 2002).

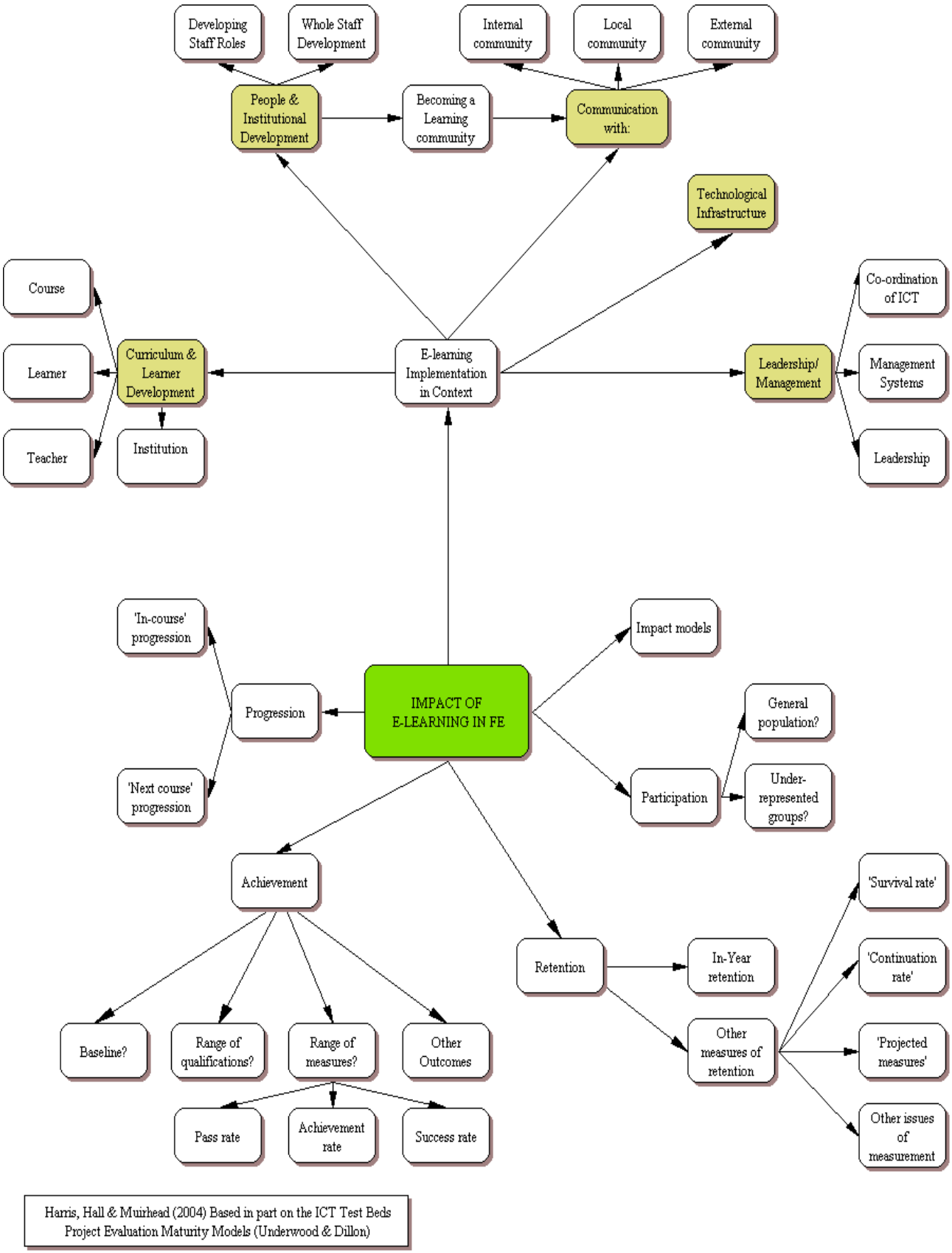
It was therefore felt valuable to provide our own framework for the scoping study; this is shown in Figure 1.

This framework was developed by drawing on previous work, including the ICT Test Beds Evaluation Project on Maturity Models (Underwood & Dillon, 2003). The Maturity Models focus on the maturity of e-learning in an institution, and include similar factors to those in the ALT model, with the

addition of: linkage, both within and outside of the institution; and the subdivision of human and institutional development into leadership/management maturity and workforce maturity. This model was used for the scoping study because it provided a comprehensive framework, which had been developed in consultation with a wide range of school, FE and ILT sector specialists. Furthermore, it was in use in research in the English FE setting .

The scoping study framework adapted the factors pertaining to e-learning outlined above, and incorporated categorisations of the other key terms within the study, i.e. participation, attainment, retention, and progression. After validation, through the project's Steering Group members and representatives of the key informant community, the framework was used to structure the literature review, and set the scene for interviews. It also provided a basis for coding interview transcripts (while the coding frame used was kept flexible in order to enable other areas to emerge) and for indexing the range of factors that a study of the impact of elearning on attainment in FE may need to consider.

Figure 1– Framework for the scoping study on impact of e-learning within FE



Findings: the views of informants

Impact of e-learning

The key informants' responses to questions regarding the impact of e-learning on participation, attainment, progression or retention in FE, are summarised below:

- Most were positive about the likely impact of e-learning on participation in education and training. E-learning could impact upon participation by creating a sense of engagement, excitement and involvement.
- E-learning could also enhance access through open and distance learning, and through assistive technology for those with special needs. For some students the technology could also provide a mask for a skills deficit, so that they may sign up for ECDL (European Computer Driving Licence), but really want to improve their reading skills. Frequent mention was also made of the increases in flexibility and choice for learners (and teachers) in terms of time and place of learning.
- There was some doubt about whether e-learning was currently attracting new participant groups, or whether it was simply providing an alternative method of delivery to groups that were already likely to participate.
- Although e-learning was perceived to have an impact on attainment, determining its contribution to attainment was difficult as it was only one aspect of learning and its effects did not operate in isolation from other factors that might influence and enhance attainment.
- It was possible that e-learning acted indirectly to promote attainment, and that it might also promote new forms of attainment which were not adequately measured by traditional assessment.
- The same aspects of e-learning which promote participation were also likely to promote retention. These primarily impact upon motivation and engagement.
- E-learning could also promote retention through improving communications between students, and between students and teachers.
- The quality of communication, and the student information provided by e-learning systems might also impact upon progression, but the key informants did not have a great deal to say about this aspect of potential impact.

Key informants also expressed views on the potential impact of e-learning on **learners, teachers, courses and institutions**:

- E-learning (and Information and Learning Technologies (ILT) in general) was thought to be motivational for learners. Interactivity, rapidity of response and objectivity of marking were all thought to contribute to this, as were enabling personalised support, learner-led pacing, new forms of access to learning, etc. By personalising the interface to specific groups' learning needs, *" dramatic effects"* could be obtained particularly with under-represented groups (KI 20), while the perception of online assessment as being impersonal and objective in nature was an

advantage for some students as they *"aren't embarrassed to fail in front of a PC"* (KI 23).

- Learners will vary in the Information and Communication Technology (ICT) skills they bring with them, and some will have acquired these skills outside formal education.
- Some aspects of e-learning may require a level of maturity in the students if they are to work without teacher support and make best use of the facilities.

□ Key informants felt that teaching staff need to develop confidence with technology if they are to use it successfully and this will require something of a culture change for many. Once this confidence is developed e-learning has the potential to promote large changes in teachers' approaches to teaching. For some, therefore the implementation of e-learning was seen as a catalyst for pedagogical and other forms of change. One respondent felt that it could even change teachers' entire approach to teaching and learning:

"e-learning is a monumental change not just of knowledge, content, but pedagogy and relationships between teachers and learners as well" (KI 15)

- Implementation of e-learning was thought to vary greatly between subjects and departments. Some subjects and departments were singled out for particular mention because of their use of e-learning.
- It was not thought that e-learning was yet having a large impact at the institutional level, occurring *"very much in pockets"*. Progress was thought to be patchy and often slow.

E-learning framework

This section provides discussion of the views expressed by key informants regarding the components of the e-learning framework presented in Figure 1.

- Leadership and management were seen as key to effective e-learning implementation. *"Lack of leadership"* among people in senior positions throughout the education system (Principals, finance officers, learning directors and local authority officers) was considered to be one of the most important barriers to effective e-learning implementation. Problems could include a lack of understanding (and vision) of what e-learning could do for their particular organisation, with insufficient recognition of the resources required (KI 24); as well as poor understanding of what e-learning can offer more generally, resulting in *"strategies, plans, and funding arrangements"* that do not exploit e-learning (KI 20).
- ILT needs to be integrated cross-institutionally in college strategies.
- Commitment, vision and enthusiasm at all levels, from individual lecturers to senior management to government, were seen as critical.
- Key informants indicated a need to identify whether policies pertaining to ILT are incorporated at ground level, e.g. in course or lesson plans.
- In relation to more practical aspects, management systems tended not to be fully developed or integrated, although some institutions were in the process of working towards having more integrated MLE (Managed

Learning Environment) systems (KI 03, KI 04).

- Technological infrastructure was seen as generally acceptable and it was felt that the focus should move towards its effective use in context
- The possibilities afforded by e-learning for communication with the learner were also seen as key. Flexible communication was felt to be an important factor for some groups of students, particularly isolated learners (KI 01).
- There was concern that the expectations of students (and potentially lecturers) may not be met as the technology continues to become more advanced and pervasive in their everyday lives.
- Training for staff not only in ICT skills but in the pedagogy of e-learning was seen as essential, both as part of continued professional development and within core initial teacher training.
- Establishing the extent of e-learning training may give one indication of the level of institutional commitment to e-learning implementation. Some institutions require any teachers of online courses to undertake qualifications in online teaching, in others ILT champions are encouraged to take ILT teaching qualifications.
- Sharing best practice among colleges on a range of e-learning issues, such as the further development of online assessment, was seen as vital for future curriculum development, as was keeping up with learners ICT expectations.
- At the teacher level, using ICT to add a dimension to lessons that would not have been possible otherwise was emphasised, as was the potential for sharing and reusing resources.
- The capacity for e-learning to enable a more learner-centred experience, allowing better differentiation of students was seen as a major benefit, particularly for disadvantaged groups, as was the possibility of more opportunity for independent learning, although realisation of the latter would be dependent on the ability of each student to work without close supervision.
- At the course level, identifying appropriate uses and contexts for e-learning was seen as an important consideration.
- It was suggested that models of funding e-learning could be improved by moving away from measuring the auditable evidence of delivering learning towards a more flexible approach.

Conclusion

Current definitions of e-learning may generally be too broad to provide a sufficiently clear focus for research. The framework developed during this study (see Figure 1) provides a means of breaking down the concept of e-learning into its constituent parts, to allow each to be considered in turn. The authors found the framework to be helpful for prompting discussion, covering all the main areas of e-learning practice, and believe it could be useful to

structure further research, as no single measure of e-learning is likely to be appropriate.

Problems also arise from trying to define and measure other elements. Changes in official definitions provided by agencies such as the Learning and Skills Council contribute to a lack of long term consistency in national data sources. Nevertheless, members of the FE sector place great importance upon these measures, as it is the data against which their own performance is measured through the external inspection process. Another problem emerging from use of these measures is that they often narrowly focused – for instance attainment measures tend to be focused on qualifications alone. The FE sector caters to a wide range of students, which is reflected in the diversity of its' provision. Many of these are adult learners have specific goals that are not related to certification, for example, being able to read well enough to help their children with homework, or to learn a specific skill to enhance performance at work or job prospects, without necessarily completing a qualification.

Given these problems, it is unsurprising that establishing a link between e-learning and the impact it has on such performance measures is difficult. Also, identifying the distinctive contribution e-learning makes is unlikely to be feasible due to the many factors that influence a learner's experience, including personal, social and institutional variables.

What is clear is that further development of the definitions and operational measures of the various measures is needed. Models, like the framework presented here, need to encompass the breadth of e-learning and thereby aid in providing the means to establishing any links. Perhaps focusing upon some of the reported benefits of e-learning, such as increased motivation and engagement, improved behaviour, and the development of other 'soft skills' such as interpersonal communication, could allow some of the indirect ways in which e-learning may impact on attainment, participation, retention and progression to be investigated.

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