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An 'objective- centred' approach to course redesign: using learning objectives to integrate e-learning

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ABSTRACT

This article describes the process of integrating e-learning into the M-level research methods course Research Synthesis for Policy and Practice. It explores an 'objective-centred' approach to course redesign. This entails using learning objectives as the basis for developing online activities and integrating technological tools. This article describes what this 'objectives approach' meant in practice and illustrates the importance of learning objectives for the redesign process. Embedding e-learning into the course provides new opportunities to meet existing objectives in an innovative, and hopefully more effective, way. Technological tools provide the scope to extend and develop new learning objectives to better meet the needs of students. Whilst objectives are central to the redesign, the article highlights the significant role played by other types of knowledge, namely tutor experience, student views and research.

INTRODUCTION

The growing popularity of e-learning in higher education is a sign of wider changes in the education system, society and technology. Prompted to reflect on what, where and how we teach, practitioners have begun to introduce new educational methods, such as e-learning, alongside more traditional approaches. A range of pedagogical, organizational and technical measures are required to ensure the successful implementation of e-learning (Jochems, Merrienboer and Koper, 2004). Various methods can be used to do so. This article focuses specifically upon an 'objective-centred' approach. This is explored in the context of the redesign of an M Level research methods course, Research Synthesis for Policy and Practice.

Educational objectives play a central part in the planning, development and evaluation of higher education courses. Referred to as both 'learning outcomes' and 'learning objectives', such goals encapsulate an explicit 'statement of what a learner is expected to know, understand and/or be able to demonstrate at the end of a period of learning' (cited in Bach et al, 2007: 81). An 'objective-centred' approach to integrating e-learning refers to the use of educational objectives as the basis for developing online activities and integrating technological tools.

The article will begin with a brief overview of the course, Research Synthesis for Policy and Practice, to provide the background to the redesign. This will be followed by a description of the rationale for integrating e-learning into the module. The main body of the article focuses upon the redesign process. This sets out the early stages of the process,

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followed by the 'objectives-centred' approach to redesign and then, lastly, the role played by other types of knowledge.

Background

Research Synthesis for Policy and Practice has evolved over a number of years into an M-level, 4-day training course, available to those with an interest in systematic research synthesis. The course provides introductory level teaching on systematic methods of reviewing the literature. For those unfamiliar with this approach, it 'attempts to identify research reports on a given topic and to examine them in explicit and standard ways so as to produce accessible, reliable and useful syntheses of research findings (these are sometimes called 'systematic reviews')' (MSc Evidence for Public Policy and Practice Handbook, 2007-8). The course is open to students with little or no prior knowledge of systematic reviews and teaches the principles and purposes of this approach, diverse methods within it and the key skills associated with the methodology. The learning objectives cover different cognitive levels (see Bloom, 1956). Towards the higher-level, one objective, for example, specifies that students should be able to evaluate the purpose of systematic research synthesis and its relevance to evidence informed policy and practice. At the lower end of the learning objective hierarchy, students should be able to understand and apply their learning about distinct stages of the research method.

The student body typically includes a mix of policy makers, practitioners, researchers and postgraduate students. These represent various sectors, including health, education and social care, and a range of organizations, including government departments, charities and professional bodies. Students' pre-existing experience and knowledge of systematic reviews vary. Similarly, their needs and expectations differ. The course aims to work with these differences whilst also providing a solid framework within which students can locate their learning.

The learning objectives, content and materials of Research Synthesis for Policy and Practice have been developed over time, primarily by a team of experienced systematic reviewers. Tutors collaborate with each other in the development and delivery of the course. A range of methods have been used to teach the module. These include lectures, group and individual activities together with class discussions. Prior to the redesign of the course, there was a small online component. The virtual learning environment Blackboard was used to store course material and host minimal online discussions.

Enhancing the course with e-learning

E-learning would provide a means of enhancing Research Synthesis for Policy and Practice for the benefit of both students and tutors. The main stimuli for the redesign included student evaluations, tutor feedback, and longer-term plans for capacity building and course development.

Student evaluations of the course, in all configurations, were generally very positive. Prior to redesign, the course was delivered in four workshops, a week apart, with recommended readings as homework. 83% of students had rated the interest of this course as 'good' or

'very good'. The face-to-face delivery and structure of the course were meeting expectations, as students reported that the 'course lived up to its advertised learning objectives'. Participants were particularly positive about the small group work, noting that 'practical activities and group interaction [were] particularly good' and 'more activities/group work [would be] welcome'. Concurrently, students expressed concern about the length of the workshops which were deemed to be too 'intense' and 'felt a little rushed at times'. Indeed, some students wanted more time to reflect on, and digest, their learning. Online components were seen to offer various means to address these issues. Integrating e-learning could provide the opportunity to increase the amount of interactive group work (online) without extending the time spent in the classroom. This would ideally provide greater time and space for students to reflect on their learning. The use of e-learning could also free up some of the workshop time by transferring individual, time-intensive tasks into the online space.

The incorporation of e-learning into the course was expected to offer other benefits to potential students. The nature of the student body, often in full time employment or commuting from a distance to workshops, meant that a redesigned course could provide greater flexibility and access to resources outside of the classroom. The course could provide learners with greater management over their own learning before, during and after the formal whole day workshops.

Embedding e-learning into the module could also offer benefits to tutors. Members of the teaching team have expressed an interest in knowing more about participants. Team teaching of the course means that tutors do not always have time within the classroom to familiarise themselves with students and their research interests. Activities in a virtual learning environment could provide the space for introductions to take place. Such exchanges would be an ongoing resource, available throughout the course. Tutors have also reported an interest in finding out more about the course content prior to, and after, the session they teach. Once again, Blackboard can display this information more explicitly, making it easier for tutors to access.

E-learning offered longer-term benefits for the Social Science Research Unit. The redesign of the course was viewed as part of the capacity building and development plans within the Unit. The process of embedding e-learning tools and techniques in Research Synthesis for Policy and Practice would develop expertise and experience of e-learning within the teaching team. This would provide a resource for further development of online resources. This fitted in with the longer-term goal to develop a fully on-line MSc.

Overall, embedding e-learning in Research Synthesis for Policy and Practice was seen to offer an array of benefits. E-learning was also particularly suited to this module. The process of carrying out a systematic review is mirrored by the mixed mode delivery of a course. Systematic reviews involve both face-to-face meetings and online work, using specially designed software. Reviews also require individual, pair and group work/ discussions. Therefore, integrating e-learning into the course will provide students with an indication of the type of procedures and interaction they can expect to experience in a systematic review.

THE REDESIGN PROCESS

The redesign of Research Synthesis for Policy and Practice was based on activities in three main areas: 1) meetings with the teaching team, 2) redesign sessions between one or two tutors and Dr Jara (Research Officer on the PREEL project), 3) PREEL staff development events. The learning, planning and discussions held within the early stages established the direction for the redesign. Course learning objectives became more significant in the later stages of the redesign process.

Early stages

1) Initial discussions with the teaching team generated a range of ideas and expectations for the redesigned course. On the one hand, our enthusiasm and energy produced some ambitious and innovative plans. On the other, the requirements of our funder, who subsidised the course, meant that we had to deliver face-to-face workshops. A 'blended' course, a combination of face-to-face teaching with online activities, was considered the best option. The e-learning component would add value by actively engaging students between workshops, better preparing them and providing a more direct connection between different subject matters. The initial discussions also identified areas of repetition in the course which we intended to reduce or eliminate.

2) Meetings with Dr Magdalena Jara were an invaluable part of the redesign process. Initial discussions provided the groundwork for the redesign. We began by casting a critical eye over the existing course. This highlighted key areas for development: the structure and logic of the course, the utilisation of time within the face-to-face workshops, the existing role of e-learning activities and preparatory work. These discussions helped to identify the best model for integrating technology into a blended module (Jara and Mohamad, 2007). The existing course already included a small amount of online support: Blackboard was used to store course materials, provide announcements and host a discussion forum. This resembled what Jara and Mohamad (2007: 10) call 'Online admin support'. The redesign of the course would alter the amount and type of learning activities and the purpose they served within the course as a whole. As well as providing online support, the new approach would primarily resemble the 'Follow up' model (Jara and Mohamad, 2007). Core activities would continue to take place in the classroom and e-learning would be used to 'follow up' student learning. There would also be elements of a 'Parallel' model. Online and class based activities would run alongside each other.

3) The PREEL staff development sessions exposed participants to a range of research projects that were both interesting and relevant. In the early stages, two of these sessions had a particular impact on the redesign process and outcome of Research Synthesis for Policy and Practice: 'E-Learners' experiences' (Daly et al, 2005), and the 'Pedagogical Planner' (Laurillard, 2006).

'E-Learners' experiences' shed light on student experiences and views of learning online. This provided an insight into the barriers to, and facilitators of, student learning online. Particular issues stood out: the ways in which students interact in group tasks, differing levels of learner engagement with online debates, and variation in student confidence using

online tools. Unfortunately, the research did not offer 'off the shelf' tools to deal with some of the concerns it raised but it did stimulate further thought and discussion in the redesign process. We aimed to develop techniques to pre-empt some of the concerns expressed by these e-learners.

The staff development session on the 'Pedagogical Planner' had a critical impact on the redesign of the course. This session focused on a web-based tool for designing and organising a course. The planner provided a way to connect different module topics with the overall course learning objectives and assessment tasks. Most significantly, this session highlighted the importance of being clear about the overall learning objectives for each session and using the appropriate pedagogical approaches to meet these.

An 'objectives approach' to course redesign?

Following the staff development session on the Pedagogical Planner, the course and session learning objectives became a driver for the redesign. In the first instance, this meant establishing clarity around the learning objectives, module aims and topics. As Gillham (1980: 8) notes, this is especially important for distance/ online learning:

> Above all else, we must be clear about our intentions when we teach at a distance; otherwise all that follows- the assessment, the writing, the teaching- is based on unsure foundations

Based on the principles of the Pedagogical Planner, a small exercise was undertaken to explore links between learning objectives, aims and topics for the module. This involved collecting all relevant information and analysing this to identify overlaps, differences and gaps. This was, however, not an easy task. Firstly, there were different written versions of the aims and objectives. Whilst an inevitable consequence of the development of the course over time, it was not apparent which were current objectives. Secondly, some of the course aims did not have explicit learning objectives attached to them. Thirdly, this was a long and intricate process. As the Pedagogical Planner was not yet complete and available for use, this exercise required intricate colour coding and detailed analysis of individual aims and objectives. The outcome of the process revealed that all module aims and learning objectives were covered by the current module topics. Yet, further objectives needed to be developed and/ or refined.

The initial interest in learning objectives, prompted by the Pedagogical Planner session, seemed to evolve into an 'objectives approach' (Gillham, 1980), a 'learning- outcomes-centred design approach' (Vogel and Oliver, 2006). This involves identifying learning objectives and then using these as the basis for selecting activities and technological tools. An alternative approach may be 'content driven' where the content (such as main theories, concepts and topic areas) are established first, then the course is designed around these (Bach et al, 2007). An 'objectives approach' has many advantages. It makes the teacher's intentions explicit to themselves and their students (Vogel and Oliver, 2006). They help the teaching team to plan the course in a more systematic way. In developing specific learning objectives, the teaching team have to give thoughtful consideration to the learning context (such as characteristics of the student group, media and resources) and so it is unlikely that course materials/content will be irrelevant or unfocused. Further, objectives form measureable components against which student learning, and the course as a whole, can be

assessed (Gillham, 1980). What did this approach mean for the process and outcome of redesigning Research Synthesis for Policy and Practice?

Firstly, the teaching team had to be clear about the learning objectives. This meant revisiting the objectives for each session. Vague or broad objectives were refined and new, more appropriate objectives were developed. This influenced 1) the structure, and 2) the content and materials for Research Synthesis for Policy and Practice.

1) The structure of the course was altered to reflect the chronological stages of the research method. Prior to redesign, it was not always possible to teach the stages in this sequence. Limits on computer availability meant that different phases of the review process, those that required internet access, had to be taught in the same workshop. Integrating e-learning would enable students to work on computers outside of workshop time and so learn about and carry out this stage at the appropriate part of the review process. Tutors would provide input in the face-to-face workshops and students could practice these stages online, and at their own pace. The data extraction stage of a review, the process of describing primary research studies using a pre-determined set of questions and answers, is an example of this. This stage of a systematic review would be explained within the workshop and then students would be asked to carry out parts of a data extraction as part of their homework activity. The data extraction is a time consuming process and so its completion between workshops frees up time for other activities within the workshops.

Using a virtual learning environment for Research for Policy and Practice means that the structure and intention of the course, and each set of activities, would be made more explicit to the students. As Vogel and Oliver (2006) note, this is very important for online learning. This would be achieved through various means. A calendar and programmes for each session would illustrate the links between face-to-face and online activities. It is clear that online activities follow up from and/or feed directly into the workshop. Similarly, different parts of the online activities, and the connection between them, would be clearly stated.

2) The focus on learning objectives allowed the teaching team to review the types of practical skills, theoretical understandings and knowledge that we expect students to have on completing the course. In order to do so, key members of the teaching team met to discuss the purpose and aims of the course. Each section of the course, the content and materials, was considered in detail by the committee. This was a time consuming process. The meetings spread over a number of months and required intensive and thoughtful work. Differing opinions and perspectives generated disagreements over learning objectives. These disagreements surrounded the meaning of the objectives as well as the actual wording of these statements. The phrasing was particularly important because it encompassed the intellectual level at which the objective was aimed (see Bloom, 1956) and explicitly conveyed course aims to students. Consensus around learning objectives was achieved through discussion, negotiation and input from the wider teaching team.

The review of learning objectives helped to enhance the coherence of the course and update the content and materials in line with developments in the field. The integration of e-learning helped to support these changes. Online activities between classes would enable

students to consolidate their learning and reflect on course content. These activities were developed to better engage with the learning objectives. Technological tools, such as wiki's or blogs, and web-based activities can assist student learning in a fast developing area. Thus, such tools can better reflect future developments in course content, providing online access to new research developments and greater flexibility for modifying activities.

The learning objectives of the course aimed to cover a range of intellectual levels (see Bloom, 1956). For example, within the topic of critical appraisal (one stage of the review method), students were expected to meet a higher-level objective: applying and reflecting on a framework for carrying out appraisal of primary studies. Lower level objectives included identifying common rationales for appraisal. By focusing on learning objectives, the teaching team had a good overview of each session and the whole course. This highlighted areas of imbalance, where learning objectives were pitched at an unreasonable level (whether too high or too low). These were rectified in the process of reviewing objectives. Online and workshop activities were then developed to better support students in meeting these objectives. The incorporation of e-learning would provide the tools for students to be able to reflect on, or analyse, an aspect of systematic review methodology between workshops. This would involve group discussion forums in Blackboard, individual or interactive tasks. Prior to redesign, such discussions had to take place within the classroom.

Research on e-learners' experience (Daly et al, 2005) and Dr Magdalena Jara's knowledge of e-learning informed the nature and type of online activities developed to meet learning objectives. It was at this stage that some of our initial plans for e-learning were ruled out. Some ideas would not help students to meet learning objectives. The timing of the activities was seen to be important. Complex online tasks would be delivered only towards the end of the course. By this time, students may feel more confident in the virtual learning environment, be more aware of their learning and the benefits of engaging in group activities/discussions. The online activities between sessions were built around individual and then pair/group work. These were set up to encourage interaction between students, vital to the success of online courses (Keefe, 2003). Strategies included, for example, asking students to act as a 'critical friend' for another member of their group, developing a group consensus on a given issue and establishing posting deadlines. These activities were also designed to have a direct input into the face-to-face sessions. Thus, it was clear that students would benefit from partaking in both elements of the course (Jara and Mohamad, 2007).

Setting the learning objectives for each session helped the teaching team to focus upon the type of preparatory activities that would be most useful for students. Sessions with higher level learning objectives required well thought-out activities to sufficiently prepare students for complex issues and material. Such pre-workshop activities involved, for example, skim reading research reports, and online group discussions around these reports using role-play. The time between face-to-face workshops was extended to provide adequate time for students to carry out this work.

The teaching team further developed the course materials. These would continue to be provided to students in hard copy, in a course pack. Slides, activity sheets and key readings

would be included. The virtual learning environment would be used to provide additional reading material together with electronic copies of the core research reports and slides. This online facility means that students can scan and navigate through articles more quickly using, for example, automatic searchers within documents. This is important for some tasks, mimicking the type of activity performed at stages of a systematic review.

An objectives approach provided a helpful focus for the redesign. This approach is, however, considered to have some drawbacks. Firstly, learning objectives have no clear source, or procedure for devising them. Secondly, once decided, the objectives and resulting course may be resistant to change. Teaching and learning can become predictable and uninspiring for students and tutors. Thirdly, the rigid structure created by objectives may inhibit open-ended problem solving behaviour. The objectives approach does not encourage students to develop high-level judgement or creative approaches to problems (Gillham, 1980). The redesign decisions for Research Synthesis for Policy and Practice inadvertently addressed some of these concerns. Alongside the course objectives created by tutors, students are encouraged to identify their own learning priorities at the beginning of the course. Embedding e-learning in the course provided the opportunity for students to express these objectives through an online discussion forum (before the first workshop). A 'Hello' discussion forum allowed students to express this information in a format they preferred. This, it was hoped, would also act as an ice-breaker for students who were nervous about posting online (Daly, 2005). This provides students with the opportunity to engage with the existing course objectives and propose their own. Tutors can see student priorities and so shape the course according to these, thus providing a degree of flexibility. Further to this, the learning objectives approach does not necessarily preclude higher-level judgements or open-ended problem solving behaviour. Throughout the course, students are encouraged to apply their learning to their own research questions/area of interest. Integrating e-learning into the course means that most of this work is carried out online. Activities held between workshops enable students to test their learning in the context of their own area, with the intellectual space to challenge, consolidate and reflect on their learning from the workshop.

Other drivers for the course redesign

Learning objectives were not the sole drivers for the course redesign. Other types of knowledge (see Pawson, 2003) – practitioner, user, and research – also played a vital role in driving the changes to Research Synthesis for Policy and Practice. These are briefly discussed below.

Practitioner knowledge was integral to many of the decisions taken for redesign. In the first instance, the learning objectives and course content originated from the team's experience and knowledge of teaching and researching. Tutors' previous experience of teaching systematic review methods guided the timings and teaching methods used in the workshops. Prior to redesign, the face-to-face classes were held from 9.30am-5.30pm. Tutors recognised that students' energy and concentration began to wane towards the end of these workshops. Student feedback supported these observations. The redesign of the module provided an opportunity to reduce the length of the face-to-face classes to 10am – 4.30pm. This was only possible because some of the work/activities were moved online.

Tutors identified that some sessions required more face-to-face time. Complex material in the course often required greater levels of tutor input. In order to take account of this, tutors were keen to extend the timing of these sessions. Concurrently, integrating e-learning into the course enabled students to be better prepared for such topics.

Student feedback, gleaned through evaluation forms, was one of the key factors that prompted the shift towards e-learning. This feedback also influenced the whole redesign process. There was, however, no systematic approach to incorporating student comments. A student representative was consulted in the course of the redesign. Her comments confirmed many of the key issues that were raised in evaluation forms (such as a desire for shorter days), as well as generating new concerns. Unfortunately, only key issues could be dealt with in this first stage of the redesign. Students had praised the course for its mixture of lectures, small group activities and discussion. As mentioned above, students were keen to have more activities. The integration of e-learning therefore provided greater scope to incorporate more group work (online) into the course. This helped to reduce the need for individual work, such as reading during the workshop.

Research knowledge also played an important role in the redesign. 'Embedding Evaluation' (Daly et al, 2006) highlighted the importance of meaningful evaluation for a course. Methods for evaluating the course need to be relevant to the current cohort of students (who may not be interested in improvements for the year ahead) and support their learning whilst generating rich and useful data for the module leader. The research provided various hints and tips for when and how to carry out such evaluation. Within Research Synthesis for Policy and Practice students are required to complete an evaluation form at the end of the course by our funders. As a direct response to the research by Daly et al (2006), the redesigned course would also include a discussion forum to glean students' views on the blended delivery of the course. Student views would be prompted by an open ended question, asking about the process of working online and face-to-face. This would draw parallels with the nature of working in a systematic review. This question would be asked midway through the course, encouraging students to post their thoughts in a discussion forum in Blackboard.

Research and guidance on accessibility in e-learning also fed into the redesign. The Techdis website[1] was used as a resource to check that the written materials for the course (online and in workshops) met accessibility guidelines.

More generally, the PREEL research review (Jara and Mellar, 2007) offered other insights for the redesign. The review highlighted the technological possibilities, from wiki's to blogs that were available for use within our courses. The review provided examples of how different tools had been used in courses. Whilst potentially fruitful, only a small selection of the tools was deemed appropriate for meeting the learning objectives of the course. These included an introductory 'quiz' and the 'RevieWiki'. The introductory quiz included a set of six multiple-choice questions housed within the survey function of Blackboard. This quiz provided a space for students to reflect on their previous experience of literature reviews. This also intended to highlight some of the steps of a systematic review and how it

[1] http://www.techdis.ac.uk

can differ from traditional approaches. The 'RevieWiki' was developed to provide a resource for students during and after the completion of the course. It was anticipated that students would use this Wiki to identify, define and explain terminology commonly used in the field of systematic reviews. Such a tool would encourage students to share their existing knowledge and demystify some of the jargon surrounding this method.

CONCLUSIONS

This article has described the process of integrating e-learning into an M-Level research methods course. Following the staff development session on the Pedagogical Planner, the redesign process began to take an 'objectives-centred' approach. Learning objectives became a central driver for deciding what and how e-learning should be incorporated into Research Synthesis for Policy and Practice. As a result, the course underwent changes in the content, structure, timing and evaluation. E-learning offered a wider array of methods for meeting learning objectives than traditional face-to-face approaches.

The 'objective- centred' approach offered many benefits for the process and outcome of the redesign. It provided a focal point and structure for the overall course and individual sessions. The use of learning objectives helped to monitor the progress of the redesign – it was apparent that sessions with vague or absent objectives required further work. The focus on learning objectives also meant that the process was explicit and documented, clear to all involved in the redesign. For these reasons, such an approach may be useful for other practitioners interested in redesigning or integrating e-learning into their course. It is important to recognise, however, that aside from learning objectives, other types of knowledge also played a significant role in the redesign. Tutor's experience, student views and research findings were central to directing the redesign. Teaching practitioners should be aware and explicit about which factors drive the integration of e-learning, and how these influence the process.

In line with the longer term plans to move towards a fully online version of the MSc in 'Evidence for Public Policy and Practice', future e-learning developments may include a gradual increase of online components in each of the core modules. For Research Synthesis for Policy and Practice, this would mean moving some of the main learning activities from the workshop to the virtual learning environment. In light of the experience documented in this article, an objective-centred approach would continue to help ground this process. Focusing on the aims of the course would mean that innovations in e-learning and technological tools do not sidetrack the redesign. It is easy to be distracted by technological possibilities that may not actually aid the learning process or achievement of objectives. However, an overzealous focus on learning objectives may also hinder the redesign. The development and phrasing of objectives is a time and energy consuming process. Discussions with the teaching team should take place at the start of the redesign in order to ensure that there is consensus on both the purpose and aims of the course, together with a clear understanding of the benefits offered by e-learning.

REFERENCES

Bach, S., Haynes, P., and Lewis Smith, J. (2007) *Online Learning and Teaching in Higher Education*. Maidenhead: Open University Press,

Bloom, B. (1956) *A taxonomy of educational objectives*. London: Longmans.

Daly, C., Pachler, N., Pickering, J. and Bezemer, J. (2005) 'A study of e-learners' experiences in the mixed-mode professional degree programme, the Master of Teaching'. Available at: http://www.wlecentre.ac.uk/cms/index.php?option=com_content&task=view&id=10&Itemid=9 (last accessed: 26 Feb 2008

Daly, C., Pachler, N., Pickering, J., Bezemer, J., Russell, J. and Wardle, J. (2006) 'The development of methods for eliciting learner narratives within a framework for embedded evaluation for fully online distance learners'. In http://www.cde.london.ac.uk/support/awards/generic2521.htm

Gillham, B. (1980) 'Thinking about objectives'. In G. Jones and R. Lewis (Eds.) *How to write a distance learning course*. London: Council for Educational Technology

Jara, M., and Mohamad, F. (2007) *Pedagogical templates for e-learning*, Occasional Papers in Work-Based Learning 2 London:WLE

Jara, M., and Mellar, H. *Research Review Report*, From Pedagogic Research to Embedded e-learning (PREEL). Available at:http://elearning.heacademy.ac.uk/weblogs/pathfinder/wp-content/uploads/2007/11/IoEPathfinderBriefings.zip (last accessed 26 Feb 2008)

Jochems, W., van Merrienboer, J., Koper, R. (2004) 'An introduction to integrated e-learning'. In Jochems, W., van Merrienboer, J., Koper, R. (Eds.) *Integrated E-Learning*. London: RoutledgeFalmer,

Keefe, T., (2003) 'Using Technology to Enhance a Course: the importance of interaction'. In *Educause Quarterly, 1, 24-34*

Laurillard, D. (2006) 'User-oriented support tools for learning analysis and design and Support Tools for Learning Analysis and Design'. Available at:http://www.jisc.ac.uk/whatwedo/programmes/elearning_pedagogy/elp_ioeplanner (last accessed 26 Feb 2008)

Pawson, R., Boaz, A., Grayson, L., Long, A. and Barnes, C. (2003) *Types and quality of knowledge in social care.* London: Social Care Institute for Excellence.

Vogel, M., and Oliver, M. *Design for Learning in Virtual Learning Environments- Insider Perspectives.* London:Centre for Excellence in Learning Technology.

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