
INITIAL FORMATIVE EVALUATION

FINAL REPORT

Document:	INITIAL FORMATIVE EVALUATION
Category:	Project Deliverable (2.1)
Version:	1.0
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Date:	31 June 2001

Contents:

INITIAL FORMATIVE EVALUATION	1
FINAL REPORT	1
Introduction	2
Method	2
The Interview Questions	2
The Interview Process	3
Analysing the Results – the Database	4
Analysing the Results - The Findings	5
Steps Already Taken	12
Interview Summary	12
Other Considerations	13
References	16
Appendices	17
1. Interview Script	17
2. Interview Questions	20
3. Figure 3 – Impression of ANGEL	24
4. Results from Brainstorming	25

Introduction

Work package two of the ANGEL project was conducted between January and March 2001. The objectives of the work package were:

- ◆ To research and analyse the current educational environment and wider context to establish the appropriate technical and organisational standards to adopt.
- ◆ To research and analyse user needs to establish both requirements and realistic goals for the project.

This deliverable (D2.1) forms the final report of the user needs analysis – a comprehensive specification of the cross-institutional, cross discipline requirements. It includes details of the method undertaken, the results achieved, the interpretation of these results and the recommendations for the project partners.

Method

It was decided that the user needs analysis would take the form of semi-structured interviews. The benefits of such an approach were a known target quantity, the opportunity for interviewees to raise points not included in the original question set, and the potential for in-depth analysis of topics that clearly sparked interest. Although qualitative information such as this is more difficult to analyse than quantitative data, the results are more topic specific, and the format is less restrictive for the interviewee.

Target interviewees were approached at four of the partner institutions: South Bank University, De Montfort University, University of Edinburgh, and Sheffield Hallam University. A mixture of one-to-one interviews and group interviews were used according to the wishes of the interviewees and the organisational logistics. A total of 47 staff members were interviewed and both academic staff from varying subject areas and support staff were represented.

The interviews were all conducted by Nicole Harris to ensure consistency of approach. The interviewees were all provided with the same background information about the project, and presented with the same introduction to the interview (see appendix 1).

The Interview Questions

In keeping with the concept of the semi-structured interview, the questions used were all open, with the exception of the questions used in section 1. Furthermore, the interviewees were encouraged to diverge from the structure of the interview, to ignore questions if they wished, and to ask their own questions at any point. This approach means that a question-by-question analysis of the results is not possible. The benefit of this approach is that each and every comment made in the interviews can be fed directly into the design work package.

Key concepts were repeated at several points within the questioning to ensure that all the necessary information had been covered by the end of the allotted time. In this way, the questionnaire allowed for some guidance for both the interviewer and interviewee.

It was originally hoped that the majority of information required would be obtained through question 1A (please see appendix 2) and the discussion that would inevitably surround it. This question was designed as an ordinal question in order to encourage discussion and response. It was hoped that this would make discussion easier for the rest of the interview. In practice, question 1A did not produce the response required. Although the question specifically asked the interviewee to respond for him or herself only, the interviewees consistently answered the question from another point of view. As the ANGEL research was concerned with direct individual opinion, this made the results invalid.

It was established early on in the interviews that interviewees were happy to ignore the first question, and entered into discussion freely and easily without the need for prompting. The interviewees felt more comfortable giving their own opinion when it could be couched directly in their own words as a response to an open question. The decision was made to leave question 1A out of the process.

The results for question 1B proved useful in that it was quickly established that most of the interviewees had heard of relatively few of the products available. Generally speaking, WebCT, Blackboard and FirstClass were known, coupled with specific learning environments adopted by the particular institution. When questioned further, the general feeling was that decisions about adopting learning environments were made at a high level, and not in discussion with the staff who are required to use them. This led to the idea that these systems were being imposed upon staff, which in turn led to an unwillingness to use the systems.

There was a marked difference in the level of response at each institution. The extent to which each of the different institutions had embraced the use of learning environments varied, and this had a marked effect on the knowledge and attitudes of the interviewees. While individual opinions and thoughts were freely expressed, many of the interviewees remarked on the problems arising from institutional policies and procedures and the effect that these had on the implementation and use of learning environments.

The noticeable conflict between the needs of the individual tutor, and the needs of the institution is applicable to the design of the ANGEL. It is vitally important that a clear perspective of the stakeholders is maintained throughout the design of the product.

Recommendation 1: consider each design aspect from the point of view of each stakeholder, here identified as Students, Academic Staff, Support Staff and Institution.

Recommendation 2: identify the cultural and operational differences of the partner institutions. The ANGEL should accommodate these differences within each.

The Interview Process

When considering the interview process, the question of bias must be raised. It is potentially true that only those members of staff who are actively engaged in using MLEs, or those who have a specific interest in them, volunteered to be interviewed. This would mean that the user needs analysis did not reach individuals who had little or no experience of using systems like the ANGEL, or those who were particularly negative about learning environments. An analysis of question 1B, however, would seem to suggest that a number of people were present who had

little or no experience of working with MLEs. The comments received throughout the interview process clearly demonstrated that many interviewees were reticent or unhappy about the use of MLEs in day-to-day teaching. It can be assumed that the interviews reached as fair and reasonable representation of staff as possible.

The response from the interviewees at all four institutions was excellent. Each group member made contributions, and high levels of discussion and debate were raised within the groups. Most interviewees expressed interest in the project regardless of scepticism or optimism.

Recommendation 3: contact should be continued with all interviewees. Thought should be given to using the same groups (as far as is possible) for summative evaluation.

As each interviewee was given the opportunity to comment on each question, there were some inevitable contradictory statements within the results. These contradictions are discussed further in the section on analysing the results.

Analysing the Results – the Database

When the results from the four interviews were collated, it was clear that some systematic form of analysis needed to be applied to the results. The qualitative data collected did not lend itself to systematic comparison in the manner of quantitative data but still needed to be logically ordered and analysed.

The decision was made to pull out each individual point raised and put them into a database. A total of 141 separate points were thus identified. A further four steps were then taken so that the data could be easily compared and contrasted:

1. Each point was assigned to a specific subject category. These categories were established as structure and navigation, support (technical), support (learning), design, usability, administration, implementation, content, assessment, requirements, and future considerations. The number of points in each category is shown in the table below. The use of these categories will allow the design team to pull out key reports at suitable stages of design. These reports will also be used during evaluation of the product to see if user needs have been met.

Category	Description	Number of Points
Structure and Navigation	Direct comments on potential structure and navigation of ANGEL.	12
Support (technical)	Support offered for technical and practical purposes.	20
Support (learning)	Support offered for pedagogical purposes.	18
Design	How the ANGEL system should be designed.	34
Usability	General comments about how the system may be used.	15
Administration	Comments regarding the administration of the system.	9
Implementation	Problems for institutions in implementation.	14
Content	Comments regarding adding content to the system.	2
Assessment	Comments regarding assessment of students.	8
Requirements	Requirements placed on institutions	4
Future Considerations	Ideas of worth that may not be relevant to ANGEL but may be to institutions and further research.	5
TOTAL		141

2. The importance of identifying stakeholders for the ANGEL has already been identified within this report. The second addition to the database was four stakeholder fields with drop-down menus. These were used to identify the stakeholders affected by each point—the most important being identified as ‘stakeholder1’ and so on.
3. The third addition was an ‘institutions’ field. In this field, the number of institutions that this point was raised at was identified. This field allows the points to be organised in terms of importance. The ‘4s’ (points raised at all 4 institutions) are arguable the most important concerns for users.
4. The final field added allowed for contradictions to be highlighted. Contradictory statements were cross-referenced within the database to allow for comparison and analysis.

Analysing the Results - The Findings

1. Question 1 B

In question 1B, interviewees were asked to name the learning environments they had experience of using, and to give their opinion of these environments. Of the 47 interviewees.

34 had heard of WebCT, of which 12 had used it.

33 had heard of Blackboard, of which 18 had used it.

32 had heard of FirstClass, of which 20 had used it.

These two systems were clearly the most well-known. The interviewees also identified the following environments:

CoMentor
BSCW
Campus.net / SCOSnet
Diverse (videostreaming)
Pathlore
Training Server
Traininsoft
Impetus
Profiler

Very few comments were received concerning these learning environments. The general opinion seemed to be that although they did the job required of them to some extent, they did not meet the needs of the interviewees. When questioned further with regard to the two most well known of the systems, the interviewees agreed that WebCT was the easier of the two systems to get to know and put into working practise, but the system quickly became limiting, especially in terms of presentation and layout. Blackboard was considered to be more flexible (although this did depend on the 'level' of Blackboard available to the interviewee) but was more difficult to master.

Most interviewees that had experience of using learning environments had only been exposed to one – that chosen by their institution. This made it difficult for the interviewees to comment on the relative benefits and weaknesses of such systems.

The comparison of WebCT and Blackboard identifies a key problem in the implementation of learning environments. A simplistic step-by-step approach to entering content and designing courses is necessary for staff approaching learning environments for the first time. As time passes and the course constructor gains experience and confidence in using the system, this approach can be restricting and frustrating. Although Blackboard has addressed this to some extent by offering the different 'levels', an institution is likely to buy only one of these levels.

Recommendation 4: the system must allow the course constructor to develop with slowly increasing levels of sophistication. This should be a graduated process, and not simply 'beginner' and 'advanced'.

The systems actually in use within the partner institutions are identified in D2.2.

2. The cross-referenced points.

As each individual point raised at the interviews was logged within the database, there are contradictory statements. Considering the amount of points raised (141) there are surprisingly few contradictions, with seven sets identified. These sets are outlined below.

Set One:

Statement 1: "There should be a strong sense of corporate style."

Statement 2: "A standard (corporate) interface is restricting to the individual."

Statement 3: "Having a common interface saves time through familiarity."

The decision to brand pages with corporate visual identity is one that has to be made by the individual institutions that adopt learning environments. Many of these institutions will have been involved in long debate over the importance and relevance of such branding with regard to existing web pages. It is important, however, that institutions accept the fact that there is concern and worry over the use of such universal branding and should consult staff accordingly.

Recommendation 5: the ANGEL should allow visual identity to be inserted, but should equally be attractive and functional without.

Recommendation 6: create a set of guidelines for institutions considering implementing learning environments. Enter the concerns over visual identity discovered through initial formative evaluation into these guidelines.

Set Two:

Statement 1: "Computers can't solve problems of communication."

Statement 2: "Could aid communication with students."

Anxiety over using the PC to communication spring from several different areas: there are concerns that users will misuse the system both in terms of abuse (through constant easy access and potential anonymity) and through lack of knowledge (such as 'flaming' in e-mail correspondence); there are the concerns about technology advancing too far that have been heard throughout history with the introduction of communication tools (land-phone, satellite, e-mail, mobile phone); there are also the concerns that use of such systems will replace all human contact. All of these attitudes towards communication via the PC arise from training and knowledge issues.

Recommendation 7: allow for training in communication via the PC.

Set Three:

Statement 1: "Do not use active help in the form of the paper-clip."

Statement 2: "Help should include push as well as pull technology."

These statements are more about how data is presented to the user than about the actual help given. Although there was an almost universal dislike for the active paperclip system in Microsoft among the interviewees, when questioned further it was found that they did like the help given by spell-as-you-go. It is not so much the use of active help that is dislike but the level of intrusion and disruption it causes.

Recommendation 8: implement active help in subtle ways such as the spell-as-you-go system. Do not use pop-up boxes, and test frequently with users.

Set Four:

Statement 1: “For students to have any control over the learning experience, they need to know how to learn. The system should teach them this too!”

Statement 2: “Students should control their learning.”

These statements clearly express the concerns over the issue of guidance within the ANGEL, which are discussed in more details in the ‘hot topics’ section of this report. One of the intentions of the ANGEL is that each time a student approaches the system he or she engages in a learning experience. The success of this will depend greatly on the content used by tutors and the extent to which the student engages with system.

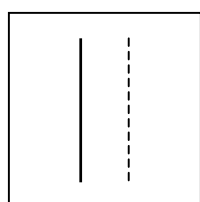
Recommendation 9: recommend that tutors build in courses covering learning skills.

Set Five:

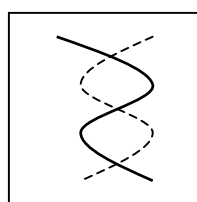
Statement 1: “Virtual and physical learning should operate side by side.”

Statement 2: “The real and virtual classroom should be integrated.”

Although at a glance these statements seem similar, they are exemplars for two very different attitudes towards real and virtual environments. Statement one suggests two separated systems operating at the same time, but not linked (figure 1 below). Statement two suggests the two systems working together to mutually support and enhance each other (figure 2 below).



(1)



(2)

— Real
- - - Virtual

Recommendation 10: make virtual reflect the real in terms of reflecting known institutional processes and practises within the virtual environment.

Set Six:

Statement 1: “Do not use flashy graphics.”

Statement 2: “Using flashy graphics can be more attention grabbing and encourage students ‘in’”.

Use of attention grabbing graphics has many implications: large graphics can slow down speed of access, cannot be seen in some browsers, and distract from the content. It is important that the system is visually pleasing, but also highly accessible. Graphics should be used to support and enhance teaching rather than as a selling point. Statement one was fully supported at all four interview institutions (see section on ‘the 4s’).

Set Seven:

Statement 1: “Academics should be made to use systems like this.”

Statement 2: “The choice to use these systems should be a personal one.”

These two statements highlight the difficulty of implementing a learning environment. Statement one reflects the need for the system to be used universally for it to be successful, and statement two reflects the needs of the individual. Institutions must implement such an environment only after careful discussion and consideration with all those who will be expected to utilise it. This has previously proved to be a difficult process, as Jan F. Scholl indicates: “logistical constraints mean that the people most directly impacted by the new materials – teachers and students – are too often not included in the development process (apart from a few committee representatives) and commonly find that the materials created lack quality and usefulness.” [1] Paul Shrivastava also points out that: “top management support for this effort is critical, because successful online learning communities often involve creative destruction of existing policies and cultural practices.” [2]

Recommendation 11: add institutional / personal conflict to guidelines for institutions.

3. The ‘4s’.

The points raised at all four interview institutions must be considered high priority. These statements are outlined below.

Statement 1: “Do not use ‘flashy’ graphics.”

Recommendation 12: use simple graphics for support of teaching.

Statement 2: “Self-customisation is important – must be adaptive (personalisation).”

Recommendation 13: despite Jacob Nielsen’s claim that personalisation is over-rated, it is clearly both wanted and needed and should be the driving force of the ANGEL. [3]

Statement 3: “Do not use active help in the form of the paperclip.”

See discussion in the section above.

Statement 4: “Help should be context-sensitive and directly related to problem.”

Recommendation 14: when help button is clicked, the information provided should relate directly and immediately to what is on-screen. Test frequently with users during design.

Statement 5: “These systems seem to create more course admin. Should concentrate on reducing time (especially in the short term).”

Recommendation 15: make administration of the system immediate, easy, and automatic.

Statement 6: “All mailing lists and discussion areas should be moderated by tutor acting as facilitator.”

Recommendation 16: add the tutor facilitator concept to guidelines for institutions.

Statement 7: “Student assessment depends on what you want them to achieve online – it must fit in with the desired outcomes of the course. These outcomes must be clear to the student.”

Recommendation 17: add ‘making desired outcomes clear to students’ to guidelines for institutions.

Statement 8: “Do students have a strong enough background in IT? They must be introduced to the system and trained.”

Recommendation 18: consider a study of average IT skills in HE students.

Recommendation 19: recommend that institutions test student IT skill level.

Statement 9: “Online assessment makes it difficult to validate student identity.”

Recommendation 20: investigate ways in which student authentication can be implemented into student assessment.

Statement 10: “Help assumes a good level of IT literacy to understand the information. You have to know the ‘lingo’ and how to ask for help.”

Recommendation 21: use appropriate vocabulary (thesaurus) for the system and test frequently with users.

4. The ‘hot topics’.

At the interviews, several topics raised produced high levels of discussion and debate amongst the interviewees. Although not immediately clear from the database, the following areas are those of concern for the interview sample:

Guidance:

A large portion of each interview held was filled with discussion concerning the element of guidance within the ANGEL, which has been flagged as an important part of the project with its inclusion in the title. These discussions included some of the major themes of online learning: synchronous and a-synchronous learning, the autonomous learner, and formative and summative evaluation. One argument centred on the need to avoid giving students the idea that everything they did was being watched and monitored (the ‘big brother’ concept) against the need for the tutor to act as a facilitator, specifically in on-line discussions, in order to prevent misuse and to aid students with difficulties. It was hoped that students and tutors would be able to build up a relationship both online and in class so that these issues became irrelevant.

Online assessment was largely considered in terms of self-assessment and this raised questions about the suitability of encouraging the concept of the autonomous learner. Many interviewees felt that human contact was the added-value reason for attending a university and that assessment of all work should be in discussion with a tutor. Countering this, however, were concerns about increasing time issues for tutors. With less contact time available, autonomous learning and self-assessment allow the student another option.

Concerns were also raised concerning the ability of such systems to take into account different learning styles. The personalisation of the system should take this into account, with different students needing different levels of help and guidance. A study by Margaret Martinez and C. Victor Bunderson demonstrates that support of learning styles is a key factor to successful personalisation in learning environments. Martinez and Bunderson identify four key learner groups (transforming learner, performing learner, conforming learner, resistant learner) and offers suggestions for catering for such learners online.[4]

This argument was succinctly summed-up by one interviewee who talked about the difference between a guided tour and a voyage of discovery. Early on in their student, students require a high level of help and guidance as they come to understand both the learning environment and their subject areas. This is where a 'guided tour' approach would be most appropriate. As the students progress, they will take on the part of the voyage of discovery and should be provided with less guidance. Furthermore, students require the opportunity to learn the skills needed to study in an online environment: "they have to be taught the information management skills, learning and self-monitoring (i.e. metacognitive) strategies which would enable them to take advantage of rich information databases and open-ended inquires." [5]

Incentive:

Most interviewees thought that there was very little incentive to use learning environments, both for themselves and for students. It was suggested that these systems generally demand too much of the staff members time, with very little reward. Although the interviewees felt that a good incentive would be for the system to actually save time, many felt that they would not mind the extra demands if they could discern a specific benefit for students.

Similarly, online elements of existing courses are generally optional for students at present. A variety of reasons for this were indicated, including lack of facilities and the fact that no credit was attached to the online work. It was proposed that if students were offered credit to use the system, much more development could be achieved. This again has precedence--Martin Ryder and Brent Wilson identify "clear payoff" as the most important factor in adopting online learning among students. Other issues identified by Ryder and Wilson are: overcoming fear / technophobia, cultural and personal compatibility (must match the candidate's lifestyle), proper scaffolding (good help and good access) and finding your voice online.[6]

Training:

A key problem of implementation was highlighted as a lack of training for both staff and students in using learning environments. Many members of staff felt that they did not have the necessary skills to create quality material for their students, and were offered only one training session in using the system and little support. It was also felt that IT skills and information retrieval skills were not built firmly enough into the student curriculum. For a learning environment to be successful a high level of support would need to be offered with high cost and time implications.

Plagiarism and cheating:

One of the most telling comments within the results is that "IT makes it easier to cheat." Although there is little evidence to support this, some of the concerns were: students can claim to have submitted online and blame it on the system; it is quick and easy to cut and paste; it is

difficult to verify a student's identity; students can download whole essays and hand them in as their own. The real problem can perhaps be seen in a second statement: "everyone has less experience with using online systems so they will be more of a worry and trusted less." It is, however, clear that institutions will not quickly adopt formative online assessment.

Pedagogical framework:

Some learning environments have taken steps to express a particular pedagogical framework for teaching using that particular system. In the interviews, it was felt that this was restrictive to the tutor. It was also felt that it would be impossible to try and support specific pedagogy as the principles applied are generally very specific to the tutor. ANGEL should not be about telling teachers how to teach. It should be about showing how easily online learning can fit in with principles they already practise and how it might add to and enhance these principles.

Intellectual Property Rights:

Staff expressed a lot of concern about putting content online. Some of the worries were that content would be plagiarised and that it would be difficult for them to assert their IPR. It was, however, pointed out at one of the interviews that IPR of work done during a staff member's time at a particular institution was often contractually claimed by the institution. In this scenario, the decision to put information online would be made by the institution. These concerns will not be relevant in ANGEL as only authenticated and authorised users will be able to access content.

Steps Already Taken

Brainstorming meeting.

With the conclusion of the interviews, it was important to get immediate feedback from all of the partners. With this in mind, a brainstorming session was held during which the results received were examined and expanded by the partners. The results of this session were considered of such value that they were entered into the database. These results have been separated from the main results by entering the letter 'B' in the institutions box for each of these results. A report containing these results is included in appendix 4.

Interview Summary

There is much that cannot be surmised directly from the database. Although each point made has its own value and can be fed into the design of the ANGEL at the points indicated by the categories, it is difficult to extract a full picture of how the interviewees imagined ANGEL functioning from the 141 separated points. This is where the benefit of the interviews being conducted by one person arises. The perceptions of the interviewer are as important as the evidence collected in the database in giving an impression of the larger picture. Figure 3 (see appendix 3) is an impression of what the interviewees wanted an MLE, and shows clearly how an MLE can go beyond existing learning environments, and how it can be integrated with 'real' teaching. The diagram was designed in response to the points raised in the interviews, the 'hot topics' from the interviews, the response of the interviewer to the interviews and the brainstorming session.

This diagram shows what an MLE should do, and not what ANGEL should look like or how ANGEL should work. The next step in the ANGEL project will be to identify and map out the exact role of ANGEL within this learning process.

Other Considerations

It is vitally important that already existing standards and specifications are taken into consideration when designing the ANGEL. The most important specifications are those provided by JISC which state that a learning environment must include:

- ◆ Mapping of the curriculum into elements (or 'chunks') that can be assessed and recorded.
- ◆ Tracking of student activity and achievement against these elements.
- ◆ Support of online learning, including access to learning resources, assessment and guidance.
- ◆ Online tutor support.
- ◆ Peer group support.
- ◆ General communications. Including email, group discussion and web access.
- ◆ Links to other systems, both in-house and externally. [7]

Recommendation 22: use JISC specifications in design.

Further standards must also be considered:

- ◆ Accessibility standards.
- ◆ Design standards.
- ◆ Metadata standards.

Recommendation 23: decide upon standards that ANGEL will follow and implement.

The recommendations from this report are as follows:

- ◆ Recommendation 1: consider each design aspect from the point of view of each stakeholder, here identified as Students, Academic Staff, Support Staff and Institution.
 - ◆ Recommendation 2: identify the cultural and operational differences of the partner institutions. The ANGEL should accommodate these differences within each.
 - ◆ Recommendation 3: contact should be continued with all interviewees. Thought should be given to using the same groups (as far as is possible) for summative evaluation.
 - ◆ Recommendation 4: the system must allow the course constructor to develop with slowly increasing levels of sophistication. This should be a graduated process, and not simply 'beginner' and 'advanced'.
 - ◆ Recommendation 5: the ANGEL should allow visual identity to be inserted, but should equally be attractive without.
 - ◆ Recommendation 6: create a set of guidelines for institutions considering implementing learning environments. Enter the concerns over visual identity discovered through initial formative evaluation into these guidelines.
 - ◆ Recommendation 7: allow for training in communication via the PC.
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- ◆ Recommendation 8: implement active help in subtle ways such as the spell-as-you-go system. Do not use pop-up boxes, and test frequently with users.
- ◆ Recommendation 9: recommend that tutors build in courses covering learning skills.
- ◆ Recommendation 10: make virtual reflect the real in terms of reflecting known institutional processes and practises within the virtual environment.
- ◆ Recommendation 11: add institutional / personal conflict to guidelines for institutions.
- ◆ Recommendation 12: use simple graphics for support of teaching.
- ◆ Recommendation 13: despite Jacob Nielsen's claim that personalisation is over-rated, it is clearly both wanted and needed and should be the driving force of the ANGEL.
- ◆ Recommendation 14: when help button is clicked, the information provided should relate directly and immediately to what is on-screen. Test frequently with users during design.
- ◆ Recommendation 15: make administration of the system immediate, easy, and automatic.
- ◆ Recommendation 16: add the tutor facilitator concept to guidelines for institutions.
- ◆ Recommendation 17: add 'making desired outcomes clear to students' to guidelines for institutions.
- ◆ Recommendation 18: consider a study of average IT skills in HE students.
- ◆ Recommendation 19: recommend that institutions test student IT skill level.
- ◆ Recommendation 20: investigate ways in which student authentication can be implemented into student assessment.
- ◆ Recommendation 21: use appropriate vocabulary (thesaurus) for the system and test frequently with users.
- ◆ Recommendation 22: use JISC specifications in design.
- ◆ Recommendation 23: decide upon standards that ANGEL will follow and implement.

It can be concluded that the interviews conducted for the initial formative evaluation were successful in that they have produced a high level of information and instruction for further workpackages. The interviews have also revealed essential information for institutions considering implementing learning environments and this information should be carefully disseminated to the necessary parties. The interviews have also revealed a firm basis for the further research and analysis that will be carried out throughout the lifetime of the project. It is hoped that the interviewees who kindly gave their time to the initial formative evaluation will be willing and able to share their thoughts, ideas, and concerns continually through the project.

Perhaps the biggest disappointment of the initial formative evaluation process was the lack of students who were willing to comment. Despite best efforts by the project team and the interview institutions, no students were willing to input at this stage. It is hoped that the valuable opinion of this group of stakeholders can be gained later within the project during usability testing.

The greatest achievement of this work package is the database of results that will prove invaluable to the project team as they start the design stage of the project, but will also be a useful tool for external stakeholders. The database results will provide information for institutions wishing to implement, for those encountering difficulties, and those wishing for

guidance in choosing learning environments, and it will also be a valuable tool for further research.

The clearest message for institutions that arise from this research is that the decision to implement a learning environment must be made at an institutional level, with all possible stakeholders consulted. It is also clear that such an implementation will be a slow process, and results should not be expected immediately. It will be a learning process for all involved.

References

[1] Jan F. Scholl "Using Technology to Improve Curriculum Development." The Technology Source, March / April 2001. <http://horizon.unc.edu/TS/default.asp?show=article&id=845>.

[2] Paul Shrivastava "Management Classes as Online Learning Communities." Journal of Management Education, 1999.
<http://www.esocrates.com/LearningResources/ClassroomOLCJME.html>

[3] Jacob Nielsen "Personalization is Over-Rated." Alertbox for October 4, 1998.
<http://www.useit.com/alertbox/981004.html>

[4] Margaret Martinez and C. Victor Bunderson "Foundations for Personalized Web Learning Environments." ALN Magazine Volume 4, Issue 2, December 2000.
http://www.aln.org/alnweb/magazine/vol4_issue2/burdenson.htm

[5] Albert Ip "Reuse of Web-based Resources in Technology-Enhanced Student-Centered Learning Environments."

[6] Martin Ryder and Brent Wilson "From Local to Virtual Learning Environments: Making the Connection." Paper presented at the meeting of the American Educational Research Association, San Francisco, April 1995.
<http://carbon.cudenver.edu/~mryder/aera95.html>

[7] JISC "Requirements for a Virtual Learning Environment."
<http://www.jisc.ac.uk:8080/pub00/req-vle.html>

See also:

JISC "Managed Learning Environments (MLEs) in Further Education: Progress Report." JISC Circular 7/00. July 2000.
http://www.jisc.ac.uk:8080/pub00/c07_00.html

Appendices

1. Interview Script

My name is Nicole Harris and I work a researcher on the ANGEL project. May I start by thanking you for agreeing to take part in this interview / focus group. I hope to take up no more than an hour of your time.

<SLIDE> ANGEL stands for Authenticated Networked Guided Environment for Learning, and the project partners are London School of Economics, University of Edinburgh, De Montfort University, South Bank University, EDINA, and Sheffield Hallam University.

In order to explain the intentions of the ANGEL project, I would ask you to consider the following scenario:

A typical student should need to access many pieces of information each day, and it is true that he or she could expect to be able to find most of this information on the Internet. A student, therefore, might visit a computer lab after a lecture to retrieve the following information:

During the lecture, the lecturer mentioned that the lecture notes could be found on his staff pages. The student finds these quickly, but then wishes to find the reading list for this course because an assignment is due. At this particular University the library holds all the reading lists for courses. These are available on line, but the student now has to visit the library web pages to retrieve them.

The lecturer has asked the student to look at a past exam paper question for the next assignment. These are held by registry – but the student is not aware of this. He or she spends several minutes searching the university web pages looking for them. Once more, these are available online, but are difficult to find.

The student can now begin his or her research, which means accessing several online databases to identify useful resources – remembering passwords and URLs for each individual database. A web search would also be useful, but the student cannot remember which search engine was recommended. The student does know that the lecturer created a tutorial concerning searching the Internet, and so returns to the lecturer's staff pages. Here, he or she can access a separate learning environment created by the lecturer.

The student now has several windows open and is trying to flick between the advice available from the lecturer's tutorial, using the search engine, and using the bibliographic database. He or she is also not quite sure why both of these styles of searching should be utilised. An explanation could probably be found on the library web pages, but that would be another screen open.

Finally the student becomes disgruntled and decides that good old-fashioned books are the best way forward. However, he or she did not print out the reading list from the library web pages, and then there is the online Opac to navigate!

At the back of the student's mind is the idea that they would like to get some information about careers – but right now the last thing they want to do is try and find this information.

In this scenario both the lecturer and the student have a positive approach to utilising electronic information. The student has showed willingness to search for the information needed and everything the student needs has been made available in one place, apparently . . .

Accessing resources using one specific tool (i.e. the PC), is not the same as having all the resources “in one place”. Information on the Internet is widely dispersed, just as the physical University has information on different floors, and at different sites. These electronic resources cannot be put “in one place”, but they can be organised, managed, and monitored, and access to required resources can be simplified. This would make interaction between the resources more fluid and meaningful.

The ANGEL project intends to address many of the difficulties encountered in this scenario by providing a model for the presentation of services and resources offered by an individual learning institution to its users or subscribers. <SLIDE> One of the key aspects of the ANGEL is integration – between resources traditionally perceived as “library resources” (the open hybrid library, not directed specifically at any particular course of study) and learning materials (the closed virtual learning environment, produced and directed specifically as resources for one or more defined course of study). This will take into account resources created in-house, those created for the academic community, and other commercial and non-commercial hosts. The project will explore deep level integration and interoperability between the resources.

In conjunction with the integration that will create the Guided Environment for Learning, the ANGEL project intends to provide network authentication that will allow the user immediate access to the resources they are authorised to access. On a simplistic level, this would mean entering only one password when entering the ANGEL site or service.

As well as improving the service offered to users, the ANGEL project intends to address the needs of the staff and administrators in terms of time commitment and workload. Using the ANGEL, educators and librarians will be able to design courses that effectively combine different material formats, track student progress through all resources, and offer support and guidance across network sources.

Both parties will be able to monitor and manage the learning experience, with an emphasis on customisation and personalisation based on course needs, current progress and personal preferences.

The purpose of this interview / focus group is to help us design a system that meets user requirements. In order to facilitate discussion, I have prepared several questions, based around the following topics <SLIDE>:

1. Content and Interoperability
2. User Support Methods and Interface
3. Practical Application

4. Administrative Requirements

Please feel free to ignore questions, ask questions of your own and put forward any ideas or thoughts you may have. Please be as imaginative as you like in describing ways to make such a system work for you.

I intend to record the session so that I can participate fully without having to worry about notes. If anyone objects please let me know!

Your thoughts and opinions will be valuable to us throughout the lifetime of the project. I hope that you will comment on the copy of the report that I will send to you, and look forward to showing you the completed product.

2. *Interview Questions*

Content and Interoperability

QUESTION 1A:

Please consider the following resources. If these resources were easily accessible in the ANGEL, how often would you utilise them?

Frequently

Occasionally

Once Only

Never

Course “Paperwork”:

Lecture Notes

Course Timetables / Calendar

Reading Lists

Assignments (and submission of)

Exam Papers

Personal Area:

Student Homepages

Area to Save Work

Bookmarking

Active Areas:

Discussion Area (student/ staff; student/student)

White Board / Notice Board

E-mail

Library Resources:

Library catalogue

“Check your own record”

InterLibrary Loan notices

Databases (online)

CD Rom

Saved searches

E-journals

Training materials

External Resources:

Web search engines

Free web resources

Teaching Resources:

Online Courses

Training Material

University Wide Material:

Careers Advice
Job Shop
Book Shop (old / new)
Student details (registry)
Student Union
Rules and Regulations
Local Intranet
Alumni / Graduation information

Any others?

QUESTION 1B:

The following are all Learning Environments. Have you heard of them? Have you used any of them? Are there any that you particularly like / dislike? Why?

WebCT
Blackboard
TopClass (WBT)
First Class
LearningSpace (Lotus)
The Learning Manager (Campus America)
COSE (staffordshire University)
CoMentor
Colloquia (Bangor – formally Learning Landscapes)

Other Considerations:

Content classification, metadata, thesaurus, authentication and authorisation,

QUESTION 2A: What is visually important when entering a system such as the

What puts you off? Is colour / style important? Or is content “king”?

QUESTION 2B: How “Guided” should the Guided Environment for Learning be?

How much choice should be immediately available? Would you like to be able to access all resources at any one time? Would you like “path” options to follow a specific learning experience? Are there any other navigational issues (back / forward, site map)?

QUESTION 2C: How would you like to receive help from the system?

Do you prefer active or passive “help” from the system? Compare to the Microsoft environment – which help techniques are helpful / unhelpful (pop-up paper clip, index search). Can you think of examples of good online help?

QUESTION 2D: What medium should help be available in?

Interactive tutorials / spoken instructions, written guides. How does online help compare to human interaction?

Other Considerations:

Back-end versus front-end

QUESTION 3A: How would you envisage using the system?

On own

At same time as lecturer / other students instead of a face-to-face tutorial

At same time as lecturer / student as well as face-to-face tutorial

Why would it be important for you to use the system in this way?

QUESTION 3B: What key factor would make the system attractive to you?

Saves time (administrative burden)

Based on known pedagogical principles

Ease of use

Resource base (size)

Resource base (quality)

Improve communication (with whom?)

Other Considerations:

Pedagogical standards

Administrative Requirements

QUESTION 4A: Who should control the learning experience?

The class as a whole

The tutor

The individual student

What implications would that choice have?

Should administrator have "access all areas"?

QUESTION 4B: Who should control content?

Can students add materials? Have own homepages? Annotate information?

QUESTION 4C: What information could the system usefully provide an

Tracking student behaviour / progress.
Time spent online per student
Comparison of progress within the group
Trouble spotting
Grades
Group discussions
Liaison with library / bookshop

QUESTION 4D: How could the system be used to assess student's work?

Submitting essays / online exercises
Credit for using system?
How fit in with normal assessment?
Self test of material comprehension

Other Considerations:

Data protection, authorisation, security, granularity, content management.

3. *Figure 3 – Impression of ANGEL*

Pre-Experience	Learning Experience			Post-Experience
<p>Content Gathering: Lecture Notes Course Notes Syllabus Course Resources</p> <p>Training: Staff Student</p> <p>Student Preferences: Set</p>	<p>Pre-Event: Student registers for courses online and is automatically placed on class lists, signed-up for e-mail groups</p> <p>Timetable for courses added to student's calendar</p> <p>student sent pre-event information</p>	<p>Event :</p> <div style="border: 1px solid black; width: 100px; height: 50px; margin: 10px auto; text-align: center;">EVENT</div> <p>This event can be: physical lecture MLE course video-streaming</p>	<p>Post-Event: Student returns to ANGEL for Assignment Tailored resources Assessment</p>	<p>Log Analysis: For tutor For systems</p> <p>Marking: Reaction to assessment which guides student to next learning experience. This can be automatic or event-driven (i.e. tutor clicks something).</p>
		<p>← Use of Chat →</p>		

Student also has access to bookshop, student union, events (fed into calendar), e-mail, and news.

4. *Results from Brainstorming*

- ◆ The problem of student expiry must be considered, including when and how to remove users and the work they have produced.
- ◆ The system needs to be able to save bookmark changes.
- ◆ Should users be allowed to be anonymous in discussions?
- ◆ The system should have project management tools.
- ◆ The system should present the “most relevant” version of a resource.
- ◆ The following should be included: student services, student union, sports, events, and personal diary with subject layers.
- ◆ The system should monitor resources and identify those that are not be utilised.
- ◆ The system should allow for searching multiple types of resources.
- ◆ WAP access should be considered.
- ◆ Feedback is important.
- ◆ Consider a feature for scoring data.
- ◆ There should be a material back-up feature.
- ◆ There should be an editing environment for course content.
- ◆ Current awareness is important, including: URL / URN updates, and auto-repeat stored searches.
- ◆ The system should allow for mediation between users and remote service providers such as bookshops and publishers.
- ◆ The system will put appropriate levels of barrier in place to limit access to authorised users to a variety of resources, matching security level to resource value.
- ◆ The system should minimise the level of additional costs resource suppliers need to invest to support / interoperate with the system.
- ◆ The system should support levels of identification in order to support monitoring and reporting of valid licensed resource use.
- ◆ The primary mode of authentication should be by authenticated user identification rather than by location based authentication.
- ◆ The system should have an option for on-screen user validation (e.g. photographs).



**Authenticated Networked
Guided Environment for Learning**
