

Information Environment

Formative Evaluation

EDNER+

Final Report

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Executive summary

- The JISC is regarded as an organisation which has achieved high standards and has provided a concentrated core of experience, leadership and expertise to the HE and FE communities. This high regard is particularly evident amongst those responsible for their institution's networked infrastructure. The response to the JISC's recent involvement in FE has been overwhelmingly positive.
- The JISC Information Environment development strategy is also known and understood, but only by certain groups, most notably librarians and information managers. The most senior managers feel disengaged from the JISC IE strategy and have only a hazy perception of what it might be. At the same time, it is evident that they have concerns which the JISC is already addressing through its IE activities, but that knowledge of much of the work which the JISC is carrying out on behalf of the HE and FE communities is not reaching this particular group. We recommend that the JISC investigates ways of improving information flows to senior strategic managers, as we believe such communication would be welcomed, and would benefit all parties. There is little evidence too that the concept of the IE has reached tutors and learners, even when the JISC services and collections are known and used.
- FE Colleges appear to have many unmet needs for online resources and would welcome the development of new resources targeted specifically at these. However, they are severely constrained by their low budgets, and perhaps do not yet understand the cost involved in developing, maintaining and providing online resources. As the JISC makes decisions about future development and provision for the FE sector, it will be important to ensure that collections and services can be supplied at a price which the FE sector can afford to pay. In addition the JISC might usefully consider how it could support FE middle managers in their efforts to ensure adequate levels of funding are available for the purchase of online resources and services.
- There is general lack of clarity about how the JISC relates to other organisations such as the funding councils, UKERNA, FERL and Becta, and to initiatives such as the development of the RLN. This has caused some concern that, nationally, initiatives are being duplicated and resources wasted. We understand that the JISC is making efforts to 'join up' this landscape, but the academic community is clearly not aware that this is so. We consider it imperative that the JISC

remedies this situation as quickly as possible with carefully targeted publicity, in order to prevent damage to the JISC's reputation.

- There was little enthusiasm for discussion of middleware and shared services developments, suggesting perhaps a lack of engagement with these initiatives. We consider it important that a cross-community group of interested parties – and not just those already engaged in JISC-supported activities - is established to ensure that this work is taken forward in tandem with institutional thinking and strategy, and that institutional and JISC IE architectures remain compatible.
- We have considerable concerns about how the JISC defines, selects and presents 'high quality' information resources to the user. We recommend that this is an area where further study should be undertaken.
- It is clear that for students, particularly undergraduates, the search engine predominates as an information seeking tool. Their ability to discriminate between online services and resource types is poor and is measured against their experiences of search engine use. There does seem to be some evidence that as their learning progresses their use of academic resources grows, but the baseline for new entrants appears to be an expectation that the search engine will provide for their needs. It is notable that some FE Librarians are reluctant to use JISC online resources because they lack training in their use, and therefore do not feel competent to cascade such training down to tutors and learners. There is a clear need therefore not only for generic information skills training, but also for training in particular resources targeted at these two groups. We suggest therefore that all JISC services are supported by substantial training materials, to ensure that students, tutors and library staff use them to their best effect.
- Levels of awareness of JISC services are mixed, and many students and teachers in both HE and FE are unaware of the services on offer. Those who are aware tend to translate this awareness into use. There is some evidence that electronic resources are helping to change the way in which teaching is carried out while students clearly benefit from the availability of these resources. The impact of the JISC IE is affected by subject and disciplinary differences in both HE and FE. This finding reinforces those of the EDNER project. We recommend that JISC investigates more fully the possible impact subject and disciplinary differences may have on the use of the IE, and on digital resources more generally, in teaching and learning.

- The take-up and use of 5/99 project outcomes has reinforced our view that a culture of usefulness has to be encouraged by the JISC in which projects build into their ongoing development engagement with the teachers and learners who are potential users. It was also clear that ongoing pedagogical and technical support is essential beyond the lifetime of the project itself.
- We suggest that there is now ample evidence that formative evaluation at the Programme and/or IE level produces worthwhile insights and we would recommend that mechanisms be found to allow this kind of engagement to continue.

Introduction

This document forms the final report of the EDNER+ Project which, between August 2003 and July 2004, undertook the formative evaluation of the development of the Joint Information Systems Committee's Information Environment. EDNER+ was the natural successor to the EDNER project previously undertaken by the same joint project partnership of CERLIM¹ and CSALT². It brought together a team of staff who were closely involved in the EDNER project, the evaluation of the DiVLE programme and the EFX project, and thus brought experience and continuity of understanding along with long term familiarity with JISC Programmes and the JISC Information Environment.

Unlike EDNER, EDNER+ addressed both the Higher and Further Education communities. The CERLIM and CSALT team had limited previous experience of working with Further Education Colleges, so the decision was taken to appoint an FE Adviser to the project. His help proved invaluable. He quickly showed EDNER+ staff that the FE community organised the business of education in a very different way to that with which the team was familiar from the HE model. Not only was their curriculum quite different, but the range of abilities of their student body was much more diverse, the employment patterns and job roles of their staff unlike those in HE institutions, and their access to resources such as ICT and library resources severely constrained. EDNER+ was able to undertake three major studies in FE Colleges, and we hope that these will contribute to the JISC's emerging understanding of this community.

EDNER+ Processes

EDNER+ activities were organised into two strands. The first was new work which complemented and extended work carried out in EDNER. This work included

¹ CERLIM is the Centre for Research in Library & Information Management at the Manchester Metropolitan University

² CSALT is the Centre for Studies in Advanced Learning technologies at Lancaster University.

- documentary analysis and close liaison with IE Programme Managers to inform intelligence gathering
- interviews with a range of stakeholders in both FE and HE at senior and junior management levels to determine the impact which the JISC IE had made upon the planning and management of their institutional information environments
- an expert workshop with the teaching community held at an international conference
- usability testing of eighteen interfaces in the JISC IE presentation layer
- surveys of staff and students in FE and HE to assess the impacts of the IE's strategy and development upon learning and teaching, scholarly communication and working practices in UK HE and FE
- dissemination activities including the online publication of workpackage reports on an EDNER+ website

The second was 'carry forward' work. This completed activities undertaken in the EDNER project which finished at the end of July 2003. The planned work included:-

- the production of public versions of EDNER deliverables in keeping with changes in JISC policy regarding the publication of workpackage reports and other deliverables, while respecting the confidentiality of informants in JISC, the projects and the wider community
- user testing of the emerging SPP developed portals to determine user acceptance and the suitability of the user interface
- a review of portal software platforms being used by SPP and other portal developers
- a review of information environment developments worldwide
- the further dissemination and publication of EDNER work
- further usage assessment case studies of a number of 5/99 projects whose completion had been delayed beyond the end of EDNER.

Interactions with the JISC IE Programmes and Projects

Because EDNER+ was a natural continuation of EDNER it was managed within the JISC Development Programme. The Learning and Teaching Programme, which funded the

original 3-year EDNER project, drew to its close as EDNER+ began, and a summative evaluation of that Programme was commissioned. Many of that Report's findings echoed what the EDNER project, in its formative evaluation, had found.

As in EDNER, EDNER+ did not work in isolation from the other JISC development programmes. Indeed there was regular and extensive contact with the Programme Managers of FAIR, X4L, Shared Services, Portals and Presentation, and Digital Libraries in the Classroom, partly through EDNER+ Progress Meetings and partly through invitations to attend and contribute to Programme meetings. These proved a particularly fruitful way of learning about and understanding emerging issues which were impacting upon IE development, and illustrated that many of these were common to several programmes. In addition EDNER+ undertook an analysis of programme documentation such as project plans and biannual reports and monitored outputs mounted on project websites.

An additional activity was a survey of Project Managers. This was facilitated through Programme lists and elicited twenty-eight responses, many of which are summarised in the issues paper, 'Institutional Repositories for the Research Community'.

None of these activities could have been carried out without the help of the Programme Managers, which was always promptly and willingly given, and to whom the Project Co-ordinator is particularly indebted.

Report structure

This Final Report is structured around key themes which were chosen at the planning stage to help steer the thinking and activities of EDNER+. At the beginning of each section or subsection the title of the EDNER+ workpackage report to which the section relates is given as a footnote, so that interested readers may follow up the project findings in greater detail. Some workpackage reports are already available on the EDNER+ website at <http://www.cerlim.ac.uk/projects/iee/index.php> and all will be published there in due course.

Section 1 broadly investigates the impact which the JISC IE strategy and development has had upon Higher and Further Education.

There are three subsections, each addressing a different stakeholder group;

- 1.1: HE and FE senior managers: those responsible for, or closely involved in, the strategic development of their institutions
- 1.2: FE library staff and library managers who had not previously come within the remit of EDNER, and systems librarians and middleware managers in HE and FE, who were asked for their views of the JISC's middleware developments and the Shared Services Programme
- 1.3: Students and teachers in FE and HE. This work included a major survey which sought to establish the extent to which the JISC IE had been perceived and used within staff and student communities, and further case studies.

These studies explored the perceptions which these groups hold of the JISC, what it is and what it does, their awareness of the JISC Information Environment, and the impacts which it has made upon their experience of the academic world.

Section 2 examines how the JISC provides high quality information content and services to students and teachers, and the information architecture which underpins them. There are three discrete reports.

- The first asks the question 'What does the JISC mean when it speaks of 'quality' of content and services?'
- The second is a major evaluation of the JISC IE presentation services by HE students
- The third is a review of SPP portal software solutions and an assessment of the decision to change to the development of 'portlets' instead of a full-blown portal development .

The user testing of SPP portals has been deferred as the β test versions were not available in the study period. Instead it is hoped to complete this work by the end of 2004.

Section 1: The impact of the JISC IE strategy and development on Higher and Further Education

1.1 The impact upon senior stakeholder perceptions of the JISC IE strategy and development

1.1.1 The HE Senior Officer perspective³

A key theme of EDNER+ was to study the effects of the Information Environment's strategy and development on the planning and management of institutional information environments. EDNER+ appointed two consultants with senior management experience in HE and FE institutions to carry out this investigation. Their findings are reported here and in the next section

The HE consultant interviewed a cross section of University Officers comprising Vice-Chancellors, Deans, University Secretaries and Registrars. None of the interviewees had served or were serving on any of the JISC committees, but some had been indirectly involved or associated with bids or particular JISC activities.

The purpose of the interviews was to establish their awareness, perceptions and views of the JISC and of the JISC Information Environment. Interviews were carried out at 21 Universities, including 'old', '1966', and 'new' Universities. An interview schedule was devised which broadly covered awareness of the JISC and the IE, its perceived strengths and weaknesses, the challenges facing Colleges and Universities relating to the embedding of ILT and the JISC's role in this process. The same interview schedule was used for the FE Senior Managers interviews reported later in this Section. The major findings from this study are:-

- **Perceptions of the JISC IE and of JISC strategy are hazy**

All but one of the interviewees had heard of the JISC, and were familiar with its work to a greater or lesser degree. Perceptions of the IE however were hazy. JISC is perceived

³ WP2.1 Stakeholder Consultancy Report: Further Education senior Officers (July 2004)

as something which ‘runs smoothly in the background’ but there is lack of clarity regarding its purpose or where the JISC IE fits within institutions. While it might be expected that Officers at this level would have strategic rather than operational responsibilities in their own institutions, it is noted that few interviewees were familiar with JISC’s Strategy, or related it to their own concerns. Most felt that the strategy was not obvious and speculated on the need for increased consultation and better dissemination.

- **The key JISC activity for this stakeholder group is the provision of a robust and reliable network infrastructure**

Most were unaware of the range and detail of JISC’s activities. Where there was awareness of the JISC IE this was gleaned from the Briefing Papers (which appear to have had a positive effect upon strategic thinking and decision making) and the legal help available on the website for matters such as data protection, intellectual property, and in particular plagiarism. These were all highly valued.

It became clear that the University Officers’ acquired knowledge about the extent of JISC activities was closely related to their present or previous line management responsibility for computing, libraries or learning, but that as they moved away from these roles their awareness of the JISC tended to lessen and they became rather disengaged. Some indeed stated that while they themselves were not well informed of the detail of JISC initiatives they were confident that others in their institution had this knowledge. This meant however, that a number of the Officers had difficulty in assessing and articulating what impact, if any, the JISC had had upon their institution.

At a practical level, the Officers were most aware of the JISC as provider of networks and computer capacity, and it is this role in particular which they praised highly, valuing the robust and resilient network service which they described as ‘mission critical’.

- **The JISC provides credible and authoritative information, but it does not always reach this group**

There was concern that information flows between themselves and the JISC were poor. The JISC was perceived as having a 'low key approach', or providing information written with too much technical jargon. Many said that they received little in the way of communications from the JISC, which might be partly explained by their claim to be overburdened by enormous email backlogs. It was interesting to learn that most would prefer hardcopy to email, so that they could read this at home in comfort during the evening, or on a train journey. They suggested that the JISC try to write from their viewpoint, or with more sensitivity to the lay reader, rather than in its current style. They expressed their need for clear, concise and non-technical information.

Regarding general information provision, the JISC is seen as consistently credible, reliable and authoritative and there was a degree of confidence that information provided by the JISC would be relevant, topical and sound. The JISC is seen as speaking with authority especially with regard to new developments, ideas, concepts and technology. They valued the JISC as a disseminator and promoter of good practice. As one said 'the JISC obviates the need to reinvent the wheel'.

- **How the JISC is positioned in relation to this group, and how it relates to other key players, is unclear**

There was a clear perception that the JISC had not positioned itself well with regard to this group. There was a strong feeling, for example, that senior administrators are not engaged by JISC as positively as they might be. They feel that they do not feature as regularly in the JISC thinking, processes or consultation as other groups do, yet that they have much knowledge and experience to offer.

There was also lack of clarity over the JISC's precise role, and how it inter-related with other bodies such as HEFCE, UKERNA and the Government. A particular concern was the JISC's relationship to the proposed Research Libraries Network (RLN), which some saw as having potential to lead to duplication of effort and waste.

- **JISC leadership is highly valued**

Lest all of this sound negative, it is important to say that although awareness of the JISC IE was low, the predominant view overall was of the JISC as an organisation that had achieved high standards, and which provided a concentrated core of experience and expertise for the community. They value the lead which the JISC has taken on their behalf on issues such as the purchase of electronic journals, though they believe that the prohibitively high cost of these may adversely affect their institution's research activities. Some expressed concern about publishers restricting authors' rights, and about the need for local electronic archives, but seemed unaware that the JISC was already addressing these issues with vigour.

They generally thought that JISC was 'good value for money' and only one complained of a proliferation of projects offering 'trivial' sums of money which focussed on 'small issues' that did not necessarily deliver significant outcomes of national importance or identify exit strategies.

Conclusion

The perceptions of the JISC IE and of JISC strategy expressed above pose some perplexing challenges for the JISC. The Senior Officers who were most aware of the JISC, of its activities and of the IE were those who at some stage had been directly involved in JISC initiatives, programmes and projects. These might be expected to retain some interest in JISC-led developments as their career moved on, but there were others who seemed unaware of current activities, and indeed one officer who had not heard of the JISC at all and who had to do some 'background reading' prior to his interview. It is clear that the development programmes funded by JCIE have been addressing issues which concern this group, and yet a substantial minority seem unaware that this is so. The challenge is how to reach and inform these people, how to engage them. They claim to be overburdened by emails, yet they want information; few subscribe to JISC MAIL. They claim that the JISC provides a forum for debate, yet feel disengaged and remote from it because the debate is not in their language. They claim that JISC is a co-ordinator but at the same time describe it as 'difficult to pin down'. Some have serious concerns but are unaware that the JISC is already addressing them.

It seems that the concept of the JISC IE has not as yet made a great impact upon this group of stakeholders, and yet it has much to offer which they want. Paradoxically they have 'vague notions' of the JISC, are 'not sure what JISC is or does and how it fits in', yet claim that it has a sound reputation within their own community and indeed worldwide.

The Consultant who carried out these interviews noted that all interviewees 'readily agreed to be interviewed' and describes them without exception as 'welcoming, candid and extremely helpful'. In view of this, the JISC may wish to explore further how it might best engage in a dialogue with this group, particularly perhaps by approaching individual senior officers in institutions which do not have a record of involvement in JISC-funded projects and activities.

1.1.2 The FE Senior Manager perspective⁴

EDNER+ appointed an FE Consultant to carry out advisory work on the project. Part of his remit was to interview senior managers in FE Colleges who had responsibility for e-learning and the local information environment (a term which he reported was 'a bit hazy in some of their minds'). Interviews were carried out at twelve colleges across the UK, though mainly in the north east and north west of England. Those interviewed were typically Heads of Learning Resources, ILT Managers, or e-Learning Co-ordinators; senior managers therefore, but closer to operational activities and practical matters than the HE group. They were decision implementers in contrast with the HE senior officers who were strategists and policy makers. The same interview schedule was used as for the HE work reported above. The findings of this study show some similarities with the HE study but there are striking differences also.

The major findings are

- **Perceptions of the JISC IE and of JISC strategy are positive**

Two of the respondents were involved in JISC working and steering groups and therefore believed they had a good grasp of JISC strategy. Others had learned of it through training, often that supplied by their Regional Support Centres (RSCs). The JISC is perceived as 'good at taking strategic leads', knowledgeable of policy matters and perceptive to 'how things might be done'.

There was an overwhelmingly positive response to the JISC becoming involved in FE. The JISC was valued for its independence, for providing a link between pedagogy and learning, and for its support for innovative projects.

⁴ WP2.2 Stakeholder consultancy report: Higher Education senior officers (July 2004)

- **The JISC does not as yet understand the nature of the FE environment, and the constraints placed upon FE colleges**

There was a distinct feeling though that the JISC does not yet understand the nature of the FE environment, its priorities, and the constraints under which FE colleges carry out their business and devise their own institutional strategies. In particular it was felt that the JISC had not grasped the sheer diversity of the FE student body; the range of abilities (from those who cannot read, or who have learning difficulties, to postgraduate level), age and maturity (14 year olds to 90+) and the breadth, depth and level of provision which FE colleges are called upon to offer. Most thought too that the JISC was not truly aware of the extremely tight budgets within which colleges are expected to work, and how this affected their capacity to purchase software licenses for services such as Infotrac and Emerald. Of course it might equally well be argued that in their turn, the FE sector does not yet appreciate the cost of developing and providing online information provision.

- **There is good awareness of JISC activities**

There was generally good awareness of the JISC and the work it does. The JISC Collections, RDN and Chest, the VTS, the technical forums, standards, data protection and other legal advice, and the ongoing work with VLEs and MLEs were all mentioned. Two particularly liked the MLE toolkit, though it might be noted that others showed great enthusiasm for VLEs but not for MLEs which were not perceived as “adding value to the business”.

They kept in touch with JISC activities through the JISC discussion lists, the JISC website and involvement in JISC-funded projects. The overall feeling was that the JISC IE and other JISC initiatives had made a positive contribution to FE, and had had an enormous impact. They were pleased to be involved in JISC activities and, of course, with JISC projects. At least four Colleges were directly involved in projects, and others possibly more loosely associated with them.

- **Information flows are perceived as good**

All respondents found it reasonably easy to keep up-to-date with the JISC and JISC activities. All used direct mailing such as JISCmail lists and RSC newsletters. Half used the JISC website, either regularly or on a 'need to know' basis.

There were difficulties with understanding the jargon used on the JISC website and in JISC documents, especially technical jargon, and a feeling that 'if it wants to be inclusive of the broader academic community, then it's got to look at the words it uses'. There were complaints that the JISC website is difficult to navigate, and that there is too much use of acronyms.

There was an overwhelmingly positive response to the Regional Support Centres⁵. They are valued for their advice and support across a range of activities; solving technical problems, training, organizing events. They also act as a bridge between the FE Colleges and the JISC and therefore have the potential to become a major facilitator of information flows.

- **How the JISC is positioned in relation to other groups is unclear and confusing**

The relationship of the JISC to other organizations such as Becta, Ferl or NLN was unclear. Although 'where things came from' was of less relevance than their value to the Colleges, they found the multiplicity of organisations confusing and were concerned that there was insufficient 'joined-up thinking' between different organisations whose activities were broadly similar. Even the JISC itself is perceived as so large that it is difficult to grasp a holistic view of how it functions.

⁵ It should be noted that most of those interviewed were from colleges in the North West of England, and would be referring specifically to their local RSC in this instance. We cannot assume that these represent the general opinion of RSCs.

- **Colleges have many unmet needs**

Colleges would welcome more support with their e-learning activities. They would like help in understanding 'what happens within a VLE', learning materials to use in their VLEs, help with accessing resources through the VLE, and support and guidance on how the use of ILT can impact upon and improve pedagogic practice.

Conclusion

One striking thing about these interviewees was their broader and deeper knowledge of the JISC, and general awareness of the role which the JISC could play in addressing their concerns, in comparison with the HE group. Because of their job roles (Heads of Learning Resources, ILT Managers, e-Learning Co-ordinators), they worked more closely than the HE interviewees with the content and services which the JISC provides, without necessarily articulating this as being an 'Information Environment'. Their particular concerns are reflected in many comments about VLE development, personalisation, student searching behaviours, portal development, e-learning, pedagogy, and, of course, how the cost of all of these could be met from their very tight budgets. It seems that this last point will be a major constraint upon FE involvement with the JISC IE, and therefore provides a challenge which the JISC will need to address.

Unlike the HE Senior Officers they did not complain about email overload, or information delivered electronically, but had taken the opportunities offered to them to communicate in this way. This may be, of course, because this particular group feels more 'at home' within the electronic environment, but in view of the rather negative comments made by the HE cohort, JISC may wish to reassess whether such communication systems and information flows are indeed appropriate for all their potential stakeholders.

It is interesting too to note that some interviewees actually mention the attitudes and influence of senior managers as being a serious impediment to the development of the information environment in general and VLE development in particular, within their Colleges. They question whether their most senior managers are sufficiently interested, well informed (and even competent!) to make the right decisions regarding embedding e-learning, ILT and digital resources within their College structure. Some even fear that senior managers are using (or will in future use) the introduction of e-learning to threaten

staff job security, believing that they perceive a 'connection between learning via a VLE and staff with time on their hands and therefore under threat'. So again there is a paradox here which the JISC may need to address with sensitivity. Indeed if these perceptions are widespread among FE senior officers, it is vital that the JISC ensures that they as well as their counterparts in HE fully understand the impacts that the resources, services, products and projects being offered and developed by the JISC and others will have, not only on their budgets, but upon the working practices and academic lives of their staff and students, and upon their College culture.

1.2 The effects of the IE's strategy and development on the planning and management of institutional information environments

1.2.1 FE Libraries and librarians⁶

The aim of this study was to shed light on the information environment within Further Education, and the role played in this by the JISC, with a particular focus upon the emergence of the use of online resources. Previous studies undertaken by CERLIM and others had helped build up an understanding of HE libraries and librarians, but much less was known about their FE counterparts. So although we are able to make some recommendations to the JISC as a result of this study, it should be seen primarily as informative and indicative.

The research focussed upon operational level FE librarians. The methods used to collect information included a survey of 62 FE Institution websites, interviews with librarians at nine FE institutions in the North West of England (seven FE Colleges and two sixth form colleges), and an online questionnaire distributed to librarians by the thirteen JISC Regional Support Centres, which elicited 92 responses.

Key findings from this study are given below, structured around three themes:

- structures and relationships with the FE information environment
- resource management within the FE information environment
- the incorporation of online resources into teaching and learning within FE.

STRUCTURES AND RELATIONSHIPS WITHIN THE FE INFORMATION ENVIRONMENT

Levels of staffing in FE libraries vary widely and impact on development potential

- Staffing levels within FE libraries varied widely and were largely dependent upon the size of the institution, and how dispersed it was across a number of sites.

⁶ WP2.3 Stakeholder Report: FE library staff (2004)

Thus a very centralised college might have fewer library staff than one with provision scattered across several locations. However, many colleges have only a small number of professional library staff and this limits their ability to engage with external activities and to devote time and energy to strategic development issues.

Information flows between librarians and senior managers is generally good

- The majority of librarians are placed one tier from senior management, but communication between librarians and senior management is generally good.

FE librarians work well with Learning and Teaching Unit staff, and with ICT staff

- The FE librarian undertakes a wide range of both practical and strategic roles. They are often well integrated into Learning and Teaching Units; over sixty percent have the word 'learning resource or 'learning centre' in their job titles. They therefore play a dual role and perhaps help bridge the divide between libraries and the teaching community which has been identified in the HE community. Some are also identified as, for example, Archivist and Print Services Manager.
- The use of ICT in FE libraries has helped to raise the profile of libraries, and possibly the status of its staff. There is evidence that ICT staff recognise that recently qualified professional library staff have good IT skills and knowledge, as well as the more 'traditional' library skills.

RESOURCE MANAGEMENT WITHIN THE FE INFORMATION ENVIRONMENT**FE librarians play a major role in the selection and embedding of online resources**

- Over 80% of respondents were either very involved, or were the ultimate decision-makers in the selection of online resources. However, there was some concern that teaching staff occasionally purchase such materials independently of the Library, leading to the unnecessary duplication of costly resources.

- Librarians were very proactive in encouraging teaching staff to be involved in the selection of online resources, and also to use online resources within their teaching, supporting this by offering training sessions. However, responses to requests for feedback and offers of training were often low. It was also clear that librarians are sometimes left to train themselves in the use of new online resources, and that they are not always confident that they can do so effectively. This is hampering the cascading of training in colleges.
- Librarians were also very proactive in communicating with students, and played an important role in encouraging and training students to use online resources.

Awareness of the JISC and of JISC online resources is good

- Awareness of the JISC and of JISC resources among respondents is good. They actively promote the RDN Hubs to users via the library website, in particular the VTS (77% of respondents) and SOSIG (74%). Respondents provide a link to BizEd (69%), AHDS (36%), Zetoc (34%), Biome (26%), Axis (13%), and Eurotext (3%). There were conflicting views about the value of the Hubs. Some respondents felt that some of the RDN hubs were too advanced for FE students. Others thought that there was material of value there, especially where the content was targeted at the FE market.
- Subscription resources too are well represented in the FE information environment. The most popular is Infotrac (68% of respondents were subscribers), Know UK (46%), Lion (41%), Britannica (40%), Oxford Reference (32%), Oxford English Dictionary (31%), Scran (21%), Childlink (16%), Xrefer (16%), Bureau van Dijk and CSA, both (7%), Web of Science (6%) and Kar2ouche (3%).
- They discover JISC resources primarily through the JISC Regional Support Centres which they praise highly, through the JISC website, and at JISC conferences and seminars.

More FE-oriented resources are needed for the FE sector

- There were many suggestions for subject areas for which it would be useful to have online resources, indicating the need for further development of online resources specifically for the FE sector. The subject areas most frequently suggested were basic skills and vocational subjects. Also requested were resources for adults with learning difficulties, animal care, art, business administration, complementary therapies, cultural studies, education – Cert Ed, teaching assistants, support assistants - ESOL, fashion, hairdressing and beauty therapy, hospitality, information management, land-based subject areas, languages (for adults), marine engineering, boat building, water sports, maths GCSE, media studies, performing arts, philosophy, photography, programming, public and uniformed services, sports science, technology – for electricians, plumbers, construction workers etc. – theatre design and management, and theology. In addition there were requests for a ‘one stop shop’ for generic modules in all vocational courses, for example, health and safety.

The use of ATHENS is not yet widespread

- Not all colleges have ATHENS in place, but its use is growing. There does not seem to be a culture of remote access to resources.

Finance and funding are major constraints upon the embedding of online resources into FE Colleges

- FE libraries are often under considerable financial constraints and do not usually have allocated budgets for electronic resources. Librarians therefore have to decrease spending on books and other materials to purchase these. There is concern that when the two or three year reduced subscription deals which the JISC currently provides to FE Institutions come to an end they will not be able to afford to renew.
- The use of consortia to purchase resources is not common in FE libraries, particularly in smaller institutions.

THE INCORPORATION OF ONLINE RESOURCES INTO TEACHING AND LEARNING WITHIN FE

Librarians promote online resources, but they believe that take up by tutors and learners is not good

- Librarians were very proactive in the promotion of online resources to both students and teaching staff. However, they were concerned that the resources were not being fully utilised. Much more work is needed to understand the constraints on take-up and the dynamics of use in FE.

Librarians experience problems where courses are franchised

- In those FE colleges providing franchised HE courses, the FE librarians were often denied access rights to their partner HEI's online resources, and therefore found it difficult to support this student group. This was of particular concern because the students involved often reported a preference for working with the FE library staff rather than their HE counterparts. Clearly access needs to be extended to include access for library staff at the partner FE college.

Conclusion

The FE information environment has to contend with and provide for an incredibly wide range of users. FE libraries function with very low levels of financial and staff resources, but are run by very enthusiastic staff who are dedicated to providing a high level of service and to meeting users' needs. Librarians are very keen to encourage both students and teaching staff to use online resources, but they find that use is still fairly low. The use of ATHENS and of VLEs within FE institutions is increasing, and many librarians feel that this will encourage the use of online resources. Specific recommendations for ways in which the JISC might better support the information environment in the FE sector are as follows:-

- We have found that librarians are often constrained by their limited budgets, and by the lack of a budget specifically for the purchase and promotion of electronic resources. If the JISC wishes to provide online resources and services to the FE sector we recommend that it will need to take this constraint into account when pricing its products

- We have found a conflict between the desire for resources specifically tailored to the needs of FE students and some concern that resources should not be too 'filtered'. We recommend that the JISC explores this further with the FE community in order to ensure that their products meet the needs of as many of their users as possible
- It is clear that there are large areas of the FE curriculum which are not currently supported by online resources. This may be a genuine lack of resource provision, or it may be a lack of awareness of existing provision. We recommend that the JISC investigate this and prioritise areas of particular need before moving into further costly development activities.
- We note that the North West RSC has received high praise from this group of librarians, particularly its role in facilitating the flow of information. We recommend that the JISC build upon this example and encourage the RSCs to provide further services to FE Librarians. They particularly identify a need for further guidance on how to encourage and promote the use of online resources, and for further training in the use of specific online products. It is not sufficient for the JISC to simply 'offer resources' to the community. Many of these have quite complex and sophisticated user interfaces which require a period of learning if they are to be used effectively. If FE librarians are to promote them to their tutors and students they must feel confident that they can do so. As there seems to be a preference for receiving this training very locally or 'in house', this again may be a role which the RSCs can fill.
- A further useful role which the RSCs might provide is to encourage and support the formation of purchasing consortia for online resources. This might help alleviate the burden of purchasing costly resources for a small student group.
- We recommend that JISC proactively encourage the uptake of ATHENS by FE colleges in order that the use of remote access can become more widespread. This is a particular problem in colleges where ICT staffing levels are low.

1.2.2 Middleware Managers in Institutions

The formative evaluation of middleware developments has proved to be among the most difficult exercises for the EDNER+ project and there is some way to go in developing a clear understanding of middleware perceptions and requirements from the institutional perspective. User-based evaluation is inappropriate since the only valid end-user perspective is that middleware is invisible – if the end user comes across it then something has gone wrong! Since most of the experts in this area are either involved in the JISC's activity or have a vested (usually commercial) interest, even setting up expert panels is difficult. However, we had expected that within each institution there would be individuals with a particular interest in and responsibility for middleware issues.

EDNER+ therefore attempted to engage with those members of staff in HE and FE institutions who have management responsibility for selecting and implementing middleware systems. In the past these might have been 'systems librarians' but the roles and job titles are now extremely disparate. Nevertheless, with the variety of systems - such as resolvers and MLE components - being installed this is clearly a key role within institutions.

Several attempts and a variety of means were used to contact this group of staff with only a very limited degree of success. The first approach reviewed the membership of library systems user mailing lists, but this demonstrated that this was too broad for the purposes of a study focussed upon UK FE and HE. Instead it was decided to arrange a Systems Librarians Workshop in May in Manchester, with the Shared Services Programme Manager as keynote speaker. This was publicised to the HE community through the SCONUL members list and to FE with the help of the Regional Support Centres. This proved unsuccessful with a very poor response particularly from the HE community, and was abandoned. Finally, direct targeting of individuals was tried, and 72 individual emails linking to an online survey were sent out on two occasions in June. This elicited only four responses. Our conclusions therefore reflect informal discussions with many in the sector to a greater extent than the survey results.

The JISC Information Architecture provides an appropriate and robust middleware framework

In extensive discussion with individuals involved in JISC development activity and those in institutions we found a uniform agreement that the IA had been tested and found robust and flexible. It was noted that so far the only shared service that had been widely deployed was Athens and thus it is early to know the extent to which UK HE will need to develop planned, or as yet unforeseen, shared services and whether these will impact on the architecture.

Institutional architectures are unclear

Because of the lack of response to surveys and other mechanisms, it is unclear whether institutions as a whole have different information architectures in mind. Engagement of many institutions in MLE and VLE developments would suggest that they are on a parallel development path, but we cannot be sure of this.

Single sign-on to all services remains an elusive goal

Single sign-on (for both internal and external systems) was mentioned by respondents to our survey as being a high priority to achieving their aim of providing seamless movement between local and external subscription resources. Single sign-on was felt to be particularly important to colleges which are actually multi-site consortia, whose students and staff currently need three or four different userIDs and passwords. The facility to provide trusted electronic signatures will be of increasing importance, for example for copyright declaration for electronic document delivery.

Better control of user access, and associated statistical data, is needed

ATHENS has been greatly appreciated and is regarded as a major advantage for institutions, but it would be timely to move on. We are of course aware that JISC intends to move to a new generation access management technology based on Shibboleth. This is an area where engagement with the wider community to determine the user requirement will be vital. We have noted a requirement for personalisation services which we believe would best be handled through a Shibboleth based service, although this needs further specification and again investigation of the user requirement.

Better quality statistical information about usage is needed, and in particular the ability to stratify usage in different ways by identifying a user as a member of more than one group, such as belonging to the 2005 intake, a postgraduate, located at a certain site and so on.

Institutional portals are not well specified

Targeted services will probably be offered through institutional portals, which would provide user-specific content channels, based on user preferences. As yet few institutions have a clear vision of their institutional portal architecture or what it might offer, nor of the relationship between the portal and other systems such as VLEs and MLEs. The FAIR PORTAL project is important in this regard, and JISC might encourage more institutions to use the survey tool kit it has developed.

Terminology services will be important to interoperability at the semantic level

It is clear that there are fundamental problems with achieving interoperability at the semantic level due to the wide range of players involved in describing information and learning objects. JISC held a workshop on this theme earlier this year, and while there is no panacea, the use of shared terminologies/ontologies offers at least a partial solution. It may be noted that these will be particularly important to the success of subject-based service providers within a distributed eprint repository landscape.

Support for systems development in smaller institutions is vital

Smaller institutions are concerned that the cost of 'going it along' will be prohibitive. They would therefore welcome more assistance and advice, for example in getting the most from institutional resolvers so as to achieve efficiency in information delivery.

Transaction-based services, including charged services, pose particular challenges

A centralised service is seen as the 'only viable solution' to managing charged Internet-based services, as smaller institutions cannot set up their own mechanisms. It would also be particularly useful to consider the relationship with institutional consortia to enable the collective administration of charged services.

Shared services need to be shared beyond the HE and FE sectors

Collaboration in supporting learners in other types of institution, such as the National Health Service or commercial enterprises, and where students may be studying at more than one local university or college, so that single interfaces can be provided to heterogeneous services, is seen as potentially very valuable.

Conclusion

It is unfortunate that exploration of middleware requirements has proved such a difficult task. The Shared Services Programme is carrying out key groundwork for future middleware services and there would be considerable value in establishing a reference group of interested parties who could be called upon to provide a considered view of developments and to contribute their expertise. It is particularly important that this advice should be able to draw on institutional thinking and strategy so as to ensure that the JISC IE remains fully interoperable with institutional systems. A reference group should contain significant membership from those not currently active in JISC-led developments.

It may be that part of the problem is that, apart from ATHENS, there is little experience of community-wide middleware services yet to draw on. Clearly the area will need more attention, but in the meantime our view remains, as expressed above, that the JISC Information Architecture provides an appropriate and robust framework for these developments.

1.3 The pedagogical impact of the IE strategy and development upon students and teachers⁷

1.3.1 Surveys of impact in UK Higher and Further Education

This section of the final report describes the application of a survey method to provide further evidence for an assessment of the impact of the Information Environment (IE). The focus was on determining the pedagogical impact of the IE in UK higher and further education. Specifically our purpose was to establish the extent to which the IE has been perceived and used within staff and student populations in the UK higher and further education communities.

In the HE sector, our aim was to gather data leading to an understanding of impact in terms of teaching staff awareness and use of a range of JISC services and resources. We framed some of the questions in terms of Hall & Loucks' Concerns-Based Adoption Model⁸. This proposes a set of stages in the adoption and use of teaching innovations, from early awareness through use, to mature development and alteration.

The aims for the FE survey were to gather data leading to an understanding of impact in terms of teaching staff awareness and use of a range of JISC services and resources. The rationale for the FE survey therefore follows a similar line to that for HE.

It is important to make the distinction between levels of awareness and stages of concern. Levels of awareness refers to the proportions of people who are at least aware of JISC services. Stages of concern relates to how advanced they are in terms of their adoption of these services.

⁷ WP5 Surveys of impact in UK Higher and Further Education (2004)

⁸ Hall, G. & Loucks, S. (1979). *Implementing innovations in schools: A concerns-based approach*. Austin, TX: Research and Development Center for Teacher Education, University of Texas.

The work described here is survey-based and largely descriptive. Survey instruments developed in the EDNER project were modified and distributed to samples of staff and students to assess the impacts of the IE strategy and development on learning and teaching, scholarly communication and other working practices, in both higher and further education in the UK. In essence this means we collected a range of largely quantitative descriptive data which we analysed to give a snapshot of impact, use and awareness across a range of institutions in the first half of 2004.

GENERAL FINDINGS

Levels of awareness within HE and FE are still limited amongst both staff and students

The overall picture is that the impact of JISC and its services is still only partial. This confirms the levels of awareness and use found in the 2003 HE survey. However there are some positive messages. In particular it is clear from the percentages of aware users who proceed to the later stages of adoption that services usually retain their users (this is not the case for HE staff though), suggesting they fulfil a need and are perceived as providing genuine benefits.

Disciplinary differences in awareness are notable and similar in both HE and FE

In line with previous EDNER work it is clear that discipline exerts a strong effect, with a tendency for Maths/Engineering staff to exhibit higher levels of awareness and use whilst, as a whole, Humanities staff and students exhibit lower than average levels for both staff and students. These tendencies are manifested with both HE and FE and, overall, HE staff seem to be more advanced in their adoption of JISC services than FE staff. In addition, HE students are more aware of, and therefore more likely to use JISC services than those in FE. This effect is particularly marked for incoming undergraduate students in the 2003/04 academic year.

There is no discernable link between patterns of adoption amongst staff and patterns of adoption amongst students.

Overall there does not appear to be a relationship between mean stages of concern of staff, and mean stages of concern of students. However, as a group both staff and

students within the Social Sciences appear to be more advanced in their levels of adoption of JISC services.

FINDINGS SPECIFIC TO HIGHER EDUCATION

HE staff show a reasonable level of awareness of JISC services

HE staff as a whole show a reasonable level of awareness (56.2% are aware of JISC services and 42.7% have used them). This is broadly in line with last year's results although a direct comparison is not possible due to changes in the resources we asked about.

Staff who have heard of JISC services are not very likely to be still using them

Staff who have heard of JISC services are also very likely to have gone on to actually use them. However, of those staff who have used these services, just over half (51.9%) are not currently using them.

There are disciplinary differences in awareness of JISC services

Maths/Engineering staff appear to be more likely than staff in other disciplines to be *aware* of JISC services. Social Science staff show the highest levels of *use* with over 40% of this subset currently using them - over double the number that would be expected from the sample as a whole (19.2% of all staff that have heard of the JISC actually use these services).

Staff are changing the way they teach

Many staff reported changes in the way they teach, with the availability of a wider choice of images for inclusion in teaching materials being a key element.

Staff have concerns about effects on students

Students are seen as benefiting from the ease of access offered by Internet resources. However, a perceived disadvantage to this ease of availability was a resulting lack of critical evaluation. Concerns were also raised about plagiarism.

There are significant barriers to staff use

Significant issues included awareness, time, and expertise. Participants complained of a lack of awareness of resources, a lack of time available to use these services, and a lack of expertise. When asked about the changes they might like to see, support for greater staff awareness was cited, and again, training.

HE students show low levels of awareness of JISC services

That HE students show low levels of awareness of JISC services is exemplified by the fact that 78.3% had never heard of any of the resources and services mentioned in the questionnaire.

Incoming students in 2003 were more advanced adopters of JISC services than their predecessors

Incoming students appear to be more advanced as users of JISC services in terms of the Stages of Concern model than undergraduate second years, and even third years. Postgraduate students, as a group, are also less advanced in terms of their stage of concern than undergraduates as a whole.

Students who are aware of JISC services are also very likely to have used at least one of these services

The survey showed that all students who were aware of JISC services were very likely to also have used at least one of those services.

Disciplinary differences are noticeable amongst students

In terms of disciplinary area a comparison with the overall percentages (i.e. 21.9% aware of JISC services), students in the Arts and Sciences show higher levels of students who are at least aware of JISC services (40.0% and 37.5% respectively).

In contrast to Arts and Sciences, students studying Humanities subjects show lower rates of students who are aware of JISC services. Other disciplines are characterised by rates of awareness similar to the overall rate.

There are marked differences between HE staff and students

Levels of awareness and stages of concern differ markedly between HE staff and students and there does not appear to be any relationship in terms of levels of awareness between staff and students within disciplines.

FINDINGS SPECIFIC TO FURTHER EDUCATION**Overall staff levels of awareness are moderate**

The survey showed that overall levels of awareness are moderate, 48.6% of respondents being aware of JISC services.

Awareness among staff appears to lead to use

A high proportion (68.8%) of those who are aware of JISC services have used them and they tend to continue to use them.

Disciplinary differences among staff are apparent

By discipline, the percentage of Humanities staff who are aware of these services is considerable lower than the overall rate at 12.5%. In contrast, Maths/Engineering staff and Social Science staff show levels of awareness slightly higher than the overall percentages (55.6% and 56.3% respectively).

Staff believe there are positive effects on students

Responses to open-ended questions showed that staff saw the increased opportunity for students to research for themselves as a distinct and positive benefit both for students and teachers.

There are significant barriers to staff use

Issues raised included a lack of training and lack of awareness for both staff and students.

Overall student levels of awareness are low

Overall levels of awareness are low with only 13.8% of respondents having heard of JISC services.

Student awareness appears to lead to use

Despite the small numbers in the sample, it appears that, if students are aware of JISC services, then are likely to have used these services as well. And, once again, of those students who are aware of JISC services, Social Science students appear to be more likely to have used them.

Students also show disciplinary differences

Discipline-wise, unlike the HE student sample, FE students in Sciences are less likely (8.0%) than the sample as a whole to be aware of JISC services.

On the other hand Maths/Engineering students appear to be more likely (20.4%) to be aware of these services. Social Science students, the largest group in the survey, display levels of awareness in line with the overall sample (13.3%). No Medicine-related or Humanities students were aware of JISC services.

Staff and students vary in their adoption of JISC services

Staff are more aware and are at a more advanced stage of adoption of JISC services than are students. However, in terms of levels of awareness and stages of concern there was no correlation between staff and students according to discipline.

Overall summary

The overall picture is that the impact of the JISC and its services is still only partial, confirming the levels of awareness and use found in the 2003 HE survey⁹. On the positive side it is clear that in FE services retain their users, suggesting they fulfil a need and are perceived as providing genuine benefits. In HE teaching there are fewer users still using services and this may represent a problem in terms of retention.

In line with previous EDNER work it is clear that discipline exerts a strong effect, with a tendency for Maths/Engineering staff to exhibit higher levels of awareness and use whilst, as a whole, Humanities staff and students exhibit lower than average levels for both staff and students. These tendencies are manifested with both HE and FE. Overall, HE staff seem to be more advanced in their adoption of JISC services than FE staff. In addition, HE students are more aware of, and therefore more likely to use JISC services than FE students. This effect is particularly marked for incoming undergraduate students in the 2003/04 academic year. This is clearly an area that would repay further investigation.

There is little sense that the FE sector is in any way less mature, despite JISC's relatively recent involvement in the sector. However it is clear that there are differences between these two sectors in terms of awareness and use, with lower levels of both apparent in FE.

⁹ Kemp B. & Goodyear, P. (2003). *EDNER: Formative Evaluation of the Distributed National Electronic Resource: Surveys of Impact* (Deliverable W-P C-2, EDNER Project). Lancaster: CSALT (The Centre for the Study of Advanced Learning Technology).

Previous EDNER reports noted that disciplines seem to have different levels of awareness and adoption of JISC services. This effect was confirmed in HE and also found in FE. It may be that careful work with different disciplinary bodies may be needed to raise awareness in specific subject and disciplinary areas. This is also an area that we would recommend the JISC to consider as an area for further research.

1.3.2 Further case studies from the 5/99 programme¹⁰

This report completed work that was conducted in two earlier Workpackages (EDNER C4 and C5) which were reported jointly in July 2003 as *EDNER: Formative Evaluation of the Distributed National Electronic Resource: the take up and use of JISC 5/99 Teaching and Learning project outputs*. This further report provides an evaluation of how users interacted with specific 5/99 project outputs in relation to their integration with learning and teaching in higher and/or further education. The focus in this report is on the user group and the assessment of impact and potential for take up. The data for this analysis was gathered from September 2003 onwards, but the work was informed by the prior engagement of the EDNER team with the projects throughout the life of the Learning and Teaching programme.

The main findings contained in the report have been summarised in the three headings set out below and in a brief set of conclusions, recommendations and a set of summary points.

- **It is clear that the creation of resources alone is not sufficient to have an impact on successful take-up and use of digital resources for learning and teaching.**

What is also evident from these case studies was that there were other factors hindering the total integration of the IE into learning and teaching practices and the usability and value of these resources for the students, lecturers and institutions. Some of these factors were quite basic. For example at Birmingham University the use of Digital Egypt was restricted by the absence of a network connection in the classroom. For VDML the fact that Danish Studies is often taught by staff on short term contracts was a problem. From the point of view of teaching staff, there was little 'reward' for contributing to the creation of resources and little incentive for lecturers to get involved and commit themselves in time and energy to the projects.

¹⁰ WPZ6 Usage assessment of JISC 5/99 teaching and learning project outputs: Further case studies (2004)

- **There is a critical need to invest in support for users at a technical and a pedagogical level. This should be embedded within the project itself or provided through established support agencies.**

Projects have an impact on members of staff who make use of project outputs that goes beyond the project's narrow remit. A lecturer engaged with the VDML project commented:

'It makes you reflect on your own teaching. The technology allows dialogue with your colleagues. I did not have pedagogic discussions before. This has been good for my professional development'

Students making use of Lemur had contrasting experiences. Some were positive:

'The use of images gives you an understanding of the area'

'I use the images to break text – comparing and contrasting them'

But this was not the common perception:

'Using images did not have a profound impact on my work'.

'I've never put images in a document, never thought I would do that. I don't have enough time, I'm happier concentrating on the research only'.

This highlights that searching for resources in this way and incorporating visual elements in their essays could be perceived by some students as a burden that did not have a direct impact on the quality of their learning. This indicates a potential gap between the quality and intrinsic value of the resource itself and the impact on the learning as perceived by the student.

- **It is through working with the lecturers and students who might be users that we can bridge the gap between the proliferation of rich resources and the educational 'usefulness' of these resources.**

The ARTWORLD project team experienced difficulties in persuading and engaging lecturers and they had identified the need to concentrate their energies on involving the academic community. As one of the practitioner put it:

‘We have lost the teaching angle; we have turned more into an information source’.

Library staff have closely integrated the INHALE/INFORMS project with support for students using the project outputs. For undergraduate students the sessions were focused around using a specific resource to find materials for an essay, in which students are shown the resource, follow the tutorial and then apply what they have learned to their own topic.

There is no guarantee that methods that aim to engage potential users will always work. VDML used a participatory design approach that had many positive outcomes in terms of engagement with lecturers. It was not entirely successful and as noted above this was in part due to factors beyond the project team’s control.

The conclusions and recommendations from this report are that all of the projects examined have clearly shown considerable effort in the production of digital resource collections. It is apparent that these projects have contributed in bringing together resources that are often dispersed and difficult to access in any other way. What is also evident from these case studies is that there are other factors hindering the total integration of the IE into learning and teaching practices and the usability and value of these resources for the students, lecturers and institutions. The case studies show that there is not yet an obvious widespread use of the IE resources among lecturers and students. It is clear that creation of resources alone is not sufficient to have an impact on successful use and take-up of digital resources for learning and teaching.

The findings indicate that technical training alone is not enough to create a sustainable community of enthusiastic practitioners who will use the resources in their teaching. It is important to promote the sharing of practice and networking and therefore there is a

critical need to invest in community support at a technical and pedagogical level. This element of support should be embedded within the project itself or provided through established support agencies.

It is also essential to create a culture of usefulness where both lecturers and students can see the value of using digital resources to enhance the teaching and learning experience. As noted above, projects need to be supported to maintain a pedagogic focus rather than focusing only on creating an information source. A participatory based approach, though not a guarantee of success, could be envisaged where lecturers, designers and students were engaged in the design and development decisions, assisting in this way in supporting the pedagogic focus. It is through working with the users (and that includes the lecturers and students) that we might bridge the gap between the proliferation of rich resources and the educational 'usefulness' of these resources.

Summary points

- The early development of targeted relationships between project leaders and specific user groups is a key factor in the integration and take up of project outputs in teaching and learning.
- Projects need extra support to allow the development of specific and targeted relationships with some well-defined segments of their target user group from the early stages throughout the end of the project's lifetime.
- Extra effort is required in finding alignment between the information source produced by projects and the usability of this source by the user community.
- There is a need to invest in community support at a technical and pedagogical level to enable better and more widespread exploitation of the 5/99 project outputs.
- Low use of project outputs is often related to institutional factors such as lack of training support and problems associated with short-term employment contracts.
- A better technological infrastructure is needed to enable a better exploitation of the 5/99 digital resources within institutions.

Section 2: The provision of high quality information content and services to students and teachers, underpinned by a sustainable and scalable information architecture

2.1 'Quality' and 'quality assured' resources in the JISC IE¹¹

The theme of the quality study has been to investigate the achievements of the JISC IE in securing and promoting 'high quality' information content and services¹². To this end a small study was undertaken into how the JISC content services define 'quality' and the criteria which they are using to achieve and implement these definitions as policy.

Key findings from the investigation are reported in Quality study 1, but it is useful to add here two other preliminary findings, namely that:-

- **Collections policies across the RDN Hubs show good consistency**

The RDN Hubs all present detailed Collections Policies. These show consistency across the Hubs, and all major issues regarding content and service presentation are covered.

- **The role of the tutor as 'subject specialist' should be encouraged**

One of the quality indicators claimed by the RDN is that it gathers resources which are carefully selected, indexed and described by subject specialists in a range of partner institutions. A search to determine exactly who these 'subject specialists' are has shown that a wide range of expertise is called upon to select, evaluate and catalogue the resources in the RDN. Subject experts include information professionals, LIS professionals, partners and other contacts in industry and the professions, librarians, tutors, researchers (especially postgraduates), LTSN staff and, of course, the public.

¹¹ Quality study 1: Comparison of the RDN Hubs and Google as search tools (2004)

¹² The new JISC Strategy talks, for example, of making it "easier for end-users to find relevant online quality resources to support learning, teaching and research"

The general impression is that tutors are not in the majority. As it is known that students value highly the recommendations made by their tutors, for example through reading lists, it is suggested that every effort should be made to ensure that tutors are involved in the resource selection process. 'Tutor recommended' might be a good 'selling point'.

The RDN and Google Study

The following points result from a small study which compared the RDN Hubs and Google as search tools. The Managers of the eight RDN Hubs were asked to provide the five words or phrases most commonly used to search their Hub, and all did so. These five searches were then run on both the appropriate Hub and on Google, and the results recorded. The first five Hub results were compared to the 'hits' on the first three pages of Google results to see if the Hub results appeared within these Google hits. A further check was carried out to see whether those Hub resources which did not appear in Google were in fact accessible through Google, or were part of the 'hidden web'. The study showed that

- **The ranking of search results is inconsistent across the Hubs**

Policy on ranking of search results across the Hubs is inconsistent. For example five rank results alphabetically, Altis results appear to be ranked in a random fashion, EEVL sorts results 'by relevance', while SOSIG ranks resources according to the frequency of occurrence of the search term, a facility which can be 'turned off', in which case results are ranked in random order.

- **User behaviour patterns suggest that when results are ranked alphabetically users may not find the most appropriate results to fulfil their needs**

We acknowledge that the Hubs are not like Google, nor was it intended that they should be. They do not fit easily with the 'get in, get stuff, get out' way of thinking. They are complex and offer academic context, and in order to ensure that the user gains the most benefit from them they require their users to put in a certain amount of learning and familiarization, and to sustain commitment. However, it is known that users are unlikely to look beyond the first three pages of Google 'hits' and also that learners (though not necessarily academics) tend to be satisfied with 'something that will do' rather than carry

out an in depth search for the optimal resource for their needs. Given the popularity of the Google search engine and the behaviours it engenders it seems reasonable to assume that users will treat RDN results in the same way. If this is the case, and they do not look beyond the first couple of pages of results in the RDN, then those Hubs which rank their hits alphabetically are in the ludicrous position whereby the hits which users look at most are likely to be those whose titles place them nearer to the start of the alphabet. Users may not find those most relevant for their needs. How alphabetical ranking can produce strange results was illustrated by some of the searches undertaken in the study. It is, for example, perplexing that the first result in a search for 'Manchester' is an article on an Australian participant in a 1977 cultural event, or for 'spectroscopy' is a list of acronyms and abbreviations. While these may be high quality resources in themselves they are unlikely to fulfil the needs of many users. The concern is that while this might not matter if students were sophisticated searchers, if they transfer their 'Google habits' to the Hubs, they are likely to quickly start searching elsewhere, or abandon this type of resource altogether.

We therefore recommend that alphabetic ranking alone may not be enough to get the most relevant resources to the user, and that a common strategy for the presentation of results across the RDN be devised, underpinned by a sound relevance ranking system.

- **The Hubs provide quality resources, but often within a highly specialised context. Google also provides high quality resources, but in a broad context.**

Our study has indicated that few of the searches showed a high degree of correspondence between the Hub results and the Google results. So it might indeed be claimed that students who use search engines are missing the academic resources of high quality which are available to them on the Hubs. However, this might well be too simplistic an interpretation. The fact that students do not find 'Hub resources' on Google does not necessarily mean that what they do find there is not of high quality or not of relevance to their academic work. Google results tend to rank highly websites from leading institutions such as governments, public bodies and large companies. The results are very broadly based and very plentiful. The Hubs often provide highly focused and specialized resources – a single journal article, a particularly interesting event, a learning resource targeted at a specific student group. They are full of the context which Google resources can lack, but being for such a specialized audience they may lack

broad appeal, even within a particular subject area. The first two 'hits' of the Humbul 'poetry' search, for example, are not even in English; one is in Galician-Portuguese, the second in Spanish, and there is no translation option. What would a student interested in 'poetry' make of this? The first hit of the BIOME 'museum' search is the winner of a wildlife photography competition. The Hubs offer plenty of opportunity to refine the search, but this infers a need for commitment on the part of the searcher and a degree of sophistication in searching behaviour which 'Google searchers' (i.e. most students, especially in the early stages of their academic careers!) seem to lack.

- **Where the resource base for the most popular searches is small, steps should be taken to augment it.**

It is clear that some Hubs have a much larger resource base upon which to draw than others. Altis, of course, is quite new, but one of the most popular Altis searches produces only one result. We recommend that they and others consider making a positive effort to augment the number of results for their most popular searches, in order to give users more choice and greater satisfaction.

- **Further detailed study is required**

We believe that this preliminary study has not answered our research question adequately, but it has raised some key questions, namely:-

- how do Hub users actually search the Hubs? Do they take time to learn how to use them, or do they apply previously learned behaviours to their searching? Do they use the many sophisticated searching options which the Hubs offer? Do they refine their searches or quickly go elsewhere? If they do go elsewhere, where do they go?
- do users find what they are looking for, and if not do they return to the Hubs on future occasions?
- do regular users discover the Hubs for themselves, or are they introduced to them in a learning situation?
- to what extent are the resources presented by the hubs of high quality? Bearing in mind that quality always relates to context, would the results be judged by experts in the field to be 'the best' sources of information on the topics sought?

We believe that such key questions merit further exploration and would recommend that further study be undertaken.

2.2 Evaluation of IE presentation services¹³

Introduction

A usability study was undertaken to evaluate the presentation layer of the IE and to develop understanding of users' searching behaviour in the IE. This work builds upon the findings of a previous usability study conducted in summer 2001¹⁴, which found that students preferred to use Google as a starting point for locating information to answer an academic information need rather than an academic resource.

The study investigated student use of eighteen services which were selected from the presentation layer of the IE. Follow-up questions related to the first EDNER study were included. Individual tasks were created for each service, questionnaires developed and piloted and methods of analysis agreed. 38 students were recruited, from 34 subjects areas, each of whom then undertook two days of searching. Of the 38 participants who took part in this study eight were studying at postgraduate level, and 30 at undergraduate.

Of the 38 students 58% reported using an Internet search engine every day, 5% 3-6 times a week, 24% 1-2 a week, 5% every other week and 8% 1-2 times a month. Bibliographic databases were less well used: 55% did not use them at all and 8% only occasionally, 3% 3-6 times a week, 10% 1-2 times a week 8% every other week and 16% 1-2 times a month. The library OPAC was better used, although some students reported never using the OPAC (10%)

¹³ WP4 Evaluation of the IE presentation services (2004)

¹⁴ Brophy P, Fisher S, Griffiths J. R. and Markland M. (2003) *EDNER: Formative Evaluation of the Distributed National Electronic Resource: DNER Service evaluation* (Deliverable MDA 2, EDNER Project). Manchester: CERLIM (The Centre for Research in Library & Information Management). [Online]
<http://www.cerlim.ac.uk/edner/dissemin/da2.doc>

Services were selected for testing according to the following criteria:

- Resources bought in by the JISC with their own interfaces
- Resources bought in by the JISC with a JISC-designed presentation layer
- JISC-created or owned services
- JISC-funded services where content is created by the JISC
- JISC projects that are not yet services
- Services where the JISC places a formal structure onto information generated by the community
- A control group

Quantitative data arising from the study was analysed using SPSS (Statistical Package for the Social Sciences), while open response question data was analysed using manual qualitative techniques.

Use of search engines (SEs) dominates students' information seeking strategies

Results from the EDNER+ study found that:

- 22 out of 38 participants use a SE every day, while
- 2 participants used them three to six times a week;
- 9 once or twice a week;
- 2 every other week, and
- 3 once or twice a month.

Of the search engines chosen 23 used Google, 4 used a combination of Google and Yahoo, 3 used Yahoo and 5 used a combination of a variety of SEs. Some students exhibited confusion regarding services, listing the library catalogue and the BBC as search engines they had used. It is clear that the majority of participants use a search engine in the first instance. This concurs with the JUBILEE and JUSTEIS results which found that use of SEs predominates over all other types of EIS. Search engines are liked for their familiarity and because they have provided successful results on previous occasions. Individual search engines become "my personal favourite" and phrases such as "tried and tested", "my usual search engine" and "trusted" were frequently given by the students when asked why they chose this source.

Students' discrimination between services is generally poor

Participants were asked whether they could tell what the service was from the homepage. Thirty one separate comments were made which show that a number of participants were unable to differentiate between the types of resources presented to them. To these participants everything is a 'search engine'.

Students' awareness and use of academic resources is low

Some of the comments from participants showed that they had very little awareness of electronic resources, apart from search engines, and indeed sometimes had no idea that academic services existed. Comments from some participants showed that they felt taking place in the user testing had itself been a useful experience and showed them resources which, while valuable to them, they had never before encountered. For example, 'I was not aware of this site. But now that I am, I will definitely use this, especially for my dissertation', 'It seems really useful – I wish someone had told me about it so I could have been using it for my course research', 'I thought this site was fantastic and am extremely keen to begin using it in my own work. I shall also be telling fellow students all about it in our next class!' and 'Well this seems like a wonderful resource ... I didn't know such a system was in place... I would say that I will certainly be using this service in the future - except that I am soon to graduate ...'

Students make limited use of library OPACs

Levels of use of the Library OPAC recorded by the EDNER+ study showed that:

- 4 out of 38 participants had never used the library OPAC
- 4 only use it occasionally
- 10 use it once or twice a month
- 3 use it every other week
- 10 once or twice a week
- 1 student uses it 3 to 6 times a week and
- 5 participants use it every day.

One participant failed to report his/her level of use.

Students make very limited use of bibliographic databases

Bibliographic database use was recorded, thus:

- 21 out of 38 participants never use bibliographic databases
- 3 use them occasionally
- once or twice a month
- 3 every other week
- 4 use them once or twice a week and
- 1 student reported that he/she uses them three to six times a week.

Of the students who do use bibliographic databases, three stated that they use Web of Science, three that they use Emerald and two listed FAME. All other bibliographic databases were only listed by one participant each: these included SOSIG, Ingenta, Butterworths Lexis Nexis and Questia Social Science Library. It is notable that again students use definitions quite loosely – not all of these would normally be termed ‘bibliographic databases’.

Use of academic resources is linked to student progression

Use of resources appears to be linked with student progression, with 100% of postgraduate (PGs) using a search engine at least 3-6 times a week compared to 64% of undergraduates (UGs). PGs also use academic resources more frequently than UGs, 50% of PGs using a bibliographic database 1-2 times per week and 17% every other week. 3% of UGs use a bibliographic database 3-6 times per week and 8% 1-2 times per week. Whilst 33% of PGs never use a bibliographic resource 56% of UGs never use such a service. The library OPAC also reveals differences in use, with 67% of PGs using it every day compared to 14% of UGs.

Students may trade quality of results for effort and time spent searching; they may ‘satisfice’.

Findings of the previous study showed that users are often satisficed, that is, users are rarely interested in a comprehensive, high recall search, but rather are satisficed with the retrieval of a few relevant hits. Results of this study agree with this finding, for example ‘when there are sites like Google for instance, that give

me immediate access to what I want, if I see a site that requires too much “effort” to get in, I just click somewhere else!’

However, a smaller number of participants were able to see the benefit of using academic resources and were prepared to sacrifice the speed of Google for the quality of content of some of the resources they used, for example, ‘Very time consuming - to be more specific wastage of time is enormous, but compared to Google or Yahoo it’s very academic and compensates for wastage of time’ and ‘Google is a faster way of searching for images on a given topic, but this system led to sites with relevant content. So yes, I suppose this is a useful tool...’

Students’ use of SEs now influences their perception and expectations of other electronic resources.

The dominance of search engines (and particularly Google) influences student perceptions of other resources, including academic ones. This, coupled with students inability to differentiate between services, leads to disappointment in performance and results found. Google’s dominance was expressed in many comments about the service and its popularity may mean that students develop preconceptions when it comes to other electronic resources, in that they expect the same speed, ease of use and functionality that they get with Google. This was also reported in the 2001 study. Many participants made comments to this effect, for example, ‘So far this has been the most disappointing search engine. Very, very unproductive. Did not give information even on the most popular topics’ and ‘To me this is just another search engine ... I would prefer to use Google instead as this is much more complicated’.

Conclusions

Many of the findings of this study concur with those of the 2001 EDNER services evaluation. Search engines continue to dominate information seeking and appear to be more ingrained in students’ searching behaviour. This dominance colours students’ perceptions of all online resources and, coupled with their inability to differentiate between different types of resource, leads to unfair comparisons and potential disappointments with academic resources. This in turn may result in low use of academic resources. Low awareness of services continues to be a problem amongst

students in the HE environment and many comments were made about the usefulness of the study by the participants; indeed many seemed to see it as a training and awareness session. Specific recommendations relating to presentation services of the IE are as follows:

- Resource training sessions need to form part of the student's learning experience and need to be integrated with their course of study.
- Where students use presentation services they are largely appreciative of their usefulness, greater effort is needed to increase awareness of relevant services.
- Tutors, librarians and the JISC need to work together in order to raise awareness and encourage use of resources.

2.3 Subject portals and review of SPP portal software solutions¹⁵

EDNER itself, and then the EDNER+ extension, had expected to undertake user testing of the subject portals, development of which was funded alongside 5/99. For reasons which are beyond the scope of EDNER+ to elucidate there has to date been no more than an initial demonstrator and the hubs have yet to release their working demonstrator (β) portals. These were expected for June 2004, which unfortunately was too late for user studies to be undertaken. Funding related to this specific task has been carried forward into 2004/05 and will be reported later.

In the meantime it has proved possible to explore one aspect of the SPP work, namely the choice of software solutions as a platform for subject portal development. The context of this lies in a change of development approach which was determined during the SPP project, namely to switch from full-blown portal development to the development of 'portlets' i.e. plug-in components. In essence this approach breaks portal development down into a series of building blocks. An important advantage is that it better supports integration of SPP-developed (or for that matter other) components into commercial platforms such as uPortal. There is already evidence (e.g. University of Birmingham) that the approach supports integration of subject-based components into institutional portals.

EDNER+ commissioned an experienced consultant to examine the software approaches being taken in some depth and this report has recently become available. This report demonstrates that the portlet approach, and the open source route selected for development work, have proved appropriate and have provided a means to maintain relevance in a fast-moving world where a variety of portal frameworks have become available commercially.

The report indicates that SPP may have underestimated the amount of resource needed and the skill set required. Given the highly distributed nature of the team, and the number of changes of project management, it is perhaps not surprising that delays have occurred, especially as the project manager was often not the line manager of the staff

¹⁵ WPZ4 Review of software solutions adopted by the Subject Portals Project (SPP)

working on SPP (who would be at the hubs). Despite this, it seems that by the end of August β demonstrators will be in place and there will be a documented repository of open source software available. A key issue then is to ensure that the project deliverables, achieved with so much effort over such a long period, can be sustained as useful resources for the community.

Section 3: Conclusion and reflections

The studies which make up EDNER+ have sometimes reiterated and reinforced the previous findings of EDNER, and sometimes thrown new issues to the fore. For example it is again clear that subject and disciplinary differences are a key factor in the uptake and impact of JISC IE resources, and we have also shown the continuing predominance of Google as a search tool. We have also investigated new areas, most notably how the JISC IE is perceived and is surfacing in FE colleges and the concept of 'quality'. The following are some reflections on our findings.

The impact of the JISC IE strategy and development on Higher and Further Education

The Information Environment

The concept of the Information Environment is still not widely understood, and does not appear to have captured the imagination of its academic stakeholders, whether they be vice chancellors or students. Why should this be? Is it perhaps a concept more useful to information planners, product and service developers and library managers rather than to the end user? While the average politics student or physics lecturer, say, may well have a personal collection of favourite search engines, websites, online resources, journals etc which facilitate academic study, perhaps few would articulate this as an 'information environment'. During most conversations held with stakeholders it was necessary to explain what the interviewer meant by the 'information environment' before discussion could take place. This is not to say that the JISC information environment has no value or has made no impact, but that the user's understanding of what we mean by it or what it implies may be hazy or open to misinterpretation.

Senior Managers

It was noted in the EDNER final report (see section 6.1) that Library and IT service directors 'feel disengaged' from the JISC's strategy. This feeling was certainly reiterated here among the HE Senior managers, even those who had previously been directly involved in JISC projects, or other initiatives. It seemed that the higher they moved up the institutional hierarchy, the more tenuous became their links with the JISC. So while the majority were somewhat aware of the JISC and of its work (especially its role as

network provider), they did not feel that the JISC engaged with them or their peer group in any very satisfactory way. And yet they expressed a wish for just such engagement, believing that they have much to offer the JISC community. The problem would seem to be finding a way to communicate which suits them and their needs, and so far this has not been fully achieved.

The FE Senior Managers appeared to be generally more aware than the HE Senior Managers of the JISC and the JISC IE and its strategy. It must be made clear though that we are not comparing like with like here. The HE interviewees were at vice-chancellor level, whereas those from FE were typically heads of department or of service. They were much more involved with their institution's learning and resource environments (so presumably closer to information resources, services and content) and they present a reassuringly positive perception of the JISC and its policies and strategy. A key facilitator of good information flows to this group appears to be a particularly effective Regional Support Centre, which provides advice and guidance, information, training, alerting services and many other kinds of support. Yet alongside this generally positive picture we see two major concerns. Firstly that the JISC does not yet understand the breadth and depth of the FE curriculum or of its student profile, and secondly that there is great need for further support with e-learning activities.

None of the problems highlighted by these two stakeholder groups needs be an insurmountable obstacle for the JISC. Both the FE and HE interviewees were eager to involve the JISC in their concerns, and thus it should be possible for the JISC to address these needs.

The effects of the IE's strategy and development on the planning and management of institutional information environments.

The FE Librarians' study was interesting as it both reinforces and contrasts with some of the EDNER findings from the study of HE librarians. The two groups were rather different. Whereas the HE librarians tended to work very largely within the confines of the University Library, their FE counterparts were often closely integrated into other related working groups, such as Learning and Teaching Units, or even Student Services, and indeed often had a dual role. They may therefore be closer to online teaching and

VLE activity than their HE peers, and may be better placed to play a more active role in the embedding of online resources into learning environments. Despite this however, our studies with this group have shown that while 59% of colleges had a VLE, only 5% were using it as their main learning platform. Indeed FE librarians report the same difficulties as HE librarians in their efforts to promote resources and to train teachers and students in their use, and they fear that uptake is low.

Two major issues preoccupied this group; the constraints placed upon them by their limited budgets (and particularly the lack of a budget specifically for the purchase of online resources) and the lack of online resources for so many FE subject areas. These two pressures may conflict, of course, as so many online resources are not free to the institution. This is an area which the JISC will need to manage with sensitivity if it wishes to go down the road of expanding provision for the FE community.

Institutional middleware managers

These proved a most elusive group of stakeholders to identify and reach, and EDNER+ was not greatly successful in eliciting their perceptions, despite trying several means of doing so. It is interesting that one of the findings to emerge from the study of FE librarians was that use of Athens and the provision of remote access for students and tutors appears to be low in FE colleges. This contrasts markedly with the situation in universities where it is taken as read that such provision will be in place. It may be that FE colleges are at an early stage of identifying their middleware needs, and do not yet understand what middleware can offer them. Perhaps this makes more urgent the formation of middleware managers into a cohesive and identifiable group which can help the spread of middleware within FE. More generally there is a need to seek assurance that the JISC IA and institutional IAs are fully aligned.

The pedagogical impact of the IE strategy and development upon students and teachers.

The survey work in Higher and Further Education suggests that the impact of the JISC and its services is still only partial with slightly more than half of staff in Higher Education and just below half in Further Education being aware of them. A positive feature of the survey was the finding that whilst in both sectors levels of awareness were moderate those staff who were aware of JISC and its services were likely to have used them. It

appears that if staff are aware of JISC services they are likely to be at an ‘advanced’ stage of concern. The same is true for students. Those students that are aware of these services are likely to have used them. There were differences between the HE and FE sectors and this may reflect the more recent intervention of the JISC in this sector. The differences found between the two sectors were in terms of both awareness and use, with lower levels of both apparent in FE.

The surveys confirmed that in both the HE and FE sectors discipline and subject differences had a strong effect, with a tendency for Maths and Engineering staff to show higher than average levels of awareness and use while staff and students in the Humanities showed lower than average levels of awareness and use. It may be that careful work with different disciplinary bodies may be needed to raise awareness in specific subject and disciplinary areas. This is also an area that we would recommend that the JISC may wish to consider as an area for further research.

Our work with further case studies provided an evaluation of how users interacted with specific 5/99 project outputs in relation to their integration with learning and teaching in higher and/or further education. This confirmed that the creation and provision of digital resources was not enough to ensure successful take-up and use in teaching and learning. It was found that users needed considerable technical and pedagogical support and that this support needed to be both built into the project and provided by relevant support agencies. Overall we recommend creating a culture of usefulness in which lecturers and students can see the value of using digital resources in enhancing teaching and learning through a process of *working with* staff and students who may be future users rather than simply *providing for* future users.

The provision of high quality information content and services to students and teachers, underpinned by a sustainable and scalable information architecture.

Two studies here, the quality study and the user testing of the JISC IE presentation layer, complement each other well. The observations made in the quality study about how information seeking behaviour might influence the way in which users approach, evaluate and use the RDN hubs (and other resources of course) are reinforced by the messages from the user testing study which show that these behaviours are, if anything, becoming more entrenched than when first recorded in the EDNER study. The latter study, furthermore, suggests that students may reject or be disappointed in resources which are complex to use or do not work as their familiar favourite search engine does.

It is very encouraging to see though, that when students are presented with new online resources, even in the artificial environment of a user testing session, and are required to use and evaluate them, that they are often pleased with what they are shown, and claim that they will go on to use them regularly and tell their friends about them.

The review of SPP portal software solutions was timely, and supported the need for user testing of these emerging subject portals. EDNER+ looks forward to being involved in this activity in the near future.

Section 4 Dissemination

Publications

Markland, M (2004) Does the student's love of the search engine mean that high quality online academic resources are being missed? (Awaiting publication)

Griffiths, J.R. and Brophy, P. (2004) Student searching behaviour and the web: use of academic resources and Google *Library Trends*, Winter (**in press**)

Markland, M (2003) Technology and people: some challenges when integrating digital library systems into online learning environments. *New Review of Information and Library Research* Vol 9 2003 pp 85-96 Taylor Graham, London

Zenios, M., Goodyear, P. & Jones C. (2004) Researching the impact of the networked information environment on learning and teaching, *Computers and Education* 43, pp.205-213.

Conferences

Workshop Symposium for the Fourth International Conference on Networked Learning, Lancaster University, April 2004.

Brophy P (2004) Networked learning and networked information: towards a theoretical basis for the development of integrated information environments. Proceedings of the fourth international conference on networked learning 2004 Eds Banks S, et al.

Lancaster University and the University of Sheffield

<http://www.shef.ac.uk/nlc2004/Proceedings/Symposia/Symposium9/Brophy.htm>

Fisher S (2004) Towards an evaluation framework for large scales networked learning initiatives. Proceedings of the fourth international conference on networked learning

2004 Eds Banks S, et al. Lancaster University and the University of Sheffield

<http://www.shef.ac.uk/nlc2004/Proceedings/Symposia/Symposium9/Fisher.htm>

Jones C, Zenios M and Griffiths J (2004) Academic use of digital resources: disciplinary differences and the issue of progression. Proceedings of the fourth international conference on networked learning 2004 Eds Banks S, et al. Lancaster University and the University of Sheffield

http://www.shef.ac.uk/nlc2004/Proceedings/Symposia/Symposium9/Jones_et_al.htm

Markland, M and Kemp, B (2004) Integrating digital resources into online learning environments to support the learner. Proceedings of the fourth international conference on networked learning 2004 Eds Banks S, et al. Lancaster University and the University of Sheffield

http://www.shef.ac.uk/nlc2004/Proceedings/Symposia/Symposium9/Markland_Kemp.htm

Zenios, M., Jones, C., Goodyear, P.& Asensio, M. (2004) Designing to facilitate learning through networked technologies: factors influencing the implementation of digital resources in higher education. Paper to be presented at ALT-C 2004: Blue skies and pragmatism - learning technologies for the next decade, Exeter, 14-16 September 2004.

Available at: http://www.alt.ac.uk/altc2004/timetable/abstract.php?abstract_id=78

Presentations

My Dad uses it: Ten reasons why students choose Google. Presentation to CILIP Multimedia Information & Technology Group (North West), Manchester Metropolitan University, 1 April 2004; Available online at

<http://www.bolton.ac.uk/learning/mmitnw/prev.htm>

Poster session at JISC Programmes Meeting, July 2004. Four posters were presented.

EDNER+ the evaluation of the JISC Information Environment (IE)

Higher Education Senior Officers' perceptions of the JISC IE

Further Education Senior Officers' perceptions of the JISC IE

Awareness of JISC Services among HE staff and students

Issues Papers

These are published on the EDNER+ website <http://www.cerlim.ac.uk/projects/iee/ip/> and are:-

1. *Assessing impact: some issues for large scale technology programmes in teaching and learning*
2. *Disciplinary differences: some implications for the information environment*
3. *What is evaluation?*
4. *A general overview of the Further Education Information Environment: An FE Librarian perspective*
5. *Quality*
6. *Institutional repositories for the research community*

List of workpackage reports

The following EDNER+ workpackage reports will be published on the dissemination page of the EDNER+ website at <http://www.cerlim.ac.uk/projects/iee/dissem.php> in due course.

Strand A Information Environment Evaluation

WP 2.1 Stakeholder consultancy report. Further Education senior officers

WP 2.2 Stakeholder consultancy report. Higher Education senior officers

WP 2.3 Stakeholder report: FE library staff

WP4 Evaluation of IE presentation services

WP5 Surveys of impact in UK Higher and Further Education

Quality study 1: Comparison of the RDN Hubs and Google as search tools

Strand B EDNER Carry Forward

Z4 Review of software solutions adopted by the Subject Portals Project (SPP)

Z6 Usage Assessment of JISC 5/99 Teaching and Learning project outputs: Further case studies