Aberystwyth University

JUSTEIS: JISC Usage Surveys: Trends in Electronic Information Services Final report 2003/2004 Cycle Five

Urquhart, Christine; Spink, Siân; Thomas, Rhian; Yeoman, Alison; Durbin, Jane; Turner, Janet; Fenton, Roger; Armstrong, Chris

JISC User Behaviour Monitoring and Evaluation Framework

JUSTEIS

JISC Usage Surveys: Trends in Electronic Information Services

Final report – 2003/2004 Cycle Five report

Department of Information Studies
University of Wales Aberystwyth
with
Information Automation Ltd (Centre for Information Quality Management)

AUGUST 2004

RESEARCH TEAM

RESEARCH OFFICERS (UWA) SIÂN SPINK, RHIAN THOMAS, ALISON YEOMAN

RESEARCH STAFF: JANE DURBIN, JANET TURNER

RESEARCH OFFICER (IAL) ROGER FENTON

PROJECT DIRECTOR (UWA) DR CHRISTINE URQUHART

PROJECT DIRECTOR (IAL) CHRIS ARMSTRONG

Disclaimer
The views expressed in this report are those of the authors, and do not necessarily reflect those of the Department of Information Studies, University of Wales Aberystwyth, or the Centre for Information Quality Management.

LIST OF CONTENTS

4

LIST OF TABLES AND FIGURES

Executive summary

Aims and objectives of JUSTEIS Cycle Five

The aims of JUSTEIS 5 were to:
- consolidate the monitoring of user behaviour undertaken during the previous four cycles, in accordance with changes agreed[1] by the JCALT committee
- extend the monitoring and evaluation framework to new communities which are now a concern of the JISC
- respond, through a variety of activities, to issues identified in discussions with other JISC committees, taking into account the review of JISC evaluation activities, the changes in government policies for formal education, lifelong learning and workplace learning.

The approach agreed with JCALT was to:
- consolidate the monitoring and evaluation (M&E) framework for studying user behaviour AND include new audiences (e.g. Adult and Community Learning (ACL), sixth form colleges (SFC)
- build on the in-depth qualitative data analysis developed in Cycle 4, working with JUBILEE, and provide a data archive to help the audience for the M&E framework find answers to questions they may have (on staff development and student skills, for example)
- focus on dissemination activities, ensuring that the lessons learned are targeted to particular audiences.

Scope of project

Number of students interviewed = 226 (146FE, 80HE), across all types of disciplines
Number of questionnaires obtained from students = 142 (28 SFC, 82 FE, 32 HE)
Number of participating institutions = 28 (18FE , 10HE) (Russell to sixth form colleges
Number of participating departments = 28 (18FE, 10HE)
Number of senior library managers interviewed = 11
Number of academic staff interviewed = 17 (9FE, 8HE)

Key messages

Virtual/Managed Learning Environments

FE colleges are making more use of Virtual Learning Environments now. There is slow progress towards greater use of VLE functionality in HEIs, but students comment on the piecemeal approach in some institutions.

One possible lever for greater use of VLEs is the 'drop box', an electronic post box facility for electronic submission of assignments. Receiving assignments in this format makes checking for plagiarism and incorrect Web citation easier, but there are huge implications for administrative and examination systems within institutions in moving from a paper-based system to an electronic system.

Information services need to know more about the ways in which staff read and assess coursework assignments – where they do this, for example. There needs to be far more emphasis on mobile computing support for academic staff if electronic submission is the way forward.

---

[1] JCALT meeting October 2003

'Copy and paste' plagiarism from the Internet

This is not a new problem by any means – students from the first cycle of JUSTEIS in 1999/2000 talked about copying and pasting from the Internet into their assignments. The availability of diagrams, and other graphics was often the key attraction as a way of making their assignments more attractive, and different from those of other students. A secondary motivation was saving on printing costs when working on campus. In copying and pasting in the way they described they often lost the URL, unless they were very methodical in their approach.

Among the sites visited this year, the same message occurs as last year. FE students appear to have more reinforcement from teaching staff on what constitutes plagiarism, and what must be done to avoid the charge of plagiarism. A more active approach is now required by academic staff in HE – and some staff are starting to do this.

The evidence from the literature is not comforting, with around half the science students in one survey indicating that if they were pressured for time, and felt at risk of failing a module, they would be willing to copy/paste from Web held materials without modification or referencing if this would save them from failing a module. Estimates of the actual frequency of such practice suggest that anything from 10% to 20% of students actually do pass off other peoples' work as their own knowingly.

How could Library and Information Services staff respond? Apart from promoting the JISC Plagiarism service the conclusions from JUSTEIS are:

- Students need guidance from teaching staff on what counts as plagiarism – verbal guidance could be backed up by clear and succinct guides

- Web citation practice needs to be better, and students need to know that the citations will be checked, and that their text will be checked.

- Electronic submission of assignments may make such checking much easier – but some academic staff will need convinced of this.

Open access journals and institutional repositories

In 2000 the concept of a page charge model for journal publishing (to provide more open access) was novel to most of the senior librarians interviewed for JUSTEIS. There was just the glimmer of interest in institutional repositories. Developments during 2003 and 2004, particularly in the biomedical arena, have forced a change of pace. In the UK, the House of Commons Science and Technology committee has recommended that universities make their research papers free online, and that government funded research grants ought to make free access to the research findings a condition of the grant.

JISC is doing work on institutional repositories and encouragement of open access journals – but there needs to be greater awareness of this work among senior librarians generally.

Performance measurement and benchmarking

There is not a shortage of work on performance measurement for digital libraries – probably too much guidance exists. The case study work for JUSTEIS in this cycle indicated that the important aspects are still hard to measure simply and reliably. Libraries need to know whether the provision of EIS has had a beneficial impact on student learning – and whether information skills have improved. Objective measurement is almost impossible, proxy indicators are maybe unreliable or not sufficiently valid.

The case study work, combined with evidence from the literature on electronic library evaluation, suggests that a simple balanced scorecard approach to assessing the impact on e-learning would include these key performance indicators, for common situations where HE and FE institutions are working together:

- Percentage of tailored electronic resources available off campus as well as on campus *(student(customer) benefit in saving time)*
  - Policy link: widening participation
- Percentage of modules/departments for which library staff have authorised access to relevant assignments for checking information skills development *(Library staff need feedback on their contribution to skills training and student learning)*
  - Policy link: e-learning, employability, and role changes of library staff in academic support

- Number of meetings and visits to departments AND/OR Development of specialist Web sites/pages for VLEs (or incorporation of Regional Support Centre subject guides (or equivalent) in course materials) AND/OR Percentage of modules to which library staff have access on the VLE to provide students information skills support *(Evidence shows that academic and library staff need to work together, measures required of internal processes to assess whether joint working is increasing)*
  - Policy link: 'Byte' size e-learning, role changes of library staff in academic support, role changes for academic staff in e-learning

- Percentage of HE licensed resources available to FE students and tutors on franchised courses *(Evidence points to this as a key financial barrier)*
  - Policy link: open access initiatives, licensing

- Percentage of library and academic staff with recognised competencies in e-learning support *(An indicator of learning and growth, requires input from the Association of Learning Technologists)*
  - Policy link: role changes for library and academic staff in e-learning development

The impact of training on use of EIS

JUSTEIS evidence shows that use and awareness of electronic journals has increased since 1999 – and the number of students reporting that they received LIS training has increased.

LIS input to training has a statistically significant effect on e-journal use and awareness, and joint training. Joint working, LIS staff and academic staff working together, appears the most effective route to promoting uptake of e-journals.

Gender differences in taking advice

There is no major difference in habitual information seeking routines between male and female students. However, female students in JUSTEIS were significantly more likely than men to have relied partly on course materials or tutor advice. Female students are significantly more likely to have approached LIS staff for advice or to have used training materials supplied by LIS staff.

Further Education and Higher Education – and lifelong learning

Most students, whether in FE or HE, explained how the need for money from part-time work shaped their approach to preparing coursework. If electronic information services provide useful information quickly and reliably they will be used, and if not, they won't.

Information on the move?

Results this year show a shift in popularity towards the use of texting and mobile phones as the electronic information services most used by students. The Internet and search engines are in second place, followed by email. But the message is clear – to reach students you should use their mobile phone number.

OVERVIEW REPORT

Acknowledgements

Main recommendations

Communication with students

For students, mobile phones and texting are the most frequently used electronic information services.

Recommendation:
JISC to increase advice on cost-effective and efficient ways of setting up communications from institution to student.

Development of Virtual Learning Environments (VLEs) and e-learning

FE staff are most attracted by an approach which encourages development and use of interactive learning materials which will hold the interest of their students.

HE staff are more likely to use VLEs as depositories for handouts, administrative information and access to resources. Staff are aware of online assessment possibilities but few are actively involved. One possible lever for HE is the current concern with plagiarism – if electronic submission of assignments via the electronic 'drop-box' was a viable solution to some of the difficulty of checking easily whether assignments were plagiarised, then there might be some incentive to move towards online assessment.

Recommendation:
JISC to continue to promote use of interactive learning software for FE college staff.

JISC publicity and promotion of online assessment to demonstrate the costs and benefits for plagiarism prevention and detection.

Open access, journal publishing and institutional repositories

There has been considerably more development over the past year, with the growth of companies such as BioMedCentral, the House of Commons Science and Technology committee report on journal publishing.

Over the past years senior librarians in HE institutions have seemed unaware of the main economic issues.

Recommendation: JISC provide a briefing paper and workshops to ensure greater awareness and understanding of the implications of a move to open access publishing, and development of institutional repositories.

Library contribution to information skills training

The evidence accumulated over the past five years of JUSTEIS indicates that library input to training has a statistically significant effect on the uptake of electronic journals by students, provided the training is the joint responsibility of academic staff and library staff. The pattern of e-journal use and specialist resource use depends on the discipline – the differences are statistically significant.

Recommendation: JISC to continue to promote a variety of discipline-specific workshops on information skills training and promotion for specific resources.

A1 Introduction

The overview report deals with the main trends in uptake and use of electronic information services (EIS) by staff and students identified in 2003/2004 (Cycle Five).

The main themes for performance measurement of electronic information services, identified from the case studies in Cycle Five, follow.

The final section deals with the results of the more in-depth analysis of the data from the previous years, both quantitative and qualitative analysis.

A2 Monitoring user behaviour

A2.1 Aims and objectives (work package 1)

The aim of this work was, as in previous cycles, to provide evidence of any trends in user behaviour, and to assess more fully the reasons for the trends. Personal face to face interviews conducted at a wide range of institutions throughout the UK identify the main concerns of students from sixth form colleges, modern apprentices, foundation degree students, other FE students, undergraduates from all types of disciplinary areas, as well as postgraduates. Interviews with academic staff and senior library managers complement the student interviews giving the other side of the learning equation and the concerns of those managing access to electronic services, and supporting their use. This cycle focused in particular on students at sixth form colleges, modern apprentices and foundation degree students, and aimed to conduct interviews with some postgraduates in the newer scientific research areas.

A2.2 Sample

Number of students interviewed = 226 (146FE, 80HE), across all types of disciplines
Number of questionnaires obtained from students = 142 (28 SFC, 82 FE, 32 HE)
Number of participating institutions = 28 (18FE , 10HE) (Russell to sixth form colleges
Number of participating departments = 28 (18FE, 10HE)
Number of senior library managers interviewed = 11
Number of academic staff interviewed = 17 (9FE, 8HE)

A2.3 Purposes of EIS use

There are few changes in the profile of reasons why students are using EIS. The main reason described for using EIS concern coursework, mostly for assignments. There was no change in the proportion of searches described that involved leisure or shopping purposes. The split is approximately 85% academic/15% leisure.(Section 2.3.1, 3.3.1)

A2.4 Profile of EIS usage, search engine preferences

Unsurprisingly Google is the search engine of choice, and many students commented that it found them the type of information they required for their studies. Search engines were toppled from their lead position as the most frequently used electronic information service, as this year texting and mobile phones were the most widely used electronic information services among students interviewed. Search engines were second, followed by e-mail for academic or personal purposes. The demand for mobile computing and accessory information services is there. (Sections 2.3.2, 2.6.1)

A2.5 Trends in EIS usage among undergraduates

Time constraints may influence undergraduates' preferences for easy access to full text, and their preferences for going to organisational sites recommended to them by academic staff. Sometimes their expectations of e-journals are unrealistic, actual attempted use

disappointing and alternative resources are usually available. One or two 'gems' of specialist resources were mentioned. (Sections 2.3.3, 2.6.3)

> *'I've used it (Sport England website) over the last couple of years…well, we've been told to use like reputable websites, anything with like org or government type of thing.' [147101, from text units 22-38]*

> *'I've tried to use them, I don't get on with them, they're not set up so can…the full journal, if you enquire about it, they say we use it to find the paper reference which underestimates the whole point of journals online to me, online you should be able to access them online, I know the university does subscribe to them.' [143104, from text units 189-195]*

> *'CAB Abstracts are amazing, the amount of information you can find on it is quite incredible. Very, very helpful, very useful….it's just good to know what's out there. [179106, from text units 57-59]*

A2.6 Trends in EIS usage among FE students

FE students are likely to mention being guided to particular websites by their tutors, and may be given a list for searching on their own, or told what to look at in class. Use of specialist information resources supplied through JISC (such as Infotrac) was very limited although there was slightly more awareness of Infotrac this year. More specialist learning resources, e.g. developed using software such as 'Hot Potatoes', are likely to be more useful to FE tutors than pure information resources. An exception to that is general current awareness and newspaper services, and the Guardian online was mentioned favourably at several FE institutions. (Section 3.3.2, 3.3.3)

> *'I like the Guardian. I always seem to find an article which interests me or which relates to what I'm researching.' [139106, from text units 29-30]*

> *'I wanted some relevant information on fluoridation in our water because it was on the news recently….so I went to the Guardian for that as well…and that was brilliant because it also does most asked questions and answers…the questions are what you need to ask really.' [139104, from text units 43-49]*

A2.7 Routine information seeking and information literacy

This year use of specialised electronic information resources was more of a habit for some students than we found in previous years. More students indicated that they would use the Internet first, but very few students would only use the Internet to solve a routine study problem. A combination of Internet, and textbooks would be used. (Section 2.6.2)

FE students were more likely than HE students to complain about not finding the right information in their Internet searches.

> *'Finding the stuff was quite difficult…I don't know, I always have trouble with it , I have to keep putting in different questions. Because I never find the right information.' [141103, from text units 63-68]*

Undergraduates were largely content with their search results: 65% were satisfied or very satisfied, 25% were neither satisfied nor dissatisfied. (Section 2.6.4)

As in previous years, the clinical and biomedical students – in both FE and HE – are the most information literate in the sense that they are more aware of specialist resources from the outset, and seem more capable of appraising the information they find. (Section 2.6.5)

A2.8 Trends in information skills education and training in higher education

Previous cycles have noted the key role of academic staff in encouraging students to use electronic information services. Good practice identified this year included staff demonstrating how to take images and other material from the Web, and citing this material. Staff are increasingly guiding students to use particular organisational Web sites.

> *'I did AS level IT so I knew sort of how to use a computer but like people didn't know, the lecturer did actually explain how to like take pictures off the Internet and things and how to reference them and how to search…we've just been recommended in the last few days a load of things for environmental science which was like electronic journals, like sort of Government agencies and things, and I'm definitely going to check those.' [179101, from text units 34-38, 287-290]*

Students (usually studying biomedical or clinical medicine subjects) reported that some library-based training had been useful.

> *'We actually had a lecture from, I'm not sure what his role is at university…well he's like our library consultant if you like. And he gave us a lecture on how to use library electronic journals and the Athens numbers and how to use the search engines and your know, useful sites, how to determine which is a useful and which isn't a useful site.' [166105, from text units 55-60]*

One disadvantage of the extreme 'Net nanny' approach, dissuading students from using Internet materials that are neither reliable nor authoritative, is that students will take the safe approach for assignments, using only books or journals. The outcome may be students who are not information literate in evaluation of Internet resources, and from the lifelong learning perspective, this is an opportunity missed.

There are no noticeable trends in greater use of formal or more structured training courses. There were favourable comments from students about:
- Working in small groups for Key Skills training in the first year, as part of the introduction to higher education

- Diagnostic programmes for Key Skills which not only identified the gaps but suggested what should be done. (Sections 2.8.3, 2.8.4)

> *'Not on Blackboard but I've used the Key Skills on line which is through the intranet, it's all linked but you've got, you can go into Blackboard or you can go into the library and catalogues and it's all in that same, but I've done the key skills and you go through all the questions and it tells you what you're good at and what you need to work on and how, it doesn't just tell you and then you can't do presentations it says you need to learn how to do this skill, they taught us how to assess ourselves, that's what the module was about, it was about doing Key Skills, the title was something about skills but I can't remember, social science skills and methods. [140104, from text units 162-170]*

A blanket approach to the timing of e-journals training, for example, is unlikely to be effective. Different disciplines use the specialist research resources – or even journals – at different stages. Training at the 'point of need' will be in first year for some disciplines but in the third year for others. (Section 2.8.5)

A2.9 Trends in Key Skills and information skills in further education

More FE students commented on having had some training at school year. This varied, and not all students had done GCSE in IT or a 'key skills' course by any means. Very few had any knowledge of advanced Internet searching, or how to narrow down searches to produce more specific results. As many FE students are dissatisfied with their searches

for that reason, some support and training in more advanced searching would save them time and make their searching more effective. (Section 3.5.4, 3.7.2, 3.7.3)

A2.10 Communication with students, professional communication

There was more evidence this year of academic staff approving of moves to contact students via text messages.

> 'There are some concerns and/or objections by some colleagues who say well not all students have got a mobile. 90% have and if they haven't the other ones can pass it on…And we've got a way of setting it up through the university system so that they would be texted on their mobile and told information. I mean we do have various screens round the university but nobody looks at them and this seems to be work rather well and the students think it's quite good fun.' [140301, from text units 248-257

University web sites may provide useful information for those headhunting for external examiners or new staff.
(Section 2.5.3)

A2.11 Staff training

Busy teachers are hard to attract to training courses, and those who do attend are often the converted. Evidence this year again points to those already interested attending sessions provided by SOSIG, for example. Most confess to not taking up the opportunities offered, although one-to-one help, on occasion is appreciated, and several academic staff (mostly in HE) mentioned using booklets or taking note of email messages about resources or new searching options. There is more pressure to attend training on use of virtual learning environment software, sessions on tutorial support, and ILT certificate training may be mandatory. For some FE staff there is a pay incentive to do IT courses. (Sections 2.8.6, 3.7.6)

A2.12 VLEs - strategic institutional developments during 2003/2004

There is more awareness, but the 'problem plateau' identified last year still remains. Staff are not making full use of the functionality of the VLE, and there is little evidence of interactive use of VLEs. Higher education institutions are still dealing with the legacy of different departmental initiatives, and these in-house VLE developments may offer features that some departments want and need for their student groups (who may be out on placement for a portion of the year).

FE colleges are making more use of Virtual Learning Environments now. There is slow progress towards greater use of VLE functionality in HEIs, but students comment on the piecemeal approach in some institutions.

One possible lever for greater use of VLEs is the 'drop box' facility for electronic submission of assignments. Receiving assignments in this format makes checking for plagiarism and incorrect Web citation easier, but there are huge implications for administrative and examination systems within institutions in moving from a paper-based system to an electronic system.

Information services need to know more about the ways in which staff read and assess coursework assignments – where they do this, for example. There needs to be far more emphasis on mobile computing support for academic staff if electronic submission is the way forward. (Sections 2.9, 3.8, 6.7)

A2.13 Students and e-learning, VLE use

Students, as in previous years, appreciate the feeling of security that 'it's all there' on the VLE – what they need for their learning. They would prefer a more consistent approach by all staff, but accept that this does not happen at present.

FE students liked the interactive exercises that were available for them – in some cases these were simply on the intranet. Other than that, they were often given lists of websites.

> *'Not that, but we've got a student intranet where you can access and print off work or also do online tests and they give you a mark. That's quite good. [167108, from text units 120-122]*

There is the danger of spoonfeeding students with information resources, rather than encouraging them, at least for part of their studies, to look for and appraise information on their own.

A2.14 Purchasing, collection development, and open access

Librarians, particularly in the smaller (e.g. sixth form college or other specialised FE colleges) explained that the JISC deals of the variety – buy cheap, buy lots but buy long, sometimes tie their hands too much. In some ways, less is more for them as working with fewer resources, but tying these into the curriculum and working with teachers, may be more effective.

Interviews with senior librarians in previous cycles have indicated that few have seriously considered the possible implications of a move to open access publishing or the 'author pays' model. There may be more awareness now, but JISC needs to produce a briefing paper on the current issues, the pros and cons, as there has been considerable ignorance of the issues on open access, author/institution pay models, and the links (or not) with establishment of institutional repositories.

A3 Case studies and performance evaluation

A3.1 Tailoring RDN Virtual Training Suite materials

In one case study, training materials were developed using training packages available from the RDN (Resource Discovery Network) Virtual Training Suite (VTS) and the course materials to develop exercises for the students. The main objectives were to improve students' skills in judging the quality of the information they retrieved from the Internet, and to improve their referencing.

Lessons learned: RDN VTS materials are very useful as a basis, but are likely to need modification to suit local needs.

A3.2 Effective use of VLE features to support information skills

In another case study, information skills training and support were closely intertwined into the curriculum, with students working in learning groups, and library information skills sessions delivered over a period of time at the appropriate point in the semester for the module requirements. There is 'dedicated time' in which students know that library staff are available to help with the coursework assignment.

The good points about this scheme are:
- Feedback (on the logistical aspects) is obtained through the modular evaluation systems and library staff have made changes accordingly, by increasing the hands-on component of the training
- Skills sessions are tailored around the subject requirements of the students
- Guidance and support is flexible, and matches a variety of student needs and learning styles

The drawbacks are:
- Library staff (and academic staff) find it difficult to formally assess the information skills component of the assignment. Although students produce evidence of their literature search technique the search itself is not assessed.

- Some students do not realise that they need to continue to develop skills beyond the basic level – maybe a result of the modular approach?

Future plans for the library are to:
- Provide question and answer services within the VLE to avoid answering the same questions from students time and again
- Continue to develop information skills support which is tailored to the subject discipline requirements of students – the relevance must be obvious
- Become more involved in the assessment process – by gaining (it is hoped) authenticated and controlled access to student folders on the VLE, to assess the literature searches and to identify students who need more support.

A3.3 Integration, time and trust

Both case studies emphasised that integration of information skills into the curriculum is a 'fine ideal'. Getting there requires trust between library staff and teaching staff – and that takes time measured in years, not months.

A3.4 Performance measurement and balanced scorecards – measuring things that matter

Both case studies contributed to the further development of the balanced scorecard suggested last year. The emphasis is on developing key library performance indicators for the things that matter for e-learning.

Scorecard perspective	Main benefit/barriers identified	Performance indicators
Customer (Student)	Students save time through access to resources off campus Students' information skills improve as part of their learning development	Percentage of tailored electronic resources available off campus as well as on campus Percentage of modules/departments for which LIS have authorised access to relevant assignments for checking information skills development.
Internal processes	Academic and LIS staff need to work together, and also with Regional Support Centres	Number of meetings/visits Development of specialist Web sites/pages for VLEs/ incorporation of RSC subject guides in course materials Percentage of modules to which library staff have access on the VLE to provide student information skills support
Financial perspective	Licensing problems between FE and HE	Percentage of HE licensed resources available to FE students and their FE tutors
Learning and growth	FE college staff (teaching, and LIS, e-learning support)	Percentage of staff with recognised competencies in developing and maintaining e-learning support.

Table A1 Balanced scorecard for library performance on e-learning

A3.5 Policy developments

There have been many initiatives on electronic library evaluation – guidance and ideas are not in short supply.

The eVALUEd toolkit reflects some of the JUSTEIS findings, although the JUSTEIS work suggests that library managers need to focus on the strategic concerns (as in the balanced scorecard) and choose measures accordingly.

A3.6 Emerging consensus on digital library evaluation

Review of the evidence from the literature on digital library evaluation methods and models, combined with JUSTEIS findings over the past five years indicates that there may be a growing consensus on the following:

- Focus on the customer (what matters to users, and what are the important organisational objectives)

  This requires ethnographic research of the type undertaken in JUSTEIS to examine: 1) what really matters to students as they use EIS in their learning, and 2) how high level government educational policy objectives are translated into operational objectives by academic staff and LIS managers.

- New metrics are required for digital libraries for translating data available (e.g. transaction logging, vendor-based statistics[2]) into meaningful performance measures which keep the user in the loop of system performance assessment (D-Lib Working Group on Digital Library Metrics[3]).

There is some evidence for the following:

- The manner of EIS usage is changing with browsing more common, attention paid to individual pages on the Web may be much less than that given to print pages.[4] [5]

  Generally students do not talk about evaluating the information they read on web pages in any depth, and JUSTEIS research indicates very clearly that time saving is a major consideration as a benefit for EIS, compared to print resources. Work for Project COUNTER[6] suggests that it is desirable to build up a statistical model, to estimate that x% of downloads will be browses, y% will be used by researchers and z% by undergraduates. That will help inform a purchasing model that publishers and librarians could use for a price flexible model.

There is less evidence on:
- The comparative benefits of different evaluation methods

- Financial measures that could be used
  Human resources may account for 50% of the costs of the library service – how best to monitor and evaluate changes in roles in academic and learning support?

A3.7 Evaluation barriers

One of the major difficulties is the lack of evidence for the effectiveness of existing forms of training or other information skills support – a study such as JUSTEIS can provide a general picture but it is a cross sectional survey. Proper trials are required and these are extremely rare.

The case study work showed that longitudinal evaluation can be thrown off course by a range of events such as:
- Policy changes

- Staff changes at the institution

- Curriculum changes

---

[2] JISC/Publishers' Association (PALS) working group: Vendor-based usage statistics. http://www.jisc.ac.uk/index.cfm?name=wg_pals_home
[3] D-Lib Working group on digital library metrics. http://www.dlib.org/metrics/public/
[4] Lynch, C. Measurement and evaluation in the networked information world. In: McClure, C and Bertot, J. (eds.) *Evaluating Networked Information Services.* Medford, NJ: Information Today, Inc, 2001, p.293-326.
[5] Nicholas, D et al. Reappraising information seeking behaviour in a digital environment: bouncers, checkers, returnees and the like. *Journal of Documentation* 60(1) (2004): 24-43.
[6] Davis PM. Personal communication 30 June 2003.

A set of indicators to chart progress needs to be chosen carefully. The recurrent policy themes over the past years have been:

- Widening participation

- E-learning

- Employability skills

- Growth of open access initiatives

- Learning objects, chunks of learning ("byte-size"

- Blurring of roles around learning technologists, librarians and learning resource support staff.

A3.8 Future directions for the balanced scorecard

The following diagram indicates how the policy initiatives might map to the revised balanced scorecard (above). This is provisional and more work needs to be done to develop valid indicators for learning and growth, and financial indicators which might be relevant to other types of institution (such as research-intensive universities).

Balanced scorecard perspective	Main benefit and barriers identified	Performance indicators	Policy relationship
Customer (Student)	Students save time through access to resources off campus Students' information skills improve as part of their learning development	Percentage of tailored electronic resources available off campus as well as on campus Percentage of modules/departments for which LIS have authorised access to relevant assignments for checking information skills development.	Widening participation E-learning Employability Role changes
Internal processes	Academic and LIS staff need to work together, and also with RSCs	Number of meetings/visits Development of specialist Web sites/pages for VLEs/ incorporation of RSC subject guides in course materials Percentage of modules to which library staff have access on the VLE to provide student information skills support.	Role changes E-learning Byte sized learning Employability Employability
Financial perspective	Licensing problems between FE and HE	Percentage of HE licensed resources available to FE students and their FE tutors	Open access
Learning and growth	FE college staff (teaching, and LIS, e-learning support)	Percentage of staff with recognised competencies in developing and maintaining e-learning support.	Role changes

Table A2 Balanced scorecard showing links with policy

A4 Information literacy and the student experience

A4.1 Approach to data mining

The quantitative data mining this cycle aggregated data over the previous cycles to give a data set large enough to test several hypotheses which have been suggested over the previous years.

The qualitative data examined in more detail the effect of part-time working, financial pressures, commuting and other lifestyle factors on students' approach to learning and use of electronic information services. Some of these pressures may contribute to the apparent rise in Internet plagiarism, and trends in 'copy and paste' of Web-based material are examined.

A4.2 Effects of training on use of e-journals

Examining the effect of training on e-journal use is complicated by many factors – students' lack of clarity in terminology on what an e-journal is, and their interpretation (and recall) of what constituted 'training'. These were revealed in interviews.

Adding up all sources of training, and testing whether there was an association between all types of training and use or awareness of e-journals found no significant association. The reasons for this could be that one type of training was having no effect or a negative effect which cancelled out a positive effect.

Examining the data more closely, to see whether any particular type of training had a beneficial effect showed that:

- Training by LIS staff alone had no statistically significant effect on e-journal uptake

- Training by tutors alone had a statistically significant effect (adverse) on e-journal uptake

- LIS input, in joint training with academic staff, was effective in increasing e-journal uptake (Figure A.1)
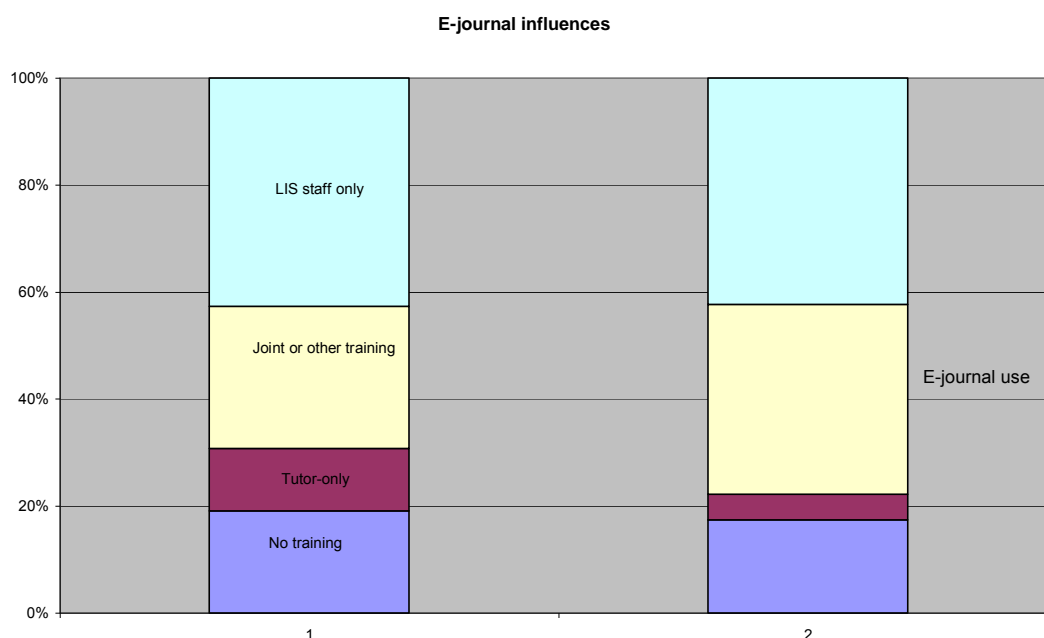
Figure A1 Effects of different types of training on e-journal use

23

A4.3 Disciplinary differences

These have been well rehearsed in previous JUSTEIS reports, differences between the disciplinary groups in e-journal use are statistically significant. E-journal use among clinical medicine (in particular) and science undergraduates is higher than among other disciplinary groupings. Around a quarter or more of undergraduates in the clinical medicine and science areas use e-journals, compared to 19.6% of maths and engineering graduates and around 10% for both the social sciences and arts and humanities undergraduates.

This disparity may account for some of the lack of effect of training on overall e-journal use. If e-journals are not yet part of the pattern of EIS use in a particular discipline, if teaching staff are not using e-journals, then it is unlikely that students will be using e-journals as a result of guidance.

A4.4 Staff and student differences in search strategies

Unsurprisingly there are statistically significant differences. One interpretation over the differences in the number of EIS used in a search is that FE students are less persistent than undergraduates or staff in their search strategies (or else they do not perceive that there are alternative resources available for them). Comparing staff and HE students, staff seem more likely to focus on one resource (if possible?) but if they need to persist, they will, to a marginally greater extent than HE students.

A4.5 Student experience – juggling study and part-time work

The media focus on the experience of university students and their financial problems, leading to many being unofficially part-time students as they need to work to cope with their debt. What the JUSTEIS interviews indicate is that financial problems, juggling part-time work and study, often combined with commuting are very much part of the experience of FE students.

The result is a highly strategic approach to learning at best. Electronic information services will be used if the information is available, reliable and the process saves time. Time-saving is probably the key benefit.

A4.6 Gender differences in information behaviour

There is no major difference in habitual information seeking routines between male and female students. However, female students in JUSTEIS were significantly more likely than men to have relied partly on course materials or tutor advice. Female students are significantly more likely to have approached LIS staff for advice or to have used training materials supplied by LIS staff.

A4.7 Information seeking habits

Convenience and authority count – but previous knowledge and experience shape most information seeking. Changing information behaviour means working through student peers (a viral marketing approach) or with teaching staff.

- Around 1 in 2 FE students are relying on own experience and knowledge (habit) when selecting the EIS used
- Around 1 in 3 FE students are basing their selection on advice from teaching staff
- Around 1 in 5 FE students are basing their selection on advice from friends or colleagues.

The figures for HE undergraduate students are a little different though the same order applies:
- Around 3 in 5 undergraduates rely on their own experience and knowledge
- Around 1 in 5 undergraduates are basing their selection on advice from teaching staff
- Around 1 in 7 undergraduates are basing their selection on advice from friends or other students.

A4.8 Plagiarism and 'copy and paste'

Examination of interview data over the past five years revealed how students copy and paste from the Internet for their coursework. Important features of the practice are:

- Easy acquisition of diagrams and graphics is a key attraction

- Cutting and pasting extracts into Word saves on printing costs – but the URL reference is easily lost, aggravating the problem of poor citation practice

- FE students are more likely to explain how they rephrased the text, putting it into their own words, as advised by their tutors. HE students very rarely mention this.

- HE staff – but possibly only a few – are taking a more active approach to explaining what is good practice and what is not

Literature evidence suggests that electronic submission of assignments would be one way forward. This might encourage students to insert the correct URLs (as markers could easily check), and checking for copied and pasted material from Web sources or from the work of other students might be easier. However, a change to electronic submission of assignments is a major administrative and examination systems change in most institutions.

A5 Looking to the future

A5.1 Dissemination approach

The JUSTEIS website is fully operational and reports and summary briefings have been loaded. Development will continue, to prepare for the workshop in December 2004.

The JUSTEIS team chose to focus on the following in Cycle Five:

- production of a response to the e-learning strategy consultation

- dissemination of briefing papers (see http://www.justeis.info)

- preparation of case study dissemination for ferl

- dissemination at various events / different audiences (ALT-C, Library Association etc)

  - CILIP Wales flyer

- web site development

- preparation of papers on information literacy (in preparation)

- collaboration with RSCs

A5.2 Visibility of the JUSTEIS work

It will take time for the research to be cited in publications elsewhere but we are happy to note that the JUSTEIS project work has been cited in several major reports and publications including:

Cox A, Yeates R. *Library orientated portals solutions.* TSW Report TSW 02-03, Report to JISC, August 2002.

Griffiths JR. Evaluation of the JISC Information Environment: student perception of services. *Information Research* 8 (4) (2003) http://informationr.net/ir/8-4/paper160.html

Tenopir C. *Use and users of electronic library resources: an overview and analysis of recent research studies.* Council on Library and Information Resources, Washington, DC, August 2003.

Davis PM. Information seeking behavior of chemists: a transaction log analysis of referral URLs. *Journal of the American Society of Information Science and Technology* 55 (4) (2004), 326-332.

A5.3 Papers published during 2003/2004

The papers published this year include work on FE, a general overview of the monitoring and evaluation framework (from a marketing perspective), a conference presentation at e-Lit 2004, and a paper to be presented at the annual conference of the Association of Learning Technologists. We have successfully covered a wide spectrum of stakeholders in the development of the use of EIS in further and higher education.

Banwell L, Ray K, Coulson G, Urquhart C, Lonsdale R, Armstrong C, Thomas R, Spink S, Yeoman A, Fenton R, Rowley J. The JISC User Behaviour Monitoring and Evaluation Framework. *Journal of Documentation* 2004; 60(3): 302-320.

Lonsdale, R, Armstrong, C. Crossing the Educational Divide: Issues surrounding the provision and use of electronic resources in secondary and tertiary education. In Penny Moore, Eleanor Howe, Ray Lonsdale, Rachel McCahon and Diljit Singh (eds). *From Aesop to e-book, the story goes on. Selected papers from the 33rd Annual Conference of the International Association of School Librarianship and the 8th International Forum on Research in School Librarianship.* Dublin 17-20 June. 2004. Erie, PA: International Association of School Librarianship, 2004. pp. 60-72.

Urquhart C, Spink S, Thomas R, Yeoman A, Turner J, Durbin J, Fenton R, Armstrong C. Evaluating the development of virtual learning environments in higher and further education *Accepted for ALT-C conference 14-16 September 2004.*

Urquhart C, Thomas R, Spink S, Fenton R, Yeoman A, Lonsdale R, Armstrong C, Banwell L, Ray K, Coulson G, Rowley J. Student use of electronic information services in further education. *Revised version submitted to International Journal of Information Management.*

Thomas R, Urquhart C, Spink S, Yeoman A, Durbin J, Turner J, Foster A, Fenton R, Armstrong C. Using VLEs and the development of information skills: evidence from the JUSTEIS project. *Conference presentation at e-LIT 2004, New York.*

A5.4 Future plans for dissemination

As Cycle Five is the last cycle for the JUSTEIS work, the team agreed that it made sense to wait until the Cycle Five data was in, before finalising some of the summative reviews of the trends over the five cycles, and final reflections on the methodology.

Papers in progress include:
The evidence for information literacy among further and higher education students in the UK

Adding value to higher education library web sites (revised version of conference presentation to LIDA, 2003)

The main dissemination event will be a workshop in London in December 2004.

Abbreviations

ACL: Adult and Community Learning

CFE: College of Further Education

CHEST: Combined Higher Education Software Team

CI: critical incident (referring to critical incident technique)

CM: clinical medicine (disciplinary cluster)

CoFHE: Colleges of Further and Higher Education

CSF: critical success factors

CURL: Coalition of University Research Libraries

Dof: degree of freedom

ECDL: European Computer Driving Licence

EIS: electronic information services (ICT based)

FE: further education

HA : Humanities and Arts (disciplinary cluster)

EIS: electronic information services

HEI: higher education institution

ICT: Information and communication technologies

ILLs: Inter-library loans

ILT: information and learning technology

ISP: Internet Service Provider

JCALT: JISC sub-committee for Awareness, Liaison and Training

JCCS: JISC sub-committee for Content Services

JCIE: JISC sub-committee for the Information Environment

JCLT: JISC sub-committee for Learning and Teaching

JCNL JISC sub-committee for Networking

JUBILEE: companion project to JUSTEIS, undertaken by a team at University of Northumbria

LIS: Library and Information Services

LRC Learning Resource Centre

MAN: Metropolitan Area Network

MCQ: multiple choice question

ME: Maths and Engineering (disciplinary cluster)

MLE: Managed Learning Environment

NESLI: National Electronic Site Licence Initiative

NFAIS: National Federation of Abstracting and Indexing Services

PAS: Pure and Applied Science (disciplinary cluster)

PASS: Pure and Applied Social Sciences (disciplinary cluster)

PBL: Problem based learning

PI: Performance Indicators

RSC: Regional Support Centre

SCONUL: Standing Conference Of National and University Libraries

SFC: Sixth form college

SPARC : Scholarly Publishing and Academic Resources Coalition

UWA: University of Wales Aberystwyth

VLE: Virtual Learning Environment

Main Report

1 Introduction

1.1 Aims and objectives

For Cycle Five, there were five work packages (WP), which related to JISC strategic aims as indicated in Table 1.1:

- Monitoring framework (WP1)
- Case studies/action research (WP2)
- Data mining (WP3)
- Round table (WP4)
- Dissemination (WP5)

JISC strategic aim[7]	JUSTEIS contribution
Building an online information environment providing secure and convenient access to a comprehensive collection of scholarly and educational material	Assessing from the user (student and staff) perspective, and from the disciplinary perspective, whether the collection is valued for convenience, content, and comprehensiveness (WP1, WP3)
Helping institutions create and maintain Managed Learning Environments to support students	Examining how MLEs and VLEs are being used to promote use of EIS within the curriculum, how benefits are being realised, and what the major step-changes are (WP1)
Ensure the continued provision of, and wide access to, a world-leading network to support education and research in the UK	Examining the different patterns of use by undergraduates, postgraduates, academic and research staff across different disciplines (WP1, WP3)
Providing a range of advisory and consultancy services in the use of ICT	Awareness raising, through liaison with ILT champions, Ferl, for example (WP5)
Promote innovation in the use of ICT to benefit learning and teaching, research and the management of institutions	Identification of the organisational models of ICT learning support which exist at departmental level, and indicative assessment of which models are working best (WP1, WP2, WP3)
Improve staff and student skills in the exploitation of ICT, particularly in their use of the Internet	Case studies in FE to help academic staff exploit EIS to best advantage, using, for example, examples of best practice identified in other sites visited for JUSTEIS. (WP2)
Support the regional and community agenda of institutions through the Metropolitan Area Networks and Regional Support Centres	Liaison with RSCs, and other organisations, plus case study work. (WP5)
Provide a focus for collaboration between UK educational ICT initiatives to help create a wider information literate society	Roundtable in Cycle Five (WP4)
Promote and facilitate international collaboration in the exploitation of ICT	Dissemination of JUSTEIS methodology and findings in journals with an international readership is well advanced (WP5)

Table 1.1 Mapping of JISC strategic aims to JUSTEIS work

1.1.1 Work package 1: monitoring framework

The aim of WP1 was to continue and consolidate the monitoring framework developed in Cycles One to Four. In Cycle Five the aim was to provide more emphasis on FE (particularly specialist and sixth form colleges, modern apprenticeships), and less on HE,

---

[7] JISC five-year strategy 2001-2005. Available online from http://www.jisc.ac.uk

with no change to the sampling approach used in previous cycles to ensure coverage of a wide range of institutions and disciplines.

Objectives were to:
- assess the uptake and use of EIS in a random sample of HE/FE institutions, to monitor trends and identify the possible triggers for change in user behaviour.
- identify searching strategies adopted by students and staff
- collect data on the context of information behaviour
- examine the factors and drivers which affect the EIS purchasing intentions of senior LIS staff.

Data would be collected on the use of MLEs/VLEs, particularly where these may be affecting use of EIS. Interviews were to examine home-based access to EIS (e.g. take-up of broadband, use of different ISPs (Internet Service Providers), workplace access for part-time students, and the context of 'everyday' information seeking (as suggested by comments from JCN, JCIE in particular).

1.1.2 Work package 2: case studies

The aim of WP2 was to work with existing action research sites to evaluate their work as case studies. The aim was a better understanding of the levers and barriers associated with uptake and use of EIS in FE institutions.

1.1.3 Work package 3: data mining

WP3 aimed to provide a more in-depth analysis of data collected over the previous Cycles. There was a considerable amount of rich data obtained from staff and student interviews which has not been explored in depth. In addition, the quantitative data over the five cycles could be aggregated to examine some hypotheses on the effect of staff influences and training on awareness and use of electronic information services. Fuller analysis should identify more fully the lifestyle factors which affect student use of EIS. In view of the increasing number of HE students working part-time while undertaking their degree, plus the large numbers of FE students pursuing courses on a part-time or day release basis, the use of EIS, and support for use of EIS, should be seen within that context of widening participation.

1.1.4 Work package 4: round table

The aim of the proposed round table was to establish a group, preferably operating under 'community of practice'[8] principles which would represent the JISC community and stakeholder agencies (e.g. staff development agencies, LSC, representative from the relevant JISC sub-committee).
What we would expect from the round table:
- 'sounding board' when identifying new trends
- foresight and alerting function, so that the impacts of developments in one area of JISC activities can be followed through in other areas

What the round table participants might expect:
- early alerting of new trends
- comparison of practice across the community, particular across FE and HE
- shared ownership of the M&E framework
- sharing of experience, particularly across FE and HE

---

[8] Community of practice: groups that emerge around a discipline or problem, with an emphasis on learning from other members of the group – social learning. See also White, Martin. 2001. Communities of practice. *Freepint* , no. 291101: http://www.freepint.com/issues/291101.htm#feature

With the number of agencies that might be involved (as listed in the JUBILEE proposal), it would need to be made clear to potential members of the round table that participation in a community of practice can be peripheral, but that such peripheral participation is still legitimate, and useful. For representation from the JISC sub-committees it would be important to include representatives from JCALT, JCIE, JCLT, and JCCS. For certain aspects, JCN and JCSR would also need to be involved.

As indicated in the JUBILEE proposal, a modified Delphi study would provide the focus for a collaborative work task (therefore providing a necessary purpose for membership of the group). There would be at least two opportunities for face to face meetings of the round table, with JUBILEE responsible for one meeting and JUSTEIS another. Most of the work of the round table would be co-ordinated electronically.

1.1.5 Work package 5: dissemination activities

The **dissemination** activities for Cycle 5 were closely integrated. Both teams worked on web sites with the specific aim of reaching the audiences quickly and effectively. JUBILEE developed the Toolkit, data archive based on data from cycles 1-4. JUSTEIS developed a web site focusing on the dissemination of tailored briefing papers (with access to the full reports), FAQ section linked to the data archive, and links to further publications. JUSTEIS also intends that its work with other organisations (such as RSCs, Ferl) should be backlinked into the site so that there are several ways of finding the JUSTEIS (and JUBILEE) research project work. Both teams worked together on dissemination activities such as the **round table.** It has always been the policy of the JUSTEIS team to ensure that JUBILEE is mentioned in any publications on the M&E framework.

1.1.4 Alterations in project work

Work package 1 proceeded as planned.

Work package 2 proceeded as planned with two sites, although one of the sites was a substitute for a provisional site where plans for web site development had not proceeded as hoped.

Work package 3 proceeded as planned as far as the work to code and analyse the JUSTEIS interview data and questionnaire data was concerned.

Work package 4 was reduced in scale as the original plans had been to inform future cycles. As JCALT had decided on a different format for monitoring and evaluation in later years, the analysis examined how to take forward some of the evaluation on a more local and in-depth basis, working with a group of FE and HE library and information services on more of a consultancy basis, but providing something of benefit to other FE and HE institutions.

Work package 5 plans changed slightly to accommodate plans for a workshop in late 2004, to showcase the entire five years of work for both JUSTEIS and JUBILEE.

1.2.1 Project team

The project team directors changed, but there were no changes to the research staff team.

The project team (and their responsibilities) comprised:

Directors
Chris Armstrong (CIQM, Information Automation Limited), Dr.Christine Urquhart (UWA), with assistance from Dr Allen Foster (UWA) in the area of information literacy, and Dr Judith Broady-Preston on business models for purchasing electronic information resources. The input of Dr Foster and Dr Broady-Preston will be focused on the

dissemination activities. Ray Lonsdale resigned on grounds of ill health. Dr Broady-Preston's contribution was curtailed on grounds of ill-health.

Chris Armstrong (and CIQM) staff were responsible for questionnaire analysis for WP1 and WP3.

Dr.Christine Urquhart compiled the report, and liaised with the JUBILEE team.

Research officers
Siân Spink undertook interviewing, including some purchasing interviews, transcribing, preparation of material for Ferl, and organisation of the project archives (work package 1 and 5)

Rhian Thomas managed work package 1, as well as undertaking interviews, including the purchasing interviews, associated transcribing and analysis, as well as some Web site development (work package 5)

Alison Yeoman managed the data mining element (work package 3) and the case studies (work package 2).

Roger Fenton was responsible for questionnaire data entry and analysis,(work package 1) as well as some quantitative data mining (work package 3).

Janet Turner has done interviewing, and transcribing (work package 1)

Research assistants
Jane Durbin has done much of the transcribing work, and has acted as the JUSTEIS liaison with JUBILEE for the round table activities (work package 4)

1.2.2 Advisory structure, liaison with JUBILEE team

Close contacts have been maintained with the JUBILEE team throughout the year.

Most of the liaison work has concerned dissemination activities, and there were two meetings in July 2003, and October 2003, with the JISC Communications and Marketing Team, to plan activities. The meeting in October 2003 involved the research staff on both teams.

Regular telephone conferences, among Sonja Bisset, Malcolm Batchelor, Linda Banwell and Christine Urquhart, reviewed progress, and dissemination plans.

1.3 Dissemination activities for Cycle Five

The following sections outline the formal dissemination activities. These have formed a greater proportion of activity in the current Cycle (see also Section 7).

1.3.1 Response to e-learning strategy consultation

The JUSTEIS team provided a response to the consultation document *Towards an e-learning strategy.* (Appendix 8).

A member of the team (CJU) attended the JISC colloquium on e-literacy, Birmingham, in September 2003. Some of the key themes relevant to JISC which emerged were:
- e-literacy encompasses learning skills, thinking skills, as well as the various literacies – information literacy, media literacy, computer literacy
- concern that librarians may emphasise information literacy (almost 100% text based) when there are other aspects that need to be emphasised. The Key Skills

(IT) places some emphasis on numbers and images as well as textual information, for example.

- e-learning – almost impossible to define, but best considered as a way of making learning easier/more effective (possibly)

- e-learning likely to require the same skills of both teacher and student as learning (traditional) but skills need to be applied in different contexts and different ways. Social skills – netiquette, spreadsheets – arithmetic etc. There should be a greater emphasis on creativity, less on memorisation. Teachers need to learn about 'virtual classroom management', when and how to apply tools/techniques, and students need independent learning skills, including self-discipline

- there are general e-skills (IT skills) and learning skills which depend on these, or reflect these. For example, life skills (social/ethical understanding) translate to netiquette, personal time management for e-learning. File management, basic information management is required for any type of 'content management' as is identification of key sources, evaluation of sources. Computer assisted collaborative working skills underpin co-operative learning.

- minimum standards of e-literacy are likely to change (and ECDL requirements are likely to evolve), and requirements are also likely to vary according to the discipline

- there are opportunities – the guest speaker provided some inspiring examples of how students were building on the learning of others – for a more accelerated curriculum than might be found in many departments at present.

1.3.2 Publications in 2003/2004

The following papers discuss JUSTEIS research methods and results. The team (as can be seen from the outlets) aim to publish in the professional journals, as well as the international peer-reviewed journals.

Banwell L, Ray K, Coulson G, Urquhart C, Lonsdale R, Armstrong C, Thomas R, Spink S, Yeoman A, Fenton R, Rowley J. The JISC User Behaviour Monitoring and Evaluation Framework. *Journal of Documentation* 2004; 60(3): 302-320.

Lonsdale, R, Armstrong, C. Crossing the Educational Divide: Issues surrounding the provision and use of electronic resources in secondary and tertiary education. In Penny Moore, Eleanor Howe, Ray Lonsdale, Rachel McCahon and Diljit Singh (eds). *From Aesop to e-book, the story goes on. Selected papers from the 33rd Annual Conference of the International Association of School Librarianship and the 8th International Forum on Research in School Librarianship.* Dublin 17-20 June. 2004. Erie, PA: International Association of School Librarianship, 2004. pp. 60-72.

Urquhart C, Spink S, Thomas R, Yeoman A, Turner J, Durbin J, Fenton R, Armstrong C. Evaluating the development of virtual learning environments in higher and further education *Accepted for ALT-C conference 14-16 September 2004 (awarded a Best Research Paper award).*

Urquhart C, Thomas R, Spink S, Fenton R, Yeoman A, Lonsdale R, Armstrong C, Banwell L, Ray K, Coulson G, Rowley J. Student use of electronic information services in further education. *Revised version submitted to International Journal of Information Management.*

Thomas R, Urquhart C, Spink S, Yeoman A, Durbin J, Turner J, Foster A, Fenton R, Armstrong C. Using VLEs and the development of information skills: evidence from the JUSTEIS project. *Conference presentation at e-LIT 2004, New York.*

1.3.3 JUSTEIS web site

A specific JUSTEIS web site was developed over the year, by Rhian Thomas. Emphasis was placed on getting the summary reports available first, before making html or pdf versions of the other reports available. The reports contain a considerable number of tables and diagrams, which have made the conversion work more time-consuming than anticipated.

1.3.4 Other dissemination activities

Poster presentation at CILIP Wales annual conference 2004, Llandrindod Wells, 11/12 March 2004.

Participation in Online Access to Qualitative Data: Opportunities and Challenges, held on 15 January 2004, at the Royal Statistical Society, London, a conference organised by the Economic and Social Data Service.

Participation in eVALUEd conference, Birmingham 16 June 2004.

2 User behaviour (Strand A) in HE

2.1 Aims and objectives

The original aims for Strand A were established by the JISC in the original call and are:

- Strand A
  To undertake a periodic survey of EIS uptake and use, investigating the quantity and quality of take up, with a view to bridging the gap between the perceptions and the reality of user behaviour.

Emphasis was placed, as in previous Cycles on obtaining interviews with students, with questionnaires used as a complementary method of data collection. Over the Cycles, the complementary JUBILEE project has focused on interviews with academic staff and LIS staff, with questionnaires used to survey students.

Where possible, data was collected on the use of MLEs or VLEs where these may be affecting use of EIS. Many institutions are now investing in VLEs and the focus on VLE usage in Cycle Five reflects the need to examine how VLE implementations might be affecting uptake of EIS. Emphasis in this cycle was on examining some of the support that might be necessary to support 'widening participation'.

2.2 Methods used in Cycle Five

Methods used were essentially a refinement of those developed in Cycle Four, which themselves consolidated experience gained in earlier Cycles.

A sampling frame (Section 2.2.1) was used to ensure that a various types of institution were included, and a multi-stage cluster sampling approach used to provide a range of departments, more or less evenly split among the five disciplinary clusters, using the same cluster categorisation that had been used previously. The HEIs asked to participate were not all new to the JUSTEIS project work, as the JUSTEIS project has covered most HEIs in the UK now. Care was taken to select different departments in these cases to avoid 'survey fatigue'.

The access methods used were the same as those adopted in Cycle Four. Research staff were alert to possible problems, most having gained experience of the likely problems in previous Cycles, and the approach taken at each institution was therefore adjusted quickly to suit the prevailing circumstances.

Survey methods were very similar to those refined during Cycle Four (Section 2.2.2), with the use of vignettes as a tool to examine preferred or habitual searching strategies.

The response rate was similar to that obtained in Cycle Four (Section 2.2.3).

Analysis combined qualitative and quantitative methods (Section 2.2.4).

Limitations are considered in Section 2.2.5, and the ethical procedures implemented for this Cycle in Section 2.2.6.

2.2.1 Sampling frame

In Cycle Five the aim was to provide more emphasis on FE, and less on HE, with no change to the sampling approach used in previous cycles to ensure coverage of a wide range of institutions and disciplines, with particular emphasis on sixth form colleges.

The proposed sample was
       HE (12-14 departments, 10-12 institutions)
       FE (16-20 departments, 12-14 institutions)

The main changes proposed for cycle 5 were:

- Discontinued - Library Web site census (Strand C)

- Alteration of the sampling matrix to include, specifically, a highly research intensive (6*) institution (HE), and also (in FE)

    o Adult and Community learning students

    o Foundation degree students

    o HE in FE

    o Modern apprenticeships

    o Sixth form colleges

- Extension of EIS purchasing interviews to provide more specific examination of the lifecycle approach to content (acquisition, evaluation criteria, economic models/banding, user needs, re-evaluation, archiving and presentation) (reflecting the JCCS agenda)

- More specific study of 'everyday' information seeking, workplace learning, home-based access and what the implications of 'off-campus EIS use' are for learning (reflecting where JCIE concerns meet those of JCLT and JCN)

Provisional target numbers of students per site: 5-10 interviews, with 10-15 questionnaires per department for larger departments
Number of academic/teaching staff surveyed: 1-2 staff interviews/questionnaires
Number of interviews of senior LIS staff: 1 per site

The intention, as in previous Cycles has been to provide an acceptably representative sample by:
- geographical location (to appear fair to all UK HEIs)
- size of institution (by number of students)
- type of HEI (new, old Russell, old non-Russell, Colleges of Higher Education)
- department and discipline (although institutions cluster disciplines and departments in different ways)

The development of the sampling frame followed procedures used for previous Cycles (see Cycle One report, Sections 5.3.1.1 – 5.3.1.2 for details of the stratified sampling approach) and details of the sample are given in Appendices 2.1, 2.2. Institutions and departments that had participated in previous Cycles were eliminated from the sample, as far as possible and care was taken to avoid clashes with JUBILEE sites.

It is difficult to apportion departments into disciplinary clusters when the departments are offering joint honours courses, the departments themselves may be multidisciplinary in approach, with the result that they might be found in the Arts and Humanities in one institution and Social Sciences in another. Restructuring in some institutions has led to very broadly based faculties.

The same discipline clusters have been used in all cycles. For convenience, these will be referred to by their initial letters in the report:
- PAS (Pure and Applied Sciences)
- ME (Maths and Engineering)
- PASS (Pure and Applied Social Sciences)
- HA (Humanities and Arts)
- CM (Clinical Medicine - including Medicine, Nursing and Allied Health

The final sampling frame was as follows (** delete names):

	Old University Russell Group	Old University Non-Russell	New University	College of Higher Education
Large (> 18,000 students)	3 **Category 1**	2 **Category 2**	3 **Category 3**	0
Medium (>6,000 < 18,000 students)	2 **Category 4**	2 **Category 5**	3 **Category 6**	2 **Category 7**
Small (< 6,000 students)	0	1 **Category 8**	2 **Category 9**	1 **Category 10**

Table 2.1 Sampling frame for JUSTEIS Cycle Four

Appendix 2.3 lists by subject discipline the HEIs included in the sample.

For Strand A, 10 HEIs participated, and it was possible to complete survey work at 2 Old Russell, 2 Old Non-Russell, 4 New Universities and 2 Colleges of Higher Education, and the sampling frame for the 21 HEIs originally approached included 8 Large (over 18,000 students) 9 Medium (> 6,000, and <18,000 students) and 4 Small (<6,000 students) HEIs (47.6% institutional response).

Of the 21 departments originally approached, 3 PAS, 1 Maths and Engineering, 4 Pure and Applied Social Sciences, 0 Humanities and Arts and 2 Clinical Medicine departments participated in Cycle Five (10 in total, 47.6% departmental response).

2.2.2 Survey methods

The interview schedule (Appendix 2.4) was little changed from that used for Cycle Four. Some minor changes in wording and in categories were made to make it easier to use the same schedule for both FE and HE sites.

The methods comprised:
- Critical incident interview, with use of a critical success factors technique and vignette (to assess use of EIS, attitudes towards EIS, awareness of EIS and searching strategies among students and staff). (Appendix 2.4 for interview schedule, Appendix 2.5 for sample vignettes).

- Critical incident questionnaire, with use of a critical success factors technique for students and academic staff (Appendix 2.6 students, Appendix 2.7 research and academic staff)

- Interviews with senior librarians provided details of their plans for purchasing EIS, and some of the problems and opportunities the change in resourcing offered (Appendix 4.1)

Vignettes were intended to provide realistic and appropriate information problem situations for the students. Academic staff were consulted wherever possible. Vignettes provided another perspective on the information seeking routines of students.

2.2.3 Response rate

Site code n=10	Student interviews (UG, including HE diploma n=80 PG n=27	Staff questionnaires	Staff interviews	LIS purchasing (Strand C)	Postal and e-mail questionnaires (student)
140	11		1	1	8
143	9		1	0	
146	8		0	0	
147	6	1	2	0	13
164	3		1	0	
166	9	1	1	0	11
169	7		0	0	
173	11		1	0	
177	10		1	1	
179	6		0	1	
Total	**80**		**8**	**3**	**32**

Table 2.2 HE Institutional response rate

Disciplinary cluster	Responses (HE)	% total HE responses
Pure and Applied Science (PAS)	0	0
Maths and Engineering (ME)	0	0
Pure and Applied Social Sciences (PASS)	21	66
Humanities and Arts (HA)	0	0
Clinical Medicine (CM)	11	34
TOTAL	**32**	**100**

Table 2.3 HE Disciplinary cluster response rate for questionnaire survey (staff and student)

2.2.4 Analysis methods

Interviews (both face to face and telephone) were transcribed and entered into a qualitative analysis software package (NUD*IST QSR N6) for coding and further analysis.

Some additional pre-coding was done at the transcript stage to speed up the coding and analysis. A checklist (see Appendix 2.4, EIS checklist (2)) was devised to enable the transcribers to add these codes prior to entry into NUD*IST.

Quantitative data were extracted from the interview transcripts manually, and collated with the questionnaire SPSS output.

Questionnaire data were entered into an SPSS database, and tables produced. Statistical tests included simple chi-squared tests of association.

2.2.5 Limitations

Gaining access to sites is not getting any easier although the experience of the team means that access is not getting any more difficult.

Emphasis was placed, as in previous Cycles on obtaining interviews with students, with questionnaires used as a complementary method of data collection. Experience in Cycle Four suggests that many FE departments and courses, particularly those offering specialist provision, operate with small numbers of students (typically in the 10-20 numbers range). In such circumstances, interviews with five students may represent 50% of the cohort. In the research intensive (6*) sector, experience also suggested that gaining the co-operation of Oxbridge for the M&E framework was not easy, and experience in Cycle Five confirmed that, although survey data from one site was obtained eventually.

2.2.6 Ethical procedures

In Cycle Five, the informed consent procedures were formalised, and interviewees were required to sign a consent form, to make the terms and conditions of the interview clear. Procedures were in line with those proposed in the Departmental policy to be approved by the UWA Ethics Committee for Research Procedures.

2.3 Use of EIS by undergraduate students

Results for the questionnaire survey and interviews are presented together, but have not always been integrated for several reasons, e.g.

- Coding categories used for the questionnaire and interviews differ slightly (the preset categories for the qualitative analysis have to be more general as they cover both the HE and FE sector)

- Questionnaire returns were very limited this Cycle. We have always – given the effort involved – tried to obtain student interviews, with questionnaires as complementary.

Comparisons are made between the current Cycle and those obtained the previous years (Cycle Four, Cycle Three) where appropriate. Columns for data from previous Cycles are italicised.

The sub-sections in this Section cover:
- purposes of EIS use (Section 2.3.1)

- patterns among sources used (Section 2.3.2)

- patterns of Web site use (Section 2.3.3)

Later Sections cover:

- use of EIS by postgraduates (Section 2.4)

- use of EIS by staff (Section 2.5)

- progression in information skills (Section 2.6)

- influences on student use of EIS (Section 2.7)

- information skills education and training (Section 2.8)

- e-learning and VLEs (Section 2.9).

Quotations from interview transcripts are included to illustrate the discussion. The format of the coding is as follows:

site code (two or three figures, followed by three figures to denote interviewee code number: 1** = student, 2** = library staff, 3** = academic staff, 4** = senior library staff.

2.3.1 Purposes of EIS use by undergraduates

Purpose (multiple responses allowed in questionnaire)	All UG (HE) students: n = 83 %	Undergraduate questionnaires n = 30 %	Undergraduates: interviews n = 53 %
Coursework / Assignment	84.3	90.0	81.1
Background Research.	2.4		3.8
Leisure/shopping	12.0	16.7	9.4
Final project	2.4		3.8
Work duties			
Job search or application	1.2		1.9
Planning an event			
Research/funding roposal			
Business travel	1.2	3.3	
Other	1.2	3.3	
For someone else			

Table 2.4 Undergraduates' reasons for seeking information in the critical incident

As in the previous cycles, the primary purpose described in the critical incident considered in the survey is academic, to support coursework, and notably the final

project. The proportion of leisure/shopping use described is very similar to that found in Cycle Three.

2.3.2 Finding information: use of EIS by undergraduates

The questionnaire and interview surveys both asked about the EIS frequently used by undergraduates. The interviewers used a checklist and could clarify queries, whereas the questionnaire merely asked students to list frequently used resources. This accounts for the fact that texting and mobile phones appear on the interview list, but not on the questionnaires. The difference in rank order, as well as the difference quantitatively suggest that the questionnaires under-represent actual frequency and awareness of EIS, although the predominance of search engine use is obvious.

The small sample size precludes much generalisation of the findings although the following trends seem to be quite clear:

- almost ubiquitous use of mobile phones among undergraduates (rise of almost 10% since last year)

- search engines are still popular, as is email, although email is less popular this year than last year

- OPAC use is steady

- Growing reliance on the VLE or its components (lecturers' pages are very popular this year, formal VLEs less so, but this simply reflects the different stages of development of the VLEs in the sites visited this year)

- Less use of CD-ROM resources

- More use of the OPACs of other HEIs – students may be using libraries at other institutions

- E-books have appeared, although at the bottom of the list. Use of e-reference material is more established.

- E-journals are slightly more popular than last year.

Rank order (frequent use)	Undergraduates: questionnaires n = 25 (%)	Rank order (frequent use)	Undergraduates: interviews n = 53 (%, rounded up)	*Rank order comparisons (previous cycle) interviews (%)*
1	Search engines (64.0)	1	Texting, mobile phones (98%)	*1 Search engines (96%)*
2	E-mail, newsgroups (24.0)	2	Search engines (92%)	*2 Email (95%)*
3	Own HEI Web site (20.0)	2	Email Academic (92%) Personal (91%)	*3 Texting mobile phone (89%)*
4	E-journals (i.e., no e-journal collection specifically named by respondent) (12.0)	4	Own OPAC (83%)	*4 Own OPAC (83%)*
5	Named database, supply medium not stated (8.0)	5	Lecturers' pages (72%)	*5 E-journals (56%)*
6	Databases (no host cited) via the Web (4.0)	6	E-Journals (64%)	*6 Bibliographic databases (53%)*
6	Other named (non-JISC) database aggregator services (4.0)	7	Statistics software (60%)	*7 Intranet courseware/VLE (47%) (Intranet lecturer notes 40% Intranet local information 40% Intranet student records 25%)*
6	Named e-journal collection (4.0)	8	Gateways (49%)	*8 CD-ROM (47%)*
6	Online curriculum resource or tutorial (4.0)	9	Bibliographic databases (47%)	*9 E-reference (44%)*
6	OPAC (own HEI) (4.0)	10	E-references, subject index (43%)	*10 Statistics software (33%)*
6	Another institutional Web site (not own HEI) (4.0)	11	CD-ROM (36%)	*11 Gateways, portals (25%)*
11	Named e-journal collection (3.1)	12	VLE (32%)	*12 Other HEI OPAC (17%)*
		13	Other HEIs. OPAC (26%)	*13 Library subject tree (16%)*
		14	COPAC/BL (21%)	*14 E-books (11%)*
		15	Internet via WAP phone Email discussion lists (17%)	*15 Internet via WAP phone (9%)*
		16	E-books (8%)	

Table 2.5 EIS used frequently by undergraduates

EIS	All UG students: interviews + questionnaires n = 82 %	UG: questionnaires n = 29 %	UGs: interviews n = 53 (includes HE Diploma) %
Search engines	67.1	79.3	60.4
Organisational and 'known' Web sites	19.5	3.4	28.3
Bibliographic databases, plus other specialist scientific databases and Web-based resources	17.1	24.1	13.2
E-journals and e-journal collections	11.0	6.9	13.2
Own HEI Web site / VLEs (not including OPAC)	4.8	13.8	
OPAC (own HEI)	3.7	10.3	
E-mail, newsgroups,etc.		0	
Other Web EIS (not listed elsewhere)		0	
Web text archive		0	
Web-based news resource		0	
Web-based one-stop shop		0	
OPAC (other than own HEI)		0	
Local EIS(CD-ROMs, etc.)		0	
E-monograph or .pdf file		0	
Online curriculum resource		0	
Other EIS: Gateways, Publisher Web site, Own LIS subject tree, Web dataset, Current awareness or SDI service, Document supply service, Pre-print collection, Ready-reference Web resource	3.7	3.4	3.8

Table 2.6 EIS used in the critical incident search by undergraduates

Types of EIS used in search	Type of Critical Incident Search (n = 29)			
	A: Academic n = 26	B: Leisure n = 5	C: Admin. n = 0	E: Final project n = 0
Search engines	76.9	100.0	0	0
Own Web	15.4	0	0	0
Web D-base	7.7	0	0	0
E-journals	7.7	20.0	0	0
Own OPAC	11.5	0	0	0
JISC-negotiated	0	0	0	0
Host	11.5	20.0	0	0
Inst. Web	3.8	0	0	0
E-mail	0	0	0	0
Web news	0	0	0	0
Local EIS	0	0	0	0
Tutorial	0	0	0	0
Text archive	0	0	0	0
E-book	0	0	0	0
Full-text	3.8	0	0	0
One-stop shop	0	0	0	0
Other Web	0	0	0	0
Gateways	3.8	20.0	0	0
Other OPAC	0	0	0	0
D-base of unknown delivery mode	11.5	0	0	0

Table 2.7: EIS used by undergraduates for specific purposes [questionnaire only].

Excludes respondents who did not answer all relevant questions. Respondents may appear in more than one category of CI search and more than one category of EIS used.

Key:
A =   Coursework: assignment, essay, project, class presentation, lab. report, background reading
B =   Searching for employment or carrying out duties of employment; planning some leisure activity; online shopping; business travel
C =   Administrative duties or planning a college/university event
E =   Work connected with writing a dissertation/thesis, article/book for publication, or funding proposal

For searching for information in the search described to the interviewer, the order (Table 2.6) of formal information resources is similar to that in Table 2.5. Search engines were the most popular route to finding information. Other popular resources used were organisational or websites known to the undergraduates, and bibliographic databases.

Compared to last year, the notable difference is the increased popularity of organisational and known sites (19.6% compared to 6.6%) and this is reflected in the students' comments about being directed to particular organisational sites. E-journals are much the same level of use as last year, as is use of the OPAC. Use of e-journals and bibliographic databases depends on the composition of the undergraduate sample as disciplinary differences are evident. Science and clinical medicine, nursing and allied health students all use bibliographic databases to a far greater extent than other student groups. (See also Section 6). With a small sample such as this, the differences between this year and the previous year are probably not important. The VLE was used less than last year (4.8% compared to 12.3%) but, as suggested above this may simply reflect the state of development of the VLE in the institutions visited this year. It is often quite difficult to asses in the accounts given by students whether they used the VLE or not. As we noted in previous years, all electronic information services tend to be described as different sorts of search engine.

Table 2.7 shows the use of EIS for four broad categories of critical incident (questionnaire data only), although comparisons with previous cycle are limited. It is evident that for both academic and leisure purposes, search engines still remain by far the most used EIS. As with previous cycles, it would appear that in general terms, the range of EIS used in each type of search is largely appropriate (although the degree to which search engines are used for academic purposes could be a cause for concern).

2.3.3 Patterns of Web site use by undergraduates

This section considers some patterns of Web site use by undergraduates. Search engines are used for a variety of reasons, and the information seeking routines associated with them are considered in Section 2.6. This section considers some of the trends in search engine and Web site use among undergraduates.

Web sites often provide full text information. This preference for easy access to full text is reflected in the preference for e-journal collections and services which specifically provide full text, rather than a mixture of abstracts and full text, and this Cycle found similar preferences among students (see also 2.6.1). Undergraduates also used reputable organisational sites, often following tutor advice.

> *'I've used it (Sport England website) over the last couple of years…well, we've been told to use like reputable websites, anything with like org or government type of thing.' [147101, from text units 22-38]*

> *'Probably the most recent thing I did was with a mechanisation piece of coursework which specially involved compiling sales leaflets for different tractors. And I decided that it would probably be best to get information and pictures off the Internet.' [179101, from text units 15-17]*

> *'I was told that the Joseph Rowntree foundation has research on it so I found it because someone had recommended it for a particular project but I use it all the time now.' [140104, from text units 41-43]*

The RDN was mentioned by a sports management student.

> *'Last thing I did was for my assignment actually. Looking at, it was like the voluntary sector and sport. I used the, you know that search engine, RDN is it?…RDN, it's like an education thing. It's got all information on what you look for. It's guaranteed to be you know. ' [147103, from text units 11-15]*

2.4 Use of EIS by postgraduates

The sample of postgraduate students recruited in this Cycle is too small to draw meaningful comparisons with previous Cycles (although the sample size of postgraduates has usually been fairly small).

2.4.1 Purposes of EIS use by postgraduates

Purpose	PG interviews: n =27		
	Total	PhD (n = 5)	Taught masters (n = 22)
Coursework	19	0	19
Lab Work	12	0	12
Dissertation/ thesis	5	3	2
Leisure/shopping/travel	2	1	1
House Searching	1	1	0
Article for publication	0		
Reference checking	0		
Work duties	0		
Research/funding proposal	0		
For someone else	0		
Other			

Table 2.8 Postgraduates' reasons for seeking information in the critical incident.

There were too few PG questionnaire respondents to justify any separate treatment. As might be predicted, the major difference between PG and UG profile of purposes (Table 2.8, Table 2.4) is the greater emphasis on research-related purposes.

2.4.2 Finding information: use of EIS by postgraduates

Rank order	Postgraduates: interviews n = 27 Frequency (%)	*Postgraduates: interviews n=32 Cycle four rank order*
1	E-mail academic (100%)	*1= E-mail personal (100%) E-mail academic (100%)*
2	E-mail personal Bibliographic databases Own OPAC E-journals (93%)	*2 Search engines (92%)*
3	Search engines (89%)	*2= Own OPAC (92%)*
4	Statistics software (85%)	*3 Texting (85%)*
5	Texting (78%)	*4 E-Journals (69%)*
6	VLE/ Lecturers' pages (74%)	*5 Gateways (62%)*
7	CD-ROMs (67%)	*5= Bibliographic databases (62%)*
8	E-reference materials (59%)	*6 Intranet local information (54%)*
9	E-mail discussion lists (56%)	*7 E-mail discussion groups (38%)*
10	E-books COPAC/BL (37%)	*8 E-reference (31%)*
11	Gateways Other HEI OPAC Subject tree/index (33%)	*9 OPAC (other HEI) (23%)*
12	Intranet local information (30%) WAP phone (7%)	*CD-ROM, Intranet lecturer pages, statistical software, WAP phone, Intranet student information/records Intranet courseware/ VLE Library subject tree / index*

Table 2.9 EIS used frequently by postgraduates

Comparing the rank order between Cycle Four and the Cycle Five (interviews) (Table 2.9) there are some marked changes, although some of these must be attributed to a high proportion of biomedical postgraduate students this year. A higher proportion of

postgraduates use electronic journals, compared to undergraduates (93% compared to 64%, interview responses) and postgraduates also use e-mail discussion groups more frequently (56% compared to 17%, interview responses). Use of bibliographic databases is much higher among postgraduates, and a high proportion this year used a VLE regularly (reflecting the state of development of the VLE at the sites visited). Compared to undergraduates, postgraduates use more specialist electronic resources generally, and more than they did in earlier cycles. E-journals were used regularly by around 20% of postgraduates in 2000/2001 – and the figure this cycle is 93%. Even allowing for the proportion of biomedical students in the sample this year, the trend is upwards.

This pattern of using the specialist resources is reflected in the type of resources used in the search described to interviewers. The pattern of database and specialist Web resourc resembles that found last year. This year a higher proportion used search engines in the search and far fewer used the OPAC. The use of organisational and known sites remains the same.

EIS	PGs: interviews n = 27 %
Search engines	55.6
Databases and specialist Web resources	29.6
Own HEI Web site, VLEs	0
Organisational and known Web sites	11.1
OPAC (own HEI)	3.7
E-journals	0
Other OPAC	0
Email	0
Web dataset	0
Web-based news resource	0
Web One-stop shop	0

Table 2.10 EIS used in the critical incident search by postgraduates

Postgraduates, as might be expected, make more use of specialist services. The expectation is that full text should be available and abstracts are seen very much as a second best.

> *'Sometimes I use journal specific sites,, say it might be Nucleic Acid Research, then I'd go for that site, Because sometimes Science Direct doesn't give…it only gives abstracts.' [173106, from text units 203-206]*

Students in the health and biomedical subject disciplines are more likely to use electronic journals and specialist resources.

> *'I know where EBSCO host is and it's an extremely useful source of psychological information. It has a lot of articles and, if not, it has a lot of abstracts from articles. So I generally use that…Other than that I mean I found a few journals online that I purchased a subscription to.' [146105, from text units 32-37]*

PhD students were prepared to do more detailed searches and reported frustrations when the material was not available despite appearances indicating that it should be.

> *'Information was very difficult to find, it was quite scarce…For instance I found a really good source of information that was supposed to be an e-textbook of some form. Unfortunately then the first chapter had been printed and I could not find that despite trying absolutely everything I could not trace the rest of the book which would have given me the answers I needed…but I couldn't actually trace*

what the source was and I'd spent up to twenty minutes trying to find this source.'
[169107, from text units 74-82]

Some postgraduate students working in scientific research were taught how to build a website, and interactive use of database services is required.

> *'Oh actually this year quite a bit (information skills training) because we did a research project, building a website so we were taught about lots of different chemical databases, search engines. So I'm better than I was…Yeah we had lectures…yes, like Boolean operators, yeah.'* [169103, from text units 128-131]

> *'You can enter a chemical formula, you can actually use a programme called ChemDraw which allows you to draw out the molecular formula of a compound. And then you can paste this into Beilstein Crossfire…and it will search…and try and match a compound.'* [169105, from text units 145-150]

Postgraduate students also described how they gained support from each other for information skills.

> *'I think the way I've learnt, obviously trial and error of my own and sort of other colleagues that I work with in the office, you know we talk about stuff and I say where can I find something…and somebody else will have the knowledge already or will know about it, so we pass information around.'* [140101, from text units 174-178]

2.5 Use of EIS by academic and research staff

2.5.1 Use of EIS for particular information purposes by staff

Some academics pointed out that they had problems assessing the authenticity of a document for their research purposes.

> *'The sort of pleasure of satisfaction of finding the stuff on the web is tempered by the fact that you're not quite sure whether it's the real thing or not….I wanted to be able to quote this document in my research but I feel a bit unsure….I'm not 100% confident that what's on the web is what's in print…no ISBN and anything like that.'* [147302, from text units 93-100]

Interviews with staff in previous years have noted their use of government websites for reports and other publications. This year a lecturer noted use of a current awareness service for government news.

> *'It's wired-gov.net and what they do is, you put in all the areas that you might be interested in and any new articles, summaries they send you everyday, anything on those keywords. Government-news@wired-gov.net. and that gives, you, they'll keep you up to date on any keywords. And that comes through everyday.* [147301 from text units 153-157]

2.5.2 Finding information

Although much of the information required may be quite specialist, one academic on postgraduate programme noted that it was occasionally difficult to find an overview at the right level.

> *'I think the problem was the information when you're doing a general search can be, you know, too detailed. So I was trying to find to start with a kind of overview, a kind of general explanation of the technology. And then it's difficult to specify that kind of level when you do a search.* [173301, from text units 69-73]

An academic commented favourably on the system the library had put in place to make e-journal access more informative and easier.

'It's done now through this [name] system…you can search alphabetically or by name of journal…you can search alphabetically or by name of journal and it tells you the route or routes of access available and the years the journal is actually available for…I prefer the alphabetical search because some of the journals if they've got American spellings…you could miss it.' [164301, from text units 258-272]

Renewing passwords is a chore.

'I use Mintel but only when I'm using, I'm teaching a module, Now I might not use them for another several months until that module comes up again by which time your passwords can be out of date and have to re-set up. Well, that's no big deal but it is a nuisance.' [147301, from text units 99-103]

Staff described the trade-offs they make when looking for reliable information.

'I guess I make a calculation as to where I'm most likely to find the literature. With that one I knew that it was more likely to be on the web than it was in any other particular format. But my natural inclination normally would be to go to literature or I might use an electronic means to survey that. But it would be a database, an abstracting service rather than a website. But if I'm looking for something very specific and I know it's going to be on a website I might try there first of all. But for anything even slightly general I would always do a literature search first and then perhaps use the web as a sort of back up or a second line of attack.[147302, from text units 23-32]

2.5.3 Use of EIS for communication and research

One academic commented favourably on the trial of a blanket texting service established to contact students if lectures have to be cancelled at short notice, for example.

'There are some concerns and/or objections by some colleagues who say well not all students have got a mobile. 90% have and if they haven't the other ones can pass it on…And we've got a way of setting it up through the university system so that they would be texted on their mobile and told information. I mean we do have various screens round the university but nobody looks at them and this seems to be work rather well and the students think it's quite good fun.' [140301, from text units 248-257]

University web sites were being trawled by one academic to profile potential new external examiners.

'I was trying to find a new external examiner, some fields I'm responsible for in (name of subject area). What I was doing was looking through UCAS and various other universities round here who have similar programmes and trying to get into that, just a personal profile to see if there was anyone who might suit.' [143301, from text units 41-46]

Added value services by journals may only be available online, and only to the subscribers.

'There is something which is in the journal (name)…which is a review of recent developments…And we've recently…I'm one of the editorial board…taken it out of the paper version and now that is only accessible, although as of right, those people who subscribe to the journal, because we can keep it more up to date…it's interesting to see more people are getting into using that as well.' [140301, from text units 316-324]

2.6 Progression in information skills

Section 2.6.1 discusses one identified problem in students' information literacy, the lack of evaluative skills they show, their lack of critical appraisal. Students' habitual routines for solving routine information needs in studying are discussed in Section 2.6.2, and this

Section covers their use of printed sources as well as electronic information. Section 2.6.3 discusses how (and if) students value the specialised services introduced to them by academic and LIS staff. Some of the factors which govern their own satisfaction, dissatisfaction and their perceptions of confidence in information seeking are considered in Section 2.6.4. Section 2.6.5 discusses the disciplinary differences observed.

2.6.1 Rationale for selecting resources

As discussed in previous Cycle reports, the reasons provided by interviewees give some clues about the information strategies they are adopting and the type of information skills they are practising. Previous reports note that students use search engines as a one-stop-shop to finding information, with the result that they rarely consider alternative strategies with different resources.

> 'Well it's like the most popular one in general and it (Google) seems to give you what you want more than like As or MN, and it seems good for university when I'm trying to find things.' [14108, from text units 41-43]

In the health and biomedical disciplines early introduction and encouragement to use other resources, as well as the expectation that journals are to be used, may affect behaviour.

> 'So the other person in my group, we were both looking through journals. We tried EBSCO and then she suggested trying another site called Find Articles I think, so we did that…Well just the university in the first year advised us to use EBSCO host and so we sort of used that the most. And then my partner I'd been working with, she suggested using, she's used this other site before and has found it quite useful so she suggested using that. [146108, from text units 23-31]

2.6.2 Information seeking routines

As a way of checking how electronic information resources fitted into their normal, routine seeking for information for their studies, students were asked how they would answer a problem in their subject area (the problems varied according to the subject and level of study). This is the last part of the interview and when the interview was limited, it was not possible to complete this part of the schedule.

Strategy	Trend	HE students (Cycle Five) n=80	HE Students (Cycle Four) n=75	HE students (Cycle Three) n=143
Library & books 1st	Down	26	36	65
Internet 1st	Up	24	15	38
Internet Only	Same	1	2	15
Ask Someone	Same	3	1	7
Course Notes	Same	3	5	not coded
Organisations	Same	3	3	11
Specialised EIS	Up	20	12	29
Intranet	Down	0	3	2

Table 2.11 Strategy used for the vignette problem

Results indicated that there were some small changes. Cycle Five found a higher proportion of students using more specialised resources, and more use of the Internet first to solve a routine study problem, but the Internet was not seen as the complete panacea to all problems, with few students selecting to use the Internet alone. The Internet route may be a tried and tested route using known sites.

> 'I probably wouldn't go straight to the Internet for that particular thing…because I have got books that have got it in, and that sort of thing is like, is not a recent thing, so probably books would be the best option.' [177105, from text units 151-156]

> *'Um I start all my searches on the internet actually, yeah. And then I would go to my main sources of information which are the Soil Association website and I have a few contacts there and I have a password for that so I can get any documents that they've got. I would go into, I mean if I did a general search, it would nearly always come up with a few colleges and normally the SAC as well, University of Reading, they're very good on animal, veterinary information. And the, normally they, I tend to follow things through so they normally say, especially University of Reading actually they nearly always reference everything very thoroughly. You can see where they got certain information from and I will actually follow those through and see if we've got certain things in the library. I go from there.' [179105, from text units 288-299]*

Discrimination over the reliability and authority of the information retrieved needs to be greater than expected at school for some students.

> *'Well, at school I used to, but you need to go to more reliable websites now. I tend to try and find out the address before, I use a government one or national organisation's one…mainly from lecturers and teachers telling me what.' {147102, from text units 120-126]*

2.6.3 Gaining familiarity with specialised services

Some undergraduates encounter problems with electronic journals and bibliographic databases. Their expectations may be unrealistic, and some find they can manage without trying to learn new routines of searching for specialist material.

> *'I've tried to use them, I don't get on with them, they're not set up so can…the full journal, if you enquire about it, they say we use it to find the paper reference which underestimates the whole point of journals online to me, online you should be able to access them online, I know the university does subscribe to them.' [143104, from text units 189-195]*

> *'I just don't understand it so I'd rather just go to somewhere else and look at a different source.' [143107, from text units 207-208]*

2.6.4 Satisfaction and confidence in information seeking

Satisfaction with results (*responses from HEI, **FE only	PAS** n = 0	ME** n = 24 %	PASS* n = 21 %	HA** n = 6 %	CM* n = 11 %	AST** n = 32 %	HCSS** n = 52 %	Total (FE and HE) n = 146 %
Totally dissatisfied	0	0	0	0	18.2	0	3.8	2.7
Satisfied	0	66.7	71.4	83.3	72.7	78.1	86.5	78.1
Totally satisfied	0	33.3	28.6	16.7	9.1	21.9	9.6	19.2
Satisfaction with results (Cycle Four) HE only	*PAS n = 143 %*	*ME n = 53 %*	*PASS n = 107 %*	*HA n = 41 %*	*CM n = 41 %*	*All HE questionnaire respondents n = 385 %*		
Totally dissatisfied	*4.2*	*7.5*	*1.9*	*7.3*	*9.8*	*4.9*		
Satisfied	*74.8*	*66.0*	*78.5*	*75.6*	*65.9*	*73.8*		
Totally satisfied	*21.0*	*26.4*	*19.6*	*17.1*	*24.4*	*21.3*		

Table 2.12 Satisfaction with search results among different disciplines (questionnaires)

No valid comparisons are possible, as the figures are too low to be statistically reliable. There is no discernible pattern, unless Maths and Engineering and Pure and Applied

Social Sciences show a tendency to be more satisfied than other groups. As in previous cycles, the Clinical Medicine group are most likely to be dissatisfied, and seem to be the most critically aware. This reflects the type of learning provided with the emphasis on evidence-based practice in this sector. Interestingly, the results for the FE students (HCSS group, Cycle Five) in the health and community sector also suggest that this critical awareness is encouraged among FE as well as HE students.

Interviews found that around 30% of the group (HE staff and students) were adversely critical of their search results to some extent, while 25% were very satisfied. The largest group (45%) were happy with their search results – which sufficed.

Satisfaction with results (scale)	Interviewees (staff and students)n= 243 (number responses to question =212, 87% response)
Totally dissatisfied (1)	1 (0.5%)
Fairly dissatisfied (2)	9 (4%)
Neither satisfied nor dissatisfied (3)	54 (25%)
Satisfied (4)	95 (45%)
Very satisfied (5)	53 (25%)

Table 2.13 Satisfaction with search results (interviews)

2.6.4.1 Factors governing satisfaction and dissatisfaction

Students much prefer to be able to access full text articles immediately, and although abstracts are very acceptable for large searches, for dissertations or final projects, they avoid paying upfront ILL charges if they can.

> *'CAB Abstracts are amazing, the amount of information you can find on it is quite incredible. Very, very helpful, very useful….it's just good to know what's out there and as I say I now go to Bonn University in Germany and get all the German articles that I found which I'm lucky that I can do that. I'm German…so I called my sister and made sure that I can go to Bonn university where I'm going to go to the library and search for them there. [179106, from text units 57-59, 63-66, 28-30]*

> *'I put limitations on the searches so that I only get full article results but that is very limiting. We need more full articles to be available.' [146106, from text units 119-121]*

> *'Yeah, you can get an interlibrary loan…I haven't no, because you have to pay, so I try and find alternative sources…two pounds for each journal.' [166109, from text units 77-82]*

It also seems possible that some students are totally unaware that they can obtain articles through ILL. The following student was doing a four year MSc programme, and was in the final year.

> *'I did get most of the things I wanted and the things that I didn't get were just well, there's the reason, they were very old, some of the papers I was looking for were from the 70's, Some of them were in the library. If they weren't in the library there was no way of getting them because they're not available online.' [164103, from text units 58-63]*

The following account indicated that the student liked the way searching had been simplified (through IP authentication).

> *'It's just an easy way to find journals because you don't need your Athens and you don't use your address. It just actually automatically puts you on to the site.' [169102, from text units 40-42]*

2.6.4.2 Reflection on information seeking processes and confidence

Undergraduates reflected on the lack of specificity in their searches but sometimes believed that this was something that you just lived with.

'It's like when you type in say a lot of things like a non specific topic sort of thing, the information gets a bit jaded and sometimes that's the only way to get the only description you have, so sometimes there are issues where you don't get exactly what you're looking for because it's quite a non-descript…description which is your own fault really.' [143105, from text units 47-53]

Fewer HE students referred to problems of lack of specificity than FE students, and there are various explanations for this – less searching experience/skills among FE students, more general topics to search in FE, more specific subject queries in HE.

One health sciences student commented on the problems of searching the softer aspects in the biomedical databases.

'Well recently I've been looking for different patients' views on different treatments to see why they might refuse treatment. And things like it's kind of hard to know what to put into search engines and how to get that exact information you want.' [166106, from text units 119-122]

Few students comment on the problems of obtaining articles in foreign languages – for most this seems to be part of the invisible Web. This student did find information that was not available because of language problems.

'Yeah, I would have loved some more information…there was lots of information that I couldn't actually access the journals because some of them were in Japanese. And whereas you need to work though Japanese website and I couldn't get hold of them. I got some Spanish website it was really hard to get the journals which I needed.' [169102, from text units 81-86]

2.6.5 Disciplinary differences

Purpose of CI search of reporting HE students	PAS n = 0	ME n = 0	PASS n = 21	HA n = 0	CM n = 11	All questionnaire respondents n = 32
Coursework	0	0	85.7	0	81.8	84.4
Leisure/shopping	0	0	19.0	0	9.1	15.6
Final project	0	0	0	0	18.2	6.3
Work project	0	0	0	0	0	0
Job search or application	0	0	0	0	0	0
Research/funding proposal	0	0	0	0	0	0
Planning an event	0	0	0	0	0	0
Business travel	0	0	0	0	9.1	3.1
Article for publication	0	0	0	0	0	0
Reference checking	0	0	0	0	0	0
Other	0	0	0	0	0	0

Table 2.14 Purpose of information search in critical incident for different disciplines
Notes: questionnaire responses only (columns may total more than 100% because multiple responses were permitted).

No comparisons are possible as the questionnaire responses were very poor.

EIS used by reporting HE students	Subject Discipline (% reporting frequent EIS use)					
	PAS n = 36 %	ME n = 28 %	PASS n = 19 %	HA n = 21 %	CM n = 38 %	All reporting HE students n = 142
Search engines	80.6	82.1	89.5	71.4	76.3	79.6
E-mail, newsgroups, etc.	25.0	35.7	15.8	23.8	18.4	23.9
Own HEI Web site	22.2	28.6	10.5	33.3	21.1	23.2
Other e-journals*	5.6	3.6	10.5	4.8	31.6	12.7
Databases (non-hosted) via the Web	11.1	0	0	4.8	21.1	9.2
OPAC (own HEI)	0	0	5.3	28.6	13.2	8.5
JISC negotiated services	8.3	0	0	4.8	13.2	6.3
Other institutional Web sites (not own HEI)	8.3	3.6	5.3	4.8	5.3	5.6
Web-based Ready-reference resource**	0	7.1	5.3	4.8	2.6	3.5
Other (non-JISC) host-provided database	0	0	5.3	0	10.5	3.5
Local EIS (CD-ROMs, etc.)	2.8	3.6	0	4.8	2.6	2.8
Named e-journal collection	0	3.6	0	4.8	5.3	2.8
Other Web EIS (not listed elsewhere)	0	0	15.8	0	0	2.1
E-monograph or .pdf file	0	0	0	14.3	0	2.1
OPAC (other than own HEI)	0	0	0	4.8	2.6	1.4
Web text archive	0	0	0	9.5	0	1.4
Web-based new resource**	0	0	10.5	0	0	1.4
Web-based One-stop shop resource**	2.8	0	0	0	2.6	1.4
Named database, but mode of supply unknown	0	0	0	4.8	0	0.7
Gateways	0	0	0	0	2.6	0.7
Web dataset	0	0	0	0	0	0
Publisher Web site	0	0	0	0	0	0
Own LIS subject tree	0	0	0	0	0	0
Current awareness or SDI service	0	0	0	0	0	0
Document supply service	0	0	0	0	0	0
Pre-print collection	0	0	0	0	0	0
Electronic collection management service	0	0	0	0	0	0
Respondent stated no EIS are regularly used	0	3.6	0	0	0	0.7

*i.e., no aggregator service named, ** Category counted under "Other Web EIS" in previous cycles.

Table 2.15 EIS frequently used by HE students in different disciplines (questionnaires)

No valid analysis possible. Figures are too low to be statistically reliable, although they do repeat patterns seen in previous years. Clinical Medicine students use a wider variety of resources, including databases, other OPACs, e-journal collections and, while last year they were not unique in this, this year PASS are much more limited once you leave the top four lines of the table.

EIS used by UG student interviewees	PAS n = 5 %	ME n = 6 %	PASS n = 32 %	HA n = 0 %	CM n =10 %
Search engines	100 (5)	100 (6)	91 (29)	0	90 (9)
E-mail personal	100	100	84.4 (27)	0	100
Texting	100	100	97 (31)	0	100
Email academic	100	100	91	0	90
Own OPAC	80 (4)	67 (4)	87.5 (28)	0	80 (8)
Other HEIs OPAC	60 (3)	17 (1)	19 (6)	0	40 (4)
E-journals	80	17	62.5 (20)	0	90
Bibliographic databases	80	0	41 (13)	0	80
CD ROM	80	0	31.2 (10)	0	50 (5)
Intranet courseware /VLE	0	100	31.2	0	10 (1)
E-reference	80	33.3 (2)	31.2	0	70 (7)
Intranet local information	0	0	0	0	0
Intranet Lecturer /course notes	100	33.3	66 (21)	0	100
Statistical software	0	50 (3)	66 (21)	0	80
WAP phone	0	33.3	19	0	10
Gateways	40 (2)	0	53.1 (17)	0	70
Library Subject index	20 (1)	17 (1)	47 (15)	0	60 (6)

Table 2.16 EIS used frequently by undergraduates in different disciplines (interviews)

The same patterns as in previous years recur – the science and clinical medicine students are more likely to use the specialist resources, from the outset of their university courses.

> *'I was looking for journals on eating disorders for an essay. I went on to the (name of university) website homepage and went down to databases for physiotherapy. We had a lecture on which ones were best. Went into Medline and Science Direct and another one. I put in keywords to search for relevant journals. [166103 from text units 22-26]*

> *'And I went to the (name) library website and looked at the electronic engines, looked for all chemistry based journals that I could see and then I found journals from there. And then I realised that there was something called the Web of Knowledge and that was really useful. I actually just typed in what I wanted and the journals that I needed came up and analysed it for them through the library website.' [169102, from text units 26-32]*

2.7 Influences on student use of EIS

2.7.1 Influences on undergraduate use of EIS

The questionnaire data show a similar pattern to that of previous Cycles, with the students' previous experience the main reason for selecting the EIS used. Questionnaire respondents this year cited more influence from reading lists, advice from LIS staff. This could be a reflection of the type of departments from which the questionnaires were obtained, and these departments may have progressed further with VLEs and information skills support than other departments.

Is 'own previous experience and results' a reflection of the lazy searcher or simply the result of learning and knowledge structures? Information behaviour research[9] [10] suggests that previous knowledge structures affect how the information need is processed and acted on.

Factors leading to EIS use	UGs: questionnaires n = 30	Factors leading to EIS use	Previous cycle: questionnaires n = 143 %
Own previous experience or results	66.7	Own previous experience and results	69.9
Lecturer or tutor recommendation	33.3	Lecturer or tutor recommendation	31.5
Friend or colleague recommendation	16.7	Friend or colleague recommendation	14.7
Reading list	20.0	Reading list	7.7
Course or session organized by LIS or IT services	13.3	Course or session organized by LIS or IT services	7.0
LIS or IT services staff advice	23.3	LIS or IT services staff advice	7.7
Read about it	0	Read about it	4.9
Course Web site	20.0	Course Web site	3.5
Other	0	Other	0.7
No response/data	0	**No response/data**	0

Table 2.17 Factors leading to undergraduates' use of EIS for the critical incident (questionnaire)

2.8 Information skills education and training

Students receive formal information skills support in a variety of ways (Section 2.8.1). Their views on the value of that support reveal that graduated support, at least in some disciplines is effective (Section 2.8.2). Some HEIs are adopting a more formal approach, Key Skills (or Professional Skills) to information skills support and the pros and cons of this are briefly considered in Section 2.8.3. The staff perspective is considered in Section 2.8.4. Often, there may a departmental or institutional strategy (e.g. for learning and teaching) which affects the type of model of information skills support observed (Section 2.8.5). Staff training is now high on the political agenda, and views on information skills training support for staff are set out in Section 2.8.6.

2.8.1 Sources of information skills training

Two extra categories were added to the questionnaire in Cycle Four (Table 2.18) – Key Skills training and Informal help from LIS staff, but in view of the problems of terminology for what is essentially key skills (but badged as professional skills, IT skills) this category was removed from the questionnaires for undergraduates in Cycle Five. The signs are encouraging in that the LIS contribution is being recognised more by students, and fewer report having received no training.

---

[9] Vakkari, P, Hakala, N. Changes in relevance criteria and problem stages in task performance. *Journal of Documentation* 2000; 56 (5): 540-562.
[10] Kuhlthau, CC. Investigating patterns in information seeking: concepts in context. In: Wilson TD, Allen DK (eds.) *Exploring the contexts of information behaviour: proceedings of the Second International Conference in Information Needs, Seeking and Use in Different Contexts,* 13-15 August 1998, Sheffield. London: Taylor Graham, 1999, p.10-20.

	UG students questionnaires n = 29		UG Students: Questionnaires Cycle Four n = 143 %	UG students Questionnaires Cycle Three n = 311 %
Any form of training	93.1	Any form of training	83.9	82.6
		Key Skills training	0.7	not asked
Training by LIS/IT or by course tutor	62.1	LIS/IT induction session	68.5	74.0
LIS/IT specialist session	27.6	Course tutor	37.8	33.4
Informal help from LIS staff	34.5	LIS/IT specialist session	21.7	10.6
		Informal help from LIS staff	21.7	not asked
Specialist external consultant	0	Specialist external consultant	0	2.6
Other training	3.4	Other training	1.4	2.6
No training	7.7	No training	16.1	17.4

* Includes five respondents also classed as academic staff

Table 2.18 Information skills training undertaken by undergraduates and postgraduates (questionnaires)

It is extremely difficult to find training categories for the questionnaire that are meaningful to respondents across a wide range of institutions, and this accounts for some of the different categories used in Cycle Five, compared to Cycle Four. The questionnaire responses indicate that training provision seems reasonably good across all categories of institution (although the perceived lack of training in sixth form colleges and FE colleges needs to be explored). Such training could be integrated into Key Skills or Professional Studies training or done by the course tutor, with the result that students are unaware that training has in fact been provided. Undergraduates are more likely to ask for informal help from library staff than other students – FE students are more likely to have contact with their teachers.

Type of training (questionnaire responses)	Type of institution					All reporting students n = 136
	SFC n = 28	CFE n = 78	SFC+CFE n = 106	ONRU n = 10	NU/CHE n = 20	
Any form of training	89.3	73.1	77.4	90.0	95.0	80.9
Key skills training**	85.7	57.7	65.1	0	0	50.7
Training by LIS/IT or by course tutor	10.7	28.2	23.6	70.0	60.0	32.4
LIS/IT specialist session*	0	0	0	40.0	25.0	6.6
Informal help from LIS staff	14.3	11.5	12.3	40.0	30.0	16.9
Specialist external consultant*	0	0	0	0	0	0
Other training	0	5.1	3.8	0	5.0	3.7
No training	10.7	26.9	22.6	10.0	5.0	19.1

Type of training Cycle Four (questionnaire responses)	Type of institution				All students n = 344 %
	CFE n = 194 %	ORU n = 40 %	ONRU n = 10 %	NU/CHE n = 100 %	
Any form of training	72.7	95.0	80.0	79.0	77.3
Key Skills training	45.9	0	0	1.0	26.2
LIS/IT induction session	41.2	80.0	70.0	67.0	54.1
Informal help from LIS staff	22.2	37.5	40.0	23.0	22.1
Training from course tutor	18.0	57.5	40.0	30.0	26.7
LIS/IT specialist session	1.5	40.0	40.0	15.0	11.0
Specialist external consultant	0	0	0	1.0	0.3
Other training	2.1	0	10.0	3.0	2.3
No training	25.8	5.0	20.0	21.0	21.8

* Responses not available to SFC/FE students
**Response not available to HE students

SFC = Sixth form colleges (4 institutions reporting)
CFE = Colleges of further education (10 institutions reporting)
ONRU = Old non-Russell universities (1 institution reporting)
NU/CHE = New universities and Colleges of higher education (2 institutions reporting)

Table 2.19 Sources of information skills training for students, by institution type (questionnaires)

2.8.2 Student perspective on information skills training and support

Students (usually studying biomedical or clinical medicine subjects) reported that some library-based training had been useful.

> *'We actually had a lecture from, I'm not sure what his role is at university…well he's like our library consultant if you like. And he gave us a lecture on how to use*

library electronic journals and the Athens numbers and how to use the search engines and your know, useful sites, how to determine which is a useful and which isn't a useful site.' [166105, from text units 55-60]

The following social sciences student viewed the training as useful, providing a means of coping with the learning requirements.

'It was either an hour or two hour IT session once a week for five to six weeks I think, which was really useful because there was a lot of stuff I didn't know about on the university website, like the Blackboard, student intranet thing…well one week we had a lot of referencing like the Harvard referencing system and then how to access online journals …just to get to know the student intranet really and cope with the work.' [140107, from text units 86-89, 99-102]

For some students everything has to be related to the search engine.

'Yeah we had like a lecture on, we had to go down to a computer room and…showed us how to access all the online journals and how to use your Athens password from home. Well they've got like a search engine on the, and like checks all the websites for academic recognition or something like that. So it means most of it on there is going to be facts and not just someone's point of view.' [147102, from text units 146-151]

Staff also lead by example, or encouragement.

'I use that all the time, encourage the students to use, facilities such as ASSIA for searching out journal articles.' [140301, from text units 276-277]

'Well, we've been told to use like reputable websites, anything with like org or government sort of thing.' [147101, from text units 37-38]

Undergraduates made the transition from school level information skills to university level in different ways. Some preferred 'doing it' with informal support, others noted that some formal training helped.

'I had done a little bit at school but at college I learnt a fair amount but I always found that the best way f learning was just get on and do it and let your friends tell because I think you listen to them more than you do if it's set down in front of you.' [143107, from text units 119-122]

'Quite a lot actually. At A level I learnt a lot of my skills anyway, so everything I was being taught here was pretty much repeated of what I had already known. But I did learn a few things like say how to use MEDLINE and other journals like that. That's fairly useful and how to refine your searches to degree level rather than A-level level. So it's very helpful to have those.' [166105, from text units 155-159]

Knowing what you don't know is part of the problem.

'Well I asked them (library staff), I actually had to ask them to get my ATHENS password, we got so far, but not sort of continued. I need to practise and work out what I need to ask.' [179105, from text units 259-261]

2.8.3 Key skills (IT) and information skills

Students sometimes sensed that staff would prefer that they did not use Web-based sources for their assignments – but that approach of avoidance did not necessarily skill them in judging the quality of information found on the Internet, and lifelong learning skills might be neglected.

'You've got to have scientific journals or books recognised by the library and so it's been useful to learn that a lot of the Internet is full of rubbish but it's very useful to get the other side of things because the college is quite sort of narrow, I feel in a certain way.' [179105, from text units 191-197]

> *'They don't necessarily show us how to do a Google search…We've been taught how to use our own search information systems here and how to search databases and stuff like that…a lot of teachers are always quite apprehensive about us using websites and things.' [143103, from text units 196-201]*

The message that staff might have been trying to convey got lost in the noise?

> *'I think it's critical at level one to embed into them the differences in search engines…they need to be just as critical of the stuff they read on the Internet as stuff they read in books and journals…they are asked to look at these sites, and if they quote Google sites or such like then we tell them that that's not the best.' [143301, from text units 145-157]*

In other institutions the information skills training is embedded into a professional studies module, or research methods.

> *'It included how to search using a search engine of your choice, you just had to analyse it briefly…you have to write down the steps in which you did it and then you came out with the answer…it was one of our tutors, it was the professional studies modules that we were doing.' [177106, from text units 78-88]*

> *'Not on Blackboard but I've used the Key Skills on line which is through the intranet, it's all linked but you've got, you can go into Blackboard or you can go into the library and catalogues and it's all in that same, but I've done the key skills and you go through all the questions and it tells you what you're good at and what you need to work on and how, it doesn't just tell you and then you can't do presentations it says you need to learn how to do this skill, they taught us how to assess ourselves, that's what the module was about, it was about doing Key Skills, the title was something about skills but I can't remember, social science skills and methods. [140104, from text units 162-170]*

Academic staff are explaining the process from website through to the referencing of the material retrieved.

> *'I did AS level IT so I knew sort of how to use a computer but like people didn't know, the lecturer did actually explain how to like take pictures off the Internet and things and how to reference them and how to search…we've just been recommended in the last few days a load of things for environmental science which was like electronic journals, like sort of Government agencies and things, and I'm definitely going to check those.' [179101, from text units 34-38, 287-290]*

A group work approach to study skills was popular with some students, as this also helped them get to know other people in their class.

> *'Yes, you have to do a project and you get all the stuff off the computers and you've sort of got a person assigned to you to like help you out and show you how to do everything, you do a presentation as well. I think it's just like to get used to your class and surroundings. it's like an introduction to get to know your class, like get into groups.' [104106, from text units 84-88, 102-103]*

Some undergraduates and postgraduates, particularly those in the clinical and biomedical disciplines were aware of more advanced searching techniques and had been taught by library staff.

> *'We had one lecture on how to use, er how to search using the search engines and how to use, how to write your query using different advanced search tools and how to use plus and then double codes to better your query skills.' [173110, from text units 103-106]*

> *'They showed us which databases were available on the network and also showed us how to build up search terms.' [140102, from text units 144-145]*

At one site, postgraduates were formally taught and assessed in website design.

'We had a computing course this year and we had to design a website using whatever we wanted really. I used Mozilla Composer, which...... it's quite an easy way to use HTML, it does a lot of the coding for you so you don't have to know HTML to use it. And we got assessed for doing the website and it was a very small portion of our coursework but it was an assessed project. [169105, from text units 131-136]

Mature students acknowledged that their attitudes probably differed from the general confidence exuded by younger students. For some, learning has been 'on the job' – sometimes more on a 'needs must' basis.

'I'm sort of the generation that just kind of tail end and I was absolutely terrified of computers...so I very much learnt on the job and I'm only now really, I'm not very good at exploring what can, what's available to me. So job wise it's been a huge learning you know because you've got to understand packages.' [179105, from text units 162-167]

2.8.4 Staff views of students' information skills support

Staff noted the variability of the skills among students, and the need to cater for that variety. The younger students might appear IT literate but they did not necessarily have the e-literacy required for their academic studies. Referencing skills were noted as poor, and that was naturally linked to the suspicions about plagiarism.

'We get quite a mix of students here...we've got a core of mature students who are not used to it, whereas we have others who are used to it, but they use it a great deal – but it's just for emailing or Hotmail. It's not searching for specific bits of information.' [143301, from text units 161-166]

'I think what they're poor at is referencing where they're getting it from...And also very aware that increasingly I think they're relying on illegitimate sources sometimes...It's a bit of plagiarism issues which we do talk about to them. But actually catching them doing it is not as easy.' [147301, from text units 259-268]

'One of the difficulties they have is sort of distinguishing between you know, authentic websites and potentially inauthentic websites...I always say if it's got gov.uk, ac.uk it's probably going to be reliable and authoritative...I think they sort of buy into that but it might give them a sort of year or so, I think I've got to comment on that when I give an assignment.' [147302, from text units 1116-126]

2.8.5 Different organisational models

There were fewer HE sites visited this year, and insufficient to make quantitative comparisons. The section focuses on the views of different ways of providing information skills support – and the division of labour in different institutions.

'When we first started we had a little, we had a talk off the librarians about the library and the Internet. Setting up everything basically....it's something you've got to get used to doing so was helpful. And if I have any problems I've just gone and asked to be honest...they(academic staff) tend to steer us more towards the librarians really...if it's a general question they can help us, but if it's a little more technical then you know we're sort of pushed down there to get the answers.' [147105, from text units 105-119]

Staff working in the clinical and biomedical sciences area were quite willing to hand over responsibility to the library for specialised training.

'I've actually taught the students how to use it (information resources requiring ATHENS authentication) but now that the university runs its own course and has members of the library staff running the course, I've handed that on to those staff

because they are obviously in the position to do it better than I am.' [164301, from text units 80-85]

In other situations, social sciences departments approach the integration of information skills into the curriculum through the teaching, in first year, of research methods and social sciences skills and methods. Staff believed that reinforcement was necessary in later years, and easier if the material taught lent itself to use of Web-based sources.

'I tend to integrate into all of my modules , not least because I tend to teach a lot of comparative material for which where are some very good international websites…and also when I am doing delivery I will actually use the computer and projector and show them the WHO or OECD…if I was to say to certainly the first and second years, send me an email attachment with your draft essay, a good proportion would go 'what?'…it gets better through the second year because I just say to them well, I'm not prepared to read paper versions….it's simply a lack of practice, lack of confidence.' [140301, from text units 193-208]

Conversely, a biomedical sciences department left the detailed training until much later in the course, but the timing was acknowledged to be a matter of debate. Another engineering tutor acknowledged that students would need encouragement and guidance to use the research resources.

'Timing of this training is always an issue but here it is really left until the fourth year when they use it in depth – it depends on the course, it would their third year probably…the main time that they get experience at using sort of access to prime sources of information for original information is not really until their final year.' [164301, from text units 144-146, 131-134]

'Just marking some recent assignments and looking at the references, I think the major comment I have when I'm going back is it would be nice to see some journals articles and research papers in there and not just plain www. They're ceasing to make use of journals and that type of thing.' [177301, from text units 48-51]

2.8.6 Training received by staff

Some staff are self-taught although they acknowledge that courses are available, possibly aimed more at new members of staff as part of staff development. Some 'as and when' support is appreciated.

'I'm largely self taught with booklets of information…most of that information was probably sent to me by email or by paper documents.' [164301, from text units 93-96]

'I, many years ago, went to a workshop which ran for I would say two or three hours which was provided by SOSIG, the information gateway. To be honest with you beyond then although I think I probably could have had some training within the university I've basically taught myself.' [140301, from text units 141-144]

'I've not availed myself of half my options. I tend to go with a specific problem and get it solved then go back to my room.' [147301, from text units 127-129]

Are librarians unusual if they are very helpful?

'Quite of lot (of training) really because we had an amazingly helpful librarian who's retiring soon and he always made himself available if anyone had any questions…It's just as and when, when we need it.' [166301, from text units 126-129]

2.9 E-learning and VLEs

Benefits to students of VLEs are discussed in Section 2.9.1,and benefits to staff in Section 2.9.2 (see also Section 6.9 for a fuller analysis). Section 2.9.3 considers organisational strategies for developing VLEs, and Section 2.9.4 examines whether VLEs have a good or bad effect on the development of information skills. One possible benefit of VLE use to students and staff is tailored access to learning resources at home, and over 50% of students interviewed have their own ISP connection (Section 2.9.5).

2.9.1 Student views on learning through VLEs

Last year JUSTEIS identified the problem plateau of VLE development – getting beyond the resource dump stage seems a barrier for many institutions. Although students find the provision of resources, administrative information, and lecture materials useful, they note that practice among academic staff varies and that the portal idea is not one that is practised as the development has been ad hoc in the recent past. There are legacies of departmental sites, as well as the VLE and individual sites.

> *'I use it most days because they've got for two of my subjects they post their lecture notes so I can use it and I can find out about the seminar topics and rooms, all the information about the course is on that.' [140104, from text units 154-157]*

> *'No notes are only on Blackboard, although there is a social policy website that's the …department, it's totally separate from Blackboard and they sometimes list notes up on there as well but that's totally different from the intranet or Blackboard, that's like got it's own web address. ….Yes and they've got links to different news organisations like the BBC and Home Office and things like that.' [140108, from text units 171-178]*

> *They've got a, like I've said before, they've got a, computer aided learning packages on Blackboard service. So I use that, easier if I've got a test coming up so I'll practise tests or previous past papers I can look through. [164102, from text units 137-140]*

> *'We download the model off Blackboard, put it on our own home drive, our little section of the network and then we use that within the (modelling) package.' [177101, from text units 203-205]*

Students are discouraged when material is not updated, although the potential is obvious.

> *'It seemed they told us to go, it's a big thing these Web CTs…and then the page never got updated and we'd go on there…and all the stuff from previous years…I don't think everyone takes advantage of it…[name] uses where it's supposed to act like a message board and everybody speaks and everything. We have discussions, but that's not really working this year because there's only eight people in the class so it's small enough to sit there…but if you had a big group it probably would work.' [143103, from text units 221-238]*

A postgraduate also found the centralised provision of learning resources through the VLE useful – in this case practice seemed more uniform. And the potential for discussion groups was recognised by another postgraduate.

> *'Module co-ordinators put all our information about our modules in there.…You just put in a password and then you use it for your learning materials, announcements, assignment information and further learning resources. You can use it for contact if you want to but I haven't used it for that yet, I just use our other email systems. It's been very useful.' [146104, from text units 103-108]*

> *'The lecturer would put up articles that we could download.…and occasionally there was a group of students that would set up a discussion, so it was a useful*

way to contact people that perhaps don't come in.' [140102, from text units 206-209]

2.9.2 Staff use of the Intranet and VLEs

More examples of the use of VLEs were mentioned in this cycle, including the use of a VLE to connect distance learning and campus-based students. Other academics noted on the advantages of contacting a group of students, or holding email tutorials.

'It does a variety of things actually. So if we have field trips, it will have photographs, potentially on video, aspects of the field trip relating to it so that they can…… we use it for discussion forums, within groups and the group can discuss and put information on there for a virtual meeting. We use it for, we've run some modules where you have distance learning and campus-based students on the same module and we get them to communicate together. So you have a group which is made up of both distance learners and campus-based, and we use WebCT to facilitate those sorts of discussions. Largely because distant learners are in work often so they can bring a very different experience to learning. [143301, from text units 200-210]

'I think it varies. I myself use it interactively to the extent that I put information in there for students to use or in some cases short exercises…I know some people do use it for assessment purposes, essentially for support and delivery…it proves very useful for sending emails to my student groups for particular modules.' [140301, from text units 55-64]

'Emails are very useful, tiresome as they are and time-consuming as they are, we have email tutorials and students email each other, staff email each other, and it would be very difficult without that… Having noticeboards, email noticeboards are very useful. The chat groups, the students do use, I find them a pain… I think the electronic output which is based on the electronic blackboard, so you can have a group tutorial or a group can have sessions within a lecture. You can write on the blackboard and then that's electronically picked up and can be distributed to students. That's quite useful as well.' [166301, from text units 148-155, 167-170]

2.9.3 Policies and approaches for VLE development

Policies were affected by the legacies of previous IT developments and policy changes. One academic commented on the sophisticated in-house VLE developed by one department, which had been developed to support the off-site teaching and students on placement, but was not compatible with the commercial product used by other departments. The same institution had a separate student records system.

One librarian tellingly spoke of the need to have a process to support staff in use of the VLE, and to have various types of support available to ensure that the institution complied with regulatory guidelines on copyright and licensing.

'We've got a process. We advise people on how to do it and also on copyright issues, licensing issues that are involved with putting resources into Blackboard, available to Blackboard. We've developed quite a lot of materials and guidelines and we've done sessions with staff as well, help them to do it. We try and do it in the easiest way possible but quite often that isn't doable so we have to give advice how best to do it.' [140401, from text units 197-203]

The 'class contact/lecture' approach to chunking of learning appears to be a feature of some institutions and academic staff fear that students will not turn up to the lecture.

Because my main teaching is to the (name of subject) students I don't have a, I don't co-ordinate a module for the (other department with own VLE) students but we do have handbooks that are available on the web for (own subject students),

put on there and it will contain all the objectives, examples of papers and all the handouts that they will get during the year. But un-annotated without the text, in my case added, that I'm going to give during the lectures. A limited amount of work material on it, to get the full information they have to then go to the lecture. The (other department with own VLE) system is even more sophisticated than that because the web site is actually dated, once a lecture had been given, the rest of the information appears live on the page for the student but isn't available prior to the lecture being given. But they can go in and actually add bits to the lectures that they might have missed during the lecture. Part of it becomes live after the lecture to give them the full information. [164301, from text units 191-204]

One senior librarian expressed the hope that further policy development of the existing commercial VLE – to an MLE, perhaps, could involve the library and information services in the initial planning stages.

'I'm hoping that if we go down the portal route that we'll be in at the sort of inception rather than having to play catch up later' [177410, from text units 331-333]

2.9.4 Information skills and VLEs

There was no evidence of specific use of information skills components within a VLE. Students commented favourably on a key skills package which was on an intranet, though not, apparently, the VLE (Section 2.8.3).

The question of giving LIS staff access to the VLE to provide information skills support is discussed in one of the case studies (Section 5).

2.9.5 Home access to the Internet

Over 50% of postgraduates and undergraduates have their own ISP connection (Table 2.20).

Type of student (Q questionnaire I interview)	Number	%	Cycle Four Type of Student	Number	%
PG n = 3 (Q), 27 (I)	17 (2 Q, 15 I)	56.7	PGs n=13	9	69%
UGs n = 30 (Q) 53 (I)	51 (16 Q, 35 I)	64.0	UGs n=75	45	60%
FE n=110 (Q)	79	71.8	FE n=151	97	64%
FE n= 145 (I)	113	77.9			

Table 2.20 Students with own ISP connections

The much higher figure for FE students is probably due to more of them living with their parents than for other student categories, as the FE sample this year included sixth form college students. Of those questionnaire respondents living on-campus 38.9% have their own ISP connection and 55.6% do not (5.6% NA), while 72.0% of those living off-campus do have their own ISP connection and 27.2% do not (0.8% NA). Own ISP connections are about twice as common among those living off-campus as on campus.

3 User behaviour in FE and Sixth Form Colleges

3.1 Aims and objectives

The original aims for the FE survey were established by the JISC in the original call and were:

> To undertake a periodic survey of EIS uptake and use, investigating the quantity and quality of take up, with a view to bridging the gap between the perceptions and the reality of user behaviour.

Emphasis was placed, as in previous Cycles on obtaining interviews with students, with questionnaires used as a complementary method of data collection. Over the Cycles, the complementary JUBILEE project has focused on interviews with academic staff and LIS staff, with questionnaires used to survey students.

Where possible, data was collected on the use of MLEs or VLEs where these may be affecting use of EIS. Many institutions are now investing in VLEs and the focus on VLE usage in Cycle Four reflected the need to examine how VLE implementations might be affecting uptake of EIS. In Cycle Five more emphasis was placed on obtaining evidence of usage from sixth form colleges.

3.2 Methods used in Cycle Five

Methods used were essentially a refinement of those developed in Cycle Four. experience gained in Cycle Two.

A sampling frame (Section 3.2.1) was used to ensure that various types of institution were included, and a multi-stage cluster sampling approach used to provide a range of size of institution, more or less evenly split among the five disciplinary clusters, using the same cluster categorisation that had been used previously (Appendix 3.1). The FE colleges asked to participate (Appendix 3.2) were all new to the JUSTEIS project work. The sampling frame was adjusted to take account both of the subject discipline coverage and the need to include the new JISC audiences (Appendix 3.3).

The access methods used were the same as those adopted in Cycle Three. Research staff were alert to possible problems, most having gained experience of the likely problems in previous Cycles, and the approach taken at each institution was therefore adjusted quickly to suit the prevailing circumstances.

Interviews with senior librarians provided details of their plans for purchasing EIS, and some of the problems and opportunities the change in resourcing offered. Appendix 4.1 details the basic interview schedule used, and the results are discussed in Section 4.

3.2.1 Sampling frame

In Cycle Five the aim was to provide more emphasis on FE, and less on HE, with no change to the sampling approach used in previous cycles to ensure coverage of a wide range of institutions and disciplines, with particular emphasis on sixth form colleges.

The proposed sample was
> HE (12-14 departments, 10-12 institutions)
> FE (16-20 departments, 12-14 institutions)

The main changes proposed for cycle 5 were:
- Discontinued - Library Web site census (Strand C)

- Alteration of the sampling matrix specifically to include a highly research intensive (6*) institution (HE), and also (in FE):

- o   Adult and Community learning students
- o   Foundation degree students
- o   HE in FE
- o   Modern apprenticeships
- o   Sixth form colleges

- Extension of EIS purchasing interviews to provide more specific examination of the lifecycle approach to content (acquisition, evaluation criteria, economic models/banding, user needs, re-evaluation, archiving and presentation) (reflecting the JCCS agenda)

- More specific study of 'everyday' information seeking, workplace learning, home-based access and what the implications of 'off-campus EIS use' are for learning (reflecting where JCIE concerns meet those of JCLT and JCN)

Provisional target numbers of students per site: 5-10 interviews, with 10-15 questionnaires per department for larger departments
Number of academic/teaching staff surveyed: 1-2 staff interviews/questionnaires
Number of interviews of senior LIS staff: 1 per site

	General FE & Tertiary	Specialist	Sixth Form College
Large (> 18,000 Students)	6 **Category 1**	0	0
Medium (> 6,000 < 18,000 students)	5 **Category 2**	0	0
Small (< 6,000 students)	5 **Category 3**	3 **Category 4**	5 **Category 5**

Table 3.1 Sample characteristics for FE colleges

Age range (where stated)	Number of student questionnaire respondents		
	SFC (Male n = 10 Female n = 16 Sex not stated n = 2)	CFE (Male n = 33 Female n = 47 Sex not stated n = 2)	SFC+CFE (Male n = 43 Female n = 63 Sex not stated n = 4)
Under 20	23	45	68
20-29	1	28	29
30-39	1	7	8
40-49	0	2	2
50-59	0	0	0
60+	0	0	0
Age not stated	3	0	3

Table 3.2 Age distribution of FE sample students

Of the 24 institutions/departments approached, 18 participated (75% response rate).

3.2.2 Survey methods

The methods comprised:

- Critical incident interview/questionnaire, with use of a critical success factors technique and vignette (to assess use of EIS, attitudes towards EIS, awareness of EIS and searching strategies among FE students). The survey instrument was modified in light of previous findings, the main changes being the modification of the spectrum of purposes, and inclusion of a vignette, to supplement the awareness checklist of EIS used in the pilot.

- Critical incident interview/questionnaire, with use of a critical success factors technique and vignette (for the interview), plus some additional questions, for academic staff.

Appendix 3.4 details the basic questionnaire, Appendix 3.5 the basic interview schedule, and Appendix 3.6 gives some examples of the vignettes used.

3.2.3 Response rate

Disciplinary cluster	Number of departments in sample n = 18	Number of staff interviews n =	Number of students interviewed n =	Number of questionnaire returns (staff and students) n = 117
Health Care and Social Sciences	5	5	37	53
Humanities and Arts	3	2	30	6
Maths and Engineering	4	0	33	25
Applied Science and Technology	6	2	46	33

Table 3.3a Distribution of FE (+SFC) sample among the disciplinary clusters

Disciplinary cluster	Number of departments in sample n = 4	Number of staff interviews n =3	Number of students interviewed n =35	Number of questionnaire returns (staff and students) n = 29
Health Care and Social Sciences	1	2	10	10
Humanities and Arts	0	0	0	0
Maths and Engineering	2	0	16	9
Applied Science and Technology	1	1	9	10

Table 3.3b Response rate for SFC by disciplinary cluster

	Site code	Student interviews	Academic staff interviews	Student questionnaires	Staff questionnaires	LIS purchasing
SFC	139	9	0	4	1	1
CFE	141	4	0			0
CFE	144	10	2			0
CFE	148	10	0	1		1
CFE	149	11	0			1
CFE	150	6	1	5		1
CFE	151	8	2	11	1	1
CFE	153	10	0	5		0
CFE	155	6	0	16		0
CFE	157	6	0	2	1	0
CFE	158	10	0	19		0
CFE	162	3	0	6	1	0
SFC	163	7	0	4		0
SFC	167	9	1	10		1
CFE	168	8	0			0
CFE	171	8	0	4	1	1
SFC	174	10	2	10		1
CFE	176	11	1	13	2	0
		146	**9**	**110**	**7**	**8**

Table 3.4 Site response rates for FE

3.2.4 Analysis methods

In Cycle Five the questionnaire data was entered into an SPSS database, as in previous cycles.

Some of the quantitative data that could be derived from the interviews were pre-coded for easier extraction from the qualitative data analysis software, and subsequent comparison with the questionnaire data.

Coding and analysis followed similar routines to those developed for the HE analysis, and similarly comparisons are made where appropriate with the previous year, Cycle Four (column figures in italics).

3.2.5 Limitations

The survey confirmed the large variation in type of institution among the sector and the results can therefore only be viewed as a snapshot which make not provide a clear picture of part of the landscape of EIS uptake and use.

Gaining access to sites is not getting any easier although the experience of the team means that access is not getting any more difficult, and FE college staff are usually very helpful, although very pressured.

Emphasis was placed, as in previous Cycles on obtaining interviews with students, with questionnaires used as a complementary method of data collection. Experience in Cycle Four suggests that many FE departments and courses, particularly those offering specialist provision, operate with small numbers of students (typically in the 10-20 numbers range). In such circumstances, interviews with five students may represent 50% of the cohort. In the research intensive (6*) sector, experience also suggested that gaining the co-operation of Oxbridge for the M&E framework was not easy, and experience in Cycle Five confirmed that, although survey data from one site was obtained eventually

3.3 Use of EIS by FE students

Results for the questionnaire survey and interviews are presented together, but have not always been integrated for several reasons, e.g.

- Coding categories used for the questionnaire and interviews differ slightly (the preset categories for the qualitative analysis have to be more general as they cover both the HE and FE sector)

The sub-sections in this Section cover:

- purposes of EIS use (Section 3.3.1)

- patterns among sources used (Section 3.3.2)

- patterns of Web site use (Section 3.3.3)

Later Sections cover:

- use of EIS by staff (Section 3.4)

- progression in information skills (Section 3.5)

- influences on student use of EIS (Section 3.6)

- information skills education and training (Section 3.7)

- e-learning and VLEs (Section 3.8).

Quotations from interview transcripts are included to illustrate the discussion. The format of the coding is as follows:

> site code (two or three figures, followed by three figures to denote interviewee code number: 1** = student, 2** = library staff, 3** = academic staff, 4** = senior library staff.

3.3.1 Purposes of EIS use by FE students

Questionnaire responses indicate that job-related searching is relatively common with this group of students, which is unsurprising as many of the FE students are part-time, studying on a day release type of arrangement. Leisure related reasons rate highly as well. These figures suggest that 'everyday' Internet searching will affect how students approach the searching of more specialist resources.

Interviews confirm this pattern with around a quarter of all searching incidents described concerning recreational purposes. This may reflect the fact that FE students have, on the whole, more time for leisure browsing than undergraduates. They are therefore more likely to report a recent search being for recreational purposes. Alternatively, the resources they use for studying may be concentrated more on printed learning materials. Whatever the reason, the implication is still that Internet searching for study will be affected by experience of searching the Internet for everyday purposes.

One possible reason for the increased frequency of recreational or everyday information seeking compared with searching for coursework (compared to the previous Cycle) could be the changing pattern of timetables in some FE colleges. If classes are increasingly concentrated in a couple of days per week (even for full-time students) then it is more likely that the searches described to interviewers could concern reasons other than coursework.

Purpose of search	SFC (I) n = 35 %	CFE (I) n= 111 %	Total SFC + CFE n=146 %	Purpose of search (Q)	SFC (Q) n = 28 %	CFE (Q) n = 82 %	Total SFC+CFE n = 110 %	Total Cycle Four interviews n=151 %
Assignments	63	57	**58**	Course-work	96.4	85.4	**88.2**	*72%*
Recreational	26	25	**25**	Final project	3.6	2.4	**2.7**	*0*
Shopping	3	4		Job (projects, routines, procedures)	7.1	13.3	**11.7**	*0*
Background Research	3	4	**3**	Job (search or applying)	3.6	8.4	**7.2**	*2%*
For someone else	3	3	**3**	Leisure	10.7	33.7	**27.9**	*11%*
Job search / Interview	3	2	**2**	Planning a college event	7.1	2.4	**3.6**	*0*
Travel		3	**2**	Research proposal	0	1.2	**0.9**	*0*
Exam revision		1	**1**	Business travel	0	3.6	**2.7**	*2%*
Work purposes		1	**1**	Finding accommo-dation	0	1.2	**0.9**	*2%*
Dissertation		1	**1**	Other	0	9.6	**7.2**	*4% (shopping)*
Other		1	**1**					

Table 3.5 FE students' reasons for seeking information in the critical incident

3.3.2 Finding information: use of EIS by FE students

Students were asked which EIS they used frequently in the interviews. Given the difficulty of extracting valid responses from students, this question was not asked in the questionnaire. (Table 3.6).

Comparisons with Cycle Four suggest increased use of
- texting (at the expense of email) for communication with friends and peers
- the Internet (and search engines in particular)
- email for communication with academic staff
- gateways and portals
- e-books
- Intranets/VLEs
- Internet via WAP phone

CD-ROMs are still used by this group, but to a lesser extent this year. OPAC use is much the same as last year. Email discussion group use has decreased.

EIS USE	Cycle Five interviews n = (%)	*FE students Interviews Cycle Four n=151 % rounded up*	*FE students n=122 Interviews Cycle Three*
Search Engines	136 (93%)	*132 (87%)*	*same rank (87%)*
Texting	134 (92%)	*129 (85%)*	*not coded*
Email Personal Use	116 (79%)	*126 (83%)*	*not coded*
CD ROM	71 (49%)	*86 (57%)*	*same rank (42%)*
E-reference	55 (38%)	*64 (42%)*	*same rank (22%)*
Email Academic Use	51 (35%)	*45 (30%)*	*not coded*
Own OPAC	37 (25%)	*41 (27%)*	*same rank (18%)*
Gateways	35 (24%)	*23 (15%)*	*same rank (9%)*
Intranet Local Information	27 (18%)	*23 (15%)*	*Not coded*
Internet via WAP Phone	27 (18%)	*17 (11%)*	*Not coded*
Intranet Courseware/VLE	21 (14%)	*18 (10%)*	
Ejournals	15 (10%)	*15 (10%)*	
Intranet Lecturer/course notes	15 (10%)	*3 (2%)*	
Email Discussion Groups	15 (10%)	*27 (18%)*	*not coded*
Statistics software	14 (10%)	*30 (20%)*	*not coded*
Ebooks	13 (9%)	*3 (2%)*	
Bibliographic databases	10 (7%)	*6 (4%)*	
Intranet Student Records	9 (6%)	*4 (3%)*	
Other OPAC	6 (4%)	*4 (3%)*	
Subject tree/index	4 (3%)	*4 (3%)*	

Table 3.6 EIS used frequently by FE students

EIS used	FE students (CFE + SFC) questionnaires n= 104 %	FE students interviews n= 146 %	*Cycle Four FE students (interviews plus questionnaires) n=320 %*
Search engines	91.3	85.6	*90.9*
Organisational, known Web sites	3.8	13.0	*7.2*
E-mail, newsgroups,etc.	1.0		*1.3*
Local EIS (CD-ROMs, etc.)	4.8	0.7	*1.0*
Own college Web site	3.8		
General e-journals	1.0	0.7	
Web EIS (reference sources, timetables, dictionaries, and shopping etc.) and News resources	1.9		
Other databases	1.0		
Current awareness or SDI service			
OPAC (own LIS)		2.7	
Other EIS categories: Gateways, Databases (non-hosted) via the Web, JISC negotiated services, Named e-journal collection, Other (non-JISC) host-provided database, OPAC (other than own LIS), E-monograph or pdf file, Web text archive, Document supply service. Pre-print collection, Electronic collection management service, Own LIS subject tree, News	3.8	0.7	

Table 3.7 EIS used by FE students in critical incident search

The pattern of EIS use in the critical incident search differs little from that found last year. Search engines are the favourite EIS, by far, for the search. One SFC student in the questionnaire survey used an e-journal in their search.

3.3.3 Patterns of Web site use by FE students

It is difficult to generalise as the range of courses provided by FE colleges is immense, but for the more general courses FE students are using 'everyday' organisational resources. Their expectations on finding ready made examples may be optimistic.

> *'It just seemed sensible to me to go on a care site, so Autotrader, you had to find adverts as we;;. 20 adverts for care to find the prices and ranges so it just made sense to go on a car site, Autotrader or Fish4cars, one of those, they all do the same job.' [157101, from text units 60-63]*

> *'I would rate it as a 3 (out of 5) because I did get what I wanted but I imagined there to be more information about it because the Internet goes all around the world, doesn't it so I was expecting more information about it, but I got the actual information I needed but expected more detail, more examples I could use.' [153109, from text units 56-60]*

FE students used Google frequently, and use organisational sites to find other organisational sites.

> *'I always use Google. I don't really use the others. I was looking for a club…And at first I typed in like the road it was on and it didn't come up. And then I typed in like the club it was at and it didn't give me really the specific website I was after, so I went to another club's website and they had the website of the website I was after…I've always used it (Google) since I was at school…I find it really easy to use so I've just used that through habit.' [144105, from text units 11-24]*

Internet searching is the way bargains are to be found.

> *'Because usually on the Internet things are cheaper than in the shops and I thought it might be a good idea to try and see if I could find the boots on the Internet and I could I would have ordered them.' [148105, from text units 37-40]*

3.4 Use of EIS by staff

Although ICT resources have improved considerably for FE staff and students access to resources is often shared – partly as some staff are part-time.

> *'It's (computer facilities) actually in the staff room. There are actually three computers in there…the last count there were 18 people using our staff room, A large percentage of those are people who just walk in, do a lesson and walk out and again and they perhaps use it occasionally. Let me just count up, there's 9 people who are full time.' [151302, from text units 50-58]*

3.4.1 Use of EIS for particular information purposes by staff

Staff use other people's web pages to check up on their skills and experience.

> *'I'm checking out this guy's CV at the moment and he's given me a web link for his web page…And this has been pivotal because I've got three application and this guy's looking the most promising because…the job's obviously for a media technician and he's just demonstrating the skills you know that we like to nourish and nurture here.' [144302, from text units 13-15, 25-28]*

3.4.2 Finding information

Staff appreciate the specialised sites and resources as they do not have to filter the information retrieved.

> *'Well, the Royal Society of Chemistry, I mean it's got a lot of links, so I immediately go to that rather than to a sort of search engine and get all sorts of stuff that I then have to filter out.' [167301, from text units 34-37]*

3.4.3 Use of EIS for communication

Access to e-mail is becoming an accepted norm.

> *'What couldn't I do without? - is actually an email um to do the job. It's something that we rely on heavily daily. And when the IT services department is actually updating or doing something to the network and it's out for like half an hour, it's a real imposition and it's a real problem. [144302, from text units 117-121]*

3.5 Progression in information skills

The preferences students have for particular EIS, including particular search engines are considered in Section 3.5.1. Normal information seeking routines for their studies include printed books as well as EIS (Section 3.5.2). Use of more specialised resources is examined in Section 3.5.3, and perceptions of satisfaction, dissatisfaction and confidence considered in Section 3.5.4. Disciplinary differences are covered in Section 3.5.5.

3.5.1 Rationale for selecting resources

Time pressures, and convenience are evident in the accounts from some students of their reasons for doing an Internet search or choosing the Internet for shopping.

> *'Convenience really because I work to half eight every night so by the time I've gone to college and gone to work I don't have time to go to the shops during the week.' [168107, from text units 26-28]*

> *'We did have textbooks but the Internet was so much easier than trawling through the library and journals and things.' [171103, from text units 17-18]*

In some FE colleges the Internet is seen to offer access to a wider range of more in-depth resources than easily available in the books section of the library.

> *'And because of the nature of the books…I was only looking at one section on it, basically glanced over things so you couldn't really get that much depth out of them. There were other books in other areas of the campus but it was the time constraint of ordering them in.' [171107, from text units 83-87]*

3.5.2 Information seeking routines

As a way of checking how electronic information resources fitted into the normal information seeking for studies, students were asked how they would answer a problem in their subject area (the problems set varied according to the discipline and level of study). Use of the Internet (Table 3.8) confirms the trend indicated last year, of a slowing in the rate of Internet use for routine coursework. Although most FE students would turn to the Internet first, books (library books and course textbooks) are still a staple source of information, and students do not necessarily only use the Internet.

Strategy	Trend	FE student n=146 (10 students not asked, 7 recorded combined methods)	FE Student (Cycle Four)n=151	FE students (Cycle Three) n=122
Internet 1st	Up slightly	66	63	39
Library & Books 1st	Same	37	37	36
Internet Only	Same	17	17	31
Ask Someone	Down	5	13	9
Course Notes	Up	14	8	not coded
Organisations	Down	3	9	4
Specialised EIS	Up	1	0	0
Intranet	Same	0	0	2

Table 3.8 Strategy used for the vignette problem

Some students prefer the novelty of the Internet with the promise of instant gratification, which is not, they realise later, always satisfied.

> *'I just don't do books….It's just like I can't be bothered to go through pages and pages of something and then just don't find something, it's better, I prefer going on the Internet but I don't always find what I'm looking for.'* [153104, from text units 45-50]

Books may offer the information in a format that is easy to find and understand – but the Internet is seen to offer more up to date information, important in some subject areas, and saves time when time is precious.

> *'There was a lot of information, so we had to find, if I could have used textbooks all the time I'd probably have chosen them because it would had, it would like homed in on the subject area.'* [174103, from text units 82-85]

> *'I've got books as well, I use both, the Internet as well as books.'* [167104, from text units 40-41]

> *'I do feel that learning languages from a book is easier. Even with the audio and the pronunciation guides given on the Internet, I do find it easier to learn from a book.'* [167107, from text units 211-215]

> *'I would, mean having to use the library which would have taken considerably longer and the information would have been out of date.'* [158107, from text units 46-48]

> *'Usually I would use books to find it but because I'd left it to the last minute, I used the Internet.'* [167106, from text units 33-34]

3.5.3 Gaining familiarity with specialised services

Several students mentioned that the Guardian Online provided useful information. Infotrac was rarely mentioned although some students mentioned they had been introduced to it.

> *'I wanted some relevant information on fluoridation in our water because it was on the news recently….so I went to the Guardian for that as well…and that was brilliant because it also does most asked questions and answers…the questions are what you need to ask really.'* [139104, from text units 43-49]

OPACs are not used very much by FE students.

> *'Personally I would just browse the shelves and then if I couldn't find anything I'd ask for it…and they've (public library) got that book search thing…now and again if I'm really stuck.'* [168104, from text units 149-156]

3.5.4 Satisfaction and confidence in information seeking

3.5.4.1 Factors governing satisfaction and dissatisfaction

Several FE students mentioned that pop-up advertising which occurred in their searches were particularly annoying.

> *'Just going through different websites, all the pop ups annoy.'* [148101, from text units 68-69]

> *'I mean the only problem we really do have with the Internet, I mean is the pop-up, an absolute nightmare, especially when you type in something and it'll pop up and then it obviously, it makes the bleeping noise, you've got to go and delete it.'* [176109, from text units 72-75]

Compared to previous Cycles, Cycle Five FE students expressed more dissatisfaction over their searching strategies, which indicates greater awareness of the way different strategies might produce different, and possibly more specific results.

> *'Finding the stuff was quite difficult…I don't know, I always have trouble with it , I have to keep putting in different questions. Because I never find the right information.' [141103, from text units 63-68]*

> *'I do look at some stuff like you get on E-Bay and stuff like that. Sometimes that is quite hard to find, like when you're looking for something to buy on the Internet, you can't really find the exact thing you want sometimes. It's really hard.' [144107, from text units 85-89]*

> *'I know sometimes if I use Yahoo and Google at the same time you always come up with different results and sometimes it could be relevant, sometimes it could be absolute nonsense, with just one word.' [157103, from text units 94-97]*

Making a search more specific is difficult for some FE students, who then find themselves scanning a large number of references. Very few students seemed aware of more advance searching techniques.

> *'I found it very hard to scan down to what I needed, it was about the new Lego store…and how it was going to affect Tesco…it was very hard trying to pick out…and eventually did but it was long and I thought it would be easier.' [158108, from text units 84-90]*

> *'Yes because I've done my A-levels and stuff like that so I have used it and I do know how to use it, I just don't particularly like it because it takes so long to find what you want.' [162101, from text units 69-72]*

> *'I later found quotations was easier and if you put the little bracket things on it actually gives you specific, you know it gives you more specific.' [148108, from text units 48-50]*

Finding the right level of information is a problem for some students.

> *'Then you get about 10,000 pages you've got to sieve through, it took about an hour to sieve through, some of them went into extreme detail which as GCSE level wasn't, I didn't understand it and then some of it was a bit too simplistic.' [171106, from text units 21-24]*

Complaints about 'finding a needle in a haystack' were more common among FE students, suggesting that they need more help and guidance in narrowing their searches sufficiently. Some students commented on the problems of finding a computer available at their colleges, suggesting that more efficient searching by students would relieve some of the pressures on the network.

> *'Well it's noisy [computer room] and it's hot and tend to send you to sleep…It depends how many people are on, if there's a lot of people on, it goes a bit slow.' [148102, from text units 55-58]*

3.5.5 Disciplinary differences

As in the previous cycle, the disciplinary effect in searching style was evident. One student working in an engineering area noted that students working for organisations and subject areas which guarded their intellectual property very carefully might encounter problems in sharing information, and finding information for project type assignments. Foundation degree students are likely to encounter this type of problem in industries such as engineering and pharmaceuticals.

'The one (assignment) at the moment is a lot more complicated in the way that it's specifically aimed at the company you're working in, so unless the company you work in release a lot of their information on to the Internet…they are not going to release prices and products for anyone to find out, specifications and how it's made…and we can't actually tell people…well I can but not to you because you could be working for xyz…we find it hard like that a lot of the documents we need to get them stamped and get permission to release them. There's not much on the Internet.' [157101, from text units 88-107]

Purpose of critical incident search of reporting SFC students	Subject Discipline (% reporting named purpose)				
	AST n = 29 %	HA n = 6 %	HCSS n = 51 %	ME n = 24 %	All SFC +CFE n = 110 %
Coursework	79.3	83.3	94.1	87.5	88.2
Leisure/shopping	23.3	0	25.5	45.8	27.9
Work duties	6.7	0	7.8	29.2	11.7
Job search or application	3.3	0	5.9	16.7	7.2
Planning an event	3.3	0	3.9	4.2	3.6
Final project	3.3	0	2.0	4.2	2.7
Research/funding proposal	0	0	2.0	0	0.9
Business travel	3.3	0	5.9	0	2.7
Finding accommodation	0	16.7	0	0	0.9
Other	3.3	0	9.8	0	7.2

Purpose of critical incident search of reporting FE students, questionnaires only (Cycle Four)	Subject Discipline (% reporting named purpose)					
	PAS n = 81 %	ME n = 21 %	PASS n = 81 %	HA n = 13 %	CM n = 1 %	All reporting FE students n = 197 %
Coursework	86.4	95.2	93.8	92.3	100	90.8
Leisure/shopping	12.3	19.0	11.1	15.4	0	12.7
Work duties	4.9	4.8	4.9	7.7	0	5.1
Job search or application	3.7	4.8	7.4	0	0	5.1
Planning an event	4.9	4.8	7.4	2.7	0	6.1
Final project	1.2	14.3	2.5	0	0	3.0
Research/funding proposal	1.2	9.5	7.4	0	0	4.6
Other	4.9	0	3.7	0	0	3.6

Table 3.9 Purposes of EIS (critical incident search) among different disciplines (questionnaire)

The figures are rather small to make detailed comparisons but there seems to be a picture emerging of more focused use by health and community services students using EIS mostly for coursework, whereas the maths and engineering students are likely to be using electronic information services for a variety of purposes – domestic and leisure. The CFE questionnaire respondents were more likely (33.7% compared to 10.7%) to report leisure purposes than the SFC questionnaire respondents, and less likely (85.4% compared to 96.4%) report coursework related purposes. The subgroup numbers are rather small, but the distinction between the maths and engineering students and the health students, whether CFE or CFC, holds.

3.6 Influences on student use of EIS

3.6.1 Influences on FE student use of EIS

The students' own experience remains the prime factor – an experience drawn from work, previous school experience and home, as well as training and support provided by the FE institution. There is no marked change between the pattern for this year and that of last year. (Table 3.10).

Factors leading to EIS use in the critical incident	SFC students n = 28 %	CFE students n = 82 %	SFC+CFE combined n = 110 %
Own previous experience and results	60.7	53.7	55.5
Lecturer or tutor recommendation	42.9	32.9	35.5
Friend or colleague recommendation	21.4	23.2	22.7
Read about it	10.7	11.0	10.9
Course or session organized by LIS or IT services	3.6	6.1	5.5
LIS or IT services staff advice	7.1	11.0	10.0
Course or Departmental Website	3.6	6.1	5.5
Reading list	0	8.5	6.4
Other	3.6	1.2	1.8
No response/data	3.6	3.7	3.6

Factors leading to EIS use in critical incident	FE student questionnaires n = 196 Cycle Four %	FE student questionnaires n = 132 Cycle Three %
Own previous experience and results	59.2	50.0
Lecturer or tutor recommendation	32.7	34.8
Friend or colleague recommendation	20.9	18.9
Read about it	6.6	4.5
Course or session organized by LIS or IT services	2.0	8.3
LIS or IT services staff advice	7.7	7.6
Course Website	3.1	4.5
Other	1.5	1.5
Reading list	3.6	0.8
No response/data	3.1	0.8

Table 3.10 Factors leading to FE students' use of EIS in critical incident search

Teaching staff remain a major influence, but friends and media influences also affect the choice of EIS.

> *'Because one of the teachers here suggested this previous book…and he said go to that particular site so.' [139101, from text units 43-44]*

> *'Went on a website on how stuff works…I was told…The tutor.' [149100, from text units 19-29]*

> *'Uh I think someone else told me because I always used to use Yahoo or Google and someone else told me about Ask Jeeves. And I've seen it advertised on telly as well.' [144104, from text units 31-33]*

> *'My mates…They say Google's a good site and just go on it.' [149102, from text units 78-80]*

'Yeah my friend told me about it(NHS Direct) and …things like Health Studies and stuff it's common.' [151102, from text units 29-30]

Google is the tried and trusted solution for many.

'I've been using Google for a while now, ever since I've been researching. I trust Google because it usually gets me to the resources I want.' [144100, from text units 44-46]

'Yeah I tend to use Google more than I do like Ask Jeves because if you type in a question in Ask Jeeves it just gives you like books like that you can buy. It's not very helpful. Yahoo's a good one as well.' [151108, from text units 68-70]

'If I'm trying to find like a specific phrase I think Google's the best for that really, especially is you're trying to find lyrics for a song and you can only remember one line, it you type the line of the song in it comes up with lyrics.' [158102, from text units 54-58]

3.7 Information skills education and training

FE students received information skills support and training in a variety of ways (Section 3.7.1). Their views on such training (Section 3.7.2), including Key Skills (IT) (Section 3.7.3) show that they are aware of IT/information skills, although views are (unsurprisingly) mixed on the value of Key Skills. Staff are aware of some of the drawbacks (Section 3.7.4). There may be some parallels between PBL in higher education and resource-based learning in FE (Section 3.7.5). Staff are taking up opportunities for IT/information skills training (Section 3.7.6).

3.7.1 Sources of information skills training

Type of training	Total (CFE + SFC) n= 106	CFE students n=78 %	Students receiving training: Cycle Four Questionnaires n = 192 %	Students receiving training: Cycle Three Questionnaires n = 127 %
Course tutor	23.4	27.8	18.2	27.6
Key Skills session	64.5	57.0	46.4	not asked
LIS/IT induction session	Not asked	Not asked	41.7	26.0
Ad hoc help from LIS staff	12.3	11.5	21.9	not asked
LIS/IT specialist session	Not asked	Not asked	0.5	7.1
Other training	3.7	5.1	2.1	1.6
No training	22.4	26.6	25.5	41.7

Table 3.11 Type of information skills support for FE students

There is little change over perceptions in previous years. The sample size for SFC questionnaire respondents was small (n=28) but more of this group (85.7%) reported receiving formal Key Skills or IT skills sessions than the CFE students (57.0% of CFE students).

Type of training (questionnaire responses)	Type of institution					
	SFC *n = 28*	*CFE* *n = 78*	*SFC+CFE* *n = 106*	ONRU n = 10	NU/CHE n = 20	All reporting students n = 136
Any form of training	*89.3*	*73.1*	*77.4*	90.0	95.0	80.9
Key skills training**	*85.7*	*57.7*	*65.1*	0	0	50.7
Training by LIS/IT or by course tutor	*10.7*	*28.2*	*23.6*	70.0	60.0	32.4
LIS/IT specialist session*	*0*	*0*	*0*	40.0	25.0	6.6
Informal help from LIS staff	*14.3*	*11.5*	*12.3*	40.0	30.0	16.9
Specialist external consultant*	*0*	*0*	*0*	0	0	0
Other training	*0*	*5.1*	*3.8*	0	5.0	3.7
No training	*10.7*	*26.9*	*22.6*	10.0	5.0	19.1

Table 3.12 Comparison of FE and HE information skills training

3.7.2 Student perspective on information skills training and support

Library support was mentioned for use of Infotrac.

> *'Yes she did go into Infotrac, yes. It was a general, it was on for about an hour and generally how to use it, how to access things that we need. And she also said that they are there, if we do get stuck just go in and ask.' [139104, from text units 119-122]*

Like some undergraduates, FE students see other specialist resources as a type of search engine.

> *'Yes, how to extract information from the actual library computer…The search engines they used. So I've actually applied for one of the passwords that I can use those but, yes I haven't actually received that back but then I should be able to use that through my computer at home.' [13910, from text units 132-137]*

Complaints about facilities and networking are fewer than in previous years, but some academic and administrative practices leave students baffled and frustrated.

> *'About 15 minutes finding the stuff and 10 minutes trying to get it to print because it wouldn't let you print over 7 pages at a time which I think is ridiculous when we pay £1100 to be here…we have to hand our cards in at the library and we get a number for the assignment, they keep our cards, we login but if you try and print over 7 pages it comes up with a little box saying you've got to print it out 6 pages at a time or something which is just annoying but it's the way they want to do it.' [158104, from text units 48-57]*

> *'The amount of paper they must be using is unbelievable when they could just give me a disc with it already on and say right there is all the information. They go through the handouts parrot fashion…I mean they've got an email system but they still insist on sending everyone a letter about any change in college working.' [158107, from text units 262-268]*

Using the printed resources may need a different approach to instruction, if students are so used to Googling. Browsing general subject areas was something this student couldn't quite fathom.

> *'Yes but it's difficult if you didn't know what the titles were, how else would you search for what you're looking for, surely they have like a word, even a word in the title?…We weren't given any direction, we were told here is where the journals are but we weren't told that you wouldn't find what you wanted by what we were doing, it wasn't explained' [171105, from text units 100-108]*

Students may not seek out formal training as they obtain enough support, in their opinion, from friends and colleagues, as well as informal support from library and academic staff. Pottering is also experiential learning, although maybe not perceived as such.

> *'One of the girls on the course she works in the library during lunch hours and she helped me, but I think basically I've had a lot of help from the library, if you do ask, they will show you.' [148108, from text units 123-126]*

> *'Most of the stuff on computers I learnt myself by pottering…Yes, I've been taught stuff in school before I come to college and I've been taught little bits here and there by tutors here.' [149103, from text units 85-91]*

> *'The more you use it the better you get.' [176110, from text unit 81]*

Those with computers at home could easily have over ten years of experience using them, though some acknowledged it was more for games.

> *'At home. I did a lot at home. I just taught myself. I've had the Internet since I was nine, so I've been using that.' [155102, from text units 114-115]*

> *'It was just your basic in's and out's. I didn't have a big interest when I was like younger, it was just like there if it was needed, nine times out of ten I just played games on it.' [168104, from text units 134-136]*

3.7.3 Key Skills (IT) and information skills

Students may receive formal and informal support from their academic tutors, study skills and IT staff, advisors as well as library staff.

> *'The Crisis and Shelter ones (websites) were given to use by our study skills teacher.' [139104, from text units 40-41]*

Integration of information skills into the curriculum can be a seamless process for some students.

> *'But they (teaching staff) help us as we go along. So if we do find any problems with finding anything we will get help and we do have an IT lesson as well…And staff in the LRC centre are very as well if you do need help with anything on the Net or computers.' [139103, from text units 72-77]*

Staffing and organisational problems can make integration of IT and information skills into the curriculum very difficult.

> *'First of all it's a difficulty of tying in the Key Skills to serve a wide range. Sometimes one person teaches Key Skills but every class they go into learns different subjects, they're formulating different assignments. This is a whole different ball game now. All the assignments are different so trying to latch into those was always difficult, then trying to find the application of number and the IT opportunities for IT within those. So people used to come in as teachers, because at the time there was no mentoring here at the college, now there is, and get hugely overburdened by trying to spin all these plates and then would disappear, then another person…' [151302, from text units 121-131]*

Relevant application of Key Skills is important in keeping some students motivated and some appear to think that training is not necessary. Students disliked repeating things they thought they already knew.

> *'Yeah, the Key Skills wasn't too…it just basically taught us things that we already knew. I don't think that was a very good source…Our teachers have really tried to like teach us how to research and the best ways of doing so…and I think that's helped a lot.' [144105, from text units 96-101]*

> *'I haven't had any training I don't think, I don't think you really need training because most people use the Internet nowadays, especially young people. We have had a bit of help getting onto sites and that…the tutor would recommend sites.' [149101, from text units 79-86]*

> *'We've had a basic course of IT throughout the year, we know all the basics, we've gone to more advanced stuff, although we seem to have taken a step backwards this year, we are doing really basic stuff again…this year it's the ECDL, last year it was just Key Skills IT so at the moment we've just covering old stuff.' [153102, from text units 111-117]*

In some colleges students were doing the ECDL as an alternative to the Key Skills route. Some mature students acknowledged that any IT was a barrier to them, requiring considerable practice.

> *'Um, me personally, I'm more likely to focus on my kids, see if they can find that for me. It's practice for them and it's easier for me. When I was a kid the computer was the size of our classroom…I did the ECDL last year on a computer course but I wouldn't say that I was very good at it at all…Practice, spending hours and hours and hours doing it.' [150103, from text units 83-91]*

FE students frequently mentioned that their tutors recommended websites to them, and this seemed to be the most popular approach to guiding students through Internet searching, to ensure that they get something useful out of the time spent searching. But simply providing lists may not be effective.

> *'Went on a website on 'how stuff works' and searched for petrol engines…[Interviewer:…were you told to use that site?]…I was told…the tutor.' [149110, from text units 18-29]*

> *'They sort of, they write them down on the board and they what you can get from this website.' [151108, from text units 108-109]*

> *'Next to every computer there's a you know a favourites list and there are favourites set up for them in various study areas…But again they don't tend to use it.' [151301, from text units 118-121]*

Key Skills (level two) was viewed by some staff as a very basic level.

> *'They do their Key Skills which does, which I think does involved a little bit of Internet work and searches on the Internet but I wouldn't say that was advanced.' [144301, from text units 149-151]*

One member of staff explained that this approach might be livened up in the future.

> *'That's the main way I would work would be to give them the web addresses…because I teach them IT as well so I can stand there and watch them do what I want them to do…it's more awkward for other staff who have to say, here is a website, go away and look at it…we're having interactive whiteboards in every room and we'll be able to show them…so hopefully in the next year it should be better.' [151301, from text units 141-153]*

Very few of the FE students interviewed had used any type of advanced Internet searching, despite often stating that they were skilled in IT, having done it at school or at

college. Those that did (fewer then five of those interviewed) acknowledged that it made searching much easier.

> *'You don't have to now, I mean about putting them (inverted commas/speech marks) in, and…you can look for exact sentences in a lot of the search engines, in Google advanced search there's a section where you can put in the exact words you want to find and also you can search within that for another word…Oh yes it makes things a lot easier, cuts down a lot of rubbish.' [148102, from text units 103-110]*

3.7.4 Staff views on students' information skills support

Staff noted that students were not specific in their searches, despite instruction.

> *'Yeah. They don't seem to have the understanding of how to narrow it down. Even though you go through it with them they don't seem to have the understanding of how to narrow it down. I mean one of the first things we teach them when they do IT key skills which all students, up until this year all students did, is how to search the internet. But they still, we still find them with you know, they've got 2 million sites to look through.' [151301, from text units 102-112]*

Another noted that students' searching results were checked, as most did not know how to search effectively.

> *'They had to go out and find out about different types of tissue…I give them recommended names for those sites…but those are heavily augmented by lectures as well because I don't trust them to get all the information they need from there (Internet)…I'd say a quarter of them…are good at searching. 75% don't really know how to search correctly and need a lot of support to start off with that.' [151302, from text units 91-105]*

One solution is to make the learning more interactive – and this type of activity was picked up for the first time (for FE) in the JUSTEIS survey this year.

> *'Because they shoplift from one place and shovel it onto a page and then print it out. So it's useful to access …I'm thinking about programmes such as Hot Potatoes here…interactive learning programmes so you can actually build up a resource based learning package that is interactive…I'm still learning about it.' [151302, from text units 163-177]*

> *'I produced a CD for them using Front Page…so they don't get a textbook…and it's got self tests on it and I've put on all the past exam papers and things...it's not because I love IT, it's because they lose textbooks.' [174302, from text units 247-257]*

Staff in a SFC made a plea for e-learning materials – particularly those devised by university academics – to be written in simple English. This was not because the students using them were unintelligent. Mostly, the students were intelligent, and hard working, but their problem was that they were non-native speakers of English and some had only recently arrived in the UK.

> *'One of the problems with the sort of websites I was getting access to, say about spider silk, is they're written by university academics and they've got words with more than two syllables and many of the students we teach can't cope with that. And yet potentially they're very able students…It's to do with a middle class you know Eurocentric academic upbringing, they haven't got that.' [167301, from text units 299-308]*

3.7.5 Different organisational models

Key Skills or ECDL were mentioned by several staff. Interestingly, the need for good information skills among clinical/biomedical science students is felt in FE courses such as

Access to Nursing. In one college an 'Advanced Practitioner' is responsible for teaching referencing as part the 'teaching and learning' remit, with another Advanced Practitioner responsible for the IT input.

> *'They are taught during study skills how to write up the Harvard way of referencing because that's what they use at the local nursing college.' [150301 from text units 145-147]*

FE colleges are having to cope with students who are coming in having done some IT at school and who therefore may not see the need for any additional training. The Key Skills in IT has to be made relevant – or else the ECDL can be sold as a universally accepted qualification.

3.7.6 Training received by staff

Training options varied. One lecturer mentioned accessing the LSDA and BECTA sites.

> *'One thing I will do is that I will access some of the sort of education research sites.' [167301, form text units 508-509]*

Unlike higher education, where there is less obligatory staff development (except for new staff) further education staff explained the various incentives for them to undertake training. In some colleges the ILT certificate was mandatory, in others completion of an IT award guaranteed additional pay. However, this was not general and some FE staff were not aware of any training on ILT – there was a distinction made between the IT and the learning support.

> *'It's been limited to the intranet and knowing where the documents are…and there may be a session on tutorial support. And then we're guided through the tutorial website where you find all the different forms and all the different, you know , material that's there, but it's limited.' [144302, from text units 95-100]*

> *'Google…into inverted commas which I had been taught the week before during my night study course, because we're having to do an ILT certificate as part of our course. How to narrow down the search.' [150301, from text units 17-20]*

> *'No, it's (CLAIT) not mandatory, but there's incentive to do it because they get, they get this teachers related, teachers' pay initiative, money if they do IT courses.' [151301 from text units 83-85]*

Good practice included support on using packages such as Hot Potato, but even when offered not all staff see the need.

> *'And some of those (updates) will be fort of teaching and learning things. But a significant number of those, usually its about three or four of them will be related to IT training. The person in charge of that, she's the person for instance the Hot Potato thing I just mentioned was purely the result of going to staff development in July…I'm comparing that to where I used to work where there wasn't any commitment at all to IT training. Not for the 9 months I was there anyway.' [151302, from text units 190-199]*

> *'I've had a lot offered at college, but to be honest most of it's been I've taught myself and what they're offering me is like introduction to and I've already done that you know. They offer you just everything you could want.'[174302, from text units 68-74]*

Bad practice included library induction which was 'boring'.

> *'Oh students do and I go along to those so I suppose you could say I have attended a library induction course. And it's a fairly boring thing, it doesn't really grab me.' [167301, from text units 334-336]*

3.8 E-learning and VLEs

Benefits of VLEs and Intranets to students (Section 3.8.1) and staff (Section 3.8.2) include opportunities for consolidation of learning, and easier student administration. Most sites were just starting to develop their VLEs (Section 3.8.3). Effects on information skills (Section 3.8.4) are impossible to assess properly yet, though it is interesting to note that the majority of FE students interviewed had their own ISP connection (Section 3.8.5).

3.8.1 Student views on learning through VLEs

FE students liked the interactive exercises that were available for them – in some cases these were simply on the intranet.

> *'Not that, but we've got a student intranet where you can access and print off work or also do online tests and they give you a mark. That's quite good. [167108, from text units 120-122]*

3.8.2 Staff use of the Intranet and VLEs

There are more examples of VLE usage in this cycle among FE colleges although progress is still slow in some colleges.

> *'It's fairly new and they have to be interested staff. I think the staff who are interested in it use it but it's not, it's a sort of optional extra so it's not generally used yet. Again it's one of those things that will, we're just at the start of. [151301, from text units 186-189]*

> *'No, not lectures. We've got, we put out schemes of work in our lesson plans on the intranet. [144302, from text units 103-105]*

> *'Yeah, there was a WebCT designed as a resource for the students and for the tutors to put work on. It's got a number of programmes within it where you can put worksheets up, you can have tasks for students, they have a forum where you can start discussion groups and that kind of thing. I think it's becoming more and more used in the college though I've had problems with it because I've found difficulty in getting anybody to issue me with a password. So I've found it difficult to use. I'd like to use it.' [144301, from text units 111-118]*

> *'I'm going to be honest, I don't know an awful lot about it at the moment because it's still developing.' [151302, from text units 181-182]*

Staff mentioned how they had searched for interactive learning material for their students – which could be used on a VLE, though not necessarily in this instance.

> *'I recently had, I looked up some nutrition games. I've got a group of level one students and they're doing both nutrition and IT and I used the BT search engine to find some nutrition games that they could play. [151301, from text units 53-56]*

One – but only one, FE lecturer suggested that using a commercial product might in fact deskill staff in IT, when they might be learning properly about webpage design.

> *'We use Blackboard. I do think it's a mistake! I think it's deskilled a lot of us…they've (another sixth form college) adopted a different approach and they actually a lot of them are actually making their own web pages…Anybody can do it (use Blackboard) I think you lose a little bit of control…I mean I use Excel spreadsheet to create lots of multiple choice tests in calculations…and I sort of knock these into tests. It doesn't take me long, it's highly automated. I just put it on the intranet.' [167301, from text units 343-265]*

3.8.3 Policies and approaches for VLE development

Although there was more evidence of VLE development in this cycle, many colleges were still planning. One librarian noted that the infrastructure was in place and the desirable

liaison between learning resources and information resources should mean that VLE development would proceed effectively.

> *'Well I've just got this new responsibility for learning resources which is the provision of student computers and the provision of the sort of data protection and projection and so on in the teaching rooms, so at the moment there's no budget and no staff…it has just been agreed that the two committees the library committee and the resources committee are going to merge into a learning and information services Committee…. With regard to the VLE that's not my area at all, an academic member of staff who is the key learning officer with another assistant also an academic, we haven't yet really got a VLE but I'm aware that things will be changing and that we need to have an input and the relevant member of library staff will be encouraged to work with them and they'll be encouraged to remember to include him on everything.'179401, from text units 166-184]*

Another librarian noted the lack of joined-up thinking, and likely problems ahead

> *'We do have one. We haven't bought into one of the WebCT or Blackboard. We do have a VLE. To be honest I think it's a bit amateurish the way they've organised it. They don't consult me over it. The electronic services …(and) library are completely separate from…ILT created in relation to VLEs in the rest of the website which is bad. But I have suggested that everything's brought together but that advice was not taken. '[150401 from text units 148-155]*

3.8.4 Information skills and VLEs

Within the FE environment the approach is likely to be working on interactive learning resources attached to the VLE. Experience with the case study (see Chapter 5) suggests that the RDN VTS materials are very useful but they need to be tweaked to suit the needs of different groups of students.

3.8.5 Home access to the Internet

Over 50% of the FE students interviewed had their own ISP connection, and the proportion of FE students (excluding SFCs) with ISP connections has probably not changed since last year. The comparatively high figure for SFC students with home access indicates that most are living with their parents and there is a computer available at home. Last year 64% of FE students interviewed had their own ISP connection but the sample did not include sixth form colleges. Home-based access is quite likely among FE students but it cannot be assumed that students have a computer available to them when they want it. Students often use a variety of computers for their studies – for various reasons. And their experience isn't always seamless.

> *'Yeah , I did it (assignment) at home yeah because access my site at college, I've been here for 5 weeks now and it just says access denied…I found a lot of the time I could access a site at home, at my Mum's house, through Tiscali and through the same provide, through Google, would then go back to my partner's house and wouldn't be able to get the same documents up. It's still through Google but through the Virgin site …it just gave different results…S it did kind of feel sometimes I was being thrown between pillar and post, I mean it just teaches you a lesson I suppose to take notes there and then…We got there in the end I suppose.' [171101, from text units 121-123, 177-191]*

Type of Student (Questionnaire)	Number	%	Type of student (Interview)	Number	%
FEs n = 82	53	64.6	CFE n=111	86	77.4%
SFCs n = 28	26	92.9	SFC n=35	32	91.4
FEs+SFCs n = 110	79	71.8	Total 146	118	78.7

Table 3.13 Students with own ISP connection

4 EIS Purchasing

4.1 Aims and objectives

Work in Cycle Five again included a round of interviews exploring purchasing intentions. The objective of these interviews was to gather information from Senior LIS (Library and Information Services) Managers on EIS (Electronic Information Services) purchasing intentions and any problems they may face with purchasing plans.

Cycle Five extended the EIS purchasing interviews to provide more specific examination of the lifecycle approach to content (acquisition, evaluation criteria, economic models/banding, user needs, re-evaluation, archiving and presentation) (reflecting the JCCS agenda).

4.2 Methodology

The methodology for Cycle Five was the same as previous cycles.

Site code	Selection
139	1
140	1
147	Approached
148	1
149	1
150	1
151	1
155	Approached
167	1
171	1
174	1
177	1
179	1
Total	**11**

Table 4.1: Distribution of purchasing interviews amongst sites

Tables 4.2 and 4.3 show the distribution of interviews between different types of institution in both FE and HE sectors. Most of the interviews were with the FE sector, including sixth form colleges.

	Old University Russell Group	Old University Non-Russell	New University	College of Higher Education
Large (>18,000 students)			2	
Medium (>6,000 <18,000 students)				
Small (<6,000 students)				1

Table 4.2: Types of HEI sites used for interviews of purchasing intentions

	General FE & Tertiary	Specialist FE	Sixth Form College
Large (>18,000 students)	1	0	0
Medium (>6,000 <18,000 students)	0	0	0
Small (<6,000 students)	3	1	3

Table 4.3 Types of FE sites used for interviews of purchasing intentions

All the interviews were transcribed and loaded into NUD*IST (QSR N6).

4.3 Purchasing interviews: results

4.3.1 Current concerns

The main concerns this cycle were about pricing and budgeting for increasing costs and the environmental changes affecting budgeting for those costs. A few sixth-form colleges were amongst the selection and, obviously, their resources were fewer due to restricted subject areas. One college was waiting for confirmation on their merger with another college and at the time of interview, they had no information on how they were going to be affected. One interviewee expressed concern about being able to 'facilitate' teaching staff effectively in order that students would use the resources available, the point being that students would not use the resources unless the teaching staff did.

> *'Well I suppose it's mainly price really. Because we get most of ours through JISC agreements. If they don't give the subsidy the price goes up. It could be an issue with us whether we could afford them.' [139401, text units 3-5]*

> *' Actually I have to say I exist in a very supportive environment in fact, I have a very good budget and the library is on the college's ILT committee, it's represented on that. I suppose the only concern I have really is time and staffing which I suppose everybody has that, but it terms of the wider environment I couldn't ask for it be more supportive, so concerns beyond the immediate in house ones, no.' [148401,text units 5-11]*

> *' Well my main concerns are financial ones being working in FE. I've looked down your questions and I can see that people working in FE would be able to give you lots of responses to these. A lot of mine are quite negative to be quite honest. I mean the concerns that we have are financial. We as a college have taken a chance of the opportunities to subscribe to most of the JISC subsidised resources if they're made available for FE, in fact the main ones. But now of course they're coming round for renewal and we're seeing that those renewal subscriptions are considerably increased. So that is our main concern as to whether we'll be able to sustain the resources that we have managed to build up over the next three years. … My finances are more or less static. Have been, I've been in this job eight years now and if it doesn't stay put it goes down. But I very rarely see an increase. We do have, we have had access to various additional pots of money and we have made use of that but even those are drying up now. It's not getting any easier in FE put it that way and the actual finances the resources that we are getting from the …, you know we don't see any great increase in those at all.' [151401, text units 3-21]*

' There aren't any drastic changes but I think the main concern is the amount of extension … and budgeting for this and like to be directly involved because I think it's important for resources and the library to be at the centre of such initiatives, but they do take a large sum out of the budget which is fairly limited in our case anyway.' [174401, text units 5-10]

'Our main concern I think as with all these things is we are relatively, well we are very small scale and obviously it's to do with funding and so on, and then the perennial one of staff changes and so on but then one always has those'. [179401, text units 3-6]

'.. Some of these you may have come across before, these concerns are quite common throughout the HE community. Obvious things like spiralling prices, then there's the variation in the models and aggregation arrangement that are out there and that there is no happy medium =that gives us what we want. And so we're dealing with a range of access and admin models. Things like, if we do deals with different people at a time, different publishers, different aggregators do we then end up with gaps in access. Some of the big deals give you very little if any flexibility in terms of title choice year to year. Obviously there's a lot of worry out there about the whole nature of the Big Deal and the fact that in some ways it's advantageous in terms of its, the content you can offer to your users but then you end up with paying for an awful lot of titles that are never used. So we probably want more opportunity to cherry pick titles but then we're probably asking rather a lot there.' [177401, text units 3-17]

'I think the main concern I have is to be able to facilitate the teaching staff using the resources that we have, effectively. Because I think until the teaching staff can use them effectively then the students are unlikely to use the ones that we've got.' [167401, text units 5-8]

4.3.2 Management and budgeting implications of EIS

There was mention this cycle on obtaining new collection/budgeting models; however, as expected, it came from the HE sector. The FE sector is still lagging behind with very small operations and staffing levels.

'The current situation is the money is top sliced. Because previously we came to a networked CDROM environment and in that environment it was easy to say well ok so the school pays so much of the content but the centre pays for the networking element so we tended to split things 50-50 for a lot of the services but of course with the internet (unclear) that model doesn't really apply. We've got to think of a new model….In terms of my area which is collection development we haven't made any radical staffing changes. We've tried to cope with it within the basic structure. Because something is electronic we haven't set up a separate, a parallel structure to go with that. So, but the level of staff who handle electronic information services tend to be higher than people who handle the print if you see what I mean. They tend to be paid a bit more because it's a more complex area. So although we've got say a journals assistant who looks after print subscriptions she doesn't have anything to do with the electronic subscriptions and I don't think that's very satisfactory state of affairs. We need to do some staff training, I think they need to have a full picture. I've tended to do a lot of electronic stuff but I think I'm going to have to change that...I think the management of electronic services cuts across quite a few of the teams in the learning centre. It affects a lot of people a lot more. A lot more people get involved and a lot more critical of the way we do things. So I think a wider range of people do have an input. Obviously the (unclear) team is very (unclear) managing the web presence and the organisation of information resources on the web'. [140401, text units 41-72]

'…With having so few, none at the moment and we are not able to make any staffing changes anyway, we are a small band of people… One full time, one term time part time and two year round part time, so 16 hours a week year round, and we are open 50 odd hours a week, 56 something like that so we are quite tight. I have only had one meeting with the head of the resources down in Uni' and it was quite tentative and that was back at the end of last academic year, this year to date we haven't had any contact which leads me to believe that he is no more involved in merger negotiations and merger developments than I am here, unfortunately. So basically it's let's merge and then we'll see what we can do I think.' [149401, text units 85-99]

'….We have a very small staff anyway. We haven't made any changes. I mean the staff we have, have coped with it very well.' [150401, text units 66-67]

'Well one of the things that we did probably about 2 and a half years ago now was to put in place a new post of systems librarian. Some years ago before I arrived at the college the number of professional posts had been reduced quite markedly and I think everybody recognised that they'd probably gone a bit far with that and so there wasn't too much concern about me introducing an additional professional post which we called systems librarian and that person is responsible both obviously for our own library system but also for investigating and developing our EIS provision.' [167401, text units 54-62]

'..I took the job on but it's grown and developed so it takes up quite a lot of my time now, so it's a big aspect of my job now - probably about 30+ percent of my time, depending on the time of year really. At this time of year there's a lot of inductions going on and setting up passwords, all the leaflets need to be revised so between September and October it's a very busy time but then things settle down over the year and I can devote time to other things but yes, it has affected my job.' [171401, text units 86-93]

'No staffing changes at all really, I think perhaps I should be taking up more time in induction in students and staff on these, it certainly has taken more of my time. I make sure they use, obviously if you're spending a lot of money on resources they need to be exploited to the full. I haven't really taken on board, as I say again, distance learning isn't really a problem in our campus and the students have a lot of study time when they're expected to stay in college, so I haven't really taken on board the facilities say of Athens… Not really, and it takes up more time than we have available and it would be a lot more implication on my time.' [174401, text units 29-37]

'.. I mean there's a wider background to this though. In terms of our normal acquisition and processing of text books and monographs, because we for some time now have been operating a shelf ready system in terms of their processing, that meant there was less emphasis on clerical support for the process, the cataloguing process, that we were able to take some staffing input away from that area and put it into the sort of newly developed electronic resources team. And that also meant that there was less need for original cataloguing so again the people who were the cataloguers have kind of had a radical shift in their, not only in their job descriptions but also in their day to day responsibilities so there is still some small requirements for original cataloguing but by and large the people who are doing that are now very much involved in the management and the establishment of electronic resources. So they're not called cataloguers any more, they're now called Electronic Resources Assistants. So that's how we've dealt with that. There has been a small increase in the size of that team. I can't remember whether it's half a person or an extra person we've taken on to boost our efforts there. But really we are finding that we do need to increase that team because it is just so complicated now to administer electronic resources because

we've got, well the deals that keep popping up, all the different subscription models, needing to keep track of licensing arrangements and not just sort of sit here and do that for ourselves but also there's a far greater liaison effort that's needed now, not just with the subject teams but also with the, obviously with the providers but obviously as well with the systems team as well. We've got to make sure they work properly and keep working properly so that the core of our effort is keeping the systems team in touch and chivvying them along and keeping them informed of the requirements to actually get these things out there and get them working effectively. There's also the whole aspect of needing to take on the extra skills to deal with these things and the impact on finance on budgeting, particularly if a deal cuts across different subject disciplines. We all need to now, I think I've just said, we need to be more pro-active in keeping colleagues informed and up to date. Also things like having to read licences and interpret those. They're horrid, horrid legal speak that's in there. I mean there's another skill that we've all had to take on and get more and more involved with, demanding and quite actually boring but that's a necessity now. And there's the whole issue of trialing things. That takes quite a lot of effort as well. Obviously ringing up for a trial or emailing a provider for a trial is the easy bit, But then you've got to get it working, you've got to go and inform people of the trial and the you've got to keep chasing them for an answer. That's quite a burden as well. There's the changes that we've been facing here to try and effectively work with these things.' [177401, text units 154-198]

4.3.2.1 Training

This cycle shows that training and upskilling of LIS staff is well supported with policies in place both in the HE and FE sectors. The sixth form colleges are now getting to grips with training the teaching staff in order that skills cascade down to the students.

'I suppose really the biggest impact is training the teaching staff using, make them aware of them and getting them to use them because if they use them then they'll pass it on to their students….So it's finding time both for our staff and time with the teaching staff to do it. I mean we have done it in the past coupled of years, we have staff training days, whole staff training days and I've had sessions within those training days to do sessions on the different online resources...…You're still sort of reaching the interested ones. But at least it's a start….If the lecturers tell them to go and use it then they will won't they.' [139401, text units 29-43]

'…Not really no, obviously we've done in house training as and when it has been necessary and when we've been appointing new staff obviously one of the requirements, the criteria would be that they are ok with IT so it's not been something that we've had to make any kind of huge alteration or had any huge implication that a management level to be honest.' [148401,text units 37-42]

'…There is a staff training department policy in operation, basically if we fill in the correct forms and our line manager thinks that we should go on to be fair to him he has never refused us anything we want to go on, we can basically do what we need to do. We've the appraisal system in operation so they try to pick up training needs from that but basically if we want to do it we've never been refused, they are quite supportive.' [149401, text units 268-274]

'..Um, to a small degree I expect.' [150401, text units 68-69]

'…Staffing changes. Well mostly in staff development. Obviously we have had to give quite considerable time over to staff development to provide library staff with the skills to be able to exploit these as well showing students the best way to exploit them. That's the main implication I think.' [151401, text units 39-43]

'…(cascading training) Yes, I do that – do in-house sessions and I produce so many leaflets and library staff are always alerted to changes if web addresses change or access arrangements change, or search interfaces change – I let people know. I mean there are too many sites for our library staff to be totally familiar with all the sites but they're familiar with the core ones like Infotrac, but I don't worry too much about the peripheral ones. I think everyone knows that the leaflets are all kept completely up-to-date so they've always got those to refer to.'
[171401, text units 94-104]

'…And the shift …to originally CD provision now online, but that's you know staffing as such it's just the same person has moved with the change in technology. What it does mean of course is extra training is needed for staff rather than actual changes in positions…Well we have a good training budget, we always have had and that continues so we are lucky in that sense. We now have it more centralised than it was in that in previous years I was given certain amounts for training and had control over it, that's more or less the same except that it now has to go to the HR manager who has to just agree but so far that's not been a problem as we are still within the budget. So training's well supported.'
[179401, text units 29-41]

4.3.3 Licensing issues

Cycle five shows that the same complaints about restrictive licensing deals and lack of ability to 'cherry pick' resources still occur – the content versus cost argument. Most institutions now make use of the JISC, CHEST, NESLI agreements because it is simpler for them in the long term, particularly for the smaller colleges holding less resources. In fact, the FE institutions rely mostly on the JISC deals on offer. Unusually, two institutions commented that their choices were made purely on content, as opposed to cost. Interestingly, one sixth form college also made the comment that previous decisions had been made on cost alone, but in hindsight this might not have been the best decision to effectively use the resource in the curriculum.

'Most of ours we get either through JISC or through the CHEST agreement mainly so all the licences are negotiated so I mean that's how we get most of ours. There's a few journals that we get online subscriptions for through our sort of hard copy subscription but as I say the majority of the stuff we get through JISC really.' *[139401, text units 51-55]*

'Well obviously we're looking at a lot of national agreements that come through, through JISC, CHEST and looking at NESLI 2 offers and quite often these have terms that are quite advantageous to us because they've been negotiated on behalf of all higher education institutions. The key question then is more to do with content than pricing for us and there are not so many licensing issues. Really you have long term and short term agreements we do, I mean an agreement that only lasts a year is not as good as three years. You have to be prepared to commit yourself to know, to predict ahead what you're going to need. If it's more advantageous to say go for a three year offer that a one year offer, after one year what happens. To actually know what you're going to pay for something over three years is quite useful but on the other hand you do have to commit yourself.'
[140401, text units 105-115]

'We've just gone onto JISC and that for us is really easy and because we've got so few it's easy to keep track, we've got no problems dealing with JISC and sort of getting the subscription through. However if we did increase then obviously there would be problems of doing everything individually like, but having said that if we do increase and we are going with Uni' it's quite possible that I wouldn't have anything to do with it anyway, I might have a line manager from Uni' who would deal with that, it's difficult to answer.' *[149401, text units 119-126]*

'Well I just wait for the emails to come from the JISC regional office basically. There's so many of those, I probably get an average of about one a day. I had two this morning. And I use the JISC folder as well. We don't have a huge number. Can count on one hand probably the ones that we have. I've asked members of staff if they would like to have a look at the folder but no-ones actually come up with anything that they desperately would like to have on top of what we have already. I think if there was far more available then there would be much more difficulty choosing. If there were half a dozen Infotrac like services then obviously that would be more difficult choosing between them but at the moment it's not a problem.' [150401, text units 78-88]

'Most of them we have through the JISC, the JISC arrangements, we actually, we will identify, well I think it's fair to say that the library staff have identified from those the ones which we think are the most useful. Other than that we will respond to requests from academic staff for particular electronic resources. Although they are few and far between I am afraid – that is the requests from the academic staff.' [151401, text units 50-56]

' Initially we went for our own individual negotiations of packages like Guardian Online and... and then I'd been aware of Infotrac in a previous college where we bought it and we bought the personalised sort of package where you could choose which journals you wanted to have and change them around and bundle them together into a sort of curriculum pack. And we were looking at that when JISC introduced it with massively reduced price package that they'd negotiated with Infotrac, and so we went for that on a value for money basis to be honest but I'm not entirely sure that that with hindsight was the best decision because I think we would have got a lot further with introduction of using Infotrac effectively in the curriculum had we gone with their other model. I think we've just got a massive overdose of information. Infotrac now seem to be recognising that are providing us with more facilities to be able to do direct links and things like that that will I think make it easier to use. But we've lost what 4 years almost from where I was at my last college to where we are now. We've not really got to that stage yet. You know sometimes you make these decisions and then discover afterwards maybe it wasn't such a good idea but because we were then tied to the JISC agreement for a period of time, we couldn't pull out of that. I understand why JISC negotiates for a number of years because obviously they can do a better deal with the supplier on that basis. But it did leave us with our hands tied a little bit.' [167401, text units 76-100]

'..Well again the ones that are the most economic for us, certainly in some cases we have found, although CDROM's on the whole have been, they are a bit of a dead duck nowadays as most people accept and students are just so orientated to the network and the internet that it's better to network a CD and treat it as an online resource and obviously you have to work out if they are feasible from the budget point of view because licenses are pretty expensive…..Yes all the ones I have are the JISC deals, Info track and Oxford refer, Britannica and Literature online. I am thinking I might not be able to carry on with Info track because that's gone up by about 50%. It started off the first 3 years £250, £500, £750 over 3 years and I am a fairly low band and now the renewal seems to be as far as I can remember, we like the resource but it's about £800 for the first year now and that's seems to be … they say they've expanded it but I'm not sure how much more useful it is but my budget isn't going up.' [174401,text units 50-67]

'I think probably again primarily it's not a question of routes, it's a question of content and if the content is what we want and we can afford it and there are no major authentication issues we will go for it regardless. We will try and then, I mean most of what we're trying to do at the moment is to work with our, certainly in terms of ejournals, is to work with our periodicals agent. But outside of that

there are the NESLI 2 arrangements that we are working with as well and working with Content Complete. So yeah it's trying to sort of get the best arrangements in terms of content, authentication, licensing, so it's kind of, again it's a complex undertaking. If there are several routes, let's assume the content is equal from a number of people, well and the cost is equal, we'd probably want the path of least resistance in terms of authentication method. So we'd be looking at ATHENS, we'd be looking at IP authentication. But we're quite fortunate here because we've taken a single sign on programme called One Log and we will get whatever electronic resources into One Log. So, and we steer our users in the direction of One Log as much as we can but we do realise that not every user is going to want to use One Log when some users may actually prefer to access the product directly. Then we'd fall back on the easiest, trying to get the easiest authentication route for them. And also we have found that a number of products flatly refuse to work with One Log. Again we'd have to fall back on making access directly available.' [177401, text units 213-236]

'…His answer is Chest, always looking specifically to see if there's a sliding scale because most of them do offer a sliding scale and we come in right at the very bottom on the cheapest subscription, if there isn't a sliding scale we basically normally have to say no. So we are very dependent on that JISC banding, so I suppose the bit there is yes on the basis of the service provider.' [179401, text units 66-72]

Consortia collaboration in Cycle five still appears to be a hit and miss affair. The HE sector is involved with consortia dealings and findings are mainly positive. However, there is a gap within the FE sector and the sixth form colleges visited this cycle report unsuccessful dealings up to now because of the banding with secondary education – they tend to fall between secondary schools and FE colleges although their relationships are closer with the schools.

'Yeah I've been thinking about this. Being a sixth form college it's a bit difficult because we're like the only, I mean there's several sixth form colleges in the area but we're the only one in this immediate area. Um, so I mean whether, I haven't talked to them about it but whether there's anything we could as sixth forms collaborate on because there are specialised sources that we would need more than others. Otherwise in this area we've got like (names) and they do different courses to us so it would be difficult to find I think common resources…we do, we used to have quite, once or twice a year, meetings of the sixth form library and LRC managers in the (region). That sort of died down a bit. But we've started it again this year. We've had one meeting so it might be something that we could bring forward to another meeting.' [139401, text units 57-74]

'We are part of a consortium, (name of consortium). I'm actively involved in that because I'm on a periodicals working group which is dealing not with print but with electronic subscriptions. So we value the work that the consortium does representing the interests of the university as a part of it. And obviously NESLI too is a big consortium in effect. So I think it does work very well.' [140401, text units 116-123]

' No I suspect it's because we're a subject specific college really and there may be the odd one or two I suppose, we have a building college here and there maybe an architecture type stuff that we could possible consider collaborating with them, but because most of the colleges here in (name) are subject specific there's not really a lot of overlap to be honest and I haven't really looked further abroad than (name) to consider that type of collaboration, so no it's very much we've been doing it on our own.' [148401, text units 91-98]

'Not really, quite informal but nothing for resources it's more sort of if I want to run something past someone I ring a librarian in (name of college) but nothing hard and fast. And of course the people at (name of University) in the library can be quite helpful if we are trying to locate resources that we haven't got here or if it's out of print or something like that, you know they are quite helpful like that. They wouldn't get the resource but they could find me the details if I can't get the details.' [149401, text units 130-138]

'We've not had much success with this. We did have a local university talk to us about this some years ago as part of a regional federation. We did sort of have some initial negotiations and the university on our behalf tried to negotiate with the suppliers but we weren't very successful. And it it was about three years ago, when all the really nice JISC subsidies came in. And we were able actually to get them cheaper through that than the university was talking as far as going with the consortia deal.' [151401, text units 60-67]

'I think it could actually be quite positive. I know a little bit about some of the consortia that run between colleges in Hertfordshire and I was actually at university in Hertfordshire at the time when HERTIS was.. and I thought that was wonderful then. And that was a good few years ago…so I'm quite used to that way of working and I would like to do that locally. I think there is, I think the FE providers locally would be interested in it but there is very little interest that I've been able to generate anyway from the university. I don't think they see, the managers that are on the ground see that the promises made by their Vice Chancellor and by their head of library service for offering facilities to the college as being expensive and costly in terms of time, perhaps rather more than resources and they don't see any advantage from them, it's just one extra thing that they have to do.' [167401, text units 146-165]

'No. We don't at the moment but in the past we did purchase what was Web of Science from the other HE institution, but we found that we could actually get it cheaper registering ourselves as an FE college – we were a bit naïve at the time!' [171401, text units 179-200]

'Yes I think in the past even with CDROM's I sort of offered, because we have very good contacts with our feeder schools because we're a 6th form for about 4 high schools in the area, and certainly that's the sort of thing that we might have, on the other hand your license only covers you for one site so we'd have to look into that and the cost of that, but that would be extending it to secondary education then which again might be a problem, I'm not sure about that. I meet regularly with the other 6th form college librarians in the region and (name) organises the region FE college librarian's…..I think people prefer to be independent in a way, I think once you've got something you, I don't know I just think that probably a lot more expense would be involved, I can't imagine that the suppliers would, if we are talking about electronic resources to buy in….I just think it would probably cost more anyway, I don't know I'm not sure really.' [174401, text units 69-84]

'Well we're always working within the (name of consortium) for advantageous big deals and out of that we kind of worked on the NESLI 2 framework within the consortium. But of course they do tend to be the big deals. And that throws up all the problems we've, that I mentioned earlier. Even though NESLI 2 did try and vary it a little bit, they did offer a chance to go with, you mentioned scholarly publishers. They did throw up the ALPS deal but no one was really interested in that. That kind of fell by the wayside. I think they were too specialist, the kind of learned journals that were being offered under the ALPS deal. And then of course the whole NESLI 2 arrangement doesn't really include the small publishers. And

we find ourselves having to do individual title deals outside all of that. Again you know it's juggling a lot of things really.' *[177401, text units 238-252]*

4.3.3.1 Channelling purchasing

On the whole, responses to questioning about channelling purchasing and involvement with academic staff were positive. A couple of institutions reported problems with the systems in place and a lack of communication.

> *'No it's not a difficult process. We have, as I say, we have regular liaison meetings each, the three professionals then we've all got sort of subject departments that we're linked to, we have liaison meetings with them and the we have an LRC rep committee which meets twice a week…. So we meet several times a year so and sort of buying issues and things like that come up there so you know we've got good links with our heads of departments and that. So we've got a good sort of college portal here, intranet that the staff use regularly so you can post notices and things on there so it's quite a good communication.'* *[139401, text units 125-144]*

> *' … we do have formal links with the academic departments, we have staff called information specialists whose primary responsibilities is to liaise with the academics departments and bring to their attention resources that they might want to buy. And vice versa as well, if they hear of something that they are interested in they bring it to the information specialists. So I don't think there are any difficulties. The problem is that they want more than we can afford. That's the problem. But I think they understand the financial situation as well so..'* *[140401, text units 175-185]*

> *' It is rather… I am trying to improve the lines of communication with heads of department but they are constrained by time as well and certainly I've found in terms of book acquisitions they are by and large happy to leave it up to me, they say you get the catalogues, go to Waterstones whatever, you know what's current in the subject, which I try to do I make it my job to be their eyes in terms of resources because simply they often don't have the time to do that and so obviously I try to channel it to the curriculum, I make sure I'm aware of what the curriculum is and any changes in the curriculum and so on and I find it varies from department to department, some departments we do have a closer relationship than with others but there's not a formal situation as such it's pretty much informal.'* *[148401, text units 161-173]*

> *'Yes. We do have a system set up and the way it's supposed to work is any requests for any resources whether they are for supporting a course for student use or whether they are for teaching purposes, should come through the library and then it's a central source and then we know what everyone has but it doesn't work. And again, I guess I'm not alone. And the other thing is that the ILT co-ordinator obviously looks at electronic resources and websites and things like that, that you subscribe to and she has a budget so she might have electronic resources that I know nothing about and if I don't know how the students know and the staff know. '* *[149401, text units 167-180]*

> *' Well that's done by the subject teams. The subject team members will in theory discuss it with academic s although again I think there's many instances where we don't get any clear answers if answers at all so there are a number of times when the decision is made on their behalf on the basis of our subject teams experiences. So yes it is a difficult process. It can be a long drawn out process but it's not difficult with everybody. I mean we do have a number of academics out there who are very switched on to the whole EIS thing.'* *[177401, text units 310-319]*

4.3.4 Evaluation of EIS and patterns emerging

Yet again, evaluation of EIS is considered by most institutions to include reading service provider statistics and the use of annual LIS user questionnaires. One HE institution mentioned that they were part of the eMeasures (e-Metrics) pilot project and that data they were now collecting was proving very interesting. As expected, the FE institutions are not so involved in collecting feedback.

> *'Well you can get them, through Infotrac you can get them direct from their database. Well most of them you can get direct from the publishers. There's a facility. And also through ATHENS as well. I'm just sort of collecting them now because I can get them for sort of past use so I'm just doing that. I'm putting that together at the moment. What I wasn't to do is sort of ask if I can tie in, when we gave sessions on certain online resources and then see if usage increased after we'd given the students the session. I'm going to try and look back and see if I can link that together as well.'* [139401, text units 166-174]

> *'We are collating usage statistics for our electronic information resources and that's, it's something we've wanted to do for a long time but we've become, we're part of the eMeasures project, pilot…One of the strands was to collect usage data for information services (unclear) journals databases and for ebooks and for other resources like exam papers that we make available for our students. So we've been busy collecting information and it's been very interesting, well it's very interesting providing user management information. And then also we have verbal feedback, people using resources for their assignments and that kind of thing. I mean the whole range of things really. We have a Student Experience Survey, a Learning Centre Survey, so we're gathering feedback but actually usage data which is hard information, not doing so much, but we are doing it now.'* [140401, text units 205-217]

> *'To be honest it's anecdotal, I know that the use of the Art indexes is quite widespread, they are used quite significantly, I know that because the number of students who ask for assistance or are looking for stuff that they've found on the database,…'* [148401, text units 193-196]

> *'I get feedback on the service provider stats.'* [149401, text units 218]

> *'Um, really the only feedback that we obtain is sort of, we've got a question now on our questionnaire we do twice a year.'* [150401, text units 177]

When questioned about any emerging trends and the effect of EIS on hardcopy, it was interesting to find that this cycle most commented on the fact that hardcopy loans were not decreasing. In fact, many were increasing and the general feeling was, particularly in the FE sector that the placement of IT sections/Internet access within libraries was drawing in users and that they then stayed and used the books as well.

> *'No it's not affecting our book loans. Our book loans this year have gone up significantly. I mean I have this discussion with one of the IT technicians…the use of the internet has sort of settled down he thinks and that students are going back to using books as well. You know at one stage they were going through this you know, the internet answers every question you've got. They've decided well perhaps it doesn't and we'll go back and have a look in a book instead.'* [139401, text units 178-194]

> *'We don't have any data to suggest that people prefer.. Obviously our electronic services are being used heavily but our book loans have not decreased in any way. We can't correlate the two. Which, although people are generally happy with the electronic services that we provide they're usually unhappy with the amount of text-books we provide because they can't get access to them when they want them, borrow them. So I can't see that one's affecting the other at this point.*

We've just gone into electronic books, we've just started buying electronic books to try and help out various demands, pressures for key texts. Whether electronic access will satisfy that demand. But it's early days yet. But it will be an interesting area of research to do.' [140401, text units 233-259]

'I would say in actual fact that since we've got the computers and the internet in the library that it's drawn people into the library, they've seen that we have books as well and in actual fact year on year our book issues figure has increased considerable. I can say it's increased over and above the increase in student numbers, in other words there has been a real increase in book usage. I would say that if there is a correlation between the two it's been positive in that students have come in to use the computers and stayed to look at the books and take out the books, I would say in actual fact far from detracting from book usage it's enhanced it.' [148401, text units 221-232]

'Our book loans are going up. Inter library loans, take up wasn't huge on those in FE but because we franchise HE courses HE students access that facility but to date this term not one, so that's gone down.' [149401, text units 229-233]

' Um, I think use of the internet affected our book loans. I mean there are a number of factors. Student numbers as well have affected it but I'm sure that is a factor. Students say I can get what I need off the internet. Um whether it's the best thing to use of course is another matter. Some members of staff are sort of cottoning on to the fact that that's what their students are doing and they're ignoring the books that are there available for them on the shelves. So there are members of staff that are slightly changing the advice they give to their students, encouraging them to use books, bringing them to the library to use books, some of them do that. So they've got a captive audience. But yeah I think they have.' [150401, text units 189-199]

'No real hard and fast evidence although I am telling people, I'm trying to justify the drop in my book loans. We are seeing a reduction in book loans. Quite, an increased reduction about three years ago but they are climbing again now. So whether it was, I mean three years ago extensive investment in IT, internet available everywhere so whether it was just, you know it was internet silly season - something new. Book loans are increasing but nothing like, they're not going back to where they were sort of 5 – 6 years ago. So our justification on that is yes, students are making, we hope, making use of other resources and we're trying actually to substantiate that obviously with hard statistics and we're working on that at the moment.' [151401, text units 141-152]

'If I was to sort of put electronic services in it's broadest terms and include the internet in that then yes definitely. We are doing quite well at keeping our issues up but I have to say that's partly because we've developed our music and DVD and video collections. And I think if we hadn't done that the they would be taking, the actual book loans would have taken a big nose dive. But certainly using the internet has had an impact.' [167401, text units 414-421]

'I think we've not got any evidence that book loans are being affected by the (unclear) electronic resources. But for us it would be very difficult to tell because there are other things going on in the background. I mean our student numbers are still increasing, not as much as they have done. But a very slight increase year on year. So our issue sort of also continues to rise but it's virtually impossible to tie that in to electronic resources. But I think probably someone here ought to do a kind of issues per student.' [177401, text units 374-381]

4.3.5 Use of intranet, VLEs and LIS input to teaching and learning

Most LIS sections now have a presence on the main institution site. However, there is still a gap in the FE sector where some LIS have no interactive facilities available either on the main institution website or the intranet. This cycle, those who currently have no facility for access are in the process of having it set up or are in discussions to set the ball in motion. A couple of FE colleges had no VLE running at the college at the time of interview and several LIS sections had no input with resource linking or teaching and learning policy decisions in VLE use. Many ILT champions at FE colleges are responsible for VLE development and one comment was made about competing elements between LIS staff and ILT champions and lack of communication.

'..And then also on the college portal, on our page we've got a list of journals and if there's a web site then we put the link on and they can link straight from that then to the site.' [139401, text units 104-106]

'Within the learning centre the systems team has the main responsibility for providing the web pages in conjunction with our computing and IT department, Communication and IT services the official name is. But we do ask for input from all staff really, adviser level and upwards which is because the presentation of our services is important for everyone. It's not just done by one team. They consult quite widely and we have a web steering group and there are various sub-groups under that, that team.' [140401, text units 73-81]

'Well yes the website, this has been a bit of a slight bone of contention, in a sense the service has been thrown back into my court… so at the moment the answer is it's at the research and development stage.' [148401, text units 45-48]

'We have a page on the college intranet and I organise, decide the content, I say what I want on there basically.' [149401, text units 104-105]

'There's a library part of the college website, yes. Well until recently we did it ourselves but it's now, it's now organised centrally by one of the computing staff, web master who does that now.' [150401, text units 72-75]

'We don't have a library web site as such but we are going to have one developed that will link, hopefully, from the college web site and the student intranet so that there will be links on that to a specific library site that students can get directly onto the OPAC and connect directly to the databases and be linked to the library leaflets and given new additions to stock etc. I'm not sure at this stage whether that will sit within the new student intranet that's just been devised, or whether it'll sit separately.' [171401, text units 106-112]

'At a sort of quite a low level to be quite honest. But we are working very closely with our college ILT Champion and the new Webmaster. We're starting to talk about links between the VLE and the library catalogue - the VLE and the library internet pages. We're also talking in terms of library staff getting involved in tagging metadata and that's nice.' [151401, text units 104-109]

'It's Blackboard. I'm hoping that if we go down the portal route that we'll be in at the sort of inception rather than having to play catch up later.' [177401, text units 331-333]

LIS input to teaching and learning and VLE development is something of a bone of contention. It is apparent that a split is widening in FE between LIS and ILT champions where LIS professionals could be included in an advisory capacity and be of value.

'Um, I suppose, yeah the opportunity is there, I mean I'm on the curriculum advisory group and then we've also got an ILT strategy group and I'm on that as

well. So there is the opportunity to become involved, say you've been on courses, got ideas, seen things, you know you can, or got suggestions. I mean as I say we don't actually use a VLE, we've got our own in-house college portal. So we've got a sort of portal user group that I'm on as well so if you want things put on or things changed, give your ideas. And the technician whose developed it is very good and takes on board things that you want.' [139401, text units 145-156]

'We have a lot of input into learning and teaching policies. We have a Learning and Teaching Institute within the Learning Centre. They are responsible for outreaching to the schools and faculties to co-ordinate the teaching assessment policies, advice on whether resources (unclear) curriculum. Blackboard is obviously a main strand in their responsibilities as well. So it's completely integrated, quite proactive in its area. Yes. We've got a process. We advise people on how to do it and also on copyright issues, licensing issues that are involved with putting resources into Blackboard, available to Blackboard. We've developed quite a lot of materials and guidelines and we've done sessions with staff as well, help them to do it. We try and do it in the easiest way possible but quite often that isn't doable so we have to give advise how best to do it.' [140401, text units 188-203]

'None. I'm not a member of the academic board for instance. Obviously decisions about resources linking with VLE's that I have no say in at all or any decision on the MIS or anything, that's outside the library.' [148401, text units 174-178]

'Yes but more or less approached by staff that use the library. We have a curriculum development committee which I go along to and they sort of run past the committee any ideas for new courses and then I speak there about resourcing, but sometimes courses appear that haven't gone through that group, and anything to do with ISE I think the IT co-ordinator generally seems to be in charge or takes control of. We do also go to some faculty team meetings, but again it tends to be those courses or those curriculum areas which tend to use the library more.' [149401, text units 202-210]

'We do have a VLE. To be honest I think it's a bit amateurish the way they've organised it. They don't consult me over it. The electronic services (unclear)library are completely separate from ILT created in relation to VLEs in the rest of the website which is bad. But I have suggested that everything's brought together but that advice was not taken. Some colleges have brought the library in with the learning resources and just gathered the whole thing. But here the staff that mend the computers, that section that mend the computers, install software is the same section that runs the VLE etc. Thereby there's the problem. They're the ones that do that you see and that is not satisfactory…mends computers shouldn't have anything to do with the learning… but you know I'm only a small voice. Yes, nothing to do with me. There is an ILT champion who liaises with them. He doesn't liaise with me though. So there's a kind of competing elements here.' [150401, text units 148-168]

'Not as much, I'm not involved at all. I think it's fair to say and I would like to be more involved. I think that may come due to our recent reorganization. Also we've got two new directors of learning, one of whom is an internal appointment and he's definitely one of our, somebody who sees the point, he thinks very carefully about different resources and how they can best be used.' [167401, text units 355-360]

'Individually I have none but I think the subject teams do have some input because they sit on school boards, faculty... There is a teaching and learning committee but I don't know what the involvement of the subject librarians is on that. As for resource linking within the VLE. For a long time we were somewhat

excluded from that and it's only now that we've managed to wedge our foot in the door and we are having some input and there is, there are pages on the VLE which are set aside for us to nominate or the subject teams I should say to nominate relevant resources for the modules.' [177401, text units 321-329]

'Well I've just got this new responsibility for learning resources which is the provision of student computers and the provision of the sort of data protection and projection and so on in the teaching rooms, so at the moment there's no budget and no staff for that but I shall be building up towards that in the coming financial year, it's really just to provide an overview so I'm working with the principal on that one. What we have done because this is a new responsibility for me is that it has just been agreed that the 2 committees the library committee and the resources committee are going to merge into a learning and information services committee so I'm now the head of LIS officially and head librarian, so yes I have a growing involvement now in that. With regard to the VLE that's not my area at all, an academic member of staff who is the key learning officer with another assistant also an academic, we haven't yet really got a VLE, we certainly haven't got Blackboard yet or WebCT whatever they decide to go for, but I'm aware that things will be changing and that we need to have an input and the relevant member of library staff will be encouraged to work with them and they'll be encouraged to remember to include him on everything.' [179401, text units 166-184]

4.4 Implications of open access

Philip Davis, a librarian at Cornell University has likened the traditional model of scholarly publishing as a 'tragedy of the commons'.

'Publishers are exploiting the academic library, by pricing journals on what the market can bear and by invoking a price discrimination model between individual and institutional copies. They have also guaranteed immunity to attrition by bundling resources and by building non-cancellation clause into their licenses. Scholars are also to blame, by maximizing the production of information and by insisting that the library provide free access to all other information that might be of use. Lastly, librarians are to blame, by building comprehensive collections as status symbols and by insisting that unlimited and free access is a guaranteed right for any and all potential users, wherever they may be.'[11]

Interviews with senior librarians in previous cycles have indicated that few have seriously considered the possible implications of a move to open access publishing or the 'author pays' model.

From Cycle Two (2000/2001)

'I was really very amused by this (page charges), I have heard that suggestion from a senior executive of one of the major publishers…It's an interesting idea if it was an attempt to reduce output, because I think it might have that impact. I don't think it's particularly sound.' [57401, from text units 418-428]

'I really don't know what to say there except I guess the university would still be spending the same amount of money instead of buying the journal but paying for publication…I suppose you might say authors might think twice about whether they did actually need to publish an article, but it's an issue for Higher Education in general, isn't it, and I'm not sure I've anything useful to say on that.' [44401, from text units 338-345]

---

[11] Davis PM. Tragedy of the commons revisited: librarians, publishers, faculty and the demise of a public resource. *Portal: Libraries and the Academy* 2003; 3 (4): 547-562. http://muse.jhu.edu

Another senior librarian from that Cycle predicted that the dispute over copyright would act as a lever for change.

> *'Our staff, or staff in the sector as a whole, write the articles for publishers, get nothing for it, don't have any rights and then we have to, not only pay extortionate amounts of money for the journals or whatever form, but we also have to pay if we want to make copies of it! So I think things are turning. The current legal dispute between University UK and the Copyright Licensing Agency, which is also affecting any digital licences, is actually going to have an impact on what happens in the future. And I think it's more likely to go our way than the licensing agencies.' [48401, from text units 275-283]*

Another suggested that a refereed e-archive would be the way forward.

> *'I personally prefer the idea of a refereed e-archive to supplement the published journal but this is the campaign that (name) has been carrying on, quite effectively from the email list, but there obviously needs to be a sustained campaign by universities to change the existing publication model. I don't know if a pay for submission model would help us, but I suppose you could argue theoretically it ought to, because we're a comparatively small research institution…but you know, it's not something we've considered in any depth.' [51401, from text units 297-306]*

Another suggested that the problem lay with the authors' role in the publishing game.

> *'We keep trying to put in our two pennyworth in trying to help the academic community understand that the problems they have with journal access in the library is of their own making – they are the authors of the stuff we are having to pay through the nose for and can't afford, and they are starting to grasp that.' [53401, from text units 365-369]*

The librarians interviewed in 2001/2002 did not see much chance of immediate change to the situation. Since then, events in North America and elsewhere have changed the situation. There have been several key developments[12] over the past year:

- Berlin declaration[13] on Open Access to Knowledge in the Sciences and Humanities, signed by leading European research associations
- JISC agreement[14] with four publishers (Public Library of Science, (PloS for biology), Institute of Physics Publishing (New Journal of Physics) Journal of Experimental Botany at Lancaster University, and the International Union of Crystallography (IUCr) to move towards or continue open access delivery to their journals.
- JISC, with Open Society Institute, survey[15] of authors (which showed that authors supported the principle of open access)
- US House Appropriations Committee report, concerning public access to National Institute of Health funded research and backing open access[16]
- House of Commons (UK) Science and Technology Committee Inquiry into Scientific Publications[17].
- European Commission study[18], starting June 2004, into the economic and technical evolution of the scientific publication markets in Europe.

---

[12] Scientific publishing: access all areas. *The Economist* 7 August 2004, 72-73.
[13] Berlin declaration on open access to knowledge in the sciences and humanities. http://www.zim.mpg.de/openaccess-berlindeclaration.html, accessed 18 August 04
[14] Press release: JISC and publishers work together to open up access to journals http://www.jisc.ac.uk/index.cfm?name=news_openaccess_03004, accessed 18 August 04
[15] JISC/Open Society Institute Journals Authors Survey – via page above.
[16] SPARC. Federal Taxpayer-Access Proposal. http://www.arl.org/sparc/core/index.asp?page=o31, accessed 18 August 04
[17] UK Parliament. House of Commons Science and Technology Committee. http://www.publications.parliament.uk/pa/cm200304/cmselect/cmsctech/399/399.pdf

In March 2003 BioMed Central (BMC) signed an agreement with the NHS, so that NHS pays centrally for staff who wish to publish in a BMC publication, and NHS staff are being encouraged to develop NHS-led open access journals under the auspices of BMC[19]. This model of open access may be suitable for a very active (and comparatively well funded) research community in the clinical and biomedical sciences. Other commercial and learned society publishers are less sure about its application to other disciplinary areas.[20] In effect, the NHS agreement means that there is no incentive for authors within the NHS to consider limiting their publication – and every reason for them to increase publication, or even start an new open access journal. One brake on this is the uncertainty about the perceived quality of open access journals, and the peer-review processes involved. A small scale study[21] in 2003 found that NHS staff were in favour in principle of using learned societies for their publication outlets, as opposed to commercial publishers. Their actual behaviour was rather different, with the journals named as essential reading, and high impact reflecting the predominance of Elsevier Science, the main commercial publisher. Some of the open access approaches are innovatatory, and BMC's review processes are far more transparent than in most traditional journals (with the review comments also openly available), but some authors may dispute whether this is a wholly desirable improvement.

A conference in June 2004, the Publisher and Library/Learning Solutions (PALS) conference[22] on institutional repositories noted that much of the discussion has focused on the needs of research but increasingly the digital learning resources are receiving attention (and the associated intellectual property problems). One of the messages coming through is that academics need to be encouraged to deposit material in repositories, as demand is actually increasing faster than supply at the existing, comparatively small repositories (e.g. MIT, Caltech). Repositories need software and interoperability is a key requirement[23]. The JISC funded SHERPA project[23] aims to create a corpus of research papers from several leading research universities in the UK, an 'e-prints archive' compliant with the Open Archives Initiative (OAI) Protocol for Metadata Harvesting using eprinte.org software. Baseline surveys[24] show disciplinary differences.

Few senior HE librarians were interviewed over the past two years as the emphasis (at the request of JISC JCALT) has been on the FE sector. One senior librarian interviewed this year was aware of the changes in open access journals, but acknowledged the uncertainties.

> *'This is obviously a very big issue at the moment the whole open archive pre-print area and all that sort of thing. As we're primarily not a research institution in theory we could do very well out of this. We will be a consumer not a provider.*

[18] Europa Press releases. An effective scientific publishing system for European research. http://europa.eu.int/rapid/pressReleasesAction.do?reference=IP/04/747&format=HTML&aged=0&language=EN&guiLanguage=en, accessed 18 August 04

[19] NeLH. National Core Content Press release from Biomed Central. http://www.nelh.nhs.uk/news_biomed.asp, accessed 18 August 04

[20] HC Science and Technology Committee Inquiry into Scientific Publications. Response from Blackwell Publishing Ltd. http://www.blackwellpublishing.com/doc/house_commons.doc, accessed 18 August 04

[21] Morley P, Urquhart C. Publishing trends in medical journal literature: the views of medical staff in an NHS teaching hospital in the United Kingdom. *Health Information and Libraries Journal* 2004; 21(2): 121-124.

[22] Paulus K. Conference feature: institutional repositories and their impact on publishing. http://www.jisc.ac.uk/printer_friendly.cfm?name=pals_conf_rep_news_020704, accessed 18 August 04

[23] SHERPA: Securing a hybrid environment for research, preservation and access. http://www.jisc.ac.uk/printer_friendly.cfm?name=project_sherpa, accessed 18 August 04

[24] Andrew T. Trends in self-posting of research material online by academic staff. *Ariadne* 2001; (37) http://www.ariadne.ac.uk/issue37/andrew/intro.html

But then is that going to meant that publishers feel that they might be…they might try to recover their slice of the pie by hiking the prices elsewhere, the things that we still have to get by rather more conventional means…So the whole thing about money bit, if you want to look at it simplistically, really it's money for scholarly communications still coming from the institutions but from a different part of the publication chain…Probably another thing is it could offer academic users the opportunity to embed appropriate metadata which could be important…although you could ask well are the academics the best people to start writing metadata.' [177401, from text units347-370]

Given the lack of awareness until this year, it is possible that JISC need to ensure that some of the messages from the PALS conference (for example) reach a wider audience among senior librarians.

4.5 Section highlights

Over five years monitoring LIS purchasing issues, there has been remarkably little change and the main concerns voiced by senior LIS staff are virtually the same, namely budgeting for increasing costs of EIS. There has been wide discussion of new pricing models but to date there has been no significant change. Consortia dealings i.e. JISC, CHEST, NESLI deals have helped certain institutions greatly, but this cycle there has been more comment about the trade-off between content and cost of long-terms deals and whether or not being locked into certain value-for-money deals actually serves the institutions and curricula best.

There is no doubt about the increasing development and use of virtual learning environments but there is a question mark over whether LIS professionals are being included enough in the decision making process and whether or not this omission might hinder the full capability of certain VLEs and linking with EIS in a logical way. It is apparent this cycle that some LIS have made headway with being included in this decision process but others still encounter problems or wonder whether it is worth the effort.

5 Case studies and performance measurement frameworks

5.1 SITE X: RDN Virtual Training Suite application

5.1.1 Aims and objectives

The main aim of this research study was to:
- Improve the information retrieval and appraisal skills of students studying for the BTEC National Diploma in Public Services (with possible extension to students studying for HND in Public Services).

5.1.2 Background

This small, rural, general and tertiary FE college has around 1090 full time, 4745 part time students. The JUSTEIS team first made contact with the course manager in Cycle Four (academic year 2002-2003) when the content and delivery of the BTEC National Diploma course in Public Services was being reviewed to ensure that it met national standards criteria.

The course manager felt that information and research skills should be fully integrated into the training programme and had given students a self-administered questionnaire to assess awareness of information resources and information-skills levels. The results of the questionnaire and assessment of students by their tutors indicated that, although students tended to have a high opinion of their own Internet search skills, they were not in fact skilled at effective searching and appraisal of information sources.

5.1.3 Methods

The methods used at this site were interviews with staff members, evaluation of the results of the self-administered questionnaire (already been given to students by the course manager), and desk research.

5.1.4 The problem

After discussion with course tutors in July 2003, the following were identified as key issues:
- Students' information skills (particularly Internet searching) are not as effective as the students themselves think (e.g. students do not check information against other Web sites)

- Information skills training should be an integrated part of the course (each of the course units has a key skills element with two hours of research skills tutorials each week) but training materials must be relevant and appropriate

- Students need help moving from the theory of information skills to putting them into practice – they need to see results early on

- An Internet skills training package should ideally be targeted at areas of weakness identified by the self-administered questionnaire that could be used as a benchmarking tool at the start of each academic year

- A further benchmarking tool should be developed for application later in the year since it is important to provide evidence of progress

- Staff were concerned that simply providing lists of resources (both electronic and hardcopy) was not enough – students had to be encouraged to actively use them

- Some subject areas covered by the Public Services course have more readily-accessible information sources than others.

5.1.5 Selection and planning of intervention

It was decided that JUSTEIS researchers should be involved in producing a tailored training package focussing on developing appraisal skills and an awareness of the range of Internet sites that can be accessed. The aim was to encourage independent searching by students that would take them beyond the first page of the first site they visited and to give them the necessary skills to identify and evaluate the sites and information most appropriate to their needs. The questionnaire would also be developed and used as a benchmarking tool to allow evaluation of students' progress later in the year.

The intention was for the training package to be developed for implementation in the 2003–2004 academic year and to be delivered by college staff as part of a weekly tutorial session aimed at developing research skills.

Work on draft versions of training materials took place over the summer of 2003. The researcher identified online training packages available via the Resource Discovery Network Virtual Training Suite[25] and used course workbooks from the site to adapt the training materials to make them as topical as possible for the Public Services students. Two draft exercises were prepared, one on judging the quality of information on the Web and one on referencing, since both of these had been identified as causing problems for the students. The students would be able to work through the exercises independently during their research skills tutorials, with support from tutors as necessary. The exercises provided guidance, tips and interactive tasks.

5.1.6 Outcome

The draft materials were sent to the course manager for comment in autumn 2003. The original intention was for them to be finalised and then applied during the academic year 2003-2004. The researcher would then have the opportunity to meet some of the students (either individually or as a group in one of the research skills tutorials) and ask for feedback on the sessions. The feedback would inform further development of the materials. A second benchmarking tool would then be developed in collaboration with the course manager so that students' information skills could be measured both at the start and end of the year.

In fact the course manager was unable to incorporate the exercises into the tutorials during this academic year. This was due to changes in the course structure resulting in a change of course manager. The new course manager hopes to use them next year and is planning them into the course diary.

5.2 SITE Y: Information skills development

5.2.1 Background

This site, a medium county town university, was selected as a case study to explore an ongoing initiative to integrate information skills training with the academic curriculum. For the past 4 years the undergraduate Foundation Studies in Education module has incorporated an element of information skills training. Library staff have been involved from the start and work closely with academic staff to both deliver and develop the information skills element of the module.

Two visits were made to the site and interviews were carried out with library and information staff, with the course manager and with the head of department. It was not possible to observe any of the information skills sessions due to timing of the site visits

---

[25] Place E, Smith P. Teaching Internet information skill and ICT key skill with the RDN Virtual Training Suite (VTS): repurposing the VTS to optimise use in VLEs and taught courses. Final report. (JISC Exchange for Learning Programme X4L).Bristol: Institute for Learning and Research Technology, 2003.

but the researcher was able to observe a practical information skills session running as part of a different module.

5.2.3 Current situation

The library and information skills study sessions, which are intended to support the students in gaining independent learning skills, are delivered within a mandatory module in the first semester of the first year. The module (Foundation Studies in Education) is presented around a series of themes, each of which is introduced by a lecture for all students. Following the initial lectures, students are divided into smaller learning groups and each theme is explored further in seminar sessions focussing on case studies, discussion of directed reading, group work, etc. The library and information skills sessions take place during the seminar groups. There are three face-to-face information skills sessions, spread throughout the semester, and delivered by a librarian. The sessions cover:

- Introduction to the library and the catalogues
- Using journals, indexes and ICT
- Internet search strategies and Web sites

The assessed assignments for the module are designed to give students the opportunity to become independent learners and to contribute their own past experiences and what they have learned through reading to their work. Strong information skills form a necessary part of the toolkit students will need to achieve this.

During the second-semester mandatory module the emphasis is on students' group work and presentation skills. Library staff contribute directly to one session in this semester when they support students in putting into practice the skills they acquired in the first semester. At this stage students are required to produce a position paper on a controversial topic relating to education. They are supplied with a list of set readings but must read more widely. Library staff provide guidance and support – there is dedicated time when students can visit the library knowing that staff will be available to help them.

During the second year there is one further taught information skills session focussing on thorough, structured, literature searching.

5.2.4 Issues

Library staff receive feedback from students as part of the modular evaluation system. Feedback has been generally positive and issues have tended to relate to logistical problems such as lack of computer rooms. Staff are keen to respond to feedback and have modified the course accordingly – e.g. by introducing more hands-on practical work.

When the integration of information skills with academic modules began there was no dedicated information skills module available to students. One has subsequently been introduced but not all students are eligible to choose this module. It is possible, however, that some students will be taking the dedicated information skills module as well as participating in the information skills element of the Foundation Studies in Education module. The challenge for the librarians is therefore to make the sessions suitable for all students whatever their skills levels. They try to achieve this by making the sessions on the Education module as applied as possible – focussing very much on education resources to retain the interest of students who already have some grounding in information skills and allow them to apply these skills in a specialised education context.

The institution is in the process of moving to Web CT but the current shared workspace system is bscw (Basic Support for Cooperative Work). One of the disadvantages of the current system for library staff is the fact that the students' personal profile folders (where their work – e.g. the literature search – is stored) are private and students must invite tutors to access the folders. The system is not flexible enough to allow authenticated access to relevant parts of the folder only and so library staff are currently excluded from access. The result of this is that library staff feel they lose continuity with the students and

it is not possible for the information skills elements of the module (the literature search process and results) to be formally assessed and credited. Students are required to produce evidence of their literature search technique with the relevant assignment but the search itself is not assessed. Both library and academic staff feel that for information skills to be fully integrated it is important that they should be incorporated into the assessments – otherwise 'you can't just assume that they'll do it'. The current approach of asking students to provide supportive documentation demonstrating the skills they have used to complete the assessments has been successful but could be reinforced to provide continuity throughout the course.

The Foundation Skills in Education module is very intense with a large amount of content for students to assimilate. One member of academic staff commented that the current information skills approach can be 'high-risk': if it doesn't go well in the first session students, especially the less confident ones, can become discouraged. Once students are beyond the induction level then differentiated support would be the ideal, but the challenge is how best to deliver it.

Maintaining the momentum throughout the full course is a further challenge. The second-semester module that follows on from Foundation Studies in Education focuses on oral presentation skills and so does not lend itself to Web-based learning. Although staff are keen to introduce an information skills element at this stage they are wary of turning it into a synthetic exercise that would fail to engage students. Students are encouraged to draw on the information skills they learnt in the first semester but experience has shown that few of them take advantage of the opportunity – and evaluation feedback indicates that students feel they have already shown evidence of the skills in the early module and do not see why they need to cover the same ground again.

The logistics of delivering practical information skills sessions can be problematic. There is limited access to PCs (they are not available in the classrooms) and so hands-on sessions take place in the library, which places a burden on resources.

5.2.5 Moving forward

Library and academic staff at this site have worked effectively together to introduce an information skills element into an academic module. The focus has been on making the information skills input relevant to the students and on encouraging the students to see it as a necessary and useful part of the module rather than just an add-on requiring extra work. Staff acknowledge that although integration of skills is a 'nice term' it needs to be carefully structured and packaged to that it is effective and not just superficial.

Although student feedback (via summative evaluation at the end of the module and through student reps) on the initial module is generally positive, staff are looking to engender a feeling of progression throughout the full term of the course. It is important to reach the students in the second year and convince them that they need to hone their existing skills and develop further.

The introduction of Web CT offers opportunities to develop the VLE so that it becomes more interactive (perhaps with self-assessment activities, multiple choice questions etc. as well as guidance on using the library and online search skills) and provides better support for the assignments. There would be potential for library staff to become more involved through setting up interactive question and answer facilities or through gaining authenticated and controlled access to student folders so that they can become involved in the assessment process – giving credit for literature searches and identifying students who may require extra support. Setting up a question and answer facility may sound time-consuming but library staff think it would save time overall since they currently spend a lot of time working with students individually – an online facility would reach all students, hopefully averting problems before they occur.

Staff at this site have taken several years to fine-tune the integration of information skills training into academic learning and are conscious that they need to continue working together to take advantage of new opportunities and to meet the challenges of achieving true integration and skills progression throughout the full course.

5.3 Discussion: performance measurement and benchmarking

5.3.1 Developing balanced scorecard frameworks

From the data in the previous cycle, a balanced scorecard set of indicators was suggested for e-learning activities in which information services were involved:

Balanced scorecard perspective	Main benefit/barriers identified	Performance indicators
Customer (Student)	Students save time through access to resources off campus	Percentage of tailored electronic resources available off campus as well as on campus
Internal processes	Academic and LIS staff need to work together, and also with RSCs	Number of meetings/visits Development of specialist Web sites/pages for VLEs/ incorporation of RSC subject guides in course materials
Financial perspective	Licensing problems between FE and HE	Percentage of HE licensed resources available to FE students and their FE tutors
Learning and growth	FE college staff (teaching, and LIS, e-learning support)	Percentage of staff with recognised competencies in developing and maintaining e-learning support.

Table 5.1 Balanced scorecard framework (original)

The work this Cycle suggests that it would be desirable, but difficult to develop some simple indicators to measure students' perceptions of their information skills, and objective assessment of the effectiveness of their skills in assignments. The balanced scorecard indicators should be simple, valid and reliable. Case study Y demonstrated the problems faced in demonstrating that students' information literacy is improving:
- Students are at various levels
- Module combinations vary
- Students themselves may see little need to improve their skills beyond a basic level
- Integration of information skills properly into the curriculum requires careful design and packaging

There are opportunities for developing flexible, individualised but equitable support through interactive Web-based exercises, available within a VLE. The major difficulty for library staff is in gaining access to the VLE, to provide a question and answer service to students as a 'registered tutor' for the module. An additional scorecard indicator is therefore:
- Percentage of modules to which library staff have access to provide student information skills support

Ideally, as case study Y indicated, library staff need to have access, at least occasionally, to student assignments to check for themselves how effective training has been. This is difficult, though not impossible to achieve[26]. An additional scorecard indicator is therefore:

- Percentage of modules/departments for which LIS have authorised access to relevant assignments for checking information skills development.

Balanced scorecard perspective	Main benefit/barriers identified	Performance indicators
Customer (Student)	Students save time through access to resources off campus Students' information skills improve as part of their learning development	Percentage of tailored electronic resources available off campus as well as on campus Percentage of modules/departments for which LIS have authorised access to relevant assignments for checking information skills development.
Internal processes	Academic and LIS staff need to work together, and also with RSCs	Number of meetings/visits Development of specialist Web sites/pages for VLEs/ incorporation of RSC subject guides in course materials Percentage of modules to which library staff have access on the VLE to provide student information skills support
Financial perspective	Licensing problems between FE and HE	Percentage of HE licensed resources available to FE students and their FE tutors
Learning and growth	FE college staff (teaching, and LIS, e-learning support)	Percentage of staff with recognised competencies in developing and maintaining e-learning support.

Table 5.2 Balanced scorecard framework (revised)

5.3.2 Relationship with other electronic library evaluation activities

The eVALUEd toolkit[27] work (funded by HEFCE) is still developing but the focus of the development at this stage is encouraging library and information services to conduct ongoing evaluation rather than the development and monitoring of performance indicators. There is a danger in focusing too much on targets at the expense of understanding, but this has to be balanced against the need to gain a rapid, but holistic picture of progress in a few key areas. The eVALUEd approach is geared towards

---

[26] Martin, Susan. Reflections on a user education session with nursing students. *Health Libraries Review* 14(2) (1998): 111-116.
[27] The eVALUEd project toolkit. http://www.evalued.uce.ac.uk

'learning and growth', but the evaluation themes: Use and Users; Access; Management; and Resources could be criticised from the strategic perspective as lacking in focus on some of the financial issues, and some of the immediate 'customer' concerns. There are some examples of how a strategic approach could be adopted, such as 'how to evaluate the impact of EIS in relation to QAA benchmark standards in Educational Studies', and some of the recommended statistics (number of meetings) mirror some of the internal process indicators listed in Table 5.2.

There is nothing to disagree with the eVALUEd suggestion that the findings of an evaluation might help to 'investigate ways for the library to more work closely with academic departments in the delivery of information skills, e.g. ensuring EIS-related information skills are fully integrated into course'. However, the case studies conducted this year, and previous JUSTEIS research point to the difficulties and complexity of this – in fact a senior manager at one site indicated that a mark of success was when the academic staff took ownership of 'information skills' and actually conducted the 'information skills' component of the module, with support of library staff at the session, and with prior consultation on the format of the workbook for the session.[28] This might be difficult to gauge if LIS performance indicators suggested that the more active involvement of LIS staff in teaching the better the performance as far as EIS integration into the curriculum was concerned.

The eVALUEd approach encourages library and information services to develop their own evaluation methods, and transfer, where possible, lessons from case studies detailed in the toolkit. What it does not provide, as the remit did not apparently call for this, is some brief recommendations on what to do, and what the key indicators might be. Possibly we still need to gather more evidence in order to do this properly. Cullen[29][30] discusses several approaches to digital library evaluation, emphasising the complexity of the problem, and noting that the health sector has particular needs which other digital library performance measurement models do not satisfy at present. Her two part review considers the traditional perspectives of:
- Extensiveness (capacity)
- Efficiency
- Effectiveness
- Economy.

Most library managers would be justifiably confused by the plethora of suggestions on digital library evaluation models. What seems to be emerging is some consensus on the following issues:
- Focus on the customer (what matters to users, and what are the important organisational objectives)

    This requires ethnographic research of the type undertaken in JUSTEIS to examine: 1) what really matters to students as they use EIS in their learning, and 2) how high level government educational policy objectives are translated into operational objectives by academic staff and LIS managers.

- New metrics are required for digital libraries for translating data available (e.g. transaction logging, vendor-based statistics[31]) into meaningful performance measures

---

[28] JUSTEIS report Strand A 2001/2002, p.49.
[29] Cullen, R. Evaluating digital libraries in the health sector. Part 1: measuring inputs and outputs. *Health Information and Libraries Journal* 20 (4) (2003): 195-204.
[30] Cullen, R. Evaluating digital libraries in the health sector. Part 2: measuring impacts and outcomes. *Health Information and Libraries Journal* 21 (1) (2004): 1-13
[31] JISC/Publishers' Association (PALS) working group: Vendor-based usage statistics. http://www.jisc.ac.uk/index.cfm?name=wg_pals_home

which keep the user in the loop of system performance assessment (D-Lib Working Group on Digital Library Metrics[32]).

There is some evidence for the following:

- The manner of EIS usage is changing with browsing more common, attention paid to individual pages on the Web may be much less than that given to print pages.[33 34]

    Generally students do not talk about evaluating the information they read on web pages in any depth, and JUSTEIS research indicates very clearly that time saving is a major consideration as a benefit for EIS, compared to print resources. Work for Project COUNTER[35] suggests that it is desirable to build up a statistical model, to estimate that x% of downloads will be browses, y% will be used by researchers and z% by undergraduates. That will help inform a purchasing model that publishers and librarians could use for a price flexible model. There are complications – a cost per download measure may not fully take into account the age of the articles downloaded, and estimating a return on investment is therefore flawed.[36]

More information about the JUBILEE toolkit for assessing the degree of integration of electronic information services is provided in the JUBILEE report. ** (is it?)

There is less evidence on the comparative benefits of particular methods for evaluation, or the financial measures that could be used. Previous reports for JUSTEIS indicate that for many library and information services, getting the right skill mix, and readjusting job roles, and service functions are important. Human resources may account for around 50% of the costs of the service, and there should be more emphasis on the human resource inputs (and outputs), possibly in evaluation. The original and revised benchmark statements in Table 5.2 suggest one simple indicator for services to use, but the exact measures that would be used (i.e. what counts as e-learning competence?) have to be worked out. Perhaps work being done by ALT (Association of Learning Technologists) to develop the competencies of learning technologists could contribute to this.

5.3.3 Case study conclusions

The case study work developed from action research conducted in previous cycles. In the action research the emphasis was on problem solving to:

- Examine the problem situation

- Devise an appropriate intervention (based on EIS)

- Trial the intervention

- Evaluate the impact

- Plan response, based on feedback from the evaluation findings.

The balanced scorecard framework was used primarily as a way of ensuring that all the main factors were considered in the evaluation. The development of the balanced scorecard also suggests that there is a need for sets of indicators for library and information services to ensure that evaluation activities are balanced. Too much

---

[32] D-Lib Working group on digital library metrics. http://www.dlib.org/metrics/public/

[33] Lynch, C. Measurement and evaluation in the networked information world. In: McClure, C and Bertot, J. (eds.) *Evaluating Networked Information Services.* Medford, NJ: Information Today, Inc, 2001, p.293-326.

[34] Nicholas, D et al. Reappraising information seeking behaviour in a digital environment: bouncers, checkers, returnees and the like. *Journal of Documentation* 60(1) (2004): 24-43.

[35] Davis PM. Personal communication 30 June 2003.

[36] Holmstrom J. The return on investment of electronic journals –it is a matter of time. *D-Lib Magazine* 2004; 10 (4): http://www.dlib.org/dlib/april04/holmstrom/04holmstrom.html

emphasis on technical considerations might mean important aspects of customer care or budgeting were neglected.

What much of the contributory research to digital library evaluation indicates is that we need to know far more about user behaviour. The models which apply to the use of printed materials do not necessarily apply to the use of electronic materials, and little is actually known about usage of printed materials and library services. The availability of data, such as transaction log statistics offers possibilities of tracking usage in a way that is not possible from traditional statistics of usage such as book loans.

Greater use of virtual learning environments and other aspects of e-learning will affect the organisation of learning. Evaluation of the information literacy contribution to e-learning will need to take account of the different 'business processes' within an organisation. For example, it is possible to deliver user education electronically through computer aided instruction, instead of traditional face to face sessions. An evaluation[37] of the effectiveness of electronic delivery compared with face to face delivery indicated that higher levels of information literacy would be (at this stage) more difficult to achieve through electronic delivery, although the electronic delivery could be an economic way of providing a minimum level of skills. One of the problems in making progress in this area is the lack of evidence for comparative studies – librarians latch on to the latest technology as the possible solution to problems, but the pilot trials do not make proper comparison with the previous methods of delivering training or services. Such pilot trials tend to be feasibility studies with the emphasis on the technical feasibility. To get the technology accepted as a normal way of working demands far more understanding of the organisational context. Information behaviour studies used to be dominated by studies of the system use by an individual, in rather unrealistic settings. Now the emphasis is more on information behaviour in context, emphasising the importance of the other factors – individual cognitive styles, pattern of routine tasks, disciplinary differences. It is not a matter of a simple task/technology fit, the social, cultural and ethical/regulatory factors need to be considered.

As confirmation, perhaps, the case study work also showed that longitudinal evaluation can be complicated by a range of events such as:

- Policy changes (external and internal) at the institution

- Staff changes

- Curriculum changes

Any one of these can throw an evaluation of an EIS intervention off course very easily. One possible solution is to use a balanced scorecard framework which uses indicators that are more likely to be useful in the long-term, but that requires some estimation of the likely long-term importance of policy initiatives.

This could involve:

Strategic aims in education

- Widening participation

- E-Learning

- Employability skills

Internet, publishing and production of educational materials

- Growth of open access initiatives

- More 'learning objects' and 'byte-sized' learning materials

---

[37] Joint N. Information literacy evaluation : moving towards virtual learning environments. *The Electronic Library* 21 (4) (2003): 322-334.

- Blurring of roles around learning technologists, librarians, and learning resource support staff

The relationship between the revised balanced scorecard framework and these developments is illustrated in Table 5.3, with question marks indicating where more work is required to develop good indicators. Although the mapping indicates that current developments and policies can be done, the indicators could be enhanced.

For example, there is a need for an indicator, or a simple set of indicators to assess the development of students' information skills as they progress through their studies, and this indicator needs to be one that makes sense to the academic staff as well as library staff. This is likely to be inextricably a part of the 'ways of thinking and practice' in the discipline, and linked to students' experiences of teaching and learning. The ESRC funded ETL project[38] has produced discussion papers on approaches to studying and perceptions of university teaching-learning environments (a deeper meaning to the 'student experience' as commonly understood). The ETL validated questionnaire includes relevant questions such as:

(Approaches to learning and studying section)

5. Much of what I've learned seems no more than lots of unrelated bits and pieces in my mind.

9. I've looked at evidence carefully to reach my own conclusions about what I'm studying.

14. I've tried to find better ways of tracking down relevant information in this subject.

(Experiences of teaching and learning)

9. The handouts and other materials we were given helped me to understand the unit.

12. We weren't just given information: staff explained how knowledge is developed in this subject.

17. The teaching in this unit helped me to think about the evidence underpinning different views.

20. The web pages provided by staff helped me to understand the topics better.

Librarians involved in information literacy programmes need to work very closely with academic staff to ensure that the 'integration' of information skills/information literacy into the curriculum includes:

- Teaching sessions, and teaching materials

- Evaluation of the LIS contribution – preferably in terms of the contribution to students' overall learning in the discipline.

---

[38] ETL project, Enhancing Teaching-Learning Environments in Undergraduate Courses. http://www.ed.ac.uk/etl

Balanced scorecard perspective	Main benefit and barriers identified	Performance indicators	Policy relationship
Customer (Student)	Students save time through access to resources off campus

Students' information skills improve as part of their learning development | Percentage of tailored electronic resources available off campus as well as on campus

Percentage of modules/departments for which LIS have authorised access to relevant assignments for checking information skills development. | Widening participation

E-learning (?)

Employability (?)

Role changes (?) |
| Internal processes | Academic and LIS staff need to work together, and also with RSCs | Number of meetings/visits

Development of specialist Web sites/pages for VLEs/ incorporation of RSC subject guides in course materials

Percentage of modules to which library staff have access on the VLE to provide student information skills support. | Role changes (?)

E-learning

Byte sized learning (?)
Employability (?)

Employability (?) |
| Financial perspective | Licensing problems between FE and HE | Percentage of HE licensed resources available to FE students and their FE tutors | Open access (?) |
| Learning and growth | FE college staff (teaching, and LIS, e-learning support) | Percentage of staff with recognised competencies in developing and maintaining e-learning support. | Role changes |

Table 5.3 Future directions for a balanced scorecard framework

This is provisional and more work needs to be done to develop valid indicators for learning and growth, and financial indicators which might be relevant to other types of institution (such as research-intensive universities).

Further confirmation that this may be the right approach is provided in research done which tested the hypothesis that collaborative promotion of e-journals would result in a better approach to learning.[39] The research tested students knowledge and awareness (questionnaires before and after training) followed with a more objective assessment of the effects of training through examination of the bibliographies in assignments. This is not a foolproof method as things may be read, but not cited, and cited, but not read, and there may be other reasons why sources used are not cited.[40] [41] However, the results in

---

[39] Colvin J, Keene J. Supporting undergraduate learning through the collaborative promotion of e-journals by library and academic departments. *Information Research* 2004; 9 (2) http://informationr.net/ir/9-2/paper173.html

[40] Urquhart C et al. *Getting information to vocational trainees: report of the GIVTS project.* Library and Information Commission Research Report 26, 1999, p.47

[41] Galloway R, Urquhart C, Evans R. Appraising evidence: the GP registrar perspective. *Education for Primary Care* 2004; 15(1): 64-72

this trial were encouraging in indicating the training done by academic and library staff working in collaboration had a positive effect on the use of e-journals for a research-based assignment.

6 Information literacy support and the student experience

6.1 Aims and objectives

The aim of the data mining and data archive work (WP3) in this cycle was to work towards provision of a useful data archive to help the community answer their queries. The various audiences are:

- academic/teaching staff
- staff developers
- learning support staff (including librarians/information services staff/VLE developers)
- library/information services managers

The aims are to:

- help answer some of the questions concerning use and evaluation of EIS, where and how the EIS are being used, effect of broadband in the home, use of EIS for learning in the workplace
- illustrate learning using EIS in various situations (with/without the VLE, for example)
- categorise the search strategies adopted by students (to help improve training packages)
- provide a range of case studies, with some 'best practice' examples for different disciplinary areas and different student groups (see also Section 5)

In this cycle more data mining was done on the quantitative data to explore various questions and hypotheses such as:

What is the effect of information skills/IT training on the uptake and awareness of electronic information services? Specifically, is the skills training provided associated with a greater uptake of EIS?

Students receiving training which did not (in student perceptions) involved LIS staff are less likely to use e-journals than students whose training has involved LIS staff.

The data mining on the qualitative data examine the lifestyle factors which affect student use of EIS. In view of the increasing number of HE students working part-time while undertaking their degrees, plus the large numbers of FE students pursuing courses on a part-time or day release basis, the use of EIS, and support for use of EIS, should be seen within that context of widening participation.

6.2 Factors affecting use of e-journals and other specialised EIS

For the quantitative data mining, several hypotheses were set out. These are examined in the following sections, together with the complementary qualitative data.

6.2.1 Training effects on e-journal use by undergraduates and postgraduates

The use of electronic journals has increased slightly over the cycles[42], as has the number of training sessions students reported receiving. We wished to assess whether the training sessions are likely to responsible, in part, for the increase in e-journal use. Two hypotheses were set up to explore that.

(Alternative hypothesis)

---

[42] JUSTEIS cumulative report Strand A: Monitoring trends in user behaviour, August 2002, para. 3.2.6

Undergraduate and postgraduate students who reported receiving some type of training in information or IT skills are more likely to be aware of e-journals and use e-journals than students who did not report receiving training.

(Null hypothesis)
Undergraduate and postgraduate students who report receiving some type of training are no more likely to be aware of, or use, e-journals than students who reported that they did not receive training.

To assess this, responses from the training question (type of training reported) over the cycles were aggregated over cycles two to five. Changes in the question from cycle one to two made aggregation over the entire JUSTEIS data set difficult. Use of e-journals for each respondent was assessed by examining responses to the types of EIS used in the critical incident search, EIS frequently used and which EIS are deemed necessary. This therefore represents a minimum level of e-journal use.

	No training	Any training	Totals
e-j use	51	207	**258**
no e-j use	135	582	**717**
Totals	**186**	**789**	**975**

Table 6.1 Training and e-journal use

A chi-squared test indicated that there was no significant association between training and e-journal use by undergraduates and postgraduates (χ^2 = 0.05, 1 dof).

Further tests were done to check whether training which involved only LIS staff, or only academic staff had an effect on e-journal use (Tables 6.2, 6.3). There was no significant association between for Table 6.2 (χ^2 = 5.9, 2 dof, p=0.053) but there was a significant association indicated in Table 6.3 (χ^2 = 13.5, 2 dof, p<0.01). Inspection of the arrays (expected and actual) indicated that tutors (alone) had a negative effect on uptake – other methods of training seemed to be significantly more effective in improving uptake. The message appears to be that LIS staff working alone or tutors working alone are not effective. The discussion is resumed later (see Table 6.4).

	No training	LIS staff only	Other	Totals
e-j use	51	124	83	**258**
no e-j use	135	292	290	**717**
Totals	**186**	**416**	**373**	**975**

Table 6.2 Training by LIS staff and e-journal use

	No training	Tutor only	Other	Totals
e-j use	51	14	193	**258**
no e-j use	135	100	482	**717**
Totals	**186**	**114**	**675**	**975**

Table 6.3 Training by academic staff and e-journal use

These findings need to also to consider:
- validity of student responses – qualitative evidence indicates that students sometimes need to be prompted to recall training in EIS use
- e-journals are only a part of the EIS spectrum and use may be concentrated in some disciplines (See Section 6.2.3)
- students may find electronic journals through general Internet searching – and 'happen on' electronic journals in general browsing, but the support may be informally provided

- Information skills training may not in fact indicate the benefits of e-journal use
- students' definitions of e-journals are not the same as LIS staff definitions
- similarly, academic staff may give informal support, rather than formal training.

What the findings suggest is that there is a very uncertain link between provision of training and evidence of uptake in use. Turning to the recent qualitative evidence, over the previous two cycles, around 10% of the undergraduate interviews provided possible evidence of links between training provision and awareness of e-journals.

The following extracts from students in the clinical medicine disciplinary area show that e-journals are used, but that students do need help to 'get their bearings'. Foster [43] describes the orientation process as including problem definition, picture building, reviewing, identifying keywords, and identifying the shape of existing research. The necessary learning does not stop once the training is completed – much necessary learning is done afterwards.

> *'We had information on using, how to find specific journals, that was through the library…[Interviewer: Did you come away and use it?]…Yeah for the journals especially, because it's something I've never done before' [107106, from text units 112-114, 124-1125]*

> *'When we actually had the IT session they were led by the senior tutor. Um as well as representatives from the library so it's probably a mixture of both… [Interviewer: How do you usually access them? …Through the uni home page, they have links to electronic journal, but it's actually sort of supplied by another company I think. I'm not sure what it's called. And they sort of review our electronic journals and store them…Yeah A to Z and then I'll go to ones that I've heard of because there are so many and I'll generally like I use Science and New Scientist if I'm looking for journals online.' [107107, from text units 102-104, 173-177, 184-186]*

This first year arts and humanities (archaeology) student found the e-journal directory in general browsing, and previous training seems to have provided the confidence to try this out, and reflect on the benefits.

> *'Um, I looked up an e-journal the other day because I was doing an essay and I wanted, and the proper paper journal was out so I went on the e-journals directory and looked it up… I think we were told about them before but I've, just found them on the site because it's got a link e-journal directory. [Interviewer: But before this search you used e-journals before?.. No…I mean now I know that I can get them if the hard copies are out and that they're easy to print if I did need to print them…I was pretty used to it before because I was used to using the internet a lot at college. I know there's a helpdesk where you can ask for advice but I haven't really needed to that much. [107114, from text units 14-15,25-26, 31-32,77-78, 125-126, 139-140]*

A third year Engineering student explained how e-journal collections provided access to material that might have cost an inter-library loan form otherwise. Library based training was focused on dissertation preparation requirements. Using e-journals for browsing was less easy in some respects, but manageable.

> *'I've done quite well I somehow got on to Science Direct and found, they seem to be publishing the journals I wanted for free, I've only had to do an inter library retrieval from the British Library for three, I think, but it would have been nice if you know we had the access to something like Ideal Library who publish all the Institute of Agricultural Engineering journals…the talk was on the BIDS system abstracts, the library searching for abstracts and finding your dissertation*

---

[43] Foster. A. A nonlinear model of information behaviour. *Journal of the American Society for Information Science and Technology* 2004; 55(3): 228-237.

research papers and what the library offered…(e-journals are) good for getting research papers, a bit fragmented because they just publish paper after paper, I still like you know picking up the journals and you know reading it and finding the page of the thing I want and thinking oh what else is in here and a lot of the time oh there's another subject you now another something that's relevant but I wouldn't have thought of looking at it before flipping through and reading it, so yes I like electronic for getting the information off the web but a… browsing it's a bit different [136110, from text units 51-58, 191-193, 364-372]

A postgraduate described initial training and support, which was then built on through practice and learning from experience.

'So we had a session with our section librarian… Yes, I tend to find things out on my own really, a lot of the databases and stuff….I knew the author and title of the journal article…I went to the main web site they've got the electronic journals bit, and then went into [name] … If I want specific information, say, for a literature review then I would do a search in something like the Web of Science or CINAHL, in databases.' [113103 from text units 95-96, 108-109, 14-16, 52-54]

Academic staff do influence students in their choice of learning resources, but the influence is more subtle, and often less formal than specific training. This can, as the following student explained, interweave with more formal training.

'But also with Beilstein I recently discovered through my tutor, because some of my products weren't found, I couldn't get a name for them so she told me about the Autonom part… First year (training) was like the Beilstein, Web of Science, um databases, things like that, how to access them and how to use them. Second year was just building on from that.' [108106,, from text units 20-22, 78-80]

E-journal influences
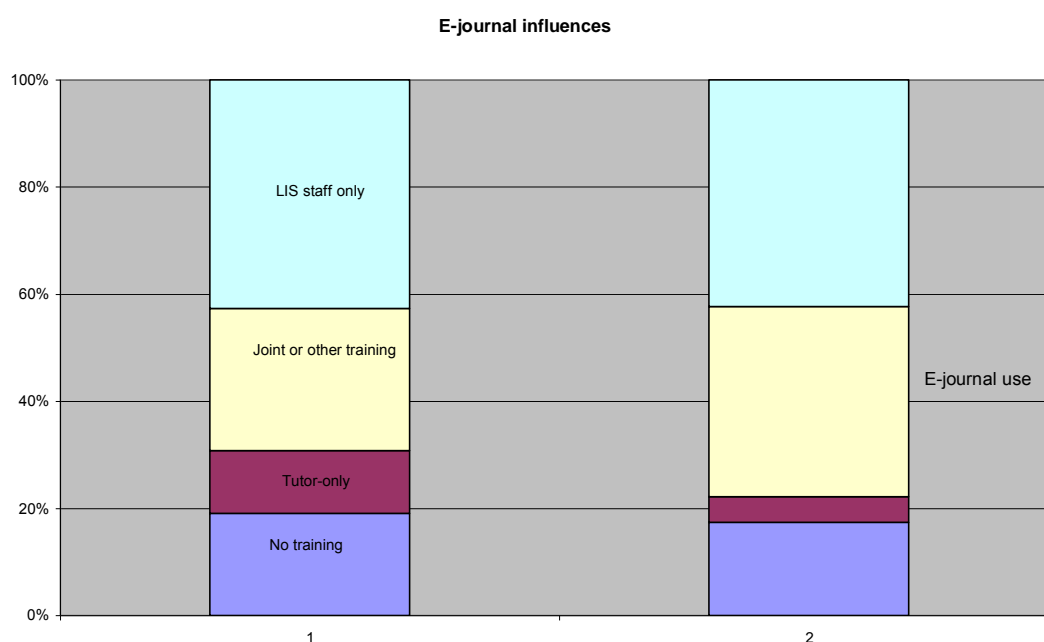
Figure 6.1 Effects of different types of training on e-journal use

As the figure suggests (Figure 6.1) joint training seems to have the most effect on e-journal use. It is difficult to demonstrate this statistically given the difficulties of getting valid responses from students and the different types of training provision, which could include web page tutorials as well as formal class sessions. However, the quantitative data could be categorised, for students who had received training, into those who had

received some LIS input, and those where no LIS input was provided. This indicated that LIS input was significant in improving the uptake of e-journals (Table 6.4) (χ^2 = 13.5, 1 dof, p<0.01). Another way of expressing this is that LIS input increases by a factor of nearly three the likelihood that students will use e-journals.

	Training w. LIS	No LIS input	Totals
e-j use	192	15	**207**
no e-j use	474	108	**582**
Totals	**666**	**123**	**789**

Table 6.4 Effect of LIS training on use of e-journals

FE students are significantly less likely to use e-journals than other groups (χ^2 = 86.8, 2 dof, p < 0.01) (Table 6.5), which is not surprising given the relative paucity of provision for FE students. Infotrac is the most commonly available 'e-journal' for this group but uptake seems relatively limited at this stage. E-journal use was calculated on the same basis as for Table 6.1.

	SFC/CFE	UG/PG	Staff	Totals
e-j use	13	293	38	**344**
no e-j use	462	1204	83	**1749**
Totals	**475**	**1497**	**121**	**2093**

Table 6.5 E-journal use by different user groups

6.2.2 Disciplinary differences in e-journal use

Over the cycles different disciplinary differences in the pattern of EIS provision and use have become apparent. Aggregating data over the five cycles makes this pattern very clear (Table 6.6). The differences are statistically significant (χ^2 = 77.8, 4 dof, p< 0.01). E-journal use among clinical medicine (in particular) and science undergraduates is higher than among other disciplinary groupings. Around a quarter or more of undergraduates in the clinical medicine and science areas use e-journals, compared to 19.6% of maths and engineering graduates and around 10% for both the social sciences and arts and humanities undergraduates.

This disparity may account for some of the lack of effect of training on overall e-journal use. If e-journals are not yet part of the pattern of EIS use in a particular discipline, if teaching staff are not using e-journals, then it is unlikely that students will be using e-journals as a result of guidance. The statistics indicate that, overall, students are as likely to come across e-journals by chance as through the results of specific training. The qualitative data confirm (previous section) that clinical medicine students are the group most likely to receive early training in the use of electronic information services, including journals.

	PAS	ME	PASS	HA	CM	Totals
e-j use	90	48	37	25	93	**293**
no e-j use	277	197	350	199	178	**1201**
Totals	**367**	**245**	**387**	**224**	**271**	**1494**

Table 6.6 Disciplinary differences in e-journal use by undergraduates (Cycle 1-5)

6.2.3 Staff and student differences in search strategies

The quantitative data shows distinct differences between the student and staff groups over the number of EIS used in the critical incident search they recalled for the questionnaire. There is an association between the type of user and the number of EIS used in the critical incident search (χ^2 = 106.4, 6 dof, p<0.01). Around 12% of the FE

group listed resources that were not EIS, 61% of FE students listed one EIS (Table 6.7). Among HE students, 40% used one resource, 30% listed two, and over 20% used three or more, whereas under 10% of FE students used three or more. Among staff, 50% listed one EIS, nearly a quarter listed two, and around a quarter listed three or more.

	PAS	ME	PASS	HA	CM	Totals
e-j use	90	48	37	25	93	**293**
no e-j use	277	197	350	199	178	**1201**
Totals	**367**	**245**	**387**	**224**	**271**	**1494**

Table 6.7 Student and staff search strategy differences

One interpretation of this is that FE students are less persistent in their search strategies (or that they do not perceive that there are alternative resources available for them). Comparing staff and HE students, staff seem more likely to focus on one resource (if possible?) but if they need to persist they will, to a marginally greater extent than students.

6.2.4 Learning information retrieval

If students are to learn how to retrieve the information they need they need to practise those skills, and to that they must be motivated to practise. But practice requires time and that is something many students have in short supply – or else they do not deem it a priority. As an FE/SFC lecturer reflected:

> *'This (search) will be fairly typical. I mean what I'm looking for , I'm looking to develop learning activities. So my purpose in doing this is – can I find something which will provide students with a piece of information? And I don't want students to waste time actually surfing the net in the same way as I'm wasting that time. I'm enjoying it. I know my students can't do that…The students are going to want instant gratification so therefore I've got to do some of that work for them. I know that deskills them but at the same time, if I don't do that I know I will lose them and there won't be any point in doing the exercise…A survey I did about three of four years ago with students, not just science students, the entire college…Our recommendation is that they should match the time inside college with the time outside. And they said that they considered it unfair if any teacher expected them to do more than two hours a week in their subject.' [167301, from text units 159-170, 210-218]*

Halttunen[44] studied Finnish undergraduates (major or minor Information Studies students) doing a course introducing information retrieval. The research indicated that students tended to pay more attention to the beginning phases of the search process, and students could be categorised into different groups: process identifiers, source identifiers, searchers, problem formulators, and assessors. Different groups concentrated on the different phases of the search process (information need, information sources, information retrieval methods, information storage, assessment, access and use) to different extents. Searchers, for example, were more interested in the methods of information retrieval, than problem formulators, who were more concerned about the problem formulation, and definition of the information needed. The researcher concluded that learning environments should comprise authentic tasks and provide 'scaffolds' to allow students to transform their rather sparse ideas of information retrieval into fuller appreciation of the phases and processes involved. These findings should be transferable to other groups of students, but most in-depth qualitative research on the topic has involved library and information studies students as study subjects.

---

[44] Halttunen K. Students' conceptions of information retrieval. Implications for design of learning environments. *Library & Information Science Research* 2003; 25: 307-332.

6.3 Students' time management and use of EIS

Statistics[45] indicate that:
- women now make up 55% of the student population
- part-time postgraduate numbers are increasing – and part-timers make up more than a quarter of the higher education population
- there is a rise in participation in higher education – from 41% to 44% from 1999/2000 to 20002/2003
- Spending on student support has changed – although grants are increasing slowly, the amount on loans is greater and has increased from just over 400 million pounds to over 1000 million (2004/2005 estimates).

The implications are that:
- More students are juggling other commitments with their studying – either as part-time students officially, or as part-time students unofficially, doing jobs to minimise the amount of loan to be paid back

Time management is therefore very important to most students, and interviews with students illustrated how some are managing the logistics, with the help of EIS.

6.4 Lifelong learning, career changes and finance

Interviews with students illuminate some of the complexity of providing support for learning that will be of benefit to all, or most of the students at an institution.

6.4.1 Benefits and drawbacks of remote access to resources

Home based access to the Internet is seen by some to be conducive to study, as well as avoiding problems of finding the right time to access computers in the institution..

> *'I find it an awful lot easier to write and study at home than the library…if I don't have to do that (search the Internet) in the library, I'll probably be using it less…and it's quite difficult to get a computer unless uou're in very early in the morning, there usually a wait , anything from 5 minutes to well half an hour.' [106106 from text units 110-139]*

Several students mentioned that the costs of accommodation meant that they were living farther from the institution than they would ideally do. For them, time spent in the institution is limited as they are spending longer on commuting. Remote access to resources is desirable, and if it is not possible, then students will do without.

> *'I live at home and I actually can't get hold of many of them because you need to be on campus for the computer to be identified…I very rarely use them…I live about 30-40 minutes drive. So it's not worth coming in just to search.' [107108, from text units 75-86]*

Having remote access is necessary for many students, but there are other demands on their time which may mean that even with remote access, they are not using the resources as effectively as they might. Simple and quick administrative tasks such as renewing library books, or checking the location are easy.

> *'I mean it is useful for Library…because there's six different libraries in the university. So you can type in what book and it will tell you which one it is. And also you can renew library books which you can do from home as well.' [107111, from text units 106-110]*

For others, work and family commitments mean a constant juggling of priorities, and this means that the time which can be allocated to study and how that study is achieved is not easy to predict. The institutions are keen to retain students and offering remote access is seen as a help by academic staff.

---

[45] Trends in higher education. *THES,* 11 June 2004, supplement.

> *'Students often leave because they are struggling with the demands of family and home and travel and so on and I think if we could streamline the amount to time they actually have to spend on campus it would help that kind of student. I wouldn't want to move away from the situation, where we move away from the average student, the student who didn't have family commitments and so on, it's finding a balance in terms of increasing access.'* [134302, from text unit 145-165]

For students, the constant juggling may have the result that a highly strategic approach to learning may be adopted, and resources will not be used unless they have to be used. Work placements mean that physical access to library resources can be difficult.

> *'Qualifying as a nurse, I think that's probably the main one (priority). My husband is off with stress at the moment and my Dad's 50th birthday in July. Planning for that. Those are the three most important things.'* [112101, from text units 99-105]

> *'Being a full time employee as well you see, it's hard work trying to get your college assignments, with what they give, you , how much they shove into you to do each week, it's a bit of a struggle at times.'* [117109, from text units 187-194]

> *'I've got a son who's 14 months old so I've only really used a computer when I'm at college. I'm not sort of one of these people that will sit on there and go onto the web and just have a nose around and see what they can find, I don't have the time. It's a privilege to get five minutes to myself anyway…so the only time I use a computer is when I'm doing basic college work, word processing or obviously general bills, writing up letters, things like that.'* [109103, from text units 133-141]

> *'Because I've got four children as well you know , I can't , the time I'm doing on the ward and in college as well, I just haven't the time to come to the library…'I have to prioritise all the time with the children and balancing acts…As it comes, yeah, I just change my priorities as and when the next crisis.'* [112107, from text units 72-75, 100-112]

Some students do need to use college facilities as home is not a peaceful learning environment.

> *'I do come to college early and I do the work and I stop after college when all the other students have gone home. My parents own a pub and a hotel so I prefer to work here which is more quiet and I get on with my work.'* [130102, from text units 107-111]

6.4.2 Explicit and hidden costs of learning resources

Student views on a reasonable price for a textbook are varied, and it might be difficult to assess whether the Internet, with the offer of 'free information' has made the upfront pain of spending around £25 on a textbook worse or better.

> *'I think there's only, in the library there's two or three books suitable for this course, but there's eight of us in the class and they're £30 each so it's easier to just go on the Internet, if you know what you're looking for it's not too bad then.'* [115104, from text units 78-87]

> *'Yes I buy my books. I get the book title and I go and get it off Amazon.com…to be honest I tried that in the first year, getting books from her, and I decided there wasn't enough and it was all a bit of a hassle….I could go out drinking but I might as well just buy books instead, I mean that's what I'm here for.'* [135103, from text units 232-239]

JUSTEIS has focused on electronic information and the reliance on textbooks only became obvious when the interviews included a vignette to elicit information on routine searching habits. That showed last year (Cycle Four) that the gloss was off the Internet as

the panacea for all routine searching problems and students still found their textbooks a major source of information for their studies. Views on book costs, and the time/cost tradeoffs only emerge as asides in the interviews but it seems that some students might nurture irrational views on the economics of textbook purchase (which might be cheaper in the long run than accumulated telecommunications charges for Internet searching, plus paper and printing costs, or visits to the library for short loan text consultation). Other students do make hard nosed decisions about what they will use, search and why.

> *'I'm not one who uses computers as an indefinite eternal source of information, I do like to use hardback journals, books…I do find that sometimes the Internet can take up a lot of your time for not a lot of valid information…I try to use all resources that I have really, paper journals, books, lectures.' [135105, from text units 89-101]*

6.4.3 Implications of commuting

Home based access is a great advantage but for many students long commuting times are a fact of life, and minimising living costs a priority. Mobile computing may ease some of the difficulties – but it is not a solution for many students.

> *'We've just been looking at all of the different areas around the university. Seeing which ones we like the most and whether we're willing to pay less in rent but commute further or pay more and stumble in every morning.' [107118, from text units 94-103]*

> *'I mean to use a computer I have to come half an hour to come up here to use it and we've agreed our hours there's no way can afford to have Internet, we haven't even got a phone line because it's just too expensive so there's no way other than walking up here and walking back.' [113111, from text units 84-103]*

Much is written about the e-learning providing 'chunks of learning' and some of this may be hype but there is a need expressed by some student interviewees for bits of learning that can be fitted into opportunity learning gaps which they have between or during other tasks. Some students don't see many of those gaps, unfortunately, and some don't have the chances others have to perfect their information skills.

> *'And I do enough walking and running around, I don't have to do any more, with two kids. I also do some admin work here so, you know I might be checking my work emails and then I might think, oh well I've got twenty minutes free, I'll just, it's so much easier when you have access to the Internet to look up what you need. You don't sort of have to lock up your bag and the rest of it.' [117103, from text units 67-75]*

> *'Within work almost every day you have to search for something on the Internet or search for various bits of information.' [131107, from text units109-116]*

> *'You can do it at work, we've got the Internet connected at work, so you can do it at work but there isn't time to do it in work, there isn't time to do it at home, that's why I haven't done it.' [113105, from text units 78-86]*

6.4.4 Lifelong learning

What helps the 'lifelong learner', the mature student, the teenage mother, the student who is also a carer? Personal support helps, as well as more material support through the provision of hardware and software, and that is probably as much a matter of institutional policy and ethos as resources.

> *'I've got quite a few sick people in my family, so – finish the course, then get a job and in the meantime look after all these people in the middle. [Interviewer: What do you think are the main factors, issues that will help you?]…My stubbornness I*

think, apart from that support from tutors and that sort of thing, which they have been very good in the past, so just the support.' [113101, from text units 97-108]

'You know they've provided me with a laptop because my spelling's poor but I've had dyslexia test and things but I'm not actually dyslexic but because of my confidence I think if I had to hand write them I think my grades would really plummet.' [129102, from text units 195-200]

'Well the teachers have been pretty good, they've helped me out quite a lot with information and things. And the other girls are good, they keep notes for me so if I have to go and see the midwife and they keep notes for me and everything so.' [129104, from text units 136-150]

The 'late joiner' who transfers in from another institution often experiences problems with assumptions made about their knowledge and experience.

'Sometimes they forget that you haven't been here the same amount of time as some of the other people on the course.' [136109, from text units 153-162]

Students are changing their lives and careers, and gaining a new identity which takes some commitment on their part.

'Although I'm really enjoying it I'm having to kind of force myself. You know that thin when you're working at home and you think oh perhaps I ought to load the dishwasher, you know it's a distraction all the time. So it's getting into that scholarly mode is what I've got to do, to sort like get a new identity really.' [113114, from text units 50-70]

'I mean I'm very capable of doing things on my own. I mean having a child at fourteen you tend to be quite mature. You tend to grow up quite a lot…That's the only reason I do it at the end of the day but that's a strong commitment for me, you know what I mean, having my child because I want to give him everything I never had as a child. And the only way I can do that is to get my qualifications and actually get out there and work…I've done the last three years, one year to go, four years all in all.' [128114, from text units 175-196]

'Obviously my family is important, my daughter, who said life didn't begin at 40 because that's exactly what I had…obviously as I'm an ageing mother I have to now rethink my whole life, so it was a case of getting back to study and do something with it because my husband is a lot older than I am…obviously I've got to access information from my local education authority…what support I can get…which particular Uni I'm going to…it's things of that nature really.' [133109, from text units 137-163]

For the following student, realising that touch typing, a skill acquired in the past, could be useful now, enhanced the feeling of confidence and empowerment that the ICT learning in college provided.

'And it's just wonderful what it's put you in touch with, I mean I tracked down a friend I hadn't seen for 10 years who's moved and I was able to send her an email, she's living in Spain now, just incredible, and sent an email to my sister in Australia and millions of other friends, and I realise that I'm very early on so I've got all the basics to learn but it's making such a difference with doing the assignments here, because I can just put in everything and then change it, add bits and take bits away, and funnily enough I went through, this is my 4th time at college, it really is crazy….I can't go back to it (former career) because my hand was injured, so I've been through a very nasty time but it's all changing and so I've been catapulted into this totally different world where a computer is essential, it's not just good, but I did a really weird thing when I was at college, I learnt to touch type I don't know why I did it, I had no idea, I didn't tell any of my friends because I thought they'd think I was weird and they would have done, and it's so

useful for the computer, it's fantastic, so I can just type away and it's so quick and if I make a mistake I just change it, it doesn't matter does it.' [118107, from text units 71-92]

Other students also found that skills in previous work came in useful for their new careers.

'I used to work as a researcher in London and I kind of spent a lot of time researching anyway, I think it just cropped up through word of mouth, people said oh Google's quite good and fast, and it's also got the images facility on it which a lot of the other ones don't, which is really good.' [126107, from text units 21-27]

For others the studying is simply a way of badging their work experience and competence, as they progress up their chosen career ladder.

'It's just mainly for the college course so I'll have a certificate…Experience in my job probably counts more than qualifications. It's what you know sort of thing, not studying sort of thing…My next job now will be to keep this job I've got promotion into and hopefully gain a bit more experience.' [117109, from text units 87-100]

Mature students may still perceive a gap between their IT skills and those of younger students, but perhaps this is now more to do with simple keyboard skills rather than the information skills aspects. Conversion is easier once the benefits are apparent.

'I mean one of our seminars each in the English department is this Virtual Learning Environment and they're like clattering away beside me. It takes me ten minutes to get myself, you know, logged on properly…but I mean now having worked, having had computers in offices and having come, become reliant on email…I just don't know how we would survive and did survive without them.' [106101, from text units 134-152]

'But I've just been on another one (training) as well now to learn how to admit on the computer. Considering I only used to dust a computer before this course.' [112107, from text units 146-149]

'I've convinced all my friends and family and a lot of them don't want to know about that, it's new technology, it's too advanced for us, I explain to them I was exactly the same and a couple of weeks and maybe a month it's all changed and opened up a whole new medium really.' [115101, from text units 27-42]

'I was thinking about getting a rebounder…and it was something which started off as a ten-minute thing and ended up being a couple of hours. And Oohh this is interesting, and Oohh I never knew that…it's an amazing way of researching things I think.' [117103, from text units 103-128]

'We're very lucky because the CLAIT is part of the nursery nursing course which without that I would have been absolutely useless.' [110110, from text units 58-66]

6.4.5 Getting jobs, getting paid

Career related information is important for many – and the Internet the obvious source.

'With the experience obviously again I went into Google or some such search engine and got to list out all the zoos and wildlife parks in England which it did, so I've been emailing them and ringing them up from that.' [118102, from text units 58-77]

Other FE students may need more career guidance than they perceive they are being given.

'Although I went to the careers office that was because I'm a mature person I went there and I sort of said what subjects I was going to be doing and they said what are your interest, what do you think you'd like to do, so I told them what I

thought and they just gave me a printed off what they had in a big manual, no guidance that's what I wish I'd had a bit more guidance but then at the end of the day they say well it's up to you.' [133111, from text units 116-124]

Holiday and weekend work are a necessity for many – background reading may be a luxury neither FE nor HE student can afford.

'Yes pay off some debts if we can…I don't know that's a funny one because I've been earning the same money the whole way along but the debt sort of comes and goes, it doesn't really seem to be tied to how much I earn, it depends really on what goes wrong with the care I suppose.' [122103, from text units 138-146]

'Because I'll probably have to get rid of my job to do work experience…I work in a shop, two shops.' [128105, from text units 127-143]

'So Monday to Friday it's mostly about college and obviously I come here three days a week as well. The weekends is when I do my part-time work, and then it begins again…I get two days off a week as well which is mostly done with college work…assignments. And obviously in the holidays I try to get overtime and things like that.' [128110, from text units 140-149]

A constant theme is time management and organising studies, and part-time work to raise money. Some FE students also commute quite long distances to college, and FE students expressed similar problems to HE students over student finances.

'Over the next 6 months I need to save money, I need to start actually working a bit harder on my college work because a lot of the time I'm not actually doing what I can for college while I've got the time to do it, and when I haven't got the time to do it I need to get it done, so…. I work in a pub Friday and Saturday night so I don't go out very often either so I save money that way… I'm getting emergency taxed at the moment which is annoying.' [118103 from text units 120-136]

'College work I suppose and part time jobs, I've got a couple of part time jobs … just college and part time jobs kind of thing. I go to college four days a week and then I do about three shifts a week at these two different jobs… I am a cashier at a small convenience store and I'm a lifeguard at a swimming baths… having enough time to do them for a start off because with those three things sometimes I can't necessarily do everything. Having the transport to get there, because I live 17 miles away from college.' [133102, from text units 110-136]

6.4.6 Special needs support

Students are being provided with a variety of personal and software support. For some students (dyslexics in particular) time management is a problem and any help with organisation is appreciated by them.

'Yes an hour a week where we (support teacher and student) go through different college work and what I've been doing and spellings, so it's pretty much all the going over what I've done.' [124106, from text units 166-184]

'Inspiration, it helps you plan out essays because I'm not very good at planning at all…and it (Text and Read Help) actually reads it out to you what you've written so that…you don't miss out words and spell them wrong.' [128104, from text units 185-246]

'I never had a lot of time at school either being a gypsy traveller. My mum used to take me around lots of different places so I was never settled and I was dyslexic before I came here.. He (English teacher) has supported me to the level I am now. I mean I'm very capable of doing my work now whereas before when I first

come here I would just look at it and think "God!" you know what I mean. I felt like in myself that I was so behind.' [128104, from text units 232-260]

'Assignments, I normally use the web first because I'm dyslexic I don't like using, I prefer using the computer than trawling round the library looking at books and things because normally, when I scan read I normally miss the part I want in the book and put it back on the shelf, so normally yes I normally use the Internet straight away because I can normally narrow the search quite quickly and get what I want without doing too much.' [136110, from text units 167-173]

6.4.7 Mature students' problems with ICT

Although most students were happy with the ICT support they obtained, a few expressed annoyance at having to gather evidence for skills they already had.

'Everybody has to do professional practice and what they do is it is split into it's a compulsory course but as a mature student we don't necessarily have to be there all the time, as long as we have demonstrated that we are competent and confident within those areas. Although we find it quite frustrating because some elements, we have had to show competence, I was a finance manager responsible for IT in a region, and you think well if you want a reference do I really need to do this and we are having to come back in and show evidence and still do the work, which to me is a waste of time- not only for us but also for the tutors having to mark it.' [130105, from text units 247-264]

Others expressed a lack of confidence initially, particularly when they did not have immediate back-up at home.

'It only took him about 5 minutes to get in and find all the sites and everything, but it's the start of the year I mean I'm not very computer literate at the moment so I'm doing computers, I'm doing IT as a course and I'm right at the start of the course at the moment and a lot of people know a lot more about computers than me because they've got their own computers and I've only just moved back in with my Mum because my dad died earlier this year and she's living on her own but I've been living away from home for 10 years and I've never owned a computer so I'm not exactly the most computer literate.' [133108 from text units 40-48]

6.5 Gender differences in information behaviour

Cumulating the quantitative data over four cycles (Cycle 2 to 5) allowed some testing of hypotheses on whether there were different searching patterns. There are many confounding factors, of course – discipline, type of institution, but examination of the hypotheses can lead to questions about the type of support that might work best in particular circumstances.

Results (Table 6.8) indicate that women are significantly more likely to use e-journals than men (χ^2 = 4.7, 1 dof, p=0.03). Women are not significantly more likely to rely solely on the Internet in the critical incident search than men (χ^2 = 2.4, 1 dof, p=0.1) (Table 6.9), nor is there a significant gender difference in the number of EIS used in a search (the critical incident search) (Table 6.10, χ^2 = 1.0, 3 dof, p=0.8).

	Male	Female	**Totals**
Does not use e-j	514	689	**1203**
Uses e-j	107	193	**300**
Totals	**621**	**882**	1503

Table 6.8 Gender differences in use of e-journals

	Male	Female	Totals
Uses more than Internet	70	77	**147**
Uses only Internet	227	338	**565**
Totals	**297**	**415**	**712**

Table 6.9 Gender differences in reliance on the Internet in a search

	One EIS	Two EIS	3 or more	Not EIS	Totals
Male	297	152	113	59	**621**
Female	415	220	173	74	**882**
Totals	**712**	**372**	**286**	**133**	**1503**

Table 6.10 Gender differences in the number of EIS used in a search

There seem no significant gender differences in information seeking routines, once established. There is, for example, no significant difference in the reliance on previous experience in selecting the resources used for the critical incident search (Table 6.11, χ^2 = 2.9, 1 dof, p=0.09)

	Male	Female	Totals
Guided by personal experience	203	327	**530**
Not guided by personal experience	418	555	**973**
Totals	**621**	**882**	**1503**

Table 6.11 Gender differences in reliance on own experience in selecting resources

However, women are significantly more likely to rely on tutors, or course materials (tutor advice, handouts, web site guides) than men (Table 6.12, χ^2 = 8.4, I dof, p < 0.01). They are also significantly more likely to have approached LIS staff or used training materials provided by LIS staff than men (Table 6.13, χ^2 = 15.9, 1 dof, p<0.01).

	Male	Female	Totals
Did not use advice	459	589	**1048**
Used advice	162	293	**455**
Totals	**621**	**882**	**1503**

Table 6.12 Gender differences in use made of tutor advice, tutor materials

	Male	Female	Totals
Did not use advice	575	757	**1332**
Used advice	46	125	**171**
Totals	**621**	**882**	**1503**

Table 6.13 Gender differences in use made of LIS staff advice, LIS materials

6.6 Discussion

Much of the literature evidence which might relate to the JUSTEIS evidence is based on small scale (though often in-depth) studies in one organisation. What is interesting is the interpolations that might be made from studies on workers with organisations to studies of students, who are often part-time workers, although nominally full-time students. Combining both roles may heighten the effects on information seeking of task complexity, access to resources, time, uncertainty about the expectations associated with the information seeking task.

An in-depth but very small scale (9 individuals) study[46] of routine information seeking and use, indicated that there may be correlations between gender, source characteristics and perceptions of usefulness of sources based on cognitive and affective aspects. JUSTEIS, on a larger, though broader study confirms that there are gender differences in the type of sources used, and the way these sources are approached – what help may or may not be sought.

Studies of information use within organisations often compares the preferences for asking someone else rather than turning the formal sources of information. The Value[47] and EVINCE[48] projects of UK doctors and nurses profiled the number and type of information resources that would be used to answer particular types of information problem. Colleagues were consulted by other nurses for queries about general updating, specific drugs or therapies, and they often used formal sources available in the department for similar reasons. The implication is that time is the key factor – and availability the important criterion for nurses. However, for course work for continuing education, colleagues are consulted comparatively less often. Bystrom[49], working with staff in local authorities categorised the type of information seeking situation by its task complexity, and found that sources were selected according to the complexity of the task. Bystrom's later work[50] suggested that:

- When information acquisition becomes an effort, people sources are preferred to documentary sources
- The more information types are acquired the greater the use of people as sources
- The more information types are acquired the greater the use of general purpose sources and the smaller the share of task oriented sources
- The more information types are acquired, the more sources are used
- The more information types are acquired, the greater the use of people internal to the organisation and the greater the use of external documentary sources.

If students are transferring information habits acquired at work to their studies, one would expect to see more use made of informal help – from other students and tutors, possibly – as the information problem becomes an effort. This is hard to correlate with the JUSTEIS evidence as the focus in JUSTEIS was on encouraging students to talk specifically about an instance when an electronic resource was used, although the electronic resources include a wide range of 'people substitutes', in the form of information posted by lectures (students own tutors and those in other institutions), and some information from organisational resources. Students are actively discouraged from collusion with other students in the production of coursework, to avoid the charge of copying from other students as a type of plagiarism. In the critical incident searches ** check what this year indicates about the peer-peer prompts and sources.

We need, possibly to find out more about how students do influence each on the choice of information source (and whether direct 'viral' marketing would be effective!). The figures for the cycles, indicate – approximately – that:

[46] Julien H, Michels D. Source selection among information seekers: ideals and realities. In *The Diverse Domain of Information Science, Proceedings of the 28th Annual Conference of the Canadian Association for Information Science,* Edmonton, Alberta May 28-30, 2000. Retrieved from http://www.slis.ualberta.ca/cais2000/julien.htm
[47] Urquhart C, Hepworth JB. *The value to clinical decision making of information supplied by NHS library and information services.* BLR&D report 6205. London: BLR&D Dept., 1995, retrieved from http://users.aber.ac.uk/cju
[48] Davies R, Urquhart C, Smith J, Massiter C, Hepworth JB. *Establishing the value of information to nursing continuing education: report of the EVINCE project.* BL RIC report 44. London: BL RIC, 1997.
[49] Bystrom K, Jarvelin K. Task complexity affects information seeking and use. *Information Processing and Management* 31 (2) (1995): 191-213.
[50] Bystrom K. Information and information sources in tasks of varying complexity. *Journal of the American Society for Information Science and Technology* 53(7) (2002): 581-591.

- Around 1 in 2 FE students are relying on own experience and knowledge (habit) when selecting the EIS used
- Around 1 in 3 FE students are basing their selection on advice from teaching staff
- Around 1 in 5 FE students are basing their selection on advice from friends or colleagues.

The figures for HE undergraduate students are a little different though the same order applies:

- Around 3 in 5 undergraduates rely on their own experience and knowledge
- Around 1 in 5 undergraduates are basing their selection on advice from teaching staff
- Around 1 in 7 undergraduates are basing their selection on advice from friends or other students.

Informal sources are therefore being used, and availability may determine the extent to which they are used. FE students are used to more class contact hours which makes it more likely that they will ask teachers directly for advice, and in a classroom situation they may have more opportunities to work with other students, in a structured learning situation, than many undergraduates will have.

The importance of habit is unsurprising, but just how is habit is invoked? Is it simply recourse to salient sources? Or a particular searching routine? Or is it some interaction – the interim results of a preliminary search that help to recall existing knowledge about a topic area, and previous searches? Information behaviour research[51] [52] suggests that previous knowledge structures affect how the information need is processed and acted on.

6.7 Plagiarism and 'copy and paste'

The inaugural conference of the JISC Plagiarism Advisory Service[53] reported a survey of students (600 recent graduates, plus 1000 officers of the NUS, with 363 responses in total) in which 15% reported passing off other people's work as their own on more than once occasion on their degree course, and 9% reported doing this only once. A survey[54] of attitudes among science students at a large UK university found that around half the respondents were willing to copy/paste from Web-held materials without modification or referencing into their assignments if this would save them from failing a module. Their actual professed practice in this respect indicated that around 15% did this a few times a year, and around 17% did this regularly. The main trigger to cheating is the possibility of module failure, followed by the difficulty of the assignment, and looming deadlines or sheer workload. Students perceived that around 50% of their classmates probably cheated, and were more sure that around 21% did cheat.

The ease of 'cutting and pasting' from the Internet, combined with the modular approach to learning and greater emphasis on coursework seems to have fuelled a large increase in plagiarism. Some dispute whether the problem, as far as learning is concerned, is really as great as it is. Reddy, for example, suggests that 'any number of citations can be dropped into an essay, but isn't what the students make of it all that ultimately tests understanding?'[55]

---

[51] Vakkari, P, Hakala, N. Changes in relevance criteria and problem stages in task performance. *Journal of Documentation* 2000; 56 (5): 540-562.
[52] Kuhlthau, CC. Investigating patterns in information seeking: concepts in context. In: Wilson TD, Allen DK (eds.) *Exploring the contexts of information behaviour: proceedings of the Second International Conference in Information Needs, Seeking and Use in Different Contexts,* 13-15 August 1998, Sheffield. London: Taylor Graham, 1999, p.10-20.
[53] Baty P. Various articles: Survey shows cheating is rife; Copycats spur system rethink; 'Wimpy' bosses cause staff to duck showdown, p.2-3, Leader, p.12, *THES* 2 July 2004.
[54] Szabo A, Underwood J. Cybercheats: Is information and communication technology fuelling academic dishonesty? *Active Learning in Higher Education* 2004; 5 (2): 180-199.
[55] Reddy M. Why I believe that software that prevents plagiarism prevents learning. *THES* 9 July 2004, p.16.

JUSTEIS work encountered students' descriptions of 'copying and pasting' incidentally. Last year (Cycle Four) the data mining revealed (Section 6.7.2.1, Cycle Four report) that FE students were more likely than undergraduates to stress to interviewers the importance of putting what they had found in their own words:

> *'Instead of using it in its pure form, we dilute it down and use it, interpret it in our own way. And then because we're not allowed to copy because you know the rules on copying things so we have to use in our own way.' [93108 from text units, 67-70]*

To asses whether there had been recent changes in attitudes, or whether it was more a matter of 'copy and paste' becoming a useful routine, qualitative data from earlier cycles were reviewed.

Examples of 'copy and paste' practice from Cycle One (1999/2000) indicated that students (on teacher education programmes) lifted lesson plans from the Internet – this saved huge amounts of time for them. The ability to copy and paste pictures and diagrams was also mentioned as an advantage, a way of making an assignment look more attractive. This suggests that some practices may simply be a continuation of practice at school doing project work. It is a little far fetched to put the two together, but if the teachers of the future see nothing wrong in lifting lesson plans then it is unlikely that they will encourage students to differentiate between the collation of a range of information on a topic, of the 'facts and figures' variety, and the passing of the opinions and evidence from others as their own work.

> *'Last time was at my school, my placement and I downloaded some schemes of work in preparation for my teaching practice, from a standards site. To be honest, it's the first time I've even used that site…It was very good. You basically go in and pick a subject that you want and you can download a full scheme and go on to get more information, resources and things for it. It was very useful, considering I've spent the last three years writing them all!' [14102, from text units 20-30]*

> *'It's very easy to out information from the Internet, also you can grab pictures off it to put into a report so I thought it would be a good thing to do…so I copied about three quarters of the web site into Word and captured about four pictures…then used that as the basis to write the report…made it look nice and printed it out using the laser jet…I've got about 5mb of stuff on the network , just documents of spreadsheets, databases just so that, basically I'm lazy so if I've got a report on something I've got one and I just change the words…if you've done it once why bother doing it again?' [20104, from paragraph units 10, 11]*

Students are aware that some of their lecture notes may be incomplete, and they do after all 'copy' what a lecturer has said. Variations often provide a different perspective on a problem concept or a check on the veracity of their own notes.

> *'I'll probably go online and try and get some different sets of notes to look as opposed to those I've already got, Basically it's a different way of looking at the subject.' [17102, from text units 66-69]*

Copying and pasting into Word requires students to be very methodical and careful about citing the source, and Web page. The following student noted that Encarta had the advantage that the referencing came along too.

> *'I have Encarta which I use, that's a nice, reliable source that you can cut and paste, I like that! It even references itself when you do it!.[24101 from text units 237-239]*

Printing costs mean that students often prefer to cut and paste into Word, rather than printing out the entire source.

> *'Then all the time I was copying stuff on to a Word document so I could print it out, instead of printing an entire article…once I printed it out I just read it and highlighted bits by hand…just wrote it down…quotes or whatever and then typed them up from my own notes into the essay.' [40119, from text units 108-111, 137-139]*

Academic staff pointed out that checking the essay mills was time-consuming.

> *'These are lots, one of the things which I keep meaning to do is checking these various web sites which offer essays on the Web just to check that the sorts of questions I'm asking can't be used by these, and trying to find ways round it' [40307, from paragraph unit 58]*

The review processes for electronic media were different from the print media and required learning and familiarisation to make instant judgements on authority.

> *…With Web and CD-ROM resources you don't have the same refereeing standards…and so the academic professionalisation of print media has not been repeated in the electronic media to date so it's more hit and miss.' [40307, from paragraph unit 58]*

Cycle Two data again found instances of the copying and pasting, particularly of the graphics. Collecting information for some class work or seminar preparation was seen as a collation activity, copying and pasting into Word.

> *'And then I used the written things, made notes from it and some of the graphics I copied and used in my project.' [44112, from text units 37-39]*

> *'Got everything that I, we were basically just told to research the history for use next week so whatever I found I copied into Word and then just printed it out like that.' [44113, from text units 51-53]*

> *'Just found pictures I just copied them onto my computer.' [53112, text unit 67]*

Cycle Three's themes were consistent – using pictures was a great benefit. Copying and pasting into a Word document as you go along in a hypertext search ensures that information is collected together in one place.

> *'And obviously if you want diagrams for essays and something to jazz them up a bit then you can plant them in as long as you reference them, that's what I say.' [71111, from text units 316-318]*

> *'So the lecturer obviously gave us quite a few websites to go and look up so I just started from there…progressed from there with like links to other sites. Then just copied bits of information off it, went onto Word then printed it out and then I could do anything like that I needed to with it.' [85113, from text units 14-20]*

FE students were more likely to indicate that they would interpret the information in their own words.

> *'Copied some of it on to Word and then read through some of it and just took some ideas off it.' [95113, text units 60-61]*

Online assessment was mentioned by one academic as a route forward, but more for formative assessment as:

> *'I have been considering it…and do more online, but it's quite difficult avoiding plagiarism.' [87302, from text units 246-253]*

Cycle Four (2002/2003) indicated that undergraduates were copying and pasting, and for some students this was a way of saving time in college, collecting material that could be used at home. Another student was collating information for planning a holiday – cutting and pasting being an obvious way of doing this.

136

'I cut it and copied it so that I could put it on the Word document and then I emailed it home so that I could do it at home.' [11401, from text units 47-48]

'I either printed it out directly or I copy it to a text file and print off the stuff that seemed relevant.' [117108, from text units 54-56]

'We were looking for a holiday on the internet. Something a bit different…my friend's got a place over in Italy so we already knew where we were going…Copied and pasted the pieces that we wanted, printed it off. My friend emailed me some of the information, directly from the site, and that was mainly it to be honest. [107106, from text units 12-16, 63-65]

Reinforcing the data mining of previous cycles (Section 6.7.2.1 Cycle Four report), FE students were more likely than undergraduates to stress that they rephrased what they had found.

'I copied it onto Word and then I rephrased it, read through it and rephrased it.' [114109, from text units 49-50]

'The bits I wanted, well I highlighted it all, pasted it and printed it off but when I get home I will read it properly…I didn't get pages of stuff, I just got like a page of information I'll put into my own words.' [121103, from text units 79-83]

'Yes they tell you how to put it into your bibliography properly and that it should all be properly referenced where it's come from.' [157106, from text units 76-77]

Cycle Five data provided some evidence that undergraduate students were aware that academic staff might check up on their 'copying and pasting' activities – the scare so as to cite approach. Students view the essay mills as another source of information, nevertheless.

'But I mean a lot of teachers are always quite apprehensive about us using web sites and things as you know they are quite careful to say yes go to it but the first thing we do when we mark an assignment is go to Google and type in the word that comes up with the pages so basically they say careful if you going to cite a page make sure you know who the author is, make sure you know where it's from, that it's an official source, so I'm reluctant to, I do step away from it because I think you know you don't know where the information's coming from and you know that they're going to check it. They are spot on with their don't go cutting and pasting from a different website because we'll go back and search it and all that sort of thing, so I guess they must see it all the time, so I just generally try to avoid it.' [143103, from text units 200-212]

'I'd probably start looking at some journalists, some journalist sites or something…. Sites that have like essays on journalists, like get free essays dot com… which is like quite handy for our work if you are typing a topic. I'd just research on sites like that which just try to help you and tell you about journalism.' [144107, from text units 226-236]

Academic staff were more likely to acknowledge the real problems of identifying plagiarism, and this HE academic noted that a more active approach was being taken to discussing what was correct citation practice.

'Um, No, I think one or two are using stuff that really they're not referencing and it's a bit of a plagiarism issue which we do talk about to them. I talk about to them. But actually catching them doing it is not as easy, and we're supposed to be trialling some software at the moment… And they're also bad at referencing, if you like the fine detail of referencing. They'll give you general references of sites but they won't tell you at what time and the exact page etc.… Well we have a procedure for referencing which they all get given at the start of the year. It's called [name] . And it's a book which goes through exactly how you reference

different types of material. So they have access to that. And we talk it through in lesson times as well. ' [147301, from text units 265-288]

As these FE students indicated, straight copying is seen as wrong but there was also some confusion over what is permissible and what it is not, the problems of referencing, and the implication that non-native speakers of English have particular problems.

'Another, we had to look at prices as well so I think one of the international students looked at the royalmail.com and also the newspapers, the newsandstar.com and the cumberlandnews.com and I think there was border television as well so companies that we were going to do the presentation through and suggested the company we'd use to promote themselves, so we looked at them to try and get prices and things. There was quite a lot so we had to put the research in the appendix because if we lifted anything straight from the internet then obviously we can't put it into the assignment…. I don't know, I think with the international they do have problems because they can see when they're writing the assignment when it comes to perfect English, I don't know whether people do it or not but I know they get in quite a bit of trouble if you do.' [158101, from text units 103-116]

'I mean from when I was in school, I did catering in college, so writing essays was completely, yes you just didn't do essays and you didn't have to reference things. It was more practical than anything… It's been very kind of brief. I mean I've I suppose used my initiative and gone home, looked at it and gone to human resources and said look I don't really understand what this referencing...people are talking about footnotes here and they're talking about this there and this there and you know if you quote it without using this reference...it's plagiarism. [171101 from text units 65-68, 91-96]

If academic staff, as the following extract indicates, find it difficult to extract bibliographic details from government documents on the web, then students might be expected to have problems as well.

'And in passing a couple of things on the web were reports that have been published in print format because they're Government documents and they made them freely available on the web. But what the web documents don't do is give you the proper bibliographic details. It was hard to ascertain what date the report was published or what its ISBN was which I thought was really strange because you know if you've got a printed report in your hand that's the first thing you look at.' [147301, from text units 75-83]

An American study of undergraduate citation behaviour[56] reveals that between 1996 and 1999, microeconomics students cited fewer books, but the newspaper and web citations increased. Links change, and it is difficult to know whether the links were wrong or students made mistakes when the links were checked. In 2000, 18% of the URLs cited in 199 led to the right document, and 55% of the URLs cited in 1999 led to the right document. An update[57] for 2000 showed that while undergraduates were citing more (median of 10 in 1996 to median of 13 in 2000) most of this increase comprised Web-based materials. In 2000, students were submitting electronically, and coincidentally, the number of URLs cited that led to right document increased from 55% in 1999 to 65% in 2000.

One conclusion is that electronic submission may:
- Assist in improving the quality of citations (particularly if students can easily cut and paste the URL into their text, and are aware that their URLs can be checked very quickly)

---

[56] Davis PM. Cohen SA. The effect of the Web on undergraduate citation behavior 1996-1999. *Journal of the American Society for Information Science* 2001; 52 (4): 309-314.
[57] Davis PM. The effect of the Web on undergraduate citation behavior: a 2000 update. *College and Research Libraries* 2002; 63 (1): 53-60.

- Assist in easier checking of their assignment for plagiarism of Web materials (and copying from other students).

Many VLEs/MLEs allow for electronic drop boxes for assignments, and the Open University has been doing this for years. For other departments different systems need to be put in place, as this system has an impact on the entire administration and examining process.

7 Looking to the future

7.1 Aims and objectives of roundtable activities

The aims and objectives of WP4 (roundtable) was to establish a group, preferably operating under 'community of practice'[58] principles which would represent the JISC community and stakeholder agencies (e.g. staff development agencies, LSC, representative from the relevant JISC sub-committee).
What we would expect from the round table:

- 'sounding board' when identifying new trends
- foresight and alerting function, so that the impacts of developments in one area of JISC activities can be followed through in other areas

What the round table participants might obtain was:

- early alerting of new trends
- comparison of practice across the community, particular across FE and HE
- shared ownership of the M&E framework
- sharing of experience, particularly across FE and HE

With the number of agencies that might be involved (as listed in the JUBILEE Cycle Five proposal), it needs to be made clear to potential members of the round table that participation in a community of practice can be peripheral, but that such peripheral participation is still legitimate, and useful. For representation from the JISC sub-committees it was important to include representatives from JCALT, JCIE, JCLT, and JCCS. For certain aspects, JCN and JCSR would also need to be involved.

As indicated in the JUBILEE proposal, a modified Delphi study provided the focus for a collaborative work task (therefore providing a necessary purpose for membership of the group). There should be at least two opportunities for face to face meetings of the round table, with JUBILEE responsible for one meeting and JUSTEIS another. Most of the work of the round table will be co-ordinated electronically. The use of electronic polling software tools was considered but abandoned when it was clear that further monitoring and evaluation by JISC/JCALT was to proceed in different directions.

7.2 Aims and objectives of dissemination

The aims and objectives of the dissemination work were agreed in meetings in July 2003 with the JISC Communications and Marketing Team.
At meetings on 4/7/03 and 22/7/03 plans were drawn up with the JISC Communications and Marketing team for a general framework.

The JISC communications and marketing framework focused on three levels of dissemination with corresponding outcomes (what you are expecting to happen as a result of the dissemination).
These are   CREATING AWARENESS by INFORMING
                ENCOURAGING UNDERSTANDING by ENGAGEMENT
            MOTIVATING ACTION through EDUCATION, AND DEVELOPMENT

The three main aims of the framework in terms of its impact on stakeholders are:

- to provide evidence
- to aid understanding
- to underpin development

---

[58] Community of practice: groups that emerge around a discipline or problem, with an emphasis on learning from other members of the group – social learning. See also White, Martin. 2001. Communities of practice. *Freepint*, no. 291101: http://www.freepint.com/issues/291101.htm#feature

	INFORM Evidence	ENGAGE Understanding	ACT Development
Staff developers			√
Libraries			√
Academics (lecturers)			√
JISC	√	√	√
Services	√		
Strategic thinkers	√	√	

Table 7.1 Dissemination strategy matrix

Immediate tasks to be done under the 'evidence to inform' were:
- Press areas on websites
- Placed articles – e.g. THES, TES (could use the same material as on the press areas)
- Executive summaries (updating previous) – wider audience? (the emphasis has to be on minimising the production of new material, so thinking about the wide audience in advance is important)
- Precis document about the framework (the 'W' words – what it is, why, where it's going etc.)
- Future JISC work areas document

Immediate tasks under the 'engage to aid understanding' were:
- identify core events for the audience (RSC events for senior management, use of JISC InfoNet, find opportunities for speakers/dissemination, JISC conference)
- round tables
- make slot for update documents for JCALT (each meeting?, first to be done for Feb 04)
- slots at conferences (ALT-C)
- ICT workshop in October 03

Immediate tasks to support 'action and development' are:
- information for HESDA and HESDA Web
- case studies (e.g. Ferl)
- JISC Info-kits for staff development (JISC InfoNet to develop?)
- RSCs and FE library events

Later, but probably require planning now:
- UCISA/Umbrella/CILIP, IFLA, CoFHE, U&CR group – newsletters, conferences
- e-Learning events
- M&E dissemination event
- e-Literacy/information literacy events

These tasks were modified to meet the needs of the planned changes in the JISC monitoring and evaluation strategy.

7.2.1 Operational plans for dissemination

The JUSTEIS team chose to focus on the following in Cycle Five:

- production of a response to the e-learning strategy consultation (See Appendix 1.1)

- dissemination of briefing papers (see http://www.justeis.info)

- preparation of case study dissemination for ferl (Appendix 7.1)

- dissemination at various events / different audiences (ALT-C, Library Association etc)

  - CILIP Wales flyer (Appendix 7.3)

- web site development

- preparation of papers on information literacy (in preparation)

- collaboration with RSCs

7.2.2 Visibility of the JUSTEIS work

It will take time for the research to be cited in publications elsewhere but we are happy to note that the JUSTEIS project work has been cited in several major reports and publications including:

Cox A, Yeates R. *Library orientated portals solutions.* TSW Report TSW 02-03, Report to JISC, August 2002.

Griffiths JR. Evaluation of the JISC Information Environment: student perception of services. *Information Research* 8 (4) (2003) http://informationr.net/ir/8-4/paper160.html

Tenopir C. *Use and users of electronic library resources: an overview and analysis of recent research studies.* Council on Library and Information Resources, Washington, DC, August 2003.

Davis PM. Information seeking behavior of chemists: a transaction log analysis of referral URLs. *Journal of the American Society of Information Science and Technology* 55 (4) (2004), 326-332.

7.2.3 Future plans for dissemination

As Cycle Five is the last cycle for the JUSTEIS work, the team agreed that it made sense to wait until the Cycle Five data was in, before finalising some of the summative reviews of the trends over the five cycles, and final reflections on the methodology.

Papers in progress include:
The evidence for information literacy among further and higher education students in the UK

Adding value to higher education library web sites (revised version of conference presentation to LIDA, 2003)

7.2.4 Mapping to other electronic library evaluation initiatives

The eVALUEd conference on 16 June 2004 (see report at Appendix 7.4) presented current work on the following projects:
- eVALUEd
- LIRG/SCONUL IMPACT project
- E-measures
- ProjectCOUNTER

It had been the intention that JUBILEE and JUSTEIS would submit a paper – in the end JUBILEE took the decision to submit a paper to the conference on their own, as a member of the JUSTEIS was in fact involved with another presentation. Unfortunately, the JUBILEE presenter was ill on the day of the conference.

The themes in the presentations and the workshops map to JUSTEIS work in the following ways:

Conference theme (eVALUEd)	JUSTEIS contribution
Importance of consultation with users, and qualitative evaluation	Qualitative evidence has been a trademark of JUSTEIS work, particularly interviews with students which is unusual among most electronic library evaluations
Correlating greater EIS use with LIS support to academic staff	Reports have provided evidence of this as an important, though complex, part of the information literacy support. This report provides evidence (and further discussion) of the issues (Section 6.2)
The need for a more focused approach – fighting a way through complexity	See discussion of the case study evidence (Section 5)
'Telling the story' is important	JUSTEIS – and the reports – provide a unique repository of the story of EIS use in UK further and higher educational institutions from 1999-2004.

Table 7.2 Mapping of eVALUEd themes to JUSTEIS research evidence

7.3 Roundtable discussion

7.3.1 Roundtable preparations

Prior to an initial face to face meeting of roundtable participants in London in December 2003, both JUBILEE and JUSTEIS teams co-operated on the development of a summary document on the framework and development of a questionnaire which was sent out to participants.

JUBILEE made the final arrangements for distribution of the questionnaires, and the summary document, and the arrangements for the meeting.

The Precis document prepared by JUSTEIS (Appendix 7.2) stressed the change in confidence in use of EIS among students, but also the problem of organisational change required if e-learning, and VLEs (in particular) are to proceed effectively.

7.3.2 Roundtable meeting

The presentation given on behalf of JUSTEIS is shown in outline powerpoint format in Appendix 7.5. The main themes stressed were:

- The size of the dataset for JUSTEIS – particularly the number of student interviews obtained. No other evaluation project elsewhere in the world has this amount of qualitative data on student information behaviour

- A question over the Internet as panacea to all searching problems, as the vignettes showed that students still used their textbooks to solve routine searching problems for their studies

- FE students fast catching up with HE students

- Students use publishers' sites (e.g. Synergy) as they might have used bibliographic databases in the past

- Debate about the rate of progress to an electronic library – some library managers see a shift to greater use of EIS, others don't.

- Students are not sold on 'quality of information' – their criteria are currency, demonstrably reliable information, authoritative (recommended by their tutors) – but principally the EIS must save time compared with the alternatives

- Undercurrents – need more evidence on

  - VLEs – do they help information literacy or not?

  - SCONUL information literacy taxonomy – real or too ideal?

  - ECDL versus Key Skills in FE? In HE – Key Skills increasingly like the Heinz 57 varieties and it is hard to see where information skills fit in precisely – maybe they can't.

- E-learning – how will the change in culture be recognised? From class contact hours to a different business model for assessing the teaching contribution? How will e-learning support staff fit in and where will they come from?

7.3.3 Roundtable discussion groups

The results of the discussion groups are presented in 'rich picture' format as that summarises the views of the groups most effectively.

ROUNDTABLE DISCUSSIONS

Personalisation: Individual choice *versus* institutionally-led profiles

ACCESS

Single entry point *versus* multiple

Normal Internet use *versus* 'formal learning' approaches
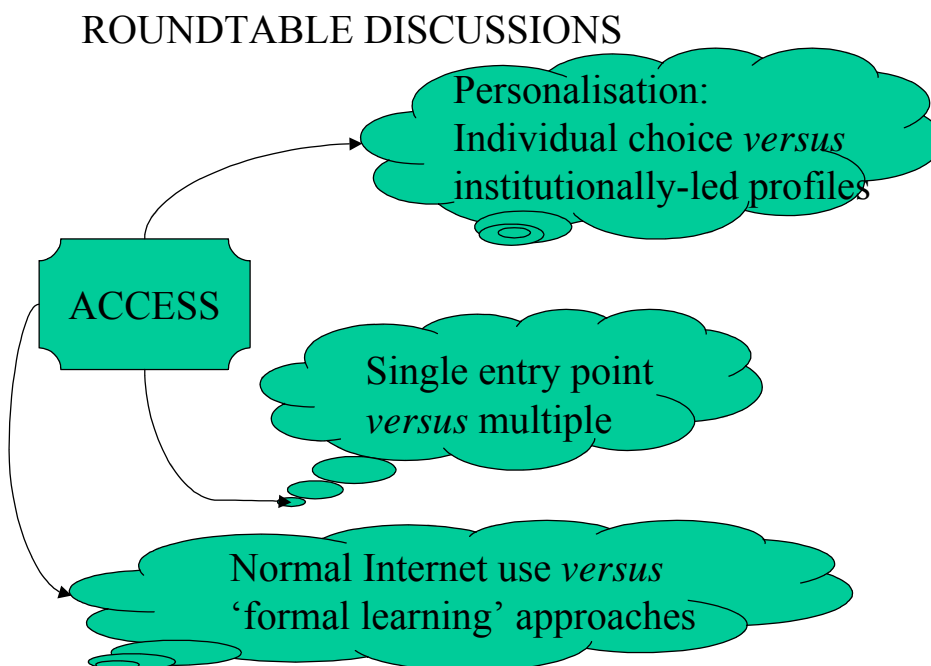
Figure 7.1 Problem issues with access

7.3.3.4 Access

The group discussing Access issues identified the following problems:

Individuals might like to personalise their own 'learning portal' provided via the VLE or MLE – but it might make sense for institutions to offer a limited range of styles to ensure that everyone benefited to some extent.

How many entry points are desirable? A single entry point might make sense for first year undergraduates perhaps – but postgraduates, final year undergraduates might like several entry points to the EIS on offer.

How can students' normal Internet use be taken into consideration for the design of formal learning situations? How can students be guided into using the more specialised resources, almost without realising that they are being led away from the default search engine search?
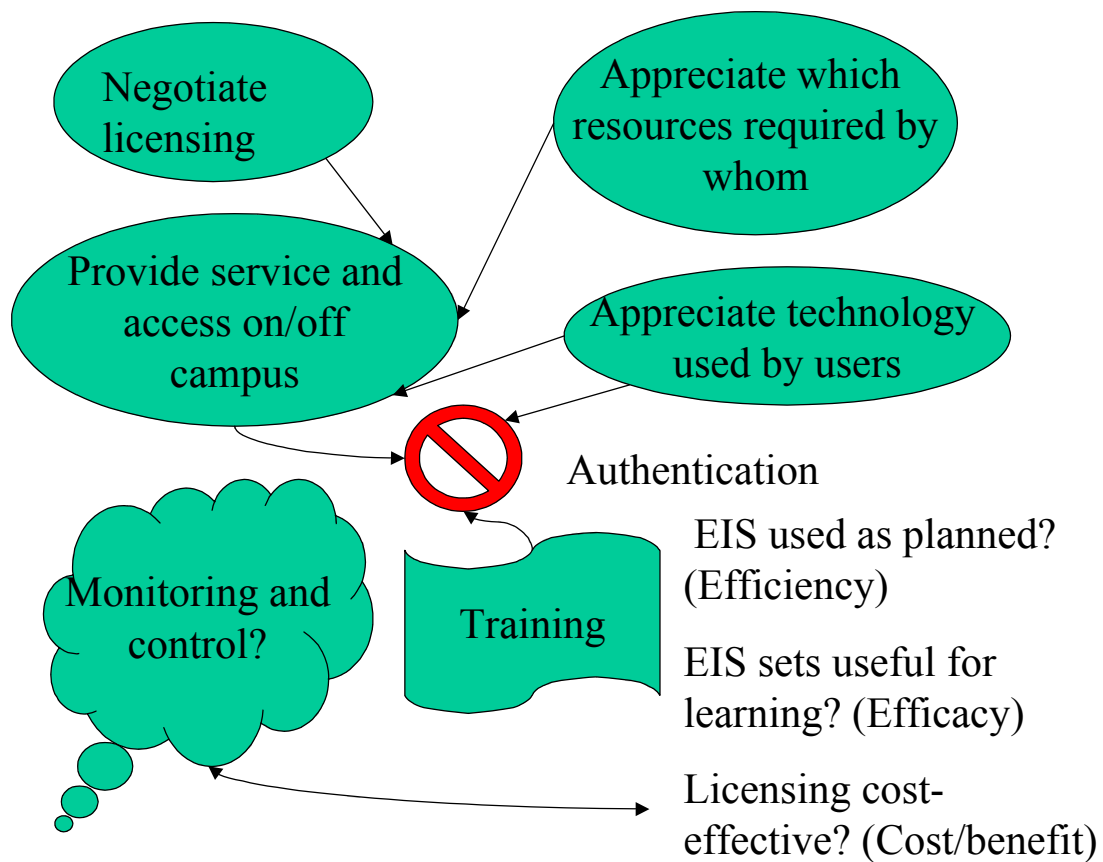
Figure 7.2 A systemic approach to access issues

Trying to look at this in a more systematic manner, to move from problem to solution, can be done using a soft systems approach. Figure 7.2 illustrates what has to be done to ensure not just that access problems are resolved but to solve the real problem of getting the right electronic resources to the users as the time and place required. From the roundtable discussions, a root definition of the problem situation would be:

> *Licence negotiation of appropriate resources for the users in the institution, and provision of physical access to these resources as and when required, with provision of any support and training necessary.*

The working root definition of the system can be checked using the CATWOE mnemonic.
The **Customers** are the registered members of the institution – students and staff.
The **Actors** are the publishers providing EIS material and Information Services in the institution.
The **Transformation** concerns the processing, collation and siting of EIS materials purchased (via licence agreements) for access by registered institutional members (staff and students).
The **Weltanschauung (world view)** is that such materials are part of the expected central provision of library resources for staff and students, and that they are used for learning and research purposes, and supplied as such by publishers who expect a financial return for their services.
The **Owners** of this system are the institutions who fund the licences.

The **Environmental factors** include the fragility of the publisher / institutional relationship, the rise in prices of some EIS, and the support offered by JISC through model licences, and consortial deals. Other environmental factors include the growth of home-based access to the Internet and the subsequent demand for hall and home-based access to institutional learning resources.

As far as the publishers are concerned there is a need to ensure that only those who have paid directly or indirectly for the services are provided with the service.

Checkland proposes that the various 'E's of the system provide some useful evaluation perspectives.

For example, is the system **efficient**? Are the inputs (EIS from publishers) translated into outputs used by staff and students (registered users)?
Is the system **efficacious**? Is provision useful for the users – do the resources help in learning and research, and do the users perceive them to be useful in their work?
Is the system **effective** ? Are the costs to the institution of the money spent on licences and making the resources available for home-based access justifiable in terms of benefits, and how would the benefits be quantified?

To these three E's, later work by Checkland and others has added:
Ethics – is the system ethical? Publishers, working on behalf of authors wish to ensure that they obtain a fair deal for the services offered. Institutions – and many of the authors work in the institutions – wish to ensure that all the users who need access to resources are treated in an equitable manner.
Economics – does the system work well from the business perspective? Is this more effective, for example, than a system in which researchers and other authors simply self-archived papers on their own web sites? Is the publisher's product, and the costs involved in generating the added value, reflected justifiably in the price, and is the consumer prepared to pay that price – does supply meet demand?

Monitoring of the system requires consideration of the 'E' issues, and an appreciation of the control and feedback in the system. For example, if home based access became the main route of access to resources, that requires (possibly) more effort by the institution to understand the problems and opportunities involved, and that may result in a different approach to authentication to be used, different training and support, and – if extra costs are to be incurred – then that has to be set against demands by publishers for higher fees in view of the greater use.

7.3.3.4 Training

The group discussed various problems and opportunities for training in IT and information skills among students (Figure 7.3). Debate focused on four main issues:

- Student perceptions (and mis-perceptions) of their own competence. Confidence in doing a web page does not necessarily translate into searching a wide range of EIS effectively.

- Persuading students that the basic skills level – first year foundation IT, for example, or Key Skills 2- is not sufficient and that they need to go beyond ECDL, for example, in applying the appropriate e-literacy for their discipline.

- Individual learning styles vary, the ways of thinking and practice in different disciplines vary, and the approaches to learning, and teaching in different disciplines vary. Ideally, students should be introduced, through teaching and learning methods that match the ways of thinking and practice adopted in the discipline, to appropriate ways of learning that they can adapt to suit their own cognitive styles. Institutionally there will be differences in the learning and teaching strategies that need to be adopted by different departments.

- How do tutors and LIS staff know what training is suitable for information skills support/e-literacy support? Is this part of an institutional framework for 'professional skills', or 'employability' skills? Where does e-literacy or information literacy fit?

Figure 7.3 Training issues

The group concluded that the main issues, the burning issues at present, were:

- Getting a strategic lead – the institution has to agree to the importance of information literacy as part of the learning and teaching strategy, and recognise the role LIS staff can play

- Personal development plans – LIS staff need to be involved in the institutional work on personal development plans for students

- Student needs should guide the development of strategies

Of secondary importance, the smouldering issues were:

- Encouragement of e-literacy in a variety of ways – e-literacy is wider than information literacy and students need to develop a wide range of evaluative and technical skills

- Evaluation skills need to be encouraged, and such appraisal skills need to be practised – a 'one-off' teacher-led session won't work

- Using VLEs in the right way – which is the right way?

Finally, some institutions are working out appropriate ways of introducing more formal recognition of external schemes such as:

- ECDL (and should this be for all students? Left to departments to decide?

Figure 7.4 illustrates how the various components of the training system fit together.

The **Customers** of the training system are students – and the tutors.

The **Actors** are the LIS staff, and staff development (or equivalent role, such as ILT champions in some institutions).

The **Transformation** involves the acquisition of relevant information and IT skills by students, through the support, training and informal encouragement offered by LIS staff working on their own or in collaboration with teaching staff.

The **Weltanschauung (world view)** is that information skills are key to lifelong learning and employability for all students leaving the institution.

The **Owners** of the system are the institution, through the learning and teaching strategy and how it is implemented.

The **Environmental constraints and opportunities** concern the different disciplinary approaches to information and IT skills, time constraints for students and staff, political initiatives concerning widening participation, employability of graduates.

Figure 7.4 Components of training
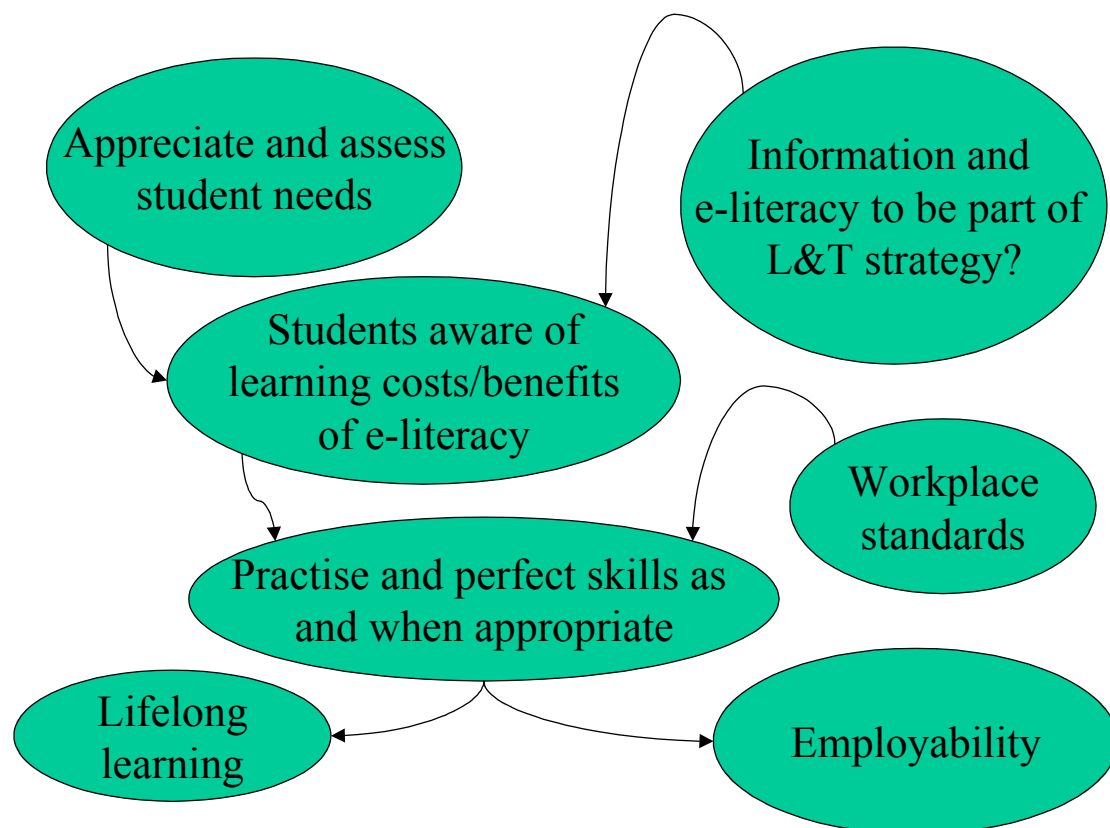
A closely related issue to training is that of 'integration', ensuring that EIS are integrated into teaching.

The discussion group concluded that the main issues, the burning issues were:

- joint working of academic and academic support staff (the LIS staff), particularly on the VLEs.

The smouldering issues were:

- VLEs – where next? Are they developing, and if so how?

- Training for support staff – both in teaching and in e-learning techniques and methods

- Certification of training

The longer-term, smoking issues are:

- Culture and disciplinary differences – working with these

- Differences in approaches to innovation among teaching (and support) staff

- Getting and keeping mutual respect across teaching/support staff

- Quality reviews and the expectations of LIS staff and services

- Strategies for e-learning in individual institutions.

Figure 7.5 Joint working influences
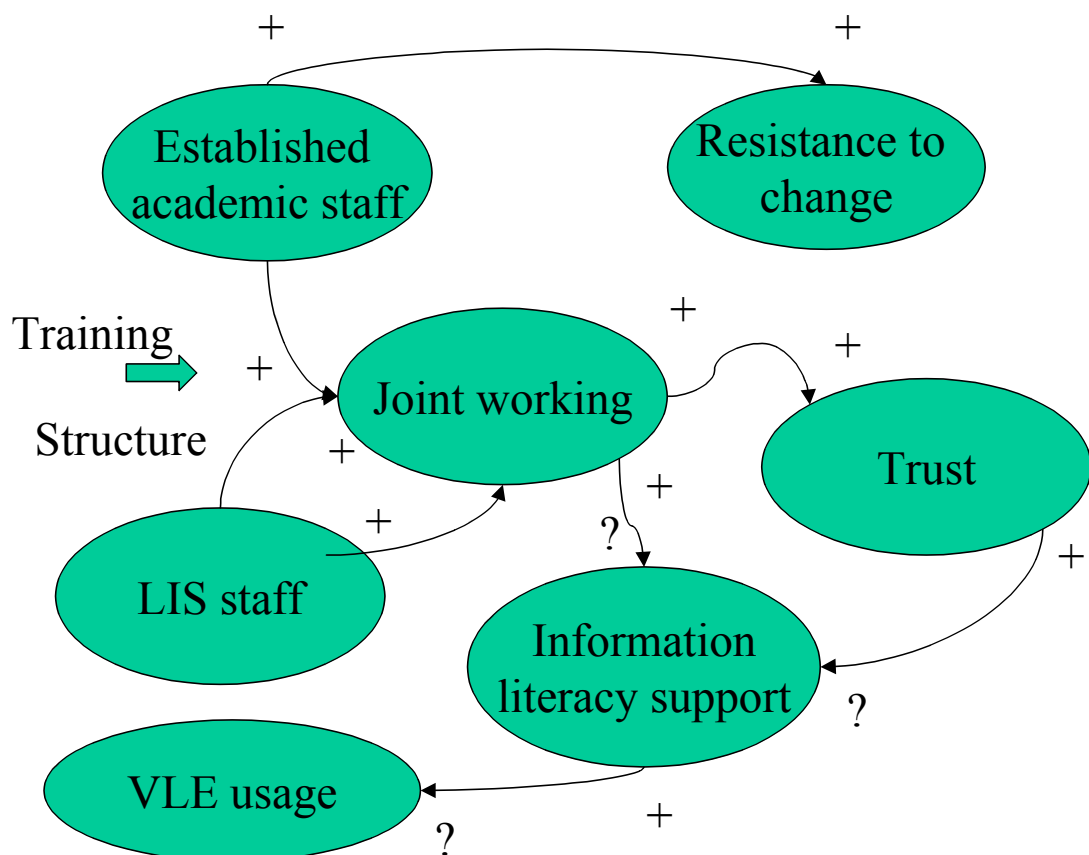
Figure 7.5 illustrates some of the influences and forces at work. The more established the staff the more resistant (on the whole) they are to change their ways of teaching and that

will include VLE development. Provided there are suitable training or teaching and learning policies and procedures in place, established staff may co-operate in joint working with LIS staff. The more such co-operation takes place the greater the trust. What is less clear is whether the joint working on information literacy support will result in more effective VLE usage by students, and whether trust is a key component of developing information literacy support packages – given the disciplinary differences in the type of information skills required.

7.3.3.6 Liaison

The group discussing liaison considered some of the mechanisms which might support joint working between academic and LIS staff, the relations between FE and HE, the organisation of teams within LIS, and the links between institutions and the Regional Support Centres, for example.

The analysis of the group discussion is best presented as a force field analysis, identifying the levers for greater liaison, and the barriers to greater liaison. The group also identified how some of the levers could be increased, and the barriers decreased.

Lever for greater liaison	Could be increased by…
Lifelong learning	More joint FE-HE project working
Evaluation of the LIS contribution to student skills	LIS staff attending student project presentations More knowledge about student coursework assessments
Publisher commitment and help with promotion of resources	More direct targeting of staff – more 'enthusing'
More – and better feedback from publishers to LIS, from academic staff to LIS, from students and staff to LIS	Standards and structures which promote this efficiently
Requirement for part-time and distance learning, e-learning as part of the widening participation agenda	LIS offering support which would aid student learning, increase student retention by fostering independent learning
Forces against greater liaison	**Could be decreased by…**
Academics view persuasion by LIS of the importance of information skills as an insult	LIS staff appreciating how information literacy is interpreted within the various disciplines – e-literacy rather than just information literacy
Lack of time and competing priorities	Information literacy/e-literacy needs to be sold as part of the existing learning /teaching strategy – benefits to be made more apparent.
Breaking established searching habit	More links between schools, FE and HE librarians to assess how information skills might progress, foster helpful attitudes to lifelong learning
LIS staff not involved in assessment	Participation where possible (see above section on attendance at project presentations

Table 7.3 Levers and barriers to more effective liaison

7.3.3.7 Branding of the monitoring and evaluation activities

The group identified the various products from the JUSTEIS and JUBILEE projects:
- Longitudinal data
- Cross-sector sample surveys
- Trend-spotting

- Baseline data for several sectors
- Summary reports
- Toolkit

Opportunities existed in:
- Sharing information
- Pulling in other surveys (to add context)
- in order to
- Provide benchmarking data
- Evidence of good practice for particular situations

Institutions needed, or are likely to need:
- Information e.g. about VLE development, to avoid unnecessary risks and safeguard their investments
- Other information and evidence to justify decisions made, or about to be made
- Evidence of impact of EIS on learning

This could require:
- Consultancy type activities
- Tailored data extraction
- Strong customer focus (integrating with customer's own data, for example)
- Segmented reports

A commercial service is likely to possess the most of the following features:
- Web site with tasters, news, Q&A to invite interest
- Subscription service – provision of regular updates
- Journal
- International dimension
- Networking – to bring people together (face to face and virtually?)

Opportunities and levers occur through:
- Lifelong learning policies
- E-learning strategies
- New markets in learning centres
- Working with new staff, research students to develop innovative approaches to e-learning and its evaluation
- Liaison with new customers – corporate universities, public libraries and learning centres

Appendix 2.1 JUSTEIS 5 – HE sample by institution

	Pure & Applied Science	Maths & Engineering	Pure & Applied Social Science	Humanities & Arts	Clinical Medicine
Bolton Institute of HE **7**			Sports & Leisure Management		
U.C. Chichester **9**				History	
City University **2**		Civil Engineering			
Cranfield University **8**	Bioinformatics (MSc only Silsoe campus)				
University of East London **6**					Podiatric Medicine
University of Glasgow **1**				Theology & Religious Studies	
University of Gloucestershire **6**			Human Geography		
University of Huddersfield **3**		Automotive Engineering			
Imperial College **4**	Chemistry				
Keele University **5**					Physiotherapy
Liverpool John Moores University					

3					Nursing (Adult & Child)
LSE **4**			Social Policy & Sociology		
Luton University **6**		Software Engineering			
University of Manchester **1**		Aerospace Engineering			
University of Nottingham **1**					Neuroscience
North East Wales Institute of HE **7**				Animation	
Queen Margaret U.C. **9**			Psychology		
Reading University **5**				Modern Languages (French)	
Royal Agricultural College **10**	Agriculture (Organic)				
University of Salford **2**	Biological Sciences				
Sheffield Hallam University **3**			Applied Social Studies		

Appendix 2.2 List of HEIs in sample

Bolton Institute of HE

U.C. Chichester

City University

Cranfield University

University of East London

University of Glasgow

University of Gloucestershire

University of Huddersfield

Imperial College

Keele University

Liverpool John Moores University

LSE

Luton University

University of Manchester

University of Nottingham

North East Wales Institute of HE

Queen Margaret U.C.

Reading University

Royal Agricultural College

University of Salford

Sheffield Hallam University

Appendix 2.3 JUSTEIS 5 HE sample by subject discipline

Pure & Applied Science

Cat.2 University of Salford	Biological Sciences
Cat.4 Imperial College	Chemistry
Cat.8 Cranfield University	Bioinformatics (MSc only, Silsoe)
Cat.10 Royal Agricultural College	Agriculture (Organic)

Maths & Engineering

Cat.1 University of Manchester	Aerospace Engineering
Cat.2 City University	Civil Engineering
Cat.3 University of Huddersfield	Automotive Engineering
Cat.6 University of Luton	Software Engineering

Pure & Applied Social Science

Cat.3 Sheffield Hallam University	Applied Social Studies
Cat.4 London School of Economics	Social Policy & Sociology
Cat.6 University of Gloucestershire	Human Geography
Cat.7 Bolton Institute of HE	Sports & Leisure Management
Cat.9 Queen Margaret U.C.	Psychology

Humanities & Arts

Cat.1 University of Glasgow	Theology & Religious Studies
Cat.5 Reading University	Modern Languages (French)
Cat.7 North East Wales Institute of HE	Animation
Cat.9 U.C. Chichester	History

Clinical Medicine

Cat.1 University of Nottingham	Neuroscience
Cat.3 Liverpool John Moores University	Nursing (Adult & child)
Cat.5 Keele University	Physiotherapy
Cat.6 University of East London	Podiatric Medicine

v.1 **RET 15th September 2003**

Appendix 2.4 Interview schedule for undergraduates and FE students

N.B Format has changed from that used in the original

Code No.

JUSTEIS Survey instrument (Strand A)

9th October 2003

Project authority
This research project is being conducted on behalf of the Joint Information Systems Committee (JISC) of the Higher Education Funding Councils, and your department has given us permission to survey a small sample of staff and students.

Purpose of project
We are surveying patterns of use of electronic information services by students, academics and librarians across all sectors and disciplines within Higher Education and Further Education in the UK, in order to inform JISC about likely trends in the use of electronic information services of all varieties.

Why you have been chosen
A sample of different types of university and, within them, departments representing various academic disciplines, has been chosen at random. Within your department you have also been chosen at random for interview.

Anonymity
All the information you give us will be treated confidentially; no individuals, departments or universities will be identified in our results and we will report only overall trends and statistics.
All interviews will be anonymous and personal data removed at the transcription stage. The data will then be kept securely, only as long as necessary for the analysis and reporting.

Welcome and introductions.

Any questions?

Explain recording method(s)

Interviewee Informed Consent Signature:

I agree that the data I have provided may be used by the JUSTEIS team, on the conditions explained to me, as outlined above.

Name	

Q1 Check that basic details are correct

Sex	Male ☐1				Female ☐2	98 NA		

Age	under 20 ☐1	20-29 ☐2	30-39 ☐3	40-49 ☐4	50-59 ☐5	60 & over ☐6 98 NA

Access to University networked computers access	At college ☐1	At term-time address ☐2	Own ISP at term-time address ownsip ☐1 98NA

Current Department / School	univdept	98NA

stutype
STUDENTS

Full-time ☐1	Part-time ☐2	Distance/Open learner ☐3

status Undergraduate ☐1	status FE Student ☐2	Year of study	1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ year

Degree First Degree ☐1	HND ☐2	HNC ☐3	BTEC or EDEXCEL Nat. Diploma ☐4	GNVQ ☐7	AVCE ☐5	ACCESS to HE ☐6

status Postgraduate ☐3	Taught Masters ☐7	Taught MA/MPhil/PhD ☐8	PhD/Mphil/MA by Research ☐9
	HE Diploma ☐10	PGCE ☐11	

Current Course name	course	98 NA

Residence	On Campus ☐1	Off Campus ☐2	98 NA

staftype
STAFF   98
NA

Type	Academic staff ☐1	Research contract staff ☐2

Employed	staftime Full-time ☐1	Part-time ☐2

Main teaching & research areas	subject 98 NA	

If you wish to be entered for the prize draw, please fill in your contact details below.

Contact Details	
Name:	
Tel. No:	Email:

158

Q2 Can you think back to a recent occasion when you needed to find information that involved you using a networked computer, or one connected to the Internet?
Think about what you have done in the last day or two or over the past week.

Prompts:
professional, academic, personal
can be informal or formal
simple to complex
sources: local, national or world, CD-ROM, Internet search, Web pages, database, dataset, databank, online texts...

We now need as much detail as you can remember about what you did, please

Prompts:
what source(s) and service(s) did you use?   Sused

what led you to use this source? e.g. was this prompted by someone's suggestion (lecturer, peer, colleague), prompted by reading about this resource? where?   Ssguide
        prev ex 1 tutor 2 friend 3 read 4 course 5 lib advice 6 reading list 7 other 8
were there alternative sources you might have used – manual or otherEIS?   Saltern
        no 2 yes 1
where was the computer workstation which you used? e.g. office, home/room, library, public workstation room, laboratory   swhere
        college 1 own 2
did you ask anyone for help? friend, colleague, help desk, library staff   shelp
        friend 1 library/IT staff 2 tutor 3 other 4
was it a one-off / on-going?   Surgent
        urgent 1 ongoing 2
how much time did you spend on this?   stime

Were you aware of using more than one source, moving from one to another? e.g. clicked on link from bib. reference to go to full text of article, from website to website, from search engine results to website

PLEASE ENSURE ALL THE ABOVE ARE ADDRESSED

Q3 Why did you need this information? What were you trying to achieve?
what did you do with the information? Will it have another use later on? e.g. use in research paper, lecture, assignment, dissertation etc.

Purpose/Reasons for use   spurpose

Coursework (assignment, essay, project, class/seminar preparation or presentation, lab report, background reading, teaching preparation)
Job (project, routine, procedure for work) – PT /DL/FE students only
Final project/Dissertation/Thesis
Proposal for funded research or project
Bibliography or reference checking – PG Research/Staff only
Article or report for publication – PG Research/Staff only
Job search or application
Business travel
Leisure (leisure travel, online shopping, societies, social clubs)
Planning a college event
Administration (student records) – Staff only
Other

Q4 Did you find the information you wanted or are you still looking?   *Sfound*
        No 2 Yes 1 Some 3
Prompts:
question modified   sxmq
        No 2 Yes 1
question answered
abandoned   stopt
        No 2 Yes 1
delegated the process   sdeleg
        No 2 Yes 1
successful - how success measured? Scale success 1 - 5   Satisfy
(effectiveness of search; degree of satisfaction with results)
        dissat 12345 satis
any problems? e.g. availability, content, completeness, currency, timeliness, accessibility, format, accuracy, quality, convenience, effort of use, procedures and policies (e.g. needed password)   sprobs
        No 2 Yes 1

Q5 What type of searches of electronic information sources do you usually do?   *Soften*

No 2 Yes 1
was this unusual or something done regularly?

Thank you. Now we'd like to use a slightly different approach, by looking at factors that affect what you are currently trying to achieve on professional, academic and personal fronts.

Q6 What do you need to sort out over the next 6 months/year? What do you need to accomplish/prioritise?
e.g. professional, academic, personal; this term/semester/academic year
marking, completing coursework, securing finance, buying goods, booking holiday, research funding, writing papers, contacting friends, etc?

Q7 What are the main factors/issues that are likely to ensure you successfully accomplish these – sort them out?
identify a limited number of areas in which satisfactory results will ensure success; vital factors only, core issues

Q8 What information do you need to help you achieve these objectives?
relate to factors, emphasis on electronic information

Q9 How much information skills / information retrieval training have you received in college?   *skilearn*

Prompts:
this could be part of the course given by tutors   3
this could be part of the course but instruction given by information
 services/IT/Library staff 2
Library/IT induction/Key Skills/Basic Skills   1
specialist training from external consultants   4
online teaching/VLE/MLE software
what did the training cover?

Q10 What electronic information resources are important to you for your studies or work? What can't you do without?   *sneed*
do you need to access other electronic information which is not presently available to you?
are there other sources which you have heard about and intend to look at/use sometime?
what electronic information services/sources do you regularly use?   sfrequse

Q11 How much texting or internet searching do you carry out with a mobile phone?
Is the phone a WAP phone? Do you do more texting than emailing?

Use prompts from short list as necessary (see EIS checklist)

Thank you very much for your time. The results of our research will be published ...

EIS checklist

Regular Use	always get as much detail as possible	Code

Email
 	
Mobile phone texting
	discussion list, news group/VLEs
	professional/academic use
	personal email
	texting
		%em
		    ⇨
		 ⇨
		%ema
		    ⇨
		 ⇨
		%emp
		    ⇨
		 ⇨
		%txting
		    ⇨
		⇨

own HEI website or services	student records/timetables
	local information
	lecture notes/lecturer's web
	home pages
	courseware/VLEs
		%stad
		    ⇨
		 ⇨
		%loinf
		    ⇨
		 ⇨
		
		%lhp
		    ⇨
		 ⇨
		%crw
		    ⇨
		 ⇨

library catalogues	own HEI OPAC
	library subject tree/subject index
	other HEIs
	COPAC/BL/other
		%opac
		    ⇨
		 ⇨
		
		%subtr
		  ⇨ ⇨
		%oheis
		    ⇨
		⇨
		%othlib
		    ⇨
		⇨

electronic journals/emonographs/ etextbooks	single ejournals – CDRom or web collection
	
	ebooks
	ereference material
		%ejs
		    ⇨
		 ⇨
		
		%ebks
		    ⇨
		 ⇨
		%erefs
		    ⇨ ⇨

Internet/WWW	search engine(s) bibliographic (*explain*) databases – (WOS, BIDS)	%sengs ⇨ ⇨

WAP Mobile phone	RDN - gateways/portals other sites using WAP phone sites	%dbs ⇨ ⇨ %gtwy ⇨ ⇨ %intoth ⇨ ⇨ %wap ⇨ ⇨
CD-ROM	networked stand alone	%cdrom ⇨ ⇨
Statistical or numeric or scientific datasets, text archives	local other	%stats ⇨ ⇨

Interviewer's checklist

Question		Tick
Q1	Base data	
Q2	EIS service and sources used	
	Why choose this source?	
	Alternative sources?	
	Location of computer workstation used	
	Asked others for help?	
	One-off or on-going search?	
	When start / complete search?	
	How much time spent?	
	Awareness of moving from one source to another	
Q3	Why needed information?	
	What trying to achieve?	
	What did with information?	
	Use information again later?	
Q4	Found what wanted or still looking?	
	Effectiveness of search, satisfaction with results	
	Any problems?	
Q5	Usual type of search?	
	What types of searching usually?	
Q6	Objectives/priorities?	
Q7	Vital factors/issues to succeed?	
Q8	Information needed to help achieve objectives?	
Q9	Information skills training received?	
Q10	Important EIS, can't do without?	
	Access to others not currently available?	
	Intend to use others?	
	EIS used regularly (*prompts*)	
Q11	Use of mobile phone for texting or searching?	

v.2 RET 9nd October 2003

Appendix 2.5 HE Vignettes

HE Vignettes for JUSTEIS 5

Pure & Applied Sciences

Physics.

HE: You need to find background information for an essay on general theories within astrophysics. Where would you look for this information?

HE: You have been asked to describe, using suitable physical examples, how Cartesian and polar co-ordinate systems are used to represent quantities that vary in 3-dimensional space.

Human Sciences.

HE: You've been asked to write an essay on theories of Human Evolution; where do you look for this information?

Pharmaceutical Sciences.

HE: You've been asked to find information on current research and trials of various drugs; where do you look for this?

Chemistry.

HE: You've been asked to look up information on various methods of making alcohol; where do you look for this?

Forensic Science.

HE: You've been asked to look up recent uses and findings of echo correlation analysis. Where do you look for such information?

Agriculture & Animal Science.

HE: You have been asked to write an essay on agricultural policies and their effects; where do you look for this information?

HE: You have been asked to write about any theories on animal rearing/husbandry; where do you look for this information?

Bioinformatics.

HE: You need to explain the approaches and methodologies used for genome sequencing. Where do you look for information to help you?

Biology.

HE: You have been asked to make a comparative study of human evolution hypotheses; where do you look for this information?

HE: You have been asked to write an essay on the effects of current speed, nutrients and light on the development of biofilms in streams and rivers; where do you look for information to support your essay?

Toxicology.

HE: You've been asked to write about indicators and effects of ethanol intoxication. Where do you look for information to help with this?

Ecology.

HE: You need to find information on hybridism; where do you look for this information?

HE: You have been asked to explain why the soil concentration of crude or fuel oil contamination largely determines the nature and extent of its effect, and the need for active remedial treatment; where do you look for this information?

Genetics.

HE: You've been asked to write about the human genetic code; where do you look for this information?

HE: You have been asked to describe the various types of chromosome mutation, showing for each how the phenotype may be affected; where do you look for this information?

Environmental Biology.

HE: You have been asked to find information on various ecosystems and their differences; where do you look for such information?

HE: You have been asked to write an essay on algae and environmental monitoring; where do you look for information to support this?

Maths & Engineering

Electronics.

HE: You have to conduct a seminar on the design of microprocessors; where would you look for supporting information?

Mathematical Sciences.

HE: You have been asked to describe the ideas that have lead to the Poisson distribution being used as a model for randomness; where do you look for this information?

Information Systems & Mathematics.

HE: You've been asked to explain the link between Boolean algebra and computers; where do you look for this information?

Agricultural Engineering.

HE: You have been asked to compare the thermodynamics between high temperature air and ambient air-drying of grain; where do you look for information to support this?

Computer Science, Software Engineering & Information Systems.

HE: You have been asked to present a seminar on systems analysis covering soft, hard and object orientated analyses; where do you look for information to support this seminar?

HE: You have been asked to explain the advantages and disadvantages of ADSL and how it is claiming higher bandwidths than ISDN for Internet access; where do you look for information to support this?

Aeronautical, Civil, Automotive & Mechanical Engineering.

HE: You have been asked to discuss thrust and propulsion and the dynamics of flight; where do you look for information to support your discussion?

HE: You have been asked to find research evidence of fire safety engineering in concrete; where do you look for this information?

HE: You have asked to compare and contrast the pros and cons of stepless and conventional gearboxes. Where do you look for information to help you?

HE: You have been asked to lead a seminar on the laws of thermodynamics; where do you look for information to support your seminar?

Materials Science.

HE: You have to take a seminar on the corrosion and mechanics of materials; where do you look for information to support this?

Sports Technology.
HE: You've been asked to talk about the principle of Conservation of Energy and how it applies to a squash ball being hit by a racquet. Where do you look up this information?

Pure & Applied Social Sciences

Human Sciences & Applied Social Sciences.

HE: You need to gather information on attitudes towards ethnicity and nationalism in the UK; where do you look for this information?

Human Geography.

HE: You are asked to choose some population theories and justify their importance in explaining the experiences of population and economic growth. Where do you look for information on this?

Sociology.

HE: You have been asked to discuss the historical development of social theory; where do you look for information to support your discussion?

Social Psychology.

HE: You have been asked to discuss how various psychological paradigms apply to working conditions and organisational structures; where do you look for information to support your discussion?

HE: You have been asked to find research evidence on the effects of group processes on different types of demeanour; where do you look for this information?

Economics.

HE: You have been asked to discuss the main macroeconomic policies facing the UK; where do you look for information to support this discussion?

Psychology.

HE: You have been asked to look for research evidence on treatments for children with non-compliant behavioural problems; where do you look for this information?

Geography & Environment.

HE: You have been asked to critically assess Wilfred Owen's assertion that for every transport problem, there is likely to be a non-transport solution; where do you look for information to support your assessment?

HE: You have been asked to discuss how the continental tropics were affected by climatic changes during the last 18,000 years; where do you look for information to support your discussion?

Cultural Studies.

HE: You have been asked to discuss whether or not the term 'popular culture' can be easily defined; where do you look for information to support your discussion?

Law.

HE: You've been asked to write an essay on the Sale of Goods Acts, using recent instances of the application of consumer law; where would you look for this information?

HE: You have been asked to discuss the premise that the elements of good faith and significant imbalance in the fairness test in the Unfair Terms in Consumer Contracts Regulations 1999 might be seen as dealing with procedural and substantive unfairness respectively, but the elements do overlap. Where do you look for information to support your discussion?

Management.

HE: You've been asked to write about Drucker's theories of post-capitalist society and the transformation to a knowledge society. Where do you look for information to help you?

Humanities & Arts

Religious Studies/Applied Theology.

HE: You've been asked to find information on the belief messages/doctrine from various religions; where would you look for this information?

English.

HE: You've been asked to discuss the effects of monologue and dialogue, showing examples. Where do you look for information to help you with this?

Classics & Ancient History.

HE: You've been asked to compare and contrast the political structures of Athens and Sparta. Where do you look for information to help you with this?

Graphic Design.

HE: You've been asked to discuss the success of the illustrated magazine in the 1860s with reference to the artists and engravers who contributed to its success. Where do you look for information to help you with this?

Languages & Linguistics.

HE: You've been asked to discuss the sociolinguistic differences between English vocabulary in Ireland and Wales and how it was expanded from Latin. Where do you look for information to help you with this?

Cultural History.

HE: You've been asked to discuss what specific ritual and religious needs can be inferred from the presence of hengiform monuments; where do you look for information to support your discussion?

Education.

HE: You need to find information on current research into changing educational environments; where would you look for this information?

HE: You have been asked to discuss the importance of free and structured play in the pre-school setting; where do you look for information to support your discussion?

Finance & Law.

HE: You have been asked to discuss the pertinence of seeking tax shields, their likely availability and, if available, their impact for each of the major stages in the life cycle of a typical corporation; where do you look for information to support your discussion?

HE: You have been asked to discuss what dangers exist and what protection is available to users of internet payment methods; where do you look for information to support your discussion?

Performing Arts.

HE: You have been asked to discuss the importance and effect of what is not depicted explicitly onstage in the work of a couple of dramatists; where do you look for information to support your discussion?

French.

HE: You have been asked to describe in detail the differences that exist in the form, function and status of various varieties of French; where do you look for the information to support this?

Business.

HE: You have been asked to discuss the different approaches to bringing about strategic change; where would you look for information to support your discussion?

Archaeology.

HE: You have been asked to discuss what kinds of information can be obtained from the study of prehistoric ceramics; where do you look for information to support your discussion?

HE: You've been asked to find details of various listed buildings around the UK; where do you look for this information?

Philosophy.

HE: You need to prepare for a seminar, comparing and contrasting Eastern and Western philosophies; where do you look for the information to support this?

Music.

HE: You have been asked to trace the origins of the concerto up to, and including, Corelli; where do you look for this information?

Drawing & Applied Arts.

HE: You have been asked to define the principal characteristics of Postmodernism as both an artistic and cultural phenomenon; where would you look for supporting information?

Animation.
HE: You are asked to lead a seminar on changing animation techniques through the centuries. Where do you look for information to support this?

Clinical Medicine

Biomedical Sciences.

HE: You have been asked to write an essay on the steroid hormones secreted by the adrenal cortex. Where would you go to look for information?

HE: You have a friend who is interested in the ocular features of albinism; where would you suggest they look for information?
Nursing.

HE: You've been asked to present some case studies, found in the literature, about unorthodox care treatments; where would you look for this information?

Dentistry.

HE: You have been asked to find research evidence looking at the benefits and drawbacks of electric toothbrushes and ordinary toothbrushes; where do you look for this evidence?

Neuroscience & Medicine:

HE: You have been asked to look for information, for a seminar, on any research findings or current studies of Parkinson Supranuclear Palsy; where do you look for this information?

HE: You have been asked to investigate nerve supply to the parotid gland. How would you go about looking for this information?

Veterinary Science.

HE: You have been asked to find evidence from any research findings on the canine use of Glucosamine and chondroitin; where would you look for this information?

Physiotherapy.

HE: You have been asked to write about the pros and cons of physiotherapy for a patient suffering from Parkinson's disease, with progressive multiple system atrophy; where do you look for information on this subject?

Podiatric Medicine.

HE: You are asked to write about the pros and cons of various surgical procedures on feet and ankles. Where do you look for initial information to support this?

v.1 RET 1st Oct. 2003

Appendix 2.6 Questionnaire for undergraduates and taught postgraduates

(N.B Formatting has been changed)

JUSTEIS – JISC Usage Surveys: Trends in Electronic Information Services

The Joint Information Systems Committee (JISC), the people who supply the Joint Academic Network (JANet) - the computer network through which you access your email and the Internet at college, have funded a major research project on the monitoring, evaluation and use of information technology and information services in UK Higher Education and Further Education. A team at the University of Wales, Aberystwyth is undertaking this research.

We need your help with this research, which involves surveying a sample of students and staff, so that we can tell the JISC about trends in usage to help plan for services that meet your needs. **No information given in this questionnaire will be linked to you, your department or the institution. All data will be kept securely, only as long as necessary for the analysis and reporting.**

This questionnaire will only take a few minutes to complete so **PLEASE DO FILL IT IN AND RETURN IT!** If you fill in the Contact Details box, on the final page, you will be entered for a prize draw to win a £15 gift voucher.

Please fill in the relevant details below. This data is purely for analysis purposes.

GENDER: (1) ⇨ ⇨ Male
(2) ⇨ ⇨ Female

AGE: ⇨ ⇨ under 20 ⇨ ⇨ 20-29
⇨ ⇨ 30-39 ⇨ ⇨ 40-49
⇨ ⇨ 50-59
⇨ ⇨ 60+

Do you have access to a college/university networked computer?
(1) ⇨ ⇨ Yes, on campus
(2) ⇨ ⇨ Yes, at my term-time address (home, hall, hostel, digs)
(4) ⇨ ⇨ No

Do you have your own Internet service account (not provided by the college) for a computer at your term-time address (home, own room in hall, hostel, digs)?
⇨ ⇨ Yes ⇨ ⇨ No

Name of your faculty/school/department:

Name of the course you are currently studying:

Are you enrolled?
⇨ ⇨ Full-time ⇨ ⇨ Part-time
⇨ ⇨ Distance learner

173

What year of study are you now?

⇨ ⇨1st ⇨ ⇨2nd ⇨ ⇨3rd
⇨ ⇨4th ⇨ ⇨ 5th

What qualification are you studying for now?

(6)	⇨	⇨	**Higher Education Diploma**
(7)	⇨	⇨	**First Degree**
(8)	⇨	⇨	**Postgraduate Diploma**
(9)	⇨	⇨	**PGCE**
(10)	⇨	⇨	**Masters Degree (Taught)**
(11)	⇨	⇨	**MPhil/PhD (Taught)**
(13)	⇨	⇨	**Other……………………………..**

Where do you live during term-time?

| (1) | ⇨ | ⇨ | **College hall, hostel** |
| (2) | ⇨ | ⇨ | **Off-campus (digs, with family)** |

Please think about a recent occasion when you wanted to find some information and you used a networked computer, or one that had an Internet connection. The information need may have been personal or academic, as simple or complex as you like, and may have required the use of the Internet, CD-Rom, databases, email, online texts, electronic books etc.

Take a minute or so to think back and recollect all the details for ONE particular search. Now please answer the following questions – tick the relevant boxes or write a fuller answer.

What was the purpose of the search?
(Please tick the category that best describes why you were looking for information)

Coursework (assignment, essay, project, class/seminar
preparation or presentation, lab report, background reading)

⇨ ⇨

Final project/Dissertation/Thesis

⇨ ⇨

Job (projects, routines, procedures for work)

⇨ ⇨

Proposal for funded research or project

⇨ ⇨

Job search or application

⇨ ⇨

Business travel

⇨ ⇨

Leisure (leisure travel, online shopping, societies, social clubs)
⇨　　⇨

Planning a college event
⇨　　⇨

Other (please give details)
⇨　　⇨

…………………………………………………………………..

Where did you carry out the search?

Library/Learning Resource Centre
⇨　　⇨

College workstation/computer lab
⇨　　⇨

Own room in Hall of Residence
⇨　　⇨

Home/term term-time address (not Hall of Residence)
⇨　　⇨

At Work
⇨　　⇨

Wap phone
⇨　　⇨

Other (please give details)
⇨　　⇨

…………………………………………………………………..

What did you use to find this information?
Please give as much detail as you can about how you carried out the search or list various sources used

………………………………………………………..
…………………………………………………………………..
…………………………………………………………………..
…………………………………………………………………..

If you needed to ask someone for help, who was it?

Did not ask anyone
⇨　　⇨

A friend
⇨　　⇨

Library/IT staff

⇨ ⇨

Tutor/Lecturer ⇨ ⇨
Other (please give details)

⇨ ⇨

………………………………………………………………..

Did you have any computer or electronic network service problems doing the search?

Yes ⇨ ⇨
No ⇨ ⇨
If Yes, please give details:

………………………………………………………………..

Did you find the information you wanted?

Yes ⇨ ⇨(1)
No ⇨ ⇨(2)
Only some of it ⇨ ⇨**(3)**

Did you need to modify your search question or strategy at all?

Yes ⇨ ⇨
No ⇨ ⇨
If Yes, please give details of what you did:

……………………………………………………………….
……………………………………………………………….

What / Who led you to the electronic materials/services used for your search?

Previous search experience and results

⇨ ⇨

Lecturer/Tutor suggestion ⇨ ⇨
Friend/Colleague suggestion ⇨ ⇨
Read about it ⇨ ⇨

Course/Session organised wholly/partly

by library/IT services ⇨ ⇨

Library/IT services staff advice ⇨ ⇨

Reading list ⇨ ⇨

Course website ⇨ ⇨

Other (please give details) ⇨ ⇨

....

How did you feel about the results of your search?

Totally satisfied

⇨ ⇨(2)

Satisfied

⇨ ⇨(1)

Totally dissatisfied

⇨ ⇨(0)

What electronic information materials/services do you use frequently?

……………………………………………………………………………
……………………………………………………………………………
……………………………………………………………………………
……………………………………………………………………………
………………………………………

Which electronic information materials/services would you find it difficult to manage without for your studies or work?
(Please give as much detail as you can)

……………………………………………………………………………
……………………………………………………………………………
……………………………………………………………………………
……………………………………………………………………………
………………………………………

a) Do you use the subject index/A-Z subject tree for electronic services, possibly found on your library/information services web site?

Yes   ⇨   ⇨(1)
No   ⇨   ⇨(2)
Don't know   ⇨   ⇨(4)

 b) Do you use any online teaching sites/Virtual Learning Environment directed by your teaching staff?

Yes   ⇨   ⇨(1)
No   ⇨   ⇨(2)

a) What information skills/information retrieval training have you had in this institution? (Tick all those that apply)

Specialist session for subject area   ⇨   ⇨
Training as part of the curriculum by
 a course tutor/IT Staff/LRC Staff   ⇨   ⇨
Informal help as needed by library staff   ⇨   ⇨
None   ⇨   ⇨
Other (please give details)   ⇨   ⇨

....

b) If you have ticked any of the above, what was covered by the training?

…………………………………………………………………
………………………………………………………………………
………………………………………………………………………
………………………………………………………………………
…………………………………………………

Many thanks for your time. Please be assured that all   information will be non-attributable.

If you wish to be entered for the prize draw, please fill in your contact details below.

Contact Details	**(Please print clearly)**
Name:	
Tel. No:	**Email:**

v.2 RET 9th October 2003

Appendix 2.7 Questionnaire for staff and research postgraduates

NB Format has changed from the original

JUSTEIS – JISC Usage Surveys: Trends in Electronic Information Services

The Joint Information Systems Committee (JISC), the people who supply the Joint Academic Network (JANet) - the computer network through which you access your email and the Internet at college, have funded a major research project on the monitoring, evaluation and use of information technology and information services in UK Higher Education and Further Education. A team at the University of Wales, Aberystwyth is undertaking this research.

We need your help with this research, which involves surveying a sample of students and staff, so that we can tell the JISC about trends in usage to help plan for services that meet your needs. No information given in this questionnaire will be linked to you, your department or the institution. All data will be kept securely, only as long as necessary for the analysis and reporting.

This questionnaire will only take a few minutes to complete so PLEASE DO FILL IT IN AND RETURN IT! If you fill in the Contact Details box, on the final page, you will be entered for a prize draw to win a £15 gift voucher.

Please fill in the relevant details below. This data is purely for analysis purposes.

GENDER: (1)   ⇨   ⇨Male
          (2)   ⇨   ⇨Female

AGE: ⇨   ⇨under 20   ⇨   ⇨20-29
          ⇨   ⇨30-39   ⇨   ⇨40-49
          ⇨   ⇨50-59
          ⇨   ⇨60+

Do you have access to a college/university networked computer?
          (1)   ⇨   ⇨Yes, on campus
          (2)   ⇨   ⇨Yes, at my term-time address
          (4)   ⇨   ⇨No

Do you have your own Internet service account for a computer at your term-time address, not provided by the college?
          ⇨   ⇨Yes   ⇨   ⇨No

Name of your faculty/school/department:

Are you enrolled/employed?   ⇨   ⇨Full-time
          ⇨   ⇨Part-time   ⇨   ⇨ Teaching staff
          ⇨   ⇨ PG Research   ⇨   ⇨ Staff undertaking
PG Research
          ⇨   ⇨ Contract Research staff

What are your main teaching / research / work areas within the department?

What year of your research are you in now? (PGs only)

⇨ ⇨1st ⇨ ⇨2nd ⇨ ⇨3rd
⇨ ⇨4th ⇨ ⇨ 5th

What qualification are you studying for now?

(12) ⇨ ⇨ MA/MPhil/PhD (by Research)
(98) ⇨ ⇨ Not applicable
⇨ ⇨ Other…………………………………..

Where do you live during term-time?
(1) ⇨ ⇨ College hall, hostel
(2) ⇨ ⇨ Off-campus

Please think about a recent occasion when you wanted to find some information and you used a networked computer, or one that had an Internet connection. The information need may have been personal or academic, as simple or complex as you like, and may have required the use of the Internet, CD-Rom, databases, email, online texts, electronic books etc.
Take a minute or so to think back and recollect all the details for ONE particular search.

Now please answer the following questions – tick the relevant boxes or write a fuller answer.

What was the purpose of the search?
Please tick the category that best describes why you were looking for information.

Coursework (teaching preparation, background reading) ⇨ ⇨
Thesis ⇨ ⇨
Article or report for publication ⇨ ⇨
Proposal for funded research or project ⇨ ⇨
Bibliography or reference checking ⇨ ⇨
Job search or application ⇨ ⇨
Business travel ⇨ ⇨
Leisure (leisure travel, online shopping, societies, social clubs) ⇨ ⇨
Administration (student records etc.) ⇨ ⇨
Other (please give details) ⇨ ⇨

…………………………………………………………….

Where did you carry out the search?

Library/Learning Resource Centre
⇨   ⇨
College workstation/computer lab
⇨   ⇨
Own room in Hall of Residence
⇨   ⇨
Home/term term-time address (not Hall of Residence)
⇨   ⇨
Own office
⇨   ⇨
Wap phone
⇨   ⇨
Other (please give details)
⇨   ⇨

………………………………………………………………….

3.   What did you use to find this information?

Please give as much detail as you can about how you carried out the search or list various sources used.

………………………………………………………………………….
………………………………………………………………………….
………………………………………………………………………….
………………………………………………………………………….

4.   If you needed to ask someone for help, who was it?

Did not ask anyone
⇨   ⇨
A friend/colleague
⇨   ⇨
Library/IT staff
⇨   ⇨
Tutor/Lecturer
⇨   ⇨
Other (please give details)
⇨   ⇨

………………………………………………………………………….

5. Did you have any computer or electronic network service problems doing the search?

Yes   ⇨   ⇨

No   ⇨   ⇨

If Yes, please give details:

………………………………………………………………….………..

6. Did you find the information you wanted?

Yes   ⇨   ⇨(1)

No   ⇨   ⇨(2)

   Only some of it   ⇨   ⇨(3)

7. Did you need to modify your search question or strategy at all?

Yes   ⇨   ⇨

No   ⇨   ⇨

If Yes, please give details of what you did:

……………………………………………………………………………

……………………………………………………………………………

8. What / Who led you to the electronic materials/services used for your search?

Previous search experience and results	⇨	⇨
Lecturer/Tutor suggestion	⇨	⇨
Friend/Colleague suggestion	⇨	⇨
Read about it	⇨	⇨

Course/Session organised wholly/partly
                 by library/IT services
                 ⇨   ⇨

Library/IT services staff advice	⇨	⇨
Departmental website	⇨	⇨
Other (please give details)	⇨	⇨

………………………………………………………………….

9. How did you feel about the results of your search?

Totally satisfied   ⇨   ⇨(2)
Satisfied   ⇨   ⇨(1)
Totally dissatisfied   ⇨   ⇨(0)

10. What electronic information resources/services do you use frequently?

………………………………………………………………………………………
………………………………………………………………………………………
………………………………………………………………………………………
………………………………………………………………………………………
……………………………………………

11. What electronic information materials/services would you find it difficult to manage without for your studies / work?
(Please give as much detail as you can)

………………………………………………………………………………………
………………………………………………………………………………………
………………………………………………………………………………………
………………………………………………………………………………………
………………………………………………………………………

12. a) Do you use the subject index/A-Z subject tree for electronic services, possibly found on your library/information services web site?

Yes   ⇨   ⇨(1)
No   ⇨   ⇨(2)
Don't know   ⇨   ⇨(4)

b) Do you use any online teaching sites/VLEs/MLEs?

Yes   ⇨   ⇨(1)

No   ⇨   ⇨(2)
If Yes, please give details of the sites used:

……………………………………………………………….

……………………………………………………………….

……………………………………………………………….

13.   a) What information skills/information retrieval training have you had in this institution? (Tick all those that apply)

Library/IT services specialist session   ⇨   ⇨

Training as part of the curriculum by a course tutor   ⇨   ⇨

Specialist training from an external consultant

⇨   ⇨

Informal help as needed by library staff

⇨   ⇨

None   ⇨   ⇨

Other (please give details)   ⇨   ⇨

………………………………………………………………….

b) If you have ticked one of the above, what was covered by the training?

………………………………………………………………

…………………………………………………………………………

…………………………………………………………………………

……………………………………………………………

Many thanks for your time. Please be assured that all   information will be non-attributable.

If you wish to be entered for the prize draw, please fill in your contact details below.

Contact Details (Please print clearly)	
Name:	
Tel. No:	Email:

Appendix 3.1 FE sample by institution

	Applied Science and Technology	Maths & Engineering	Health, Care & Social Sciences	Humanities & Arts
Berkshire College of Agriculture **4**	Animal Care National Diploma			
Carlisle College **2**			Business BTEC HND	
City College Manchester **1**		Computing Edexcel HNC		
Cornwall College **1**	Applied Science BTEC 1st Diploma			
Dunstable College **3**			Early Years Care & Children NVQ Level 3	
Hull College **1**		Electrical/ Electronics BTEC National Diploma Level 3		
Huntingdonshire Regional College **3**			Access to Nursing & Healthcare	
Leeds College of Art & Design **4**				Design Crafts (Furniture) BTEC National Diploma
Liverpool Community College **1**	Science (Dental Technology) BTEC National Diploma			
Luton SFC **5**	Applied Science (Sports) BTEC National Diploma			

Meirion-Dwyfor College **3**				Performing Arts BTEC National Diploma
Merthyr Tydfil College **3**		Vehicle Repair & Technology BTEC National Diploma		
North Warwickshire & Hinckley College **1**				Public Services Edexcel National Diploma
Plymouth College of Art & Design **4**				Graphic Design HNC
Reigate SFC **5**				Travel & Tourism AVCE
Sir John Deane's College SFC **5**			Health & Social Care AVCE	
Stafford College **1**			Health Studies BTEC National Diploma (Also Direct Care NVQ MA)	
St Vincent College SFC **5**		Engineering GNVQ		
Suffolk College **3**	Foundation Science (UEA accredited)			
Uxbridge College **2**				Media Techniques (Journalism) BTEC National Diploma
West Lothian College **2**	Access to Science & Technology			

Westminster Kingsway College **2**		Maths, Econ & Actuarial Science BSc Foundation in partnership with City Uni		
Weymouth College **2**			CACHE Diploma in Child Care & Education	
Worcester SFC **5**		Access to HE & Personal Development		

Appendix 3.2 List of FE sites

Berkshire College of Agriculture

Carlisle College

City College Manchester

Cornwall College

Dunstable College

Hull College

Huntingdonshire Regional College

Leeds College of Art & Design

Liverpool Community College

Luton SFC

Meirion-Dwyfor College

Merthyr Tydfil College

North Warwickshire & Hinckley College

Plymouth College of Art & Design

Reigate SFC

Sir John Deane's College SFC

Stafford College

St Vincent College SFC

Suffolk College

Uxbridge College

West Lothian College

Westminster Kingsway College

Weymouth College

Worcester SFC

Appendix 3.3 FE sample by subject discipline

Applied Science and Technology

Cat. 1 Cornwall College	Applied Science BTEC 1st Diploma
Cat. 1 Liverpool Community College	Science (Dental Technology) BTEC National Diploma
Cat. 2 West Lothian College	Access to Science & Technology
Cat. 3 Suffolk College	Foundation Science (UEA accredited)
Cat. 4 Berkshire College of Agriculture	Animal Care National Diploma
Cat. 5 Luton SFC	Applied Science (Sports) BTEC National Diploma

Maths & Engineering

Cat. 1 City College Manchester	Computing Edexcel HNC
Cat. 1 Hull College	Electrical/Electronics BTEC National Diploma Level 3
Cat. 2 Westminster Kingsway College	Maths, Econ & Actuarial Science BSc Foundation in partnership with City Uni.
Cat. 3 Merthyr Tydfil College	Vehicle Repair & Technology BTEC National Diploma
Cat. 5 Worcester SFC	Access to HE & Personal Development
Cat. 5 St Vincent SFC	Engineering GNVQ

Health, Care & Social Sciences

Cat. 1 Stafford College	Health Studies BTEC National Diploma (Also Direct Care NVQ 2&3 Modern Apprentices)
Cat. 2 Carlisle College	Business BTEC HND
Cat. 2 Weymouth College	CACHE Diploma in Child Care & Education
Cat. 3 Dunstable College	Early Years Care & Children NVQ Level 3
Cat. 3 Huntingdonshire Regional College	Access to Nursing & Healthcare
Cat. 5 Sir John Deane's SFC	Health & Social Care AVCE

Humanities & Arts

Cat. 1 North Warwickshire & Hinckley	Public Services Edexcel National Diploma
Cat. 2 Uxbridge College	Media Techniques (Journalism) BTEC National Diploma
Cat. 3 Coleg Meirion-Dwyfor	Performing Arts BTEC National Diploma
Cat. 4 Leeds College of Art & Design	Design Crafts (Furniture) BTEC National Diploma
Cat. 4 Plymouth College of Art & Design	Graphic Design HNC
Cat. 5 Reigate SFC	Travel & Tourism AVCE

Appendix 3.4 Questionnaire for FE students

JUSTEIS – JISC Usage Surveys: Trends in Electronic Information Services

The Joint Information Systems Committee (JISC), the people who supply the Joint Academic Network (JANet) - the computer network through which you access your email and the Internet at college, have funded a major research project on the monitoring, evaluation and use of information technology and information services in UK Higher Education and Further Education. A team at the University of Wales, Aberystwyth is undertaking this research.

We need your help with this research, which involves surveying a sample of students and staff, so that we can tell the JISC about trends in usage to help plan for services that meet your needs. **No information given in this questionnaire will be linked to you, your department or the institution. All data will be kept securely, only as long as necessary for the analysis and reporting.**

This questionnaire will only take a few minutes to complete so **PLEASE DO FILL IT IN AND RETURN IT!** If you fill in the Contact Details box, on the final page, you will be entered for a prize draw to win a £15 gift voucher.

Please fill in the relevant details below. This data is purely for analysis purposes.

GENDER: (1)   ⇨   ⇨**Male**

       (2)   ⇨   ⇨**Female**

AGE: ⇨   ⇨**under 20**   ⇨   ⇨**20-29**

       ⇨   ⇨**30-39**   ⇨   ⇨**40-49**

       ⇨   ⇨**50-59**

       ⇨   ⇨**60+**

Do you have access to a college-networked computer?

       (1)   ⇨   ⇨**Yes, on campus**

       (2)   ⇨   ⇨**Yes, at my term-time address (home, hostel, digs)**

       (4)   ⇨   ⇨**No**

Do you have your own Internet service account for a computer at your term-time address (home, hostel, digs), not provided by the college?

       ⇨   ⇨**Yes**   ⇨   ⇨**No**

Name of your course:

Are you enrolled?   ⇨   ⇨**Full-time**

       ⇨   ⇨**Part-time**

What year of your course are you in now? ⇨ ⇨1ˢᵗ
⇨ ⇨2ⁿᵈ ⇨ ⇨3ʳᵈ

What qualification are you studying for now?

(1)	⇨	⇨	**BTEC/EDEXCEL National Diploma**
(14)	⇨	⇨	**HND**
(15)	⇨	⇨	**HNC**
(16)	⇨	⇨	**AVCE**
(5)	⇨	⇨	**Access to Higher Education**
(7)	⇨	⇨	**GVNQ**

Where do you live during term-time?

(1)	⇨	⇨	**College hostel**
(2)	⇨	⇨	**Off-campus (digs, with family)**

Please think about a recent occasion when you wanted to find some information and you used a networked computer, or one that had an Internet connection. The information need may have been personal or academic, as simple or complex as you like, and may have required the use of the Internet, CD-Rom, databases, email, online texts, electronic books etc.
Take a minute or so to think back and recollect all the details for ONE particular search.

Now please answer the following questions – tick the relevant boxes or write a fuller answer.

What was the purpose of the search?
Please tick the category that best describes why you were looking for information.

Coursework (assignment, essay, project, class/seminar
preparation or presentation, lab report, background reading)
⇨ ⇨
Final project/Dissertation
⇨ ⇨
Job (projects, routines, procedures for work)
⇨ ⇨
Proposal for funded research or project
⇨ ⇨
Job search or application
⇨ ⇨
Business travel
⇨ ⇨
Leisure (leisure travel, online shopping, societies, social clubs)
⇨ ⇨

Planning a college/work event

⇨   ⇨

Other (please give details)

⇨   ⇨

…………………………………………………………..

Where did you carry out the search?

Library/Learning Resource Centre

⇨   ⇨

College workstation/computer lab

⇨   ⇨

Own room in Hall of Residence

⇨   ⇨

Home/term term-time address (not Hall of Residence**)**

⇨   ⇨

At work

⇨   ⇨

Wap phone

⇨   ⇨

Other (please give details)

⇨   ⇨

…………………………………………………………..

3.   What did you use to find this information?
Please give as much detail as you can about how you carried out the search or list
various sources used.

…………………………………………………………..
…………………………………………………………..
…………………………………………………………..
…………………………………………………………..

4.   If you needed to ask someone for help, who was it?

Did not ask anyone

⇨   ⇨

A friend/family
⇨   ⇨

Library/IT staff
⇨   ⇨

Tutor/Lecturer
⇨   ⇨

Other (please give details)
⇨   ⇨

…………………………………………………………..

5. Did you have any computer or electronic network service problems doing the search?

Yes   ⇨   ⇨

No   ⇨   ⇨

If Yes, please give details:

………………………………………………………….……..

(8) # 6. What / Who led you to the electronic materials/services used for your search?

Previous search experience and results	⇨ ⇨
Lecturer/Tutor suggestion	⇨ ⇨
Friend/Colleague/Family suggestion	⇨ ⇨
Read about it	⇨ ⇨
Course/Session organised wholly/partly	
by library/IT services	⇨ ⇨
Library/IT services staff advice	⇨ ⇨
Reading list	⇨ ⇨
Course website	⇨ ⇨
Other (please give details)	⇨ ⇨

………………………………………………

(9) 7. How did you feel about the results of your search?

Totally satisfied	⇨	⇨(2)
Satisfied	⇨	⇨(1)
Totally dissatisfied	⇨	⇨(0)

(13)8. a) What information skills/information retrieval training have you had in this institution? (Tick all those that apply)

Key Skills/Basic Skills/IT Skills session	⇨	⇨
During class session with course tutor	⇨	⇨
Informal help as needed from library staff	⇨	⇨
None	⇨	⇨
Other (please give details)	⇨	⇨

…………………………………………………………………

b) If you have ticked any of the above, what was covered by the training?

……………………………………………………………………

……………………………………………………………………

……………………………………………………………………

Many thanks for your time. Please be assured that all   information will be confidential.

If you wish to be entered for the prize draw, please fill in your contact details below.

Contact Details	**(Please print clearly)**	
Name:		
Tel. No:	**Email:**	

v.2 RET 9th October 2003

Appendix 3.5 Interview schedule for FE students

N.B Format has changed from that used in the original

JUSTEIS Survey instrument (Strand A)
9th October 2003

Project authority
This research project is being conducted on behalf of the Joint Information Systems Committee (JISC) of the Higher Education Funding Councils, and your department has given us permission to survey a small sample of staff and students.

Purpose of project
We are surveying patterns of use of electronic information services by students, academics and librarians across all sectors and disciplines within Higher Education and Further Education in the UK, in order to inform JISC about likely trends in the use of electronic information services of all varieties.

Why you have been chosen
A sample of different types of university and, within them, departments representing various academic disciplines, has been chosen at random. Within your department you have also been chosen at random for interview.

Anonymity
All the information you give us will be treated confidentially; no individuals, departments or universities will be identified in our results and we will report only overall trends and statistics.
All interviews will be anonymous and personal data removed at the transcription stage. The data will then be kept securely, only as long as necessary for the analysis and reporting.

Welcome and introductions.

Any questions?

Explain recording method(s)

Interviewee Informed Consent Signature:

I agree that the data I have provided may be used by the JUSTEIS team, on the conditions explained to me, as outlined above.

Name	

Q1 Check that basic details are correct

Sex	Male □1			Female □2		98 NA

Age	under 20 □1	20-29 □2	30-39 □3	40-49 □4	50-59 □5	60 & over □6 98 NA

Access to University networked computers access	At college □1	At term-time address □2	Own ISP at term-time address ownsip □1 98NA		

Current Department / School	univdept 98NA

stutype
STUDENTS

Full-time □1	Part-time □2	Distance/Open learner □3

status Undergraduate □1	status FE Student □2	Year of study	1 □ 2 □ 3 □ 4 □ 5 □ year

Degree First Degree □1	HND □2	HNC □3	BTEC or EDEXCEL Nat. Diploma □4	GNVQ □7	AVCE □5	ACCESS to HE □6

status Postgraduate □3	Taught Masters □7	Taught MA/MPhil/PhD □8	PhD/Mphil/MA by Research □9

	HE Diploma □10	PGCE □11

Current Course name	course 98 NA

Residence	On Campus □1	Off Campus □2 98 NA

staftype
STAFF
98 NA

Type	Academic staff □1	Research contract staff □2
Employed	staftime Full-time □1	Part-time □2
Main teaching & research areas	subject 98 NA	

If you wish to be entered for the prize draw, please fill in your contact details below.

Contact Details	
Name:	
Tel. No:	Email:

199

Q2 Can you think back to a recent occasion when you needed to find information that involved you using a networked computer, or one connected to the Internet?
Think about what you have done in the last day or two or over the past week.

Prompts:
professional, academic, personal
can be informal or formal
simple to complex
sources: local, national or world, CD-ROM, Internet search, Web pages, database, dataset, databank, online texts...

We now need as much detail as you can remember about what you did, please

Prompts:
what source(s) and service(s) did you use?   Sused

what led you to use this source? e.g. was this prompted by someone's suggestion (lecturer, peer, colleague), prompted by reading about this resource? where?   Ssguide
        prev ex 1 tutor 2 friend 3 read 4 course 5 lib advice 6 reading list 7 other 8
were there alternative sources you might have used – manual or otherEIS?   Saltern?
        no 2 yes 1
where was the computer workstation which you used? e.g. office, home/room, library, public workstation room, laboratory   swhere
        college 1 own 2
did you ask anyone for help? friend, colleague, help desk, library staff   shelp
        friend 1 library/IT staff 2 tutor 3 other 4
was it a one-off / on-going?   Surgent
        urgent 1 ongoing 2
how much time did you spend on this?   stime

Were you aware of using more than one source, moving from one to another? e.g. clicked on link from bib. reference to go to full text of article, from website to website, from search engine results to website

PLEASE ENSURE ALL THE ABOVE ARE ADDRESSED

Q3 Why did you need this information? What were you trying to achieve?
what did you do with the information? Will it have another use later on? e.g. use in research paper, lecture, assignment, dissertation etc.

Purpose/Reasons for use   spurpose

Coursework (assignment, essay, project, class/seminar preparation or presentation, lab report, background reading, teaching preparation)
Job (project, routine, procedure for work) – PT /DL/FE students only
Final project/Dissertation/Thesis
Proposal for funded research or project
Bibliography or reference checking – PG Research/Staff only
Article or report for publication – PG Research/Staff only
Job search or application
Business travel
Leisure (leisure travel, online shopping, societies, social clubs)
Planning a college event
Administration (student records) – Staff only
Other

Q4 Did you find the information you wanted or are you still looking?   *Sfound*
        No 2   Yes 1   Some 3
Prompts:
question modified   sxmq
        No 2   Yes 1
question answered
abandoned   stopt
        No 2   Yes 1
delegated the process   sdeleg
        No 2   Yes 1
successful - how success measured? Scale success 1 - 5   Satisfy
(effectiveness of search; degree of satisfaction with results)
        dissat 12345 satis
any problems? e.g. availability, content, completeness, currency, timeliness, accessibility, format, accuracy, quality, convenience, effort of use, procedures and policies (e.g. needed password)   sprobs
        No 2   Yes 1

Q5 What type of searches of electronic information sources do you usually do?   *Soften*

No 2   Yes 1
was this unusual or something done regularly?

Thank you. Now we'd like to use a slightly different approach, by looking at factors that affect what you are currently trying to achieve on professional, academic and personal fronts.

Q6 What do you need to sort out over the next 6 months/year? What do you need to accomplish/prioritise?
e.g. professional, academic, personal; this term/semester/academic year
marking, completing coursework, securing finance, buying goods, booking holiday, research funding, writing papers, contacting friends, etc?

Q7 What are the main factors/issues that are likely to ensure you successfully accomplish these – sort them out?
identify a limited number of areas in which satisfactory results will ensure success; vital factors only, core issues

Q8 What information do you need to help you achieve these objectives?
relate to factors, emphasis on electronic information

Q9 How much information skills / information retrieval training have you received in college?   *skilearn*

Prompts:
this could be part of the course given by tutors   3
this could be part of the course but instruction given by information
 services/IT/Library staff 2
Library/IT induction/Key Skills/Basic Skills   1
specialist training from external consultants   4
online teaching/VLE/MLE software
what did the training cover?

Q10 What electronic information resources are important to you for your studies or work? What can't you do without?   *sneed*
do you need to access other electronic information which is not presently available to you?
are there other sources which you have heard about and intend to look at/use sometime?
what electronic information services/sources do you regularly use?   sfrequse

Q11 How much texting or internet searching do you carry out with a mobile phone?
Is the phone a WAP phone? Do you do more texting than emailing?

Use prompts from short list as necessary (see EIS checklist)

Thank you very much for your time. The results of our research will be published ...

EIS checklist

Regular Use	always get as much detail as possible	Code
Email Mobile phone texting	discussion list, news group/VLEs professional/academic use personal email texting	%em ⇨ ⇨ %ema ⇨ ⇨ %emp ⇨ ⇨ %txting ⇨ ⇨
own HEI website or services	student records/timetables local information lecture notes/lecturer's web home pages courseware/VLEs	%stad ⇨ ⇨ %loinf ⇨ ⇨ %lhp ⇨ ⇨ %crw ⇨ ⇨
library catalogues	own HEI OPAC library subject tree/subject index other HEIs COPAC/BL/other	%opac ⇨ ⇨ %subtr ⇨ ⇨ %oheis ⇨ ⇨ %othlib ⇨ ⇨
electronic journals/emonographs/ etextbooks	single ejournals – CDRom or web collection ebooks ereference material	%ejs ⇨ ⇨ %ebks ⇨ ⇨ %erefs ⇨ ⇨
Internet/WWW	search engine(s) bibliographic (*explain*) databases – (WOS, BIDS)	%sengs ⇨ ⇨

WAP Mobile phone	RDN - gateways/portals other sites using WAP phone sites	%dbs ⇨ ⇨ %gtwy ⇨ ⇨ %intoth ⇨ ⇨ %wap ⇨ ⇨
CD-ROM	networked stand alone	%cdrom ⇨ ⇨
Statistical or numeric or scientific datasets, text archives	local other	%stats ⇨ ⇨

Interviewer's checklist

Question		Tick
Q1	Base data	
Q2	EIS service and sources used	
	Why choose this source?	
	Alternative sources?	
	Location of computer workstation used	
	Asked others for help?	
	One-off or on-going search?	
	When start / complete search?	
	How much time spent?	
	Awareness of moving from one source to another	
Q3	Why needed information?	
	What trying to achieve?	
	What did with information?	
	Use information again later?	
Q4	Found what wanted or still looking?	
	Effectiveness of search, satisfaction with results	
	Any problems?	
Q5	Usual type of search?	
	What types of searching usually?	
Q6	Objectives/priorities?	
Q7	Vital factors/issues to succeed?	
Q8	Information needed to help achieve objectives?	
Q9	Information skills training received?	
Q10	Important EIS, can't do without?	
	Access to others not currently available?	
	Intend to use others?	
	EIS used regularly (*prompts*)	
Q11	Use of mobile phone for texting or searching?	

v.2 RET 9nd October 2003

Appendix 3.6 FE Vignettes

Applied Science and Technology

Animal Care.

FE: A friend is trying to find out information about their bulldog and any health problems that the breed may get in the future, but doesn't want to ask the vet. How would you advise them to search for this information?

General Science.

FE: You want to find out general information about conduction, convection and radiation or atmospheric pressure. Where are you going to look for this?

Biology.

FE: A friend needs general information on human evolution for an essay, and doesn't know where to start. How would you advise them to go about searching for this information?

Forensic Science.

FE: You've been asked to write an essay on laboratory techniques and application. Where do you start looking for information to help you?

Chemistry.

FE: You must write an essay on the various levels of structure found in proteins. Where would you look for information to support your essay?

Dental Technology.

FE: You've been asked to write about the use of soft polymers in dental technology. Where do you look for information to help you?

Sports & Exercise.

FE: You must write an essay on anatomy, discussing the best use of exercises to work the various bone and muscle groups in the body to their optimum level. Where would you look for information to support your essay?

Maths & Engineering

Maths & Econ.

FE: You are asked to write about the concept of uncertainty and risk analysis within the property insurance market. Where do you look for information to help you?

Computer Studies.

FE: You need to apply either a soft systems analysis or a structured systems analysis method to a project and justify your choice. Where do you look for information to support your choice?

IT Engineering/Technology.

FE: You want to find information on different computer platforms and compatible software; where would you look for such information?

Mechanical & Electrical Engineering.

FE: You want to find information on designs of various engines and transmission systems; where would you look for this information?

FE: You have to look up information on comparisons of analogue and digital electronics, where do you look?

Construction.

FE: You need to find out information on different grades of sand for cement and their uses; how would you find this information?

Mechatronics.

FE: You've been asked to write an essay on the pros and cons of stepless gearboxes and conventional gearboxes. Where do you look for information on this?

Agriculture.

FE: You have to discuss the pros and cons of fixed chamber and variable chamber round balers. Where do you look for information to support your discussion?

FE: You must write an essay on the effects of weeds on crop plants and yields. Where do you look for information to support your essay?

Health, Care & Social Sciences

Business Studies.

FE: You want to compare various business management styles for an assignment; where would you look for this information?

People & Social change.

FE: You need to find information on different cultures and social structures for an assignment; where would you look for this information?

Sports Recreation.

FE: You want to find a list of sports activity centres in the UK, with a view to booking a holiday; where do you look for this?

Childhood Studies.

FE: You need to find information on the theory of playing being very important for child development; where do you look for this?

Veterinary Nursing.

FE: You need to find information about looking after animals under anaesthetic; where do you look for this?

Childcare.

FE: After qualifying, you want to start up your own crèche. Where do you look for information on starting up such a business?

Care Practice.

FE: A client/patient has asked you to find information on practical ways to deal with disabilities around the home; where would you look for this information?

Nursing.

FE: You've been asked to write an essay on responding to death and bereavement in the work situation. Where would you look for information on existing research on this subject?

Humanities & Arts

Public Services.

FE: You need to write an essay on the history of the British Police Force and changes over the years; where do you look for information on this?

Theatre, Performing Arts, Music Studies.

FE: You want to find information on the history of various theatres in the UK; where would you look for this?

Travel & Tourism.

FE: You need to find information on Arts Centres in the UK and what they can offer; where do you look for this information?

Design Crafts.

FE: You want to find an in-depth explanation about the changes in furniture design through the centuries; where are you likely to search for this information?

Graphic Design.

FE: You are asked to write about how Victorian magazine illustrators reflected the codes, conduct and social conditions of mid-nineteenth century England. Where do you look for information?

Media Techniques (Journalism).

FE: You are asked to compare and contrast different interviewing styles used by current journalists against those of the last century. Where do you look for information to support this?

RET 1st Oct. 2003

Appendix 4.1 Interview schedule for purchasing intentions

1. Can you give me some idea of the current concerns you may have? Are there changes in your environment/institution which may affect your ability to plan effectively for EIS?

2. Do you have any special arrangements for departmental libraries, remote campuses or distance learning students - or other students not on site for a good proportion of their course?

3. Has the advent of EIS affected your existing arrangements for departmental allocations or school/departmental contributions?

4. What are some of the management implications of these electronic information services - could we cover the ways you have had to make staffing changes to cope with service changes?

5. How do you go about the organisation, development and maintenance of the Library/Information Services web site?

6. How do you deal with obtaining various EIS and the licensing issues (print/electronic bundling, long-term vs short term agreements various NESLI/JISC deals offered?). If there are several routes to obtaining an EIS - how do you choose amongst these? (on basis of service provider, bundling with existing services or random choice?).

7. What about collaborative/consortia arrangements with other institutions - how do you feel this works - or could work?

8. Do you have a formal collection development policy/strategy?

9. Are subject based / learned society deals of more interest to you than publisher based deals? (particularly with a view to charging departments, for example?)

10. How do you view the future of electronic journals for you? How do you manage the e-journals in relation to the existing periodicals functions?

11. How does use of e-journals and EIS affect the way printing / photocopying services are organised - and financed? Have you any evidence for preferences of users for table of contents/abstracts versus full text?

12. How are your views on buying particular services channelled to academics/department heads/tutors? Is this a difficult process within your institution?

13. How much input/involvement do you have with learning and teaching policies within the institution? (i.e. is your advice sought on suitable aids/services) . How involved are you with decisions on resource linking within VLEs – i.e. Blackboard, WebCT etc.?

14. How do you obtain feedback on usage of EIS? How effective do you judge your provision of EIS to be? How would you expect to assess the performance of the services?

15. One route for reducing journal subscription costs might be for authors to pay for submission (page costs). How might this affect your institution? (HE only)

16. What evidence do you have that supports the increasing use of electronic services affecting book loans? Are any patterns emerging?

17. Increasingly, textbooks are supplied with disks and electronic monographs are coming online, how do you foresee the management of such items? (Do you subscribe to any e-books?)

18. How much help/involvement do you get from your RSC (JISC Regional Support Centre)?

Appendix 7.1 Ferl case study (draft document)

Summary

A case study of an Action Research project undertaken at a college of further education by the JISC funded JUSTEIS (JISC Usage Surveys: Trends in Electronic Information Services) research team based at the Department of Information Studies, University of Wales, Aberystwyth. The study examined the effectiveness of targeted advice on information resources.

Background
As part of the JISC User Behaviour Monitoring and Evaluation Framework Cycle 4 (2002-2003) the JUSTEIS team, based at the Department of Information Studies, University of Wales, Aberystwyth undertook a survey of end users of all electronic information services (EIS) in further education. Conducted in parallel with a similar study in higher education the survey drew on data collected through interviews, questionnaires and action research. This study focuses on the action research element with the main aim of promoting and encouraging the uptake and use of EIS by students following selected courses at further education colleges. The emphasis was not only to identify and examine the problems but also to reflect on it, do something to improve the situation, and provide models for other institutions.

Approach

The initial proposal for the action research envisaged a range of institutions, including urban, rural, and county town. Six sites were finally selected, three of which were identified from research work conducted in the previous cycle. This study concentrates on an action research project undertaken at a college serving an urban area supporting 14,572 (4,079 f/t & 14,446 p/t) students operating from three main campuses and focuses on improving the uptake and effective use of electronic services and sources by students following the HNC Mechanical Engineering course. All students were first year students, a few weeks into their first term and identified as a group likely to be aware of their weaknesses and lack of knowledge about use of EIS. By means of interviews, questionnaires and focus groups college tutors, LRC staff, students and the researcher worked collaboratively.

The aims and objectives were, as far as possible to examine the process of benefits realisation for EIS and to develop appropriate performance indicators which might be used in a Balanced Scorecard evaluation framework.

Findings

The main barriers to the use of EIS were identified and the following issues were apparent:

- students and staff receive little formal training and support aimed at helping them make effective use of EIS for learning. Library induction in the library *'touches on the OPAC',* students learn skills by '*trial and error'* and there was little awareness of what is offered by the RSC.
- the HNC students attend college only one day a week and do not have the time to either access computers or search for information. However access to computers outside college is not (usually) a problem.

> *'...one [student] hasn't got a computer at home, can't use one at work, I know he has used County Library facilities'.*

Tutors were under similar time constraints to the students:

- library opening hours are inconvenient, the library closing before the students finish lectures.
- password problems do not allow for off-site access to the OPAC.
- lack of easy access by the students to computers in the college.

  'Many computers are used for teaching rooms as well. So if those rooms are full where does the student go?...We're creating the structure for them but the availability of the room isn't there because of teaching'.

- the department is keen to introduce an MLE and VLE. However it is proving difficult to convince management of the need.
- ownership of resources cause problems. The Engineering Department has subject specific resources which they purchase but they are only accessible to engineering students when in the department and not externally.
- licensing restrictions do not allow franchise students or staff access to the franchising college's electronic resources, other than the online catalogue. College library and department staff do not know how to manage this situation.

Selection and implementation of intervention

Findings indicated the importance of giving help to students in a form suited to their circumstances as part time, day release students. Lack of time and other difficulties faced by the students in accessing library and college resources during their one-day attendance at college highlighted the need for an intervention that could be used outside college premises and hours. The licensing restrictions presented a more difficult problem, but the intervention could, it was hoped, reduce some of the dissatisfaction over access to resources that students might otherwise voice.
Students acknowledged they needed pointers to relevant electronic information.
'It wouldn't be wasted, When you're searching for something you don't actually know what you're going to get and whether you're searching the right things so it might be useful on the course, they give you pointers as to where you may need to look, useful places to look at.'
In order that they could familiarize themselves with key Web sites in their subject area, a list of engineering websites for the students to use, in their own time and at a computer easily accessible to them, whether at work or at home, was developed by the researcher using models from a previous action research site in an earlier cycle. Copies of the list were distributed amongst the students, and their tutors, prior to their first assignment.

Evaluation & impact of intervention

Evaluation was carried out through a student focus group, complemented by a questionnaire survey and timed to take place after completion of their assignments.
The evaluation indicated that the comprehensive listing of web site sources served the students well. The majority of students found the list useful and would refer to it again either during their studies or their work and its format enabled the students to carry out electronic information research off campus, using computers more easily accessible to them.

Judging the success of this solution, or similar, can be measured initially in terms of satisfaction and whether the barriers to access were reduced. The web site list had the potential of improving the uptake and use of EIS by reducing the difficulties faced by students in accessing computers at college, in accessing electronic resources externally and their lack of research time whilst at college.

Rather than considering evaluation in terms only of access to one set of resources or the skills acquired to manipulate one database the balanced scorecard framework usually ensures that important organisational perspectives are covered. From the organisational perspective the questions to answer are what matters to our customers, what business

processes (internal processes) should we be good at, how can we learn and grow as an organisation and how do we appear to our 'shareholders' – are we succeeding financially?

Keeping this in mind some points which emerged for discussion were whether the development of web site listings/information leaflets for all subject area is a useful direction for library staff effort, whether listings provide more equity in resource provision, whether they are a means of informing tutors who are then more able to help students, and whether they provide more flexibility for students when researching making study easier and more efficient for them.

Conclusions

Student (and tutor) attitudes towards the use of EIS are influenced by the lack of access to facilities and resources, and restrictions placed on them by their college timetable. Ideally these constraints might be alleviated by developing library EIS services and support. Contact with the RSC would ease the situation, with both department and library receiving the benefit of RSC support and services. The trickle down effect of training tutors may then help students during class contact time.

Clarifying the situation about franchised resources available through the franchising college would help, as well as extending library opening hours on the appropriate day and including Saturday opening. Also, improved networking, with development of the VLE, should ensure access to subject specific resources by students throughout the campus via the library, classrooms, and externally via the intranet.

Developing performance indicators based on the Balanced Scorecard requires four indicators (customer, internal processes, financial, and learning and growth). From the pointers which emerged, and the initial problems identified:
student customers save time by getting access to required resources when and where required. The percentage of tailored resources available to students off campus is an indicator the college could use to represent this customer perspective.
internal processes are how the library staff work with the academic staff, and also with the RSC, to develop better access to EIS for students. An initial performance indicator might be the number of meetings between the library and departments, and number of contacts between the RSC and college staff, but the emphasis should be on the outcomes of those meetings, and the later performance indicator should shift to incorporation of EIS, e.g. Web sites, and use of RSC subject guides in course materials.
the financial perspective is related to the licensing problems associated with the partnership between the FE college and the HEI. This is a more difficult problem to resolve, but the performance indicator could be the percentage of HEI licensed resources that the FE students and staff can access as easily as if they were in the HEI.

the learning and growth perspective concern the competencies of college staff in supporting such e-learning. Performance indicators could relate to the competencies required to develop and maintain Web pages or the proposed VLE.

Appendix 7.2 JUSTEIS flyer

JUSTEIS ACTIVITY	1999-2003 Total	2003-2004 to date
Students interviewed	936	189
Student questionnaires obtained	1858	92
Participating institutions	112	21
Participating departments	176	21
Senior library managers interviewed	42	4
Academic staff interviewed	115	6
Library Web sites analysed	197	n/a

JUSTEIS Web Page
http://www.justeis.info

University of Wales, Aberystwyth
http://www.aber.ac.uk

Department of Information Studies
http://www.dil.aber.ac.uk

Information Automation Limited (Centre for Information Quality)
http://www.i.a.l.co.uk

JISC
http://www.jisc.ac.uk

? ? ?

If you wish to speak with project personnel contact:

Dr Christine Urquhart
Department of Information Studies
University of Wales Aberystwyth
(01970) 622188/9

Chris Armstrong
Information Automation Limited
(01974) 251302

Department of Information Studies

CIQM — Centre for Information Quality Management

JUSTEIS

(JISC Usage Surveys: Trends in Electronic Information Services)

JISC — The Joint Information Systems Committee

Appendix 7.3 Precis document

(N.B. text components only displayed – a two column format was proposed)

[JISC logo]

[title banner across page]

[Column one]

The MEUB Framework is run by the JISC Committee for Awareness, Liaison and Training (JCALT) to help them plan effective promotion and support for electronic information services in further and higher education teaching and research.
Since 1999, the two major projects undertaking this work are:
JUBILEE (JISC User Behaviour in Information seeking: Longitudinal Evaluation of EIS), by Northumbria University's Information Management Research Institute
and
JUSTEIS (JISC Usage Surveys: Trends in Electronic Information Services), by the University of Wales Aberystwyth, Department of Information Studies with the Centre for Information Quality Management

Together, JUBILEE and JUSTEIS provide data of interest to senior managers, teaching staff, student representatives, library and information services staff, e-learning support, and staff developers.

JUBILEE is building a longitudinal view and developing the JUBILEE Toolkit to guide and benchmark EIS development in institutions.

JUSTEIS is a very broad based survey designed to identify trends as well as explaining why students benefit from some services more than others.

For more information

JISC website http://jisc.ac.uk MEUB Framework
Contact: JCALT Secretary, Sonja Bisset s.bisset@jisc.ac.uk
JUBILEE (includes Toolkit)
http://www.northumbria.ac.uk/imri
JUSTEIS http://www.justeis.info

[column two]

Answers are being provided to questions such as:

- What are the changing patterns of use
- how does a critical mass develop?
- Why are e-journals, for example, popular among some groups of students?
- How can institutions apply 'best practice' in information literacy?
- Who, or what, influences students to use particular services?
- Are VLEs a good or bad influence on lifelong learning skills?
- Are institutions realising benefits from using EIS in teaching and learning?
- What type of training and support is required for e-learning?

Chart of figures indicating the data collected

217

Higher and further education institutions need to make it possible for students to learn 'anytime, anywhere'. MEUB findings show that students increasingly see, and realise the benefits of ICT and EIS in their learning. But there is more to do to ensure that the quality of the learning experience is improved, and that the benefits are realised faster.

A major focus of the MEUB framework is USER BEHAVIOUR , examining why students and staff use EIS in their learning and research, and what difference such services have made. Individuals learn in different ways, and individual preferences and habits remain the single greatest enabler – or barrier – to using EIS. The MEUB findings indicate that use of all EIS by undergraduates has increased from 40% to nearly 80% since 1999. Around 25% of undergraduates are now using bibliographic databases and specialist resources. Student satisfaction in searching is usually results oriented – they may not value the appraisal skills learnt through searching and browsing selectively.

'I must have spent about four hours...I was able to find a lot of pictures and diagrams...Four (satisfaction score), not five only on account of spending time on it'
(undergraduate)

'You've got some students who know how to use it really well but other students who have got fairly basic knowledge of it'. (Law academic)

For students the initial benefit is the time saved, and this is important when so many students are working and studying (Figure 2).

[graph – EIS save me time]

Another aspect examined is ACCESS. Institutions need to plan for the needs of an increasingly diverse student community. MEUB findings found that around 60% of students (FE and HE) interviewed in 2002/03 had their own Internet Service Provider connection. Over 85% regularly text, email for personal reasons, and search the Internet. There were few differences between FE and HE students.
'Well over fifty per cent of students have their own computer and, increasingly, they're coming to university with laptops.' (Library staff, site A)

LIAISON is required across HE and FE and the MEUB framework examines the new types of links and partnerships developing, from school to PhD and beyond.
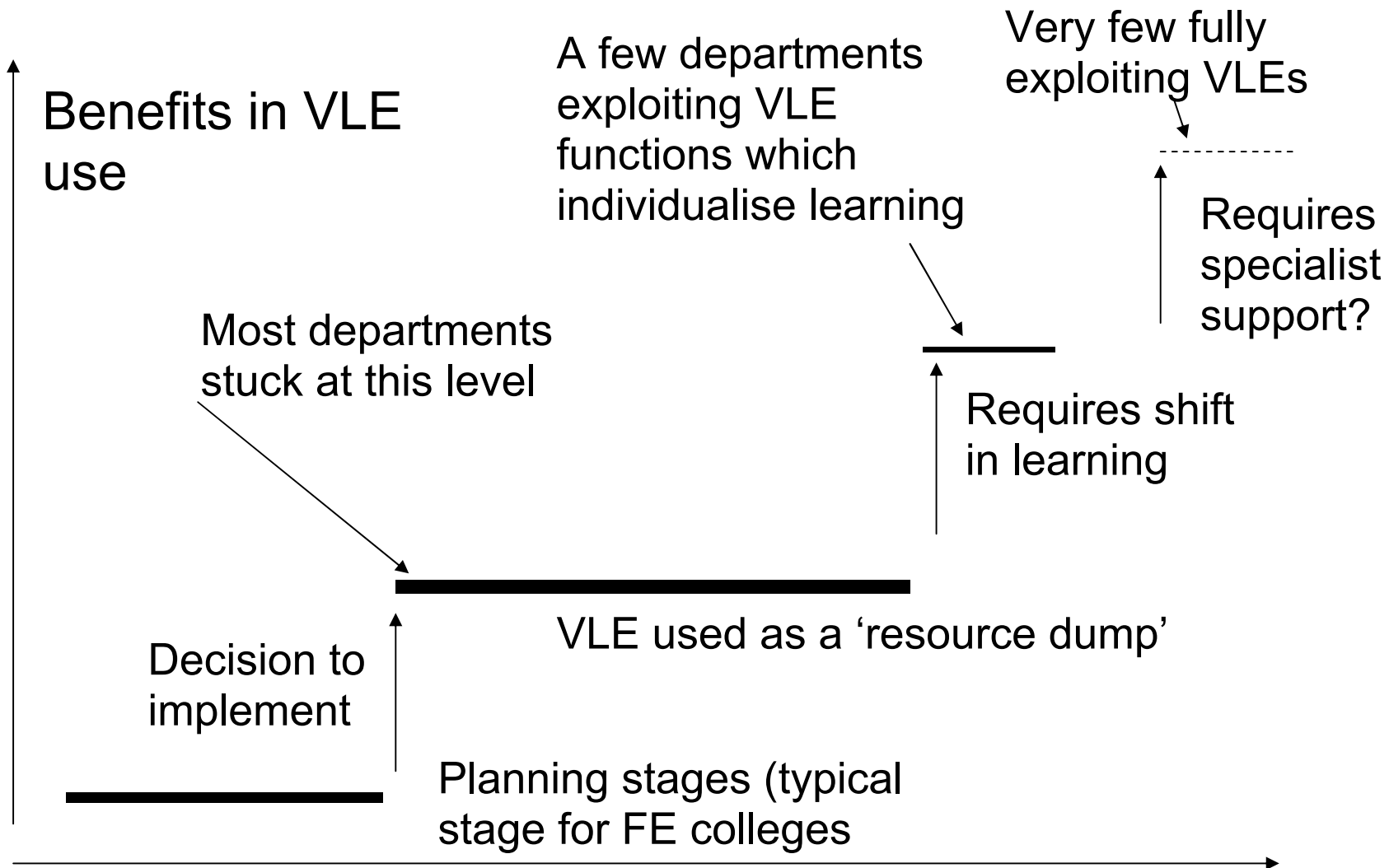
Other themes in the MEUB framework research concern TRAINING, and closely related to that, the question of INTEGRATION of EIS into learning and assessment. What teaching staff say, or expect, affects whether students use electronic information or not – and their involvement is vital.

'It's the one we're trying to get new teaching staff to do, is, they talk to us in advance so that the workbooks the student goes away with and that we use in the session are tailored for that particular module but also the member of staff stays...
...and we want to take that one step further, it's happened once which is where the teaching staff has actually held the session and has asked a member of [our] staff to support and we don't think that's a step back, we think that's wonderful' (senior manager in a library)

The MEUB framework has found that departments which practise problem-based learning or resource-based learning are more successful in improving information literacy. Staff training for learning approaches appropriate to e-learning is essential. MEUB findings indicate that many departments are stuck at a basic level of VLE implementation (Figure 3)
[VLE diagram] (see next page)

In 2003/2004 we are continuing to plot EIS development and identify new trends, with greater emphasis on the widening participation agenda. We are developing structures to obtain feedback from lecturers, library and information services staff, staff developers, and managers on how the MEUB framework should evolve to meet their needs, and the needs of their students. We have a large body of data – interviews with over 1000 students, for example – and that data can be mined in different ways. For example, in 2002-2003 JUSTEIS used their data to examine the critical success factors for VLEs. JUBILEE is developing the toolkit themes in more depth. Please consult the web site for more details.

Benefits in VLE use

A few departments exploiting VLE functions which individualise learning

Very few fully exploiting VLEs

Requires specialist support?

Most departments stuck at this level

Requires shift in learning

Decision to implement

VLE used as a 'resource dump'

Planning stages (typical stage for FE colleges)

Appendix 7.4 Report of eVALUEd conference

The eVALUEd Conference. Library Evaluation in Practice: Electronic Information Services in Higher Education. 16th June 2004, Austin Court, Birmingham.

Report by Siân Spink

The conference addressed current issues in the evaluation of EIS in HE. There were parallel sessions and I made note of what struck me most forcibly in the presentations I attended. The proceedings are to be published a special issue of VINE any way – so the true story will be available then.

The title of the keynote address by Charles McClure gives you his focus – *Preparation for Collecting Networked Statistics: Strategies and* - a 'tour de force' presentation – and a great stand up comic as well. A 'must go to hear' speaker.

Sarah McNicol (eVALUEd project) went through the project so far telling us that the approach taken by the eVALUEd toolkit places emphasis on qualitative techniques such as survey, interview and focus group questions, the focus being on people rather than resources – consulting with users and staff to determine their impressions, opinions and use of EIS.

Alison Bremner & Claire Grace (OU) on *Getting the value from evaluation.* They included in their presentation the need for both qualitative and quantitative to get a full picture of EIS impact. They related their concern concerning next year's introduction of the library portal which would make it perhaps impossible to obtain user stats re individual e-journal use. They were yet to find a way around this problem.

Philip Payne (Leeds Metropolitan) gave an over-view of the LIRG/SCONUL IMPACT project Wendy Fiander (Chester College of HE), presented a case-study focusing on the library's participation in the project. She spoke of the correlation between greater EIS use and dedicated library staff supporting academic resource input into the VLE.

John Crawford (Glasgow Calendonian), another IMPACT participant told us about the correlation between subject/course retention rates and access to EIS.

Stephen Town (Cranfield), the last speaker of the day gave a refreshing talk entitled *E-measures: a comprehensive waste of time?* This was an antidote to all the number crunching that had gone on before It was a cautionary end note to the day questioning whether the range of projects described during the conference actually assists performance or reflect 'data mania…and/or an inappropriate separation of e-issues from the broader library measurement context'. He examined the 'dream' of straightforward evaluation measures and toolkits against the 'reality' of usage trends and dynamic publishing, and considered the potential for missing data from non-library mediated use.

Angela Conyers (Director E-measures project) took us through project's developments so far.

The panel session at the end proved interesting – Peter Shepherd (Director ProjectCOUNTER), Charles McClure, Stephen Town and Peter Brophy. I made note of the following:

'impact assessment of [EIS/e-journal/library use] has to be undertaken', 'qualitative research needs encouraging & nurturing' - 'other people [outside the library/not stats] have to say how good the library is', 'narrative based ', 'listen to the stories', 'listen to the learners', 'work with others outside the traditional boundaries', 'relationship building' debate re the hurdles to do so.

Unfortunately Graham Coulson's presentation did not take place – we were told that he was ill. His talk was to focus on *The impact of JUBILEE on institutions.*

Appendix 7.5 JUSTEIS roundtable presentation (outline format)

Monitoring and Evaluation of User Behaviour

JUSTEIS project
Christine Urquhart
Dept Information Studies, University of Wales Aberystwyth (with IAL)
Tuesday 9th December 2003

Monitoring and Evaluation of User Behaviour

1999 - User behaviour in HE vs. Provision
2000 - User behaviour in HE vs Provision, PLUS piloting in FE of monitoring methods
2001 - User behaviour in HE AND FE, Provision, PLUS Pilot of Action research (FE)
2002 - User behaviour in HE and FE, Provision, Action Research PLUS data mining
2003 - User behaviour in HE and FE (+ new groups), data mining, PLUS Dissemination and Roundtable

Monitoring and Evaluation of User Behaviour

Some facts and figures for JUSTEIS:

Over 1000 interviews with students
Over 1500 questionnaires
Over 50 interviews with senior library managers
Surveys of over 250 LIS web sites

Monitoring and Evaluation of User Behaviour
Changes in questions to be answered:

1999 - Is there a problem with the provision of electronic information services that means that usage is less than optimal?
2000 - What sort of questions need to be asked for the FE setting? Will an adapted monitoring framework work in FE?
2001 - How can an action research approach help - case studies, and working together for greater understanding of the problems?
2002 - What can the data (over 1000 student interviews) tell us about user behaviour - e.g. for the future development of VLEs?

Monitoring and Evaluation of User Behaviour

2003 - What questions are important to YOU?

Identifying trends, and their importance (difficult!)
e.g. in 1999, nine interviewees (out of more than 130) mentioned Google (three of those were librarians)
'This Google and it's incredible' - one student indicator
By 2001, metasearch engines hardly rated and Google was the preferred search engine
Forecasting - needs sensitivity to the context - 'skimming and dipping'

Monitoring and Evaluation of User Behaviour
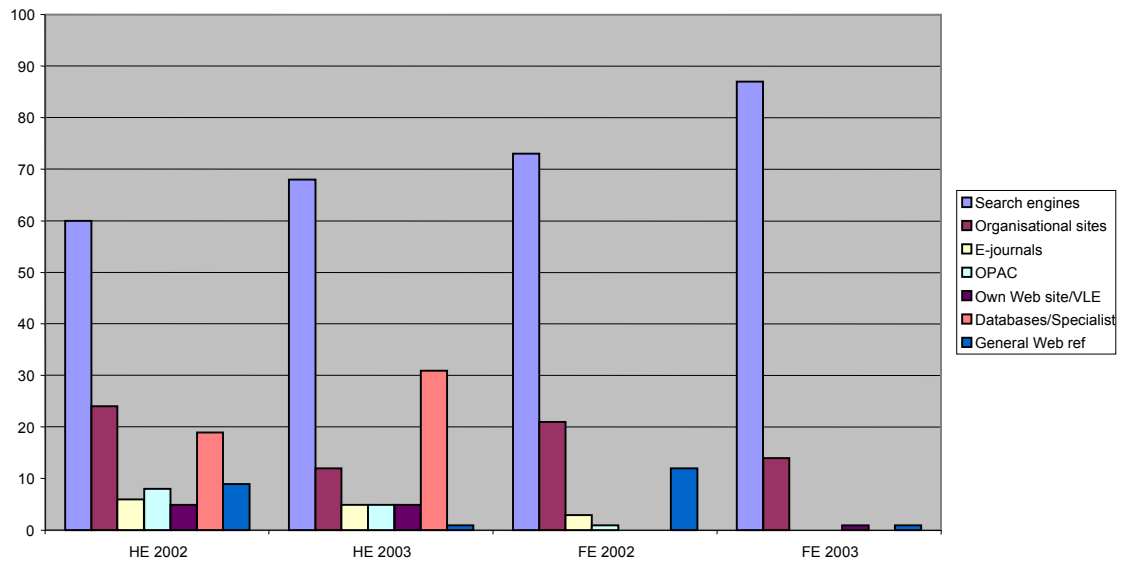
2002 observed trends

FE students catching up with HE students
Electronic journals - publishers' sites being used by students as databases (WoK, MEDLINE) have been
Is the glamour of the Internet wearing off? Routine searching relies on textbooks (still).

Monitoring and Evaluation of User Behaviour

Use of EIS in recent search

Appendix 8 Response to 'Towards an e-learning strategy' consultation document

Monitoring and Evaluation of User Behaviour
2002 - more trends?

Staff training
More structured now? When, rather than if, for FE college lecturers?

VLEs and MLEs
Are FE colleges more likely to go down the MLE route?
More emphasis on a learning portal in FE?
HE approach still based on the OPAC?

Monitoring and Evaluation of User Behaviour
Recurrent themes

Hybrid libraries
Some see a shift towards greater use of EIS
Some see a shift the other way

Purchasing and licensing options
Little awareness generally of open access, and implications of IPR?
'I'm sure there's various initiatives, I can't remember
        what they're called now'

Monitoring and Evaluation of User Behaviour
More recurrent themes

Disciplinary differences
Sometimes difficult to distinguish from effects of approaches to learning (e.g. problem-based learning)

Approaches to learning do matter! Students and staff who are practising:
resource based learning in FE
problem based learning in HE

are more successful and effective users of EIS

Monitoring and Evaluation of User Behaviour
VLEs - developing or not?

Trends in 2002 suggested a problem plateau of development
Data mining examined:
What are the expected benefits? (literature review-based)
Using benefits framework developed - examined whether these benefits were being realised - and if not, why not?
From identified 'problem plateau' to a deeper understanding of what is happening and where progress is being made (and how)

Monitoring and Evaluation of User Behaviour
More data mining on information literacy

Why do students sometimes use specialised services, sometimes not?
Forget quality (as defined by LIS)!
Selling points for students are:
Currency, demonstrably reliable information, authoritative (lecturer/known organisation), AND using that service must SAVE TIME
Therefore - if it's fiddly, difficult to download, print out - it won't be used

Monitoring and Evaluation of User Behaviour
Present undercurrents

VLEs
Do they help students' information literacy?
SCONUL information literacy taxonomy
Does this taxonomy reflect 'reality'?
ECDL and Key Skills in FE
Is the ECDL taking over as the norm?

HE - Key Skills

Heinz 57 varieties - transferable, professional, key skills and where do information skills fit in?

Monitoring and Evaluation of User Behaviour
Policy agenda - e-learning

Commercial training materials (mostly FE?)

E-books

Culture changes - from class contact hours to?

E-learning and staff development

Monitoring and Evaluation of User Behaviour
Policy agenda - widening participation

Home, workplace as well as campus use

Workplace learning (NHSU)

Diverse needs - have implications for

licensing agreements

training and support

skills escalator

Some problems and paradoxes, e.g. NVQs for care workers vs. recruitment problems

Monitoring and Evaluation of User Behaviour
Questions for 2003

JCALT objectives shape the questions

Awareness, Liaison and Training

What is important?

Who needs to know (and when)

Who needs to engage in this?

What needs to be done (and when?)

Monitoring and Evaluation of User Behaviour
CONCLUSIONS

Overview of issues: need to resolve

Flaming issues - hot to handle!

E-learning? MLEs/VLEs? Widening participation?

Smoking issues - what gets in your eyes?

Staff development? User support and training? Key skills?

Smouldering issues - rumbling on?

Licensing?