JISC

Project Title	UBiRD User Behaviour in Resource Discovery
Project website address	*<project URL, Wiki, Blog>* *http://idc.uni.mdx.ac.uk/groups (at the moment this is for internal use)*
Start date	*6 April 2009*
End date	*5 October 2009*
Overview	*HE libraries are spending very significant proportions of their budgets on electronic resources. Yet the common complaint among librarians and academics is that users are not accessing the quality material and are indeed more than ever preferring Google or Yahoo! to obtain their materials. There are many reasons for this – e.g. lack of standardisation in software platform design, access issues and lack of an aggregation facility which fits all. We are in a situation where electronic resources and technologies supporting they access have accelerated far beyond current practices in library user education. Studies in the behaviour of users, including attitudinal studies are needed in order to forge new pedagogic practices.*
Aims and objectives	*The project aim to identify behaviours invoked by users (students and researchers in HE studying Business and Economics) when using resources discovery systems available in HE institutions such as electronic databases, e-journals portals and free online resources available on the Internet to locate the most appropriate and highest quality scholarly materials in the course of their research. The study will also investigate the interaction between these behavioural factors and the technical issues.*
Project methodology	*We propose to use a combination of user behaviour observational study techniques, such as 'think aloud' during the execution of task scenarios; and in-depth interviews and cognitive task analysis that can lead to insights about how users use resource discovery systems to locate the most appropriate and highest quality scholarly materials in the course of their research. Participants will be selected based on a stratified sampling strategy of three*

	universities representing the Russell Group, the 94 Group and the Million+ Group of universities, studying 4 participants each at undergraduate, postgraduate and faculty researchers, relating to novice, experience and expert levels of information literacy, in total 36 participants.
Anticipated outputs and outcomes	*The deliverable documents that will be produced by the project are:* *D1 User Behaviour Observation Dataset. A report/spreadsheet or other suitable format to be agreed containing the observational and interview data in a format that can be reused for future analysis/activities.* *D2 User Behaviour in Resource Discovery Final Report. A report containing an analysis of the data indicating the key trends and findings, and recommendations for JISC, Librarians, Publishers and others on how resource discovery environments in the context of scholarly resources may be developed to address the challenges and issues identified.*
Technology / Standards used (if applicable)	*N/A*
Project Manager & Team	*Prof B.L. William Wong Head, Interaction Design Centre; School of Engineering and Information Sciences, Middlesex University, Tel: +44(0)208 4112864, Fax: +44(0) 208 4116943, w.wong@mdx.ac.uk*
Project Team	*Dr Hanna Stelmaszewska, School of Engineering and Information Sciences, Middlesex University, Tel: +44(0)208 4114697, h.stelmaszewska@mdx.ac.uk;* *Nazlin Bhimani, Learning Resources Liaison Manager School of Engineering & Information Sciences and The Institute for Work Based Learning, The Sheppard Library Middlesex University, Tel: +44(0)208 4116866, n.bhimani@mdx.ac.uk;* *Sukhbinder Barn, Senior Lecturer in Marketing, Business School, Middlesex University, Tel: +44(0)208 4116835, s.barn@mdx.ac.uk;* *Prof. Balbir Barn, Associate Dean, Business; School of Engineering and Information Sciences, Middlesex University, Tel: +44(0)208 4114563, b.barn@mdx.ac.uk*
Lead Institution	N/A
Project partners	*N/A*
To be completed by Programme Managers	
JISC programme	Publishers' Action Group

JISC theme(s)	
JISC Programme Manager	Ben Wynne
JISC Programme Director	Rachel Bruce
Related projects	

Project Acronym: UBiRD – User Behaviour in Resource Discovery
Version: 1.0
Contact: Prof William Wong (w.wong@mdx.ac.uk) & Dr Hanna Stelmaszewska
(h.stelmaszewska@mdx.ac.uk)
Date: 25.04.2009

JISC UBiRD Project Plan

Overview of Project

1. Background

HE libraries are spending very significant proportions of their budgets on electronic resources: databases, backfiles of e-journals, and e-books. Yet the common complaint among librarians and academics is that users are not accessing the quality material and are indeed more than ever preferring Google or Yahoo! to obtain their materials. There are many reasons for this – and the information seeking behaviour of the •Google Generation• is adequately described in the jointly commissioned JISC-BL CIBER report1. Research into the behaviour of users, especially research that leads to practical proposals for promoting academic alternatives to Google, is urgently required.

'Information Literacy' is now a commonly used term – and addressing the skills required by students to reach high level competence in searching for and evaluating materials is becoming more central to the teaching and learning strategies of many universities. ALA and CILIP have usefully contributed to these developments by defining the term 'information literacy' 2 while SCONUL has identified the 7 pillars of information literacy3 in its bid to identify the information skills required of users engaged in HE study and life long learning.

In broad terms, libraries are responding to the challenges presented by new technology, for example by purchasing meta search and link resolver systems; many HE institutions have also eased access to online resources through single sign on so that students can authenticate without the need to click through more than once via the VLE. Despite developments such as these, the overall picture is a confusing one, often characterised by a re-active and fragmented approach rather than one based on a co-ordinated strategy with a clear vision. Some of these issues have been highlighted in the JISC SCONUL LMS Report.4

Practical issues that remain at the forefront include: lack of standardisation in software platform design, access issues, especially the resulting confusion on the part of students and researchers in how to access the quality information resources; and lack of an aggregation facility which fits all. A UK HE-wide information literacy policy is lacking. Such a policy would, among other things, identify key skills and address the need for the grading of resources within databases.

Overall, we are in a situation where electronic resources and the technologies by which they may be accessed, together with changes in the broad social behaviour of 'the millennium generation' have accelerated far beyond current practices in library user education. Studies in the behaviour of users, including attitudinal studies are needed in order to forge new pedagogic practices.

The Problem

The problem is two-fold. One is socio-cultural and behavioural, while the other technical and methodological. The broader attitudinal and behavioural issues that underlie student searching present a complex picture. The problem they pose, however, is a simple one: why do so many students at both undergraduate and postgraduate level NOT use specialist online learning resources – which they themselves have paid for the right of access through their course fees. The answer to this question may be partly for technical reasons (see next) but is, perhaps primarily to be located in forms of behaviour rooted in a broad range of social and cultural factors relating to online activity. (Some of these are captured in the two scenarios provided in Appendix 2). These factors include:

• Online activity experienced as sociable and interactive

• Expectation that the Internet provides instant answers within a multi-tasking lifestyle
• A culture of distraction perceived as enriching and positive.

A particularly common analysis invokes the distinction between right and left brain functions. New technologies speak to right-hemisphere brain functions – which are fast, playful, pick up quickly the gist of meaning and respond to visual gesturing. The right-hemisphere responds to novelty. By contrast the left-hemisphere is more systematic, analyses and arranges material in careful mathematical or syntactical patterns. The implication here is that the 'millennium generation' think in ways that are adapted to multiple and instant sources of diverse material but are less able to conduct a traditional academic research activity requiring a systematic approach and a singularity of focus.

In addition to these fundamental behavioural issues there are technical shortcomings in search engines which further encourages other forms of online activity

Description of Work

The purpose of the UBiRD study is to identify and compare behaviours invoked by users when accessing using resource discovery systems available in HE institutions such as electronic databases, e-journals portals (such as Emerald, EBSCOs EJS) and free online resources available on the Internet.

We propose to use a combination of user behaviour observational study techniques and cognitive task analysis that can lead to insights about how students and researchers in higher education studying Business and Economics use resource discovery systems to locate the most appropriate and highest quality scholarly materials in the course of their research. These methods will help us:

(1) identify how access procedures impact on the use of resource discovery systems, i.e. whether metasearch products and link resolvers are in place and function effectively to achieve optimum results;
(2) identify and compare search and retrieval strategies and problems in using resource discovery systems at two to three universities in the UK;
(3) evaluate impact of these observed issues against existing work e.g. issues arising from the deep log analyses;
(4) characterise the differences between students and researchers at different types of universities;
(5) consider the impact and user perceptions of different platform designs on searching and retrieval; and
(6) identify other issues that may result in promoting successful searching methods and successful uses of a particular resource.[1]

2. Aims and Objectives

The UBiRD project aims to identify, understand and compare behaviour of students and researchers from business and economic studies representing different level of information literacy experience (novice, experience and expert) using various resource discovery systems available in HE institutions as well as free online resources available on the Internet while seeking for information relevant to their work or study.

The purpose of this work is to inform JISC, publishers and libraries of issues arising from the interaction between user behaviour and the technology that will impact the development of a roadmap

[1] For example: the level of material contained in the resource, efficiency of the built in searching mechanism and the information and digital literacy/prior learning/experience of the student/researcher

for improving user access across the different platforms so as to improve the quality of scholarly information search and retrieval.

3. Overall Approach

The project will be carried out in the following three stages:

Stage 1 Month 1-2: In this stage we will identify and review key reports and published studies, and establish the state of the art in terms of electronic resource discovery systems. We will also plan the study and prepare scenarios that will provide a common basis for the investigation across different institutions, and observation and interview protocols. During this stage we will also arrange for field work to be carried out at the respective institutions.

Stage 2 Month 3-5: In this stage we carry out the field observation studies at two to three institutions from different backgrounds such as the Russell Group, the 94 Group, and the Million+ Group, of universities, as their electronic resource discovery provision will vary. We will use a stratified sampling strategy covering undergraduate, postgraduate and faculty researchers, for a coverage that helps us discover the variety of user strategies. We will then carry out a thematic analysis of the observation studies and in-depth interviews, using Grounded Theory techniques such as Emergent Themes Analysis.

Stage 3 Month 6: In this final stage, we will review our findings with reference to the context of the issues identified in the earlier studies such as the Deep Log Analysis (see next). We will prepare the final report, as well as a repository of the video and verbal protocols through qualitative data analysis software such as HyperResearch.

During Stage 3 of the study, we will analyse our findings in relation to some of the key issues identified in earlier studies, such as the E-Books Observatory Deep Log Analysis, the JISC-BL CIBER report on the 'Google Generation' and the JISC-SCONUL LMS study report. This will provide us with some common ground between the earlier studies and how we build on that work. These issues include:

Issue 1: That users spend half their time navigating around the systems (e.g. e-book platform, a resource discovery system) finding content. While we can infer that there are some problems with usability, however, it is also likely that it could be about problems in information design and organisation, a lack of skills in identifying search strategies and problem formulation and articulation, and the lack of an understanding of the storage organisation where the user's mental model may not map well with the designer's model of the design. According to these studies, it is a "dangerous myth" to assume that students of the Google Generation are expert searchers as it confuses what they really need to know but do not, as their familiarity with Google suggests that those skills provide them with the necessary information and digital literacy to effectively use the various resource discovery tools. To what principles should such navigation systems be designed?

Issue 2: Users are not sure what they are assessing online – different sources have different storage methods, structures and assumptions, possibly requiring different navigation strategies. Should we standardise navigation strategies?

Issue 3: Despite availability of virtual library resources, a large proportion of students have been observed to still visit the library. What are the tangible and intangible attributes or differences in services that a physical and virtual library provide, and should therefore be built in or extended in a virtual library?

Issue 4: On-screen reading strategies – do they really read long documents on-line? In the days before electronic library resources, we marked, highlighted and wrote notes on photocopies. For

example, while the e-books may allow downloading of annotations and selected fragments of text, it is easy to lose the context that comes with seeing the annotations together with the source document. As the technology changes, how effective are their on-line reading and studying behaviours? How might we improve this?

Detailed Work Programme

Sampling Strategy

We anticipate using a stratified sampling strategy of three universities representing the Russell Group, the 94 Group and the Million+ Group of universities, studying 4 participants each at undergraduate, postgraduate and faculty researchers in business and economics studies. These levels represent novice, experienced and expert levels of information literacy. We envisage studying a total of 36 participants. In the given project time frame, this sampling will provide the most cost-effective coverage of user behaviour in the use of electronic resource discovery systems. This sampling strategy is illustrated in Table 1 below.

		Undergrad	Postgrad	Researchers
Russell Group	University 1	4	4	4
94 Group	University 2	4	4	4
M+	University 3	4	4	4
	TOTAL = 36	*12*	*12*	*12*

Table 1. Stratified sampling strategy for the UBiRD project.

Recruitment of study participants

Also considering that the time frame of this study will span across the exam period and normal summer vacation, we anticipate some difficulty in recruiting study participants, and therefore would consider paying students up to £10 an hour for up to three hour each participant, in order to attract participation in the study (36 participants x 3h x £10 = £1,080).

Methods

Guided by the earlier findings from CIBER, the project will employ focus group interviews to identify which electronic resources are used by different user groups (students and researchers) and how, in order to find information related to their study or work. In addition, the focus groups will help in identifying the vocabulary that users understand and use in the context of resource discovery systems. The information obtained will be used to develop meaningful standardized task scenarios for 'think aloud' sessions to provide a basis for comparison across the different samples. These focus groups will be audio recorded for subsequent audio data analysis of relevant issues.

In the user observational study we will employ a combination of ethnomethodological techniques such as Contextual Inquiry and 'think aloud' of task scenarios to provide a basis for comparison across the different samples. These studies will be screen and audio recorded for later data analysis.

In addition, we will supplement the observations with in-depth interviews, using techniques such as cognitive task analysis (CTA) to identify non-observable thinking and reasoning processes such as problem and information search formulation strategies. Candidate CTA methods include modified forms of the Critical Decision Method and the Applied Cognitive Task Analysis methods.

Method	Aim and objectives	Who will take part in it
Focus group	**Rationale:** this is to identify which electronic resources are used by different user groups	Students and researchers from MU

	(students and researchers) and how, in order to find information related to their study or work. In addition, the focus groups will help in identifying the vocabulary that users understand and use in the context of resource discovery systems. The information obtained will be used to develop meaningful standardized task scenarios for 'think aloud' sessions to provide a basis for comparison across the different samples. A sample population of 3 - 4 participants representing each group (undergraduates, postgraduates and researchers) will take in this study. The focus groups will be audio recorded for subsequent audio data analysis of relevant issues.	
'Think aloud' of task scenarios	**Rationale:** this method is used to collect qualitative data from undergraduates, postgraduates and researchers to explore: 1. the nature of use of various resources available through the university subscriptions and other free resources available on the Internet, 2. what strategies they apply to find information, 3. what is the users' level of information and digital literacy and how it is used in the context of various resource discovery tools, 4. navigation strategies that users apply when searching for information, 5. any problems users encounter when interacting with these resources. A sample population of 4 participants representing each group of undergrads, postgraduates and researchers (representing novice, experienced and expert level of information literacy) from business and economic studies from each university (refer to section 'Sampling Strategy') will take part in the study. The 'think aloud' sessions will be screen and audio recorded and will then be transcribed and analysed using Grounded Theory-based approaches such as Emergent Themes Analysis, a technique for rapid yet systematic and rigorous extraction of key themes from data sets of individual participants, which can be then collated and analysed across the different sample groups.	Students and researchers
In-depth interviews	**Rationale:** to gain a further understanding of participants' use of resource discovery systems it is important to investigate following matters: 1. why participants choose the particular resources	Students and researchers

	they used during the 'think aloud' session 2. how they recognise navigation strategies within different resources, 3. the differences between services and attributes of physical and virtual libraries used by participants, and 4. how does this affect their use of the resources. In addition, the interviews will clarify any instances which happened during the 'think aloud' session that require participants' explanation in order to avoid researchers' misinterpretation of them. The interview sessions will be audio recorded and analysed using CTA (Cognitive Task Analysis) to identify non-observable thinking and reasoning processes such as problems and information search formulation strategies. Candidate CTA methods include modified forms of the Critical Decision Method and the Applied Cognitive Task Analysis methods.	

4. Project Outputs

There will be two project deliverables:

D1 User Behaviour Observation Dataset. A report spreadsheet or other suitable format to be agreed containing the observational and interview data in a format that can be re-used for future analysis/activities.

D2 User Behaviour in Resource Discovery: Final Report. A report containing an analysis of the data indicating the key trends and findings, and recommendations for JISC, Librarians, Publishers and others on how resource discovery environments in the context of scholarly resources may be developed to address the challenges and issues identified.

5. Project Outcomes

It is anticipated that the project will provide valuable insight and empirical data on users' (students and researchers from business and economic studies) behaviour when interacting with resource discovery systems (e.g. electronic databases, e-journals, etc.) and free resources available on the Internet.

6. Stakeholder Analysis

Stakeholder	Interest / stake	Importance
JISC & Publishers	This project will provide recommendations on how the resources discovery environment in the context of scholarly resources may be developed to address the challenges and issues identified during the studies.	High

Librarians & Wider UK HE Community	The knowledge gained may help in applying different methods and strategies to educate people what resources are available, how they can be used and what kind of information they provide so the resources that HE institutions subscribe to can be used efficiently providing a high quality of material	Medium
Students and researchers	Users taking part in the studies will expand their knowledge and understanding of using various resources available in HE.	Medium
Partners	Gain a better understanding of how students and researchers use resources available in HE institutions	High

7. Risk Analysis

Risk	Probability (1-5)	Severity (1-5)	Score (P x S)	Action to Prevent/Manage Risk
Availability of team for meetings	3	2	6	Early continual planning. Use of collaborative technologies such as Skype, blog, wiki etc.
Ethical approval of research	1	4	4	We have started the ethical approval process in preparation.
Loss of key personnel	2	2	4	The project team has strength in depth and institutional support – other research students in related projects can also be utilised
Methodological framework is inadequate.	2	3	6	We have extensive experience in this area – and can rapidly adapt to changing requirements.
Access to other institutions and their students	2	4	8	We have an extensive network of colleagues across the range of institutions that we intend to research. We will also take guidance from the JISC programme team on obtaining access.

Project Resources

8. Project Partners

CIBER at University College London. Although CIBER is not a formal project partner, UBiRD will coordinate its work with CIBER in order to provide further insight to the findings about user usage patterns uncovered by CIBER, such as the deep log work.

9. Project Management

The project will be supervised on a day-to-day basis by William Wong and Hanna Stelmaszewska, who will be closely involved with the work of the project. Overall project management and coordination will be the responsibility of William Wong. Meetings between all members of the project team, regularly every 2 weeks, will monitor progress and ensure the team members are working together effectively.

Name	Role	Contact
William WONG	Project Manager	Interaction Design Centre; School of Engineering and Information Sciences, Middlesex University, Tel:

		+44(0)208 4112864, Fax: +44(0) 208 4116943, w.wong@mdx.ac.uk
Hanna Stelmaszewska	Researcher	School of Engineering and Information Sciences, Middlesex University, Tel: +44(0)208 4114697, h.stelmaszewska@mdx.ac.uk;
Nazlin Bhimami	Co-investigator	The Sheppard Library Middlesex University, Tel: +44(0)208 4116866, n.bhimani@mdx.ac.uk;
Sukhbinder Barn	Co-investigator	Business School, Middlesex University, Tel: +44(0)208 4116835, s.barn@mdx.ac.uk;
Balbir Barn	Co-investigator	School of Engineering and Information Sciences, Middlesex University, Tel: +44(0)208 4114563, b.barn@mdx.ac.uk

No training needs have been identified for the project.

10. Programme Support

No requirement identified.

11. Budget

See Appendix A for the project budget details.

Detailed Project Planning

12. Workpackages

See Appendix B for the work package details

13. Evaluation Plan

Timing	Factor to Evaluate	Questions to Address	Method(s)	Measure of Success
May - August	Alignment with CIBER sampling frame	Is the UBiRD participant sampling strategy representative of the CIBER sampling strategy?	UBiRD participant selection based on similar sampling frame.	UBiRD sample representative of CIBER sample
May - August	Alignment with CIBER project intent	Do the UBiRD findings provide further insight to the CIBER findings?	Reflective analysis and discussion	Insight about the nature of user strategies invoked

			between CIBER and UBiRD	during resource discovery
May - Sept	Minimise investigator bias	How reliable are the conclusions from the qualitative study?	Traceability of results; Co-analysis; Peer review by team	Evidence of traceability; co-analysis review points; peer review of analysis points.

14. Quality Plan

Output					
Timing	**Quality criteria**	**QA method(s)**	**Evidence of compliance**	**Quality responsibilities**	**Quality tools (if applicable)**
Monthly emails	Project progress	Peer review by team	Progress updates	NB (assurance) HS (preparation)	n.a.
September 2009	Project Report	Peer review by team	Sign off	NB (assurance) HS (preparation)	n.a.
September 2009	Report of observational and interview data	Peer review by team	Sign off	NB (assurance) HS (preparation)	n.a.

Appendixes

Appendix A. Project Budget

Appendix B. Workpackages