Canute rules the waves? Hope for e-library tools facing the challenge of the 'Google Generation'

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Abstract

Purpose: To consider the findings of a recent e-resources survey at the University of Exeter library in the context of the dominance of web search engines in academia, balanced by the development of e-library tools such as the library OPAC, OpenURL resolvers, metasearch engines, LDAP and proxy servers, and electronic resource management modules.

Methodology: Report of survey findings in the context of similar, recent research and articles.

Findings: The survey confirmed the very high usage, ease of use, confident use and user satisfaction in web search engines as the predominant means of accessing academic information. The survey also reveals the considerable use, user confidence, and search success of Exeter's various e-library tools. A number of variations have been detected between user groups including part-time groups, disabled users and those who do not own personal computers.

Practical implications: The paper confirms popular conceptions about how academic users access information although it clearly identifies a vital, continuing role for e-library tools which must accordingly develop and adapt to users' preferences.

Originality/value: The paper draws on aspects raised by recent international surveys and research. It reveals highly-profiled survey findings in the context of the University of Exeter and a unique insight into the current use of e-library tools in this setting.

Keywords: User surveys; online tools; web search engines; metasearching; OpenURL Resolver; Innovative Interfaces Inc.; Google.

Paper type: Research paper

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1. Introduction

"*Let all men know how empty and worthless is the power of kings. For there is none worthy of the name but God, whom heaven, earth and sea obey*. So spoke King Canute the Great, the legend says, seated on his throne on the seashore, waves lapping round his feet. Canute had learned that his flattering courtiers claimed he was *So great, he could command the tides of the sea to go back*. Now Canute was not only a religious man, but also a clever politician. He knew his limitations - even if his courtiers did not - so he had his throne carried to the seashore and sat on it as the tide came in, commanding the waves to advance no further. When they didn't, he had made his point that, though the deeds of

kings might appear 'great' in the minds of men, they were as nothing in the face of God's power" (Viking Network, 2000).

Compared with the 'surface web', it is vital to be aware, especially in an academic setting, of the greater forces of the 'deep web' where the majority of database content remains hidden from search engine crawlers, 'spiders' and bots (BrightPlanet, 2006). Bergman (2001) estimated the 'deep web' to be over 500 times larger than the 'surface web' – the latter being the element which is freely accessible to search engines. Additionally, Spink et al (2006) show that the amount of overlap between different search engines is very small - less than 16% between any two of MSN Search, Google, Yahoo and Ask Jeeves. Search engines retrieve and rank materials differently. However, like Canute, web search engines are perceived as being very powerful. According to a recent OCLC international survey (2005), 84% of respondents used a web search engine (especially Google) to begin a search for information and only 1% started searching from a library web page. Ninety per cent of web searchers were satisfied with the results they obtained. The main satisfaction criteria were that the information retrieved should be worthwhile and free – speed of response was less important. The majority of respondents did not seek help from library staff and libraries were mainly regarded as places to borrow books rather than purveyors of electronic information. Nonetheless, traditional and electronic library use was highest amongst further and higher education students. Nor is it just OCLC which has reported on the might of the web search engine. For example, Van Orsdel and Born (2006) reveal that in June 2005 Google accounted for over 56% of referrals to research articles provided online in HighWire Press journals, while PubMed Central (a well-respected and fully-academic tool) accounted for just 9%.

The University of Exeter library ran its own online e-resources survey during March 2006 with the help of Priority Research Ltd. In the context of the OCLC findings and Exeter's own, previous experiences, the survey sought to explore the use and value of its most recent e-resource tools in the quest for academic information. These tools include:

- the online catalogue - installed in 1999
- metasearch engine (MetaFind*)* – installed in 2004
- OpenURL resolver (WebBridge*)* – installed in 2004
- Electronic Resource Management (ERM) module installed in 2005.

These are all products purchased from Innovative Interfaces Inc, the supplier of the university's Millennium integrated library system. The survey also provided a detailed profile of different user types and therefore variations in usage and attitudes. The survey responses received accounted for just over 20% of the library's active borrowing clientele but were very representative of all user groups. The findings give these specific library tools hope of survival – for the present, at least.

2. Background to University of Exeter Library and its e-library tools

2.1 University of Exeter Library

The University of Exeter is a medium-sized, research-led higher education institution in the UK and recently celebrated its 50-year jubilee as a university. Exeter offers

multidisciplinary courses at certificate, degree and higher degree level including a new medical school (the Peninsula College of Medicine and Dentistry) in conjunction with the University of Plymouth and the National Health Service, and is also a major partner in the new, Combined Universities in Cornwall initiative. Exeter has nearly 14,000 registered students, 3,000 of those at postgraduate level and over 800 teaching staff. The library has 115 employees (59 full-time equivalent).

The University of Exeter Library was a founder member of the South West Academic Libraries Co-operative Automation Project (SWALCAP) which commenced live operation with its online circulation system in 1976. In 1998, with the impending decline of SWALCAP, the university purchased the INNOPAC (later Millennium) system from Innovative Interfaces Inc. and went live with this at Easter 1999 (Myhill, 2000). Since then, Millennium has undergone a steady product development path. At the same time, a number of new extra-cost products have been added and, since 2004, Exeter has added metasearching (also known as federated searching), an OpenURL resolver and electronic resource management (ERM) to its original purchase. All new members (staff and students) are offered a brief, general library induction on arrival but more detailed tuition in the use of e-resources is arranged separately by academic schools and provision and content varies from course to course. Help systems exist through a dedicated team of highly-regarded subject librarians, enquiry desks, telephone and e-mail contact points as well as an extensive set of web pages including online guides and other documentation (see http://www.exeter.ac.uk/library). These are further supported by general 'drop-in' InfoSkills sessions run at regular intervals throughout the academic session.

In the context of this article, it is worth noting Innovative's strong commitment to at least one, major, annual enhancement release with the latest upgrade in 2006 offering over 250 new features and developments. This means that the various e-library tools described below continue to improve in the light of user feedback and technological improvements.

2.2 OPAC

The library catalogue is the essential source for locating all of the University of Exeter's library holdings and covers all material types. It has been fully online since the early 1990s. While Exeter's current page design requires a local make-over, its graphical layout of a textual menu (see http://lib.ex.ac.uk) reflects the earlier menu-driven and easily-understood format of the LIBERTAS system. The base layout offers standard author-title, author, title, journal title and keyword searches together with self-service options and more advanced facilities. Search results are displayed as browseable options leading to a full bibliographic display complete with e-resource links as appropriate, links to help sheets and other guides, and to authentication instructions.

2.3 Metasearching

Exeter uses Innovative's MetaFind product, which is run using software provided by MuseGlobal (http://www.museglobal.com/), and is one of a number of federated search engines available to the information industry. Exeter's configuration of this product currently offers 30 resources grouped under various headings (E-journals, Humanities,

Image databases, Newspapers/reference works, Science and Medicine, Social Science, Education and Law, Library catalogues and Web search engines). The product is linked from a prominent toolbar available on all of the library's web pages (see http://www.ex.ac.uk/library). Using optional, advanced search query boxes linked by Boolean operators, it is possible to simultaneously search all, some or one resource or group(s). While this variety can make MetaFind look a very complex product, the array of options and its 'one stop shop' nature makes it very powerful especially as users only have to log in once, at the start of the session.

2.4. WebBridge

Exeter's OPAC also offers Innovative's WebBridge OpenURL resolver by means of a single icon. WebBridge allows the user to direct an existing search beyond the limits of the local catalogue into a wide variety of other resources such as WorldCat from OCLC, the Consortium of University Libraries' (CURL) OPAC (COPAC), the Research Libraries Group (RLG) union catalogue, Amazon, Google etc. At the same time, WebBridge also provides a direct link from profiled databases (again, there is a long list of OpenURL-compliant bibliographic products ranging from ASSIA to Zetoc) into the University of Exeter's Library OpenURL resolver. By clicking on the WebBridge icon while using an external database, users can immediately and easily access online, full-text articles (if available under institutional subscription) and also link directly to the OPAC to search for print equivalents if required.

2.5 ERM-links

In early 2005 the University of Exeter Library installed Innovative's Electronic Resource Module (ERM). While this additional product offers a number of features covering the spectrum of e-resource management, in this article the major consideration is the automatic production of OPAC-based, e-journal links complete with full holdings information. The data for this process, containing in excess of 19,500 e-journal titles at Exeter, is derived from a coverage spreadsheet regularly downloaded from EBSCO's AtoZ service, EBSCO being the university's predominant journal agent. Each download updates existing data, optionally permitting the creation of new bibliographic records and reporting on changes and non-changes. The latter then allows consideration of the on-going validity of a specific title link, offering it as a potential candidate for deletion. ERM provides a very simple, one click, authenticated and 'proxied' link straight to the e-resource from the OPAC.

2.6 LDAP and *proxy*

All the tools described above operate in conjunction with Innovative's Lightweight Directory Access Protocol (LDAP) product linking into the University of Exeter's own LDAP server for authentication. Unless open source (such as the *Directory of Open Access Journals* – DOAJ (http://www.doaj.org/)), links to resources via the OPAC, WebBridge and Metafind are all 'proxied' using Innovative's Web Access Management (WAM) system to permit off-campus access, tighter user management (an ability to limit access by user category and individual resource) and provide detailed usage statistics.

2.7 Usage Statistics

Use of Exeter's e-resources is very considerable and well-established. Against a 'basket' of our top 20 bibliographic databases, the number of searches rose by nearly 50% from 857,380 in 2003-4 to 1,223,627 in 2004-5. WebBridge passed nearly 430,000 requests in 2004-5, profiled against over 50 of these databases and e-journal sites. Of the latter, the number of e-journal searches conducted through the EBSCO website rose three-fold from 70,921 in 2003-4 to 206,261 in 2004-5. Of course, this is only one pathway to e-journals and the university's complete figures for e-journal usage are much higher. Direct JSTOR searches, for instance, rose over five-fold from 18,711 in 2003-4 to 105,884 in 2004-5. Meanwhile, MetaFind realised 41,589 searches in 2004-5 (from 232 in 2003-4 but against a much smaller profile of resources) and OPAC searches averaged around 6,300 per day (over a seven day week).

3. Survey Results

3.1 Methodology

The survey was conducted online, ran for three weeks from late February 2006 and offered three £50 cash prizes as inducement. The survey was promoted by a general e-mail alert to all users (sent on a Monday morning – regarded as peak e-mail reading time), via a link on the library's web pages and a reminder on the OPAC screens. The rationale for the survey was to explore certain findings relating to e-resource use from the previous year's LibQUAL survey (see http://www.library.ex.ac.uk/news/libqual05.html) at Exeter in more detail and it was divided into two main sections. The first explored the frequency, ease of use, user confidence and results success ratings regarding the tools described above together with those for web search engines, the University of Exeter's own library web pages (which provide alternative routes to the full range of available e-resources), publisher websites and 'other' (covering a range of services including those offered by other libraries). The second section asked for rankings relating to specific statements covering the use of Exeter's online information services. The survey also provided the optional opportunity for respondents to make comments and responses were profiled against a large number different user types including university status (first year undergraduate, taught postgraduate etc.), academic school, library most used, age group, full or part-time work or study, location of residence and normal place of work or study, ethnic origin, whether English was their first language, disability, and computer ownership.

3.2 Frequency of use

Figure 1 provides a graphical view of the ranked results for the question "How often do you use each system to find academic information online". It can be seen that while web search engines led the way as the most frequently used tool (almost 96% as 'frequent' or 'occasional') and clearly confirming the OCLC report conclusions, the OPAC also figured prominently (83%) as did the library's own web pages (73%) and ERM-created

OPAC links (60%). Even usage of WebBridge links (47%) and MetaFind (27%) were significant.

Take in Figure 1

Figure 1. Frequency of use (n=1349)

3.3 Ease of use

Figure 2 provides a graphical view of responses to the question "How easy do you find each of the following to use"? Once again, web search engines led the way with 97.5% of respondents described these as 'very' or 'fairly easy' to use. However, the library community can take much comfort from the fact that not only did the OPAC rank very highly (89%), but that 60% of respondents regarded WebBridge linking, and almost half

of respondents (46%) regarded the potential complexities of MetaFind, in the same light. Reflecting one of the findings from the OCLC survey, ERM-created links from the OPAC to specific e-journals scored only 63% 'very easy' or 'fairly easy' ratings. This is less to do with the mechanics of use and more with the vagaries of certain journals' websites, unreliability of some holdings data and proxy complications, especially for authorised Exeter users accessing IP-authenticated services located on the networks of other academic institutions such as the Peninsula Medical School and Combined Universities in Cornwall.

Take in Figure 2

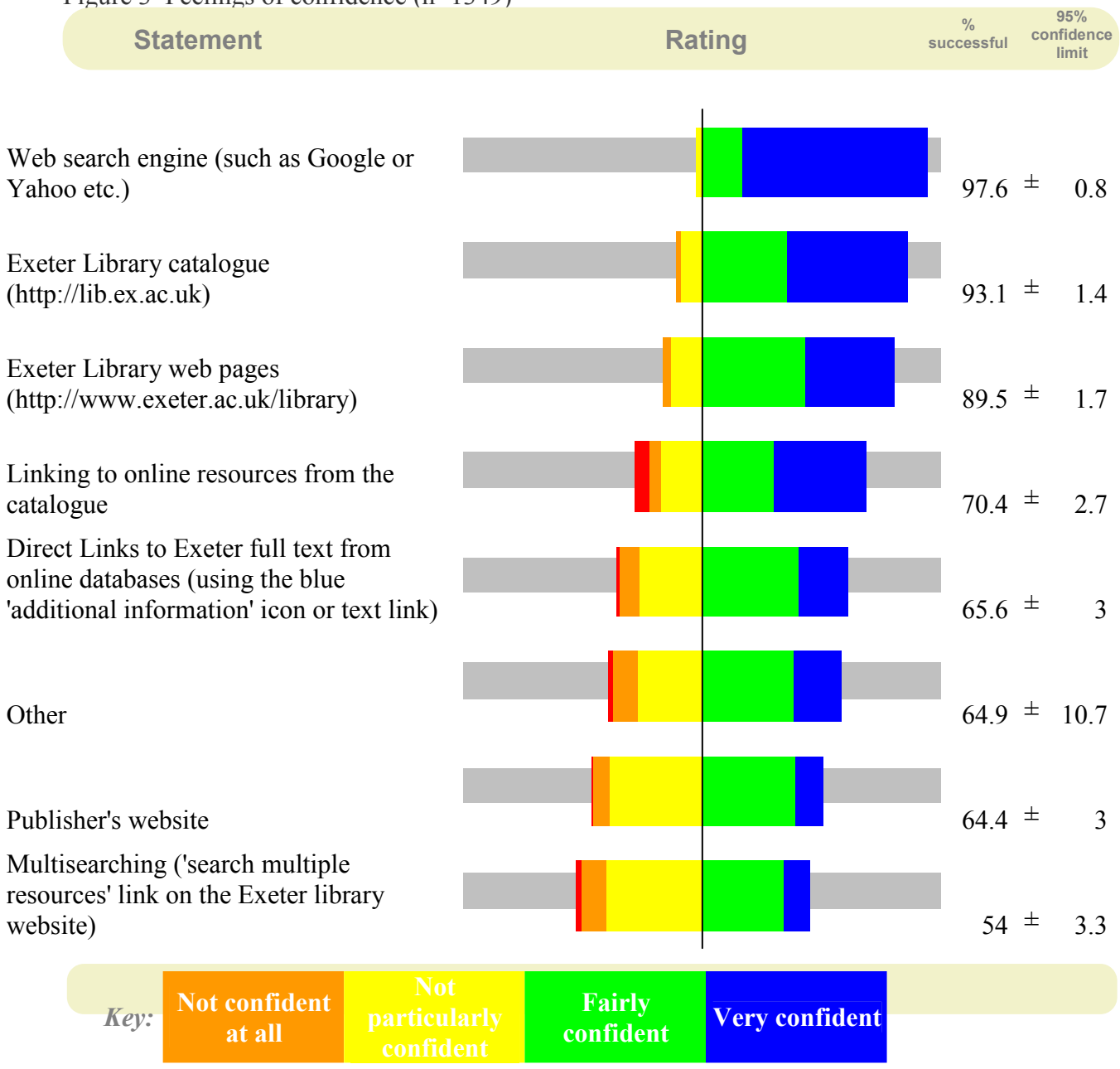
Figure 2 Ease of use (n=1349)

3.4 Confidence of use

Figure 3 displays the ratings regarding "How confident do you feel in using each of the following resources?" Over half of all respondents felt 'very confident' or 'fairly confident' in the use of all resources. While web search engines again scored very highly (98% 'very' or 'fairly' confident), the OPAC scores 93%, and the local web pages 90%. ERM-created links (70%) and WebBridge use (66%) were also significant. Even the potential complexities of MetaFind produced a 54% satisfactory level of user confidence. ERM-created links had the highest 'very unsuccessful' rating.

Take in Figure 3

Figure 3 Feelings of confidence (n=1349)

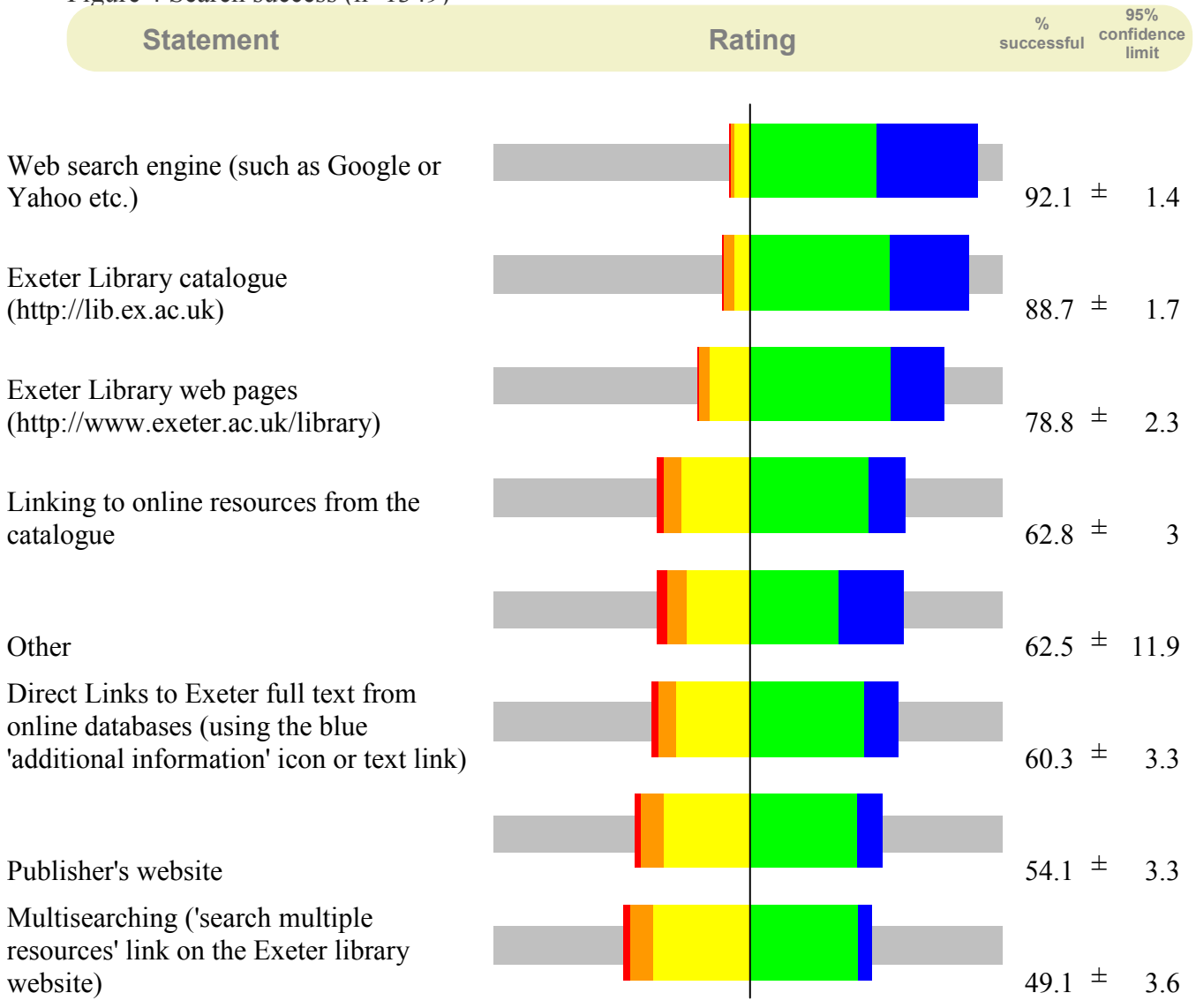


3.5 Search success

Figure 4 displays response ratings to the question "Usually, how successful are the searches you conduct on each of the following resources in terms of getting the results you are looking for?" In general there was a strong similarity for all tools as a 'fairly successful' rating but some variation in the 'very successful' ratings. Web search engines and the OPAC were particularly successful. Overall, half of all searches on all the tools surveyed were regarded as 'very successful' or 'fairly successful', with web search engines (92%) and the OPAC (89%) scoring most highly and MetaFind reaching 49%. It should be noted that less than 10% of searches using any tool were regarded as 'fairly unsuccessful' or 'very unsuccessful'.

Take in Figure 4

Figure 4 Search success (n=1349)

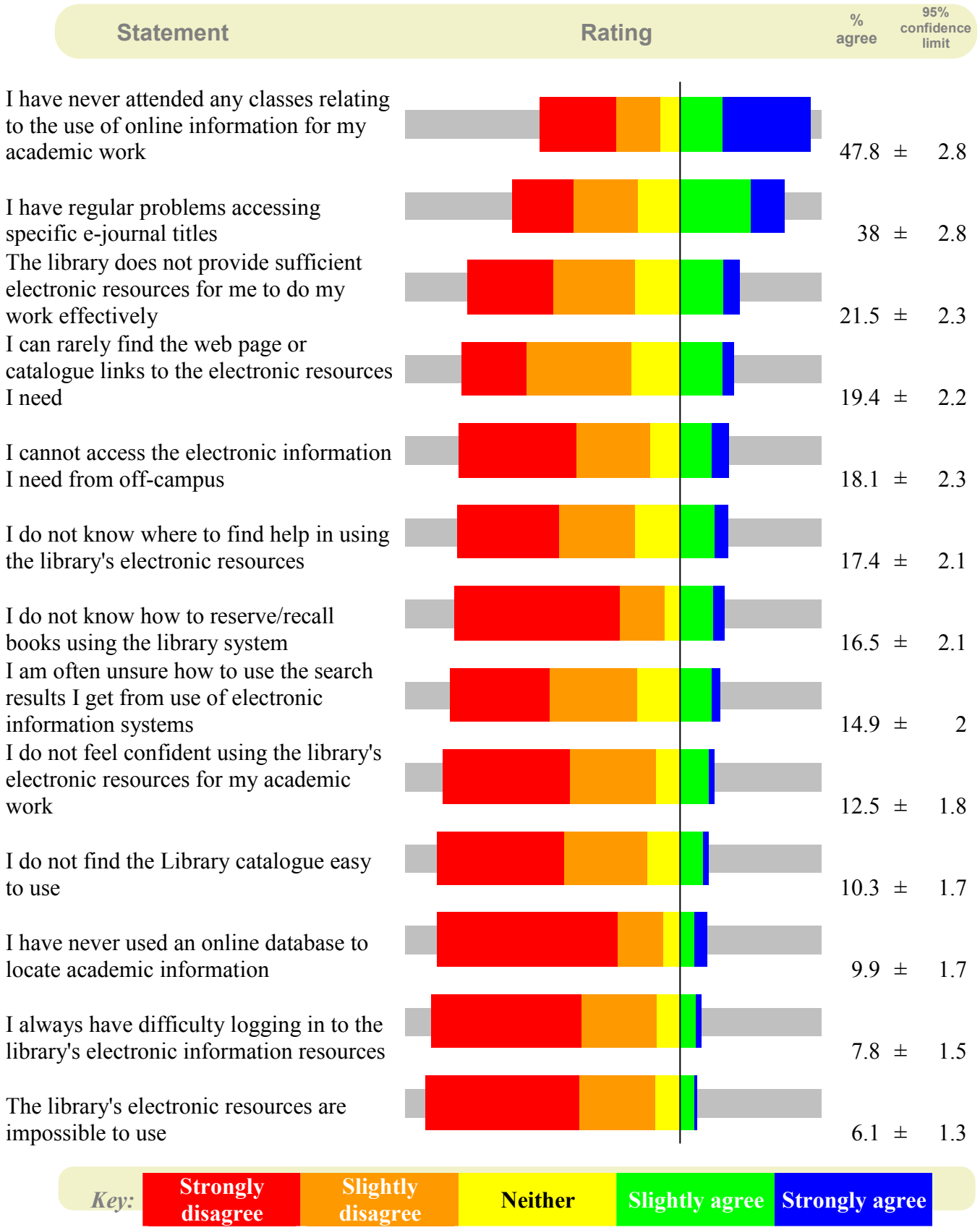


3.6 Use of resources and help facilities

This section of the survey explored user attitudes to the processes involved in finding and using information rather than use of the tools themselves. Agreement responses were sought to 13 separate statements (see Figure 5) such as "I have regular problems accessing specific e-journal titles" and "the library's electronic resources are impossible to use".

Take in Figure 5

Figure 5 Statements on use of resources (n=1349)


Statement
Rating
% agree
95% confidence limit
I have never attended any classes relating to the use of online information for my academic work
47.8 ± 2.8
I have regular problems accessing specific e-journal titles
38 ± 2.8
The library does not provide sufficient electronic resources for me to do my work effectively
21.5 ± 2.3
I can rarely find the web page or catalogue links to the electronic resources I need
19.4 ± 2.2
I cannot access the electronic information I need from off-campus
18.1 ± 2.3
I do not know where to find help in using the library's electronic resources
17.4 ± 2.1
I do not know how to reserve/recall books using the library system
16.5 ± 2.1
I am often unsure how to use the search results I get from use of electronic information systems
14.9 ± 2
I do not feel confident using the library's electronic resources for my academic work
12.5 ± 1.8
I do not find the Library catalogue easy to use
10.3 ± 1.7
I have never used an online database to locate academic information
9.9 ± 1.7
I always have difficulty logging in to the library's electronic information resources
7.8 ± 1.5
The library's electronic resources are impossible to use
6.1 ± 1.3
Key:
Strongly disagree
Slightly disagree
Neither
Slightly agree
Strongly agree

The points of particular note are that just 6% of respondents regarded Exeter's e-resources as impossible to use, yet 48% had never attended any of the classes offered by the library or their Schools to assist e-resource use. Thirty eight per cent cited regular problems logging in to specific e-journal titles, and lack of resources - a common complaint by library users regardless of media – rated as a further cause for concern (21%).

As regards other statements, between 1 in 10 and 1 in 5 of the ???users :

- can't always find the correct 'gateway' web page (19%),
- can't access e-resources from off-campus (18%),
- don't know how to reserve books on loan to other users (16.5%),
- don't know how to use search results (15%),
- are not confident in using e-resources (12.5%),
- find the OPAC difficult to use (10%),
- have never used an online database (10%).

As traditional gatekeepers of knowledge, should the library and information profession be troubled by these findings? Close examination of the results shows that while confidence and ease of use of web search engines rates highly, almost 8% don't find search engine results very successful. While that percentage is lower than any 'library-equivalent' tools it is still significant enough to make use of library tools a useful, additional option in academic environments. The survey findings do emphasise a strong user preference for the 'search engine' culture. Facilities such as Google Scholar (Google Scholar http://scholar.google.com/), Windows Live Academic (http://academic.live.com/), and LibX (http://libx.org/)) have already been developed in the library context in that vein and Breeding (2006) also describes the measures taken in one project to make 'deep web' materials available to search engine crawlers. At the same time, library tools do continue to evolve and improve.

4. Survey profiles

As the survey provided a high-degree of user profiling it has been possible to draw out the significant differences regarding various user types. In general, there was considerable uniformity of response across all categories but there were also variations requiring further consideration.

4.1 Year One undergraduates

The survey was conducted half-way through the first year of this cohort but well after all general library induction sessions had taken place and far enough into the academic year for most to have used the library and its resources. Reflecting their initial academic requirements, this group should already be reasonably proficient in the use of the OPAC but less so with other, more specialist tools.

In general, this group made less use of all the library's tools than search engines (much less of WebBridge, ERM-created links and the library's web pages). They also found WebBridge and MetaFind more difficult to use, and WebBridge and ERM-created links

less successful than the survey average. There was a higher incidence of problems when linking to specific resources, use of the OPAC to reserve items, user confidence in e-resources and knowing how to use search results.

4.2 Year Three undergraduates

As well as being far more experienced than first year undergraduates in their understanding and use of the library's resources, this group should also be fully confident in their use and exploitation. Their academic work, often involving research dissertations, is also more demanding and likely to involve the full spectrum of tools, although these have been implemented during their academic careers at Exeter and were not part of initial induction sessions.

This cohort showed a greater use of the OPAC, library web pages (Exeter's earliest means of accessing e-resources before the purchase of tools such as WebBridge, MetaFind and ERM), and ERM-links. They reported higher levels of ease of use and confidence with these (less so with MetaFind) and even a higher-than search engine rating for search success using the OPAC. Logging in was also easier than average (emphasising the value of our recent investment in LDAP and proxy technology as this group started their university careers when these products were not available to them). Problems highlighted were limited to lack of training classes, and linking to specific e-journal titles.

4.3 Peninsula Medical School (PMS)

The Peninsula Medical School users (as the founding element of the Peninsula College of Medicine and Dentistry) are joint members of the universities of Exeter and Plymouth and many belong to the National Health Service as well. As such, PMS users face a number of authentication issues when accessing e-resources from individual parts of this consortium. Tools such as MetaFind, where access is governed by a single log in (at least, to Exeter's resources) and profiled against core resources including Exeter and Plymouth OPACs, PubMed, ScienceDirect and all Exeter's e-journal subscriptions, should be particularly beneficial in this complex environment. At the same time, the members are geographically-spread over the south west region of the UK and have no undue dependence on one partner institution more than the others.

This group did not use the various library tools as frequently as the survey average. Apart from MetaFind (which had a positive rating for 'ease of use', confidence of use and search success), the other tools received lower than average ratings. PMS users also highlighted a lack of e-resources, regular problems accessing specific titles, lack of confidence, difficulty logging in from on and off campus, and inability to use the OPAC or reserve items on loan.

4.4 Combined Universities in Cornwall (CUC)

Like the PMS, this is a comparatively young venture (currently at the end of year two) and involves a consortium of higher education institutions. The survey responses all came from University of Exeter in Cornwall (UEC) members reflecting undergraduates, postgraduates and staff. The CUC site, near Falmouth, uses the University College,

Falmouth network IP range and relies on Falmouth's Voyager library system as the base catalogue for the combined site. This network arrangement has caused considerable difficulties for a small number of publishers as regards e-journal access for Exeter-only users. Unfortunately, the publications affected are core to the new programmes and have been one of the biggest sources of user complaint as regards library and resource matters. As well as the Falmouth OPAC, Exeter users also have access to the University of Exeter catalogue, Exeter system usernames and passwords and Exeter academic staff based at CUC have a virtual private network access override on the Falmouth IP. As a young venture, print resources are supported considerably by e-journals and online databases.

UEC members make higher than average use of all of Exeter's library tools. This is especially true of WebBridge although, with the exception of MetaFind, this group finds each more difficult to use than the survey average. The Exeter OPAC and the Exeter library web pages are particularly difficult to use. The highest levels of confidence are in using MetaFind and WebBridge, although the success ratings for all resources (including web search engines) are lower than the survey average. Regular problems accessing specific e-journals unsurprisingly featured very highly (59%) – the greatest deviation from the survey average of any item in any category or group, although lack of user confidence and lack of e-resources also figured highly. Given the site reliance on e-resources there was a null response to "I have never used an online database to locate academic information" and better than average ratings for obtaining help and, surprisingly, "the library's electronic resources are impossible to use" (4.8%).

4.5 Part-time students

This group of respondents provided over 10% of the survey returns. Exeter's part-time students are mostly at postgraduate level or part of the Department of Lifelong Learning. As a largely off-campus clientele this cohort is particularly dependent on the proxy server and ERM-links to access e-journals and other online resources. Being part-time, there is less opportunity to attend scheduled library classes and inductions although help is also available through a variety of online guides, systems provided by the resource itself and also via electronic communication with library staff.

This group rated MetaFind above average for frequency of use, ease of use, confident use, and search success. The library OPAC was consistently rated below average on all four headings. As mainly off-campus users, there were higher than average problems concerning login and system access and less confidence in system use and attendance at library InfoSkills classes.

4.6 Users for whom English is not their first language

This group also comprised over 10% of the survey respondents and particularly reflects a large, postgraduate, taught-course cohort. Their information requirements are more likely to reflect the needs of higher-level study and, consequently, a greater use of online databases and e-resources than undergraduates.

Use of ERM-created links, WebBridge and MetaFind were considerably greater than the survey average and the library's web pages were also used more frequently. The group found all these resources easier to use than average and had greater confidence in their use, especially WebBridge and MetaFind. They also produced a higher-than-average search success rating. Reflecting the detailed information requirements and higher-level nature of the group, the lack of e-resources was the biggest single problem area although there was a higher-than-average attendance at library InfoSkills classes and a greater confidence in using search results.

4.7 Users with disabilities

The University of Exeter has over 1,000 disabled students registered with its Disability Resource Centre (http://www.admin.ex.ac.uk/academic/disability/intro.php). The vast majority of these users suffer from some degree of dyslexia; other disabilities including a range of mental health, chronic illness, mobility and sensory difficulties are far less evident. As such, the likelihood would be a lower user tolerance of complex authentication and access systems and potential problems for some users in interpreting search results.

The survey responses from this profile represented around 5% of returns. MetaFind had a more frequent-than-average usage but all systems (including web search engines) had a lower-than-average rating for ease and confidence of use. This was especially true for ERM-created OPAC links and WebBridge. The OPAC and library web pages gave better-than-average search success scores and the heavier-used ERM-links and MetaFind were below average on this rating. In general, this group found all aspects of the e-library problematic if not impossible, especially off-campus access, with difficulty reported in logging in and being able to use any search results.

4.8 Users with no private access to a personal computer of their own

The survey revealed that 80% of all respondents have private access to a computer (50% of respondents have laptops). It is anticipated that users who don't have their own computers would face more technical difficulties using them and also in allocating sufficient time to search for information in the corporate, campus-based computer clusters.

The survey findings revealed that this group made lower-than-average usage of all information tools (including search engines), finding these less easy to use, with less confidence and less success than other groups. MetaFind, WebBridge and ERM-links were particularly problematic, although use of search engines was also lower. The group had a higher-than-average attendance at InfoSkills classes, with only lack of confidence and lack of sufficient e-resources as higher-than-average problems

5. Next steps

At Exeter, these survey findings have been extensively discussed amongst the library staff. It has been concluded that the most effective change required is to reduce user confusion by limiting the number of different access paths to the same information. For specialist groups, such as international students, a glossary of essential library jargon has

been compiled to further break down some of the mystique behind ATHENS DA, LDAP etc. Work continues on redesign of our key information systems including the e-resources web pages (using a locally-created database management system) and the OPAC - with increased simplicity in mind.

It is perhaps the OPAC development where the greatest industry-wide change will come. The Calhoun Report (2006) points to the need to utilise a business model to enliven the catalogue and its use. A four-part matrix encourages new users to use existing tools via the OPAC, existing users to make more use of minor enhancements to the OPAC, for new users to utilise major new advances (such as mass digitisation) and for existing users to make use of significant new features particularly relating to full-text discovery and retrieval. Such developments may well be in loose collaboration with search engines but the report is careful to elaborate on the main advantages of the catalogue – information discovery and management in one system, browsing ability and consistency, collocation and location of local holdings. Certainly new products from library management system vendors are aimed at further refining such technology for library users. Innovative's Encore (http://www.iii.com/news/pr_template.php?id=290), or Aleph's Primo (http://www.exlibrisgroup.com/newsletter/?cat=71&parent=19) are very recent examples of systems which offer simple yet powerful search and discovery tools intended to provide users with the relevance-ranked information they require accurately, quickly and effortlessly. Inevitably, given the relentless growth of global information, systems will increasingly rely on powerful algorithms and offer self-service profiling so that users can elect to see materials most relevant to them without being deluged with information.

6. Conclusion

Even at the most profiled level, there are probably few surprises revealed by this survey. In many ways, it is comforting to have assumptions about the academic library clientele confirmed. However, the fact that the majority of the academic web lies hidden from web search engines must be a major concern to information professionals in their role as trustworthy gatekeepers even if the clientele ignores their advice in favour of simpler, but more satisfying web search engines. As far as the latter are concerned, users would do well to remember that however powerful Canute was, he acknowledged the greater forces at work around him. As Bergman (2001) concluded:

> *"A quality search result is not a long list of hits, but the right list. Searchers want answers. Providing those answers has always been a problem for the surface Web, and without appropriate technology will be a problem for the deep Web as well.*
>
> *Effective searches should both identify the relevant information desired and present it in order of potential relevance -- quality. Sometimes what is most important is comprehensive discovery -- everything referring to a commercial product, for instance. Other times the most authoritative result is needed -- the complete description of a chemical compound, as an example. The searches may be the same for the two sets of requirements, but the answers will have to be*

different. Meeting those requirements is daunting, and knowing that the deep Web exists only complicates the solution because it often contains useful information for either kind of search. If useful information is obtainable but excluded from a search, the requirements of either user cannot be met."

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