

Paper

More to life than Google – a journey for PhD students

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Abstract

Loughborough University Librarians have become concerned that students, both undergraduate and postgraduate, over estimate their information literacy skills. Students therefore lack motivation to attend and interact during information literacy courses. This paper outlines how Loughborough University Library has tried to encourage postgraduate researchers to reflect on their information searching abilities through the use of checklists and online tests. Research postgraduate students then attend appropriate courses relating to their information literacy needs.

Keywords

Information literacy, Diagnostic tools, CAA, Postgraduate research skills.

Setting the scene: PhD information literacy courses at Loughborough University

Prior to 2003/2004 Loughborough University ran a PhD training programme for the Social Science and Humanities Faculty. The programme was administered by the Department of Professional Development and included a two hour compulsory workshop, which was delivered by the Library twice a year. The workshops were assessed. The Library also ran three voluntary workshops twice a year for the Faculties of Science and Engineering (Tracing journal articles, Finding research information and Keeping up-to-date), which were relatively well attended.

In response to the Roberts' review "SET for success"(2002), the University made the Professional Development research training programme available to all PhD students. Four voluntary library workshops (Tracing journal articles, Finding research information, Keeping up-to-date and Plagiarism, citation and RefWorks) were created with no formal assessment attached. The courses run three times a year. Approximately 30 PhD students attend each course and of these 50% attend all four courses. Supporting material for all the information literacy courses is made available from the University's VLE. None of the courses is subject specific and therefore all examples used in the courses are generic. Most students do not mind this, but some would prefer subject specific courses. Nine academic librarians from all subject disciplines take turns in delivering the information literacy workshops. All have different levels of comfort in delivering courses, but feel it is an important and essential part of their work.

Setting the scene: the issue

Despite the courses being relatively well attended the Library felt that it was not reaching all PhD students. Libraries including Loughborough are competing with search engines in providing access to information. Regrettably Google and company are strong competitors to good quality information resources provided by academic libraries. Students like search engines as they are quick to use and have simple search interfaces (Mittermeyer & Quirion 2003). Hard-pressed students (both undergraduate and postgraduate) attempt to find information quickly and easily through this route and often feel they succeed. We would argue this leads students to assume they know how to find good quality information and makes them reluctant to invest time in learning how to conduct information research properly.

Studies in the UK such as Justeis (Urquhart et al. 2003) and Susie Andretta (2001) corroborate the anecdotal evidence supplied by librarians that students often overestimate their information literacy skills. Students tend to be reasonable at finding information, but lack the analytical skills to select good quality information. The recent PEW study on search engine users (Fallows 2005) found that 92% of the respondents who used the Internet stated they were confident in using search engines. And 87% of the respondents found the information they were looking for. The PEW report found these results disconcerting as they also discovered that most of the respondents who used the Internet were naive about how search engines work, especially in terms of paid and unpaid results and advanced searching techniques. Even more worrying for librarians, the PEW report states that “the young are confident and more trusting and tolerant of search engine results.”

Robinson and Nelson (2002) argue that the student confidence in the Internet makes them “reluctant library patrons”. Although most UK HE libraries may feel that this is not an accurate picture of library usage, many would agree that students are reluctant to participate in information literacy courses. Loughborough University Library recognises that information literacy skills assist life long learning (Robinson & Nelson 2002) and like Webber and Johnston (2003) feel that they should be “adaptable to changes through life”. The Library therefore wishes to equip the students with the skills they need to undertake good quality research during their PhD. The library aims to encourage all new PhD students to identify their own strengths and weaknesses so they can improve the information literacy skills appropriate to them, through face-to-face teaching and online course material.

The project team reviewed the literature and found that similar projects relating to assessment of undergraduate information literacy levels had been undertaken in Canada and America. For example in Canada (Mittermeyer & Quirion 2003) a consortium of libraries undertook a study on the information research skills of undergraduate students entering Quebec Universities. As part of their project they developed a questionnaire that assessed students information searching skills. In America Lawson (1999) undertook pre and post information literacy tests at Central Missouri State University and found that information literacy teaching did make a difference. The SAILS (Standardized Assessment of Information Literacy Skills) (Thompson 2005) project is developing an information literacy test that can be used to ascertain students’ initial skill levels on entering university and then compare them after information literacy teaching. The project team also surveyed the web sites of

UK higher education institutions to establish current practice in relation to student reflection, the use of checklists, online tests and diagnostic tools. An annotated list of tools found during the spring of 2004 is available in Appendix A. Since then the project team has heard of several more UK tests being used, some of them as diagnostic tools.

Following investigations a variety of resources was created and made available via the University's Virtual Learning Environment (VLE) known as Learn. The project team and academic librarians agreed that a variety of online learning materials should be offered, as a mixture of resources would afford student choice of what and how to learn. The materials included web pages, database tutorials and resources that encouraged student reflection in the form of checklists and an online self-assessment tool to diagnose students' strengths and weaknesses.

Supporting material

Supporting material for the courses were provided online through the University's VLE, Learn. The project team enhanced the existing material on Learn by linking the supporting material more closely to the learning outcomes, which were based on SCONUL's (2004) seven pillars of information literacy. However the resources on Learn were not obviously divided into the key areas outlined under the seven pillars model. Rather they were presented in seven areas that the PhD students tended to ask Library staff about. It was felt that this would help the students to find the supporting material they required more easily. The seven areas covered were:

- using the library
- searching the Library catalogue
- finding journal articles
- searching the web
- finding completed and ongoing research
- current awareness
- plagiarism, citation and RefWorks.

Fuller explanations of best literature search practice and how to use the library and all its services were made on Learn. Attempts were made to make the material interactive as Brown and Gibbs (1996) suggest, rather than just text and the "turning" of pages. However the project team lacked technical skills in this area and the supporting material is not as interactive and reflective as desired. Appropriate links to open access library web pages and external web pages were maintained as they often provided fuller information or an alternate way to illustrate a point.

Online database tutorials created using the Informs software were made available via links. As the course material is aimed at all PhD students irrespective of department, the examples used in the database tutorials were of a generic nature. Although each database tutorial illustrates how to search a particular database, the library attempts to illustrate best practice in how to formulate a search strategy by always incorporating refining of a search by using boolean logic and/or date and other limiting factors. More details of the Informs project can be found in the Loughborough Informs project report (Franklin & Stubbings 2003) and JeLit paper (Franklin & Stubbings 2004).

The online teaching material created during the project was designed for and used in classroom teaching, as well as by the students in their own time (especially the checklists, database tutorials and tests). Colleagues had mixed success embedding all the material into teaching contact hours. The project team believes this reflects their comfort level with the supporting material and content of the course. Information was presented in bite size chunks (Robinson & Nelson 2002) to try and maintain student attention.

Student reflection: checklists

The project team decided to use both informal (checklists) and formal (tests) methods of student reflection.

Checklists were placed prominently on Learn and students were encouraged to complete them before attending a face-to-face course. Once the students had finished the checklists they were encouraged to compare their self-assessment with the more formal online assessment. The project team felt that checklists could provide active engagement with the content of the learning material as the tool helps the student reflect on “What’s in it for me?” Discussions within the classroom on the results of the checklists often showed the students were genuinely surprised regarding their competence level. Some realised they were far more aware of best literature search practice, but more often than not they were shocked by how little they knew.

Mark Hepworth (2005) on the UK discussion list *lis-infoliteracy*¹ has expressed concerns over the use of checklists, as he feels they are often generic in nature and do not take into account the situation and learning style of an individual. Susie Andretta (2005) argues that checklists have a role to play as long as they are embedded into the learning experience as a whole and can be used in the creation of a students learning plan. However, Susie Andretta does argue that self-evaluation does not work well with postgraduates and feels that these students are more at ease with formative and summative assessment.

Despite this, the project team believes checklists provide an informal and non-threatening tool for students to assess their searching skills. The checklists asked the students to rank how confident they felt in undertaking certain tasks, e.g. selecting appropriate databases to search for a particular topic. Each checklist contained between five and ten statements, so that they were quick to complete. No record of completed checklists was kept, but students were encouraged to print them off for their own records and for possible discussion in class. Webber and Johnston (2003) argue that self reflection often requires guidance for it to be useful. The checklists were embedded into teaching with varying degrees of success. Some of the Academic Librarians successfully led general discussions in class on the results of the checklists and used these to dictate the content of the face-to-face courses. The PhD students did not seem to mind discussing the checklists during the courses and some used them to formulate questions for the librarian delivering the workshop.

¹ <http://www.jiscmail.ac.uk/lists/LIS-INFOLITERACY.html>

Five checklists were created on the following topics:

- searching the Library catalogue
- tracing journal articles
- tracing research
- searching the web
- current awareness.

Copies of the checklists are available in appendix B.

Student reflection: online formative / summative assessment

Webber and Johnston (2003) argue that it is important for information literacy to be assessed. Unfortunately the University felt that none of the courses offered within the PhD research training programme should be formally assessed. However, the project team felt that a more formal method of reflection should be devised to complement the informal reflection of checklists. It was felt that formal assessment would allow not only students, but academic staff and the Library to review student progress against learning outcomes.

Webber and Johnston (2003) argue that assessment should be relevant, assess learning outcomes, consistent, practical, provide feedback and encourage deep learning. The literature shows that there are several ways to formally assess student information literacy levels. These range from assignments that ask students to outline their literature search strategy and include a bibliography on a particular topic, search story problems (a quiz study sheet that illustrates problems and students are asked to review the search techniques involved) (Fagan 2001), creation of portfolios, informal quizzes and formal tests. Webber and Johnston (2003) provide an excellent overview of assessment techniques used by information literacy courses in UK higher education and whether they are effective.

As stated before, the information literacy courses provided as part of the PhD research programme have no remit to be formally assessed. Also although attendance at the PhD courses is voluntary and not everyone attends, there is a large number of participants. The Library therefore needed a method of assessment that would not be time consuming for either staff or students. It was therefore felt that online tests would be the best route forward as they could be used in class contact time or at a time convenient for the student.

In common with existing computer assisted assessment methods within the University, the tests were created using Questionmark Perception² (QMP). The project team would like to thank the Professional Development Department and in particular Bryan Dawson for his assistance and guidance in learning to use QMP. QMP allows a tutor to create a question bank(s) that can be used in the creation of tests.

A question bank relating to information literacy was created. The questions were designed to assess the learning outcomes of the face-to-face courses and measure

² <http://www.questionmark.com/uk/home.htm>

either knowledge or understanding. For example, how many books can a PhD research student borrow or how to refine a search when too little or too much information is found. The project team decided to try and avoid using library jargon such as boolean logic (combining keywords) and bibliographic databases (finding articles) as the library wanted to test a student's understanding of how to find information not their understanding of terminology.

To aid learning a variety of question styles were used, e.g. multiple choice (one correct answer); multiple response (more than one correct answer); true or false; and fill in the blank (where students have to insert the missing word). All the questions received a score of one, except for multiple response questions. Bryan Dawson created a complex algorithm for the multiple response questions that ensured students did not receive a mark if they selected all the options. Negative marking for incorrect responses were used within the marking algorithm.

Creating quality questions was harder than first anticipated. Writing meaningful questions and answers, including sensible distractor statements for both multiple choice and multiple response questions was both taxing and time consuming. Webber and Johnston (2003) argue that multiple choice questions should not be used to test higher order questions and it is true that the project team found it easier to design factual questions testing knowledge than good quality questions testing cognitive and critical thinking skills. The project team reviewed questions available on library web sites and in the literature, for example those made available by the Quebec project (Mittermeyer & Quirion 2003) and Lawson (1999). Most were of the multiple choice style and often used very library oriented jargon or were subject specific. Despite this, they were useful in helping to determine possible questions and writing styles. The project team also swapped questions with Leicester University Library. The project team would like to thank Selena Lock and Heather Keeble for this. It was gratifying to see that Leicester University were using similar learning outcomes to ourselves and that they had thought of similar questions. However, it was also sobering to view the good quality of their questions.

QMP enables the question designer to provide formative feedback for each question, plus a summative and formative report at the end of the test. The project team decided that students would not be able to see the feedback for each individual question until they had completed and submitted the test. It was felt that some feedback provided guidance on how to answer the next question and it was felt that this should be avoided. Both the individual question and overall test feedback provided the correct answer(s) with reasons, plus remedial advice including links to appropriate Learn pages and the online database tutorials created via Informs.

QMP records student marks. The lecturer can monitor the marks attained by each participant, e.g. 10 out of 25 and to review individual responses to each question. The tests were originally designed to be used as self-diagnostic tools to help students evaluate their own information literacy skills and plan how to enhance them. Therefore the summative marks were not noted against a student's record. However, the tests can be used as a more formal method of assessment and count towards a module mark.

It was felt that students should have the opportunity to undertake “bite size” (Robinson & Nelson 2002) tests that would take no longer than 10 minutes to complete, rather than one long test that covered several topics. It was felt that smaller tests on a particular topics would allow both students and staff to assess particular aspects of information literacy in more detail, would encourage more in depth student reflection and could be done at time of need. There was no time limit set for the test, so students could take as long as they wanted to complete them. As the tests were designed to be formative and encourage self-reflection, there were no restrictions on how many times students could take the tests, although QMP does have this feature.

The following tests were created:

- the Library (tested factual knowledge about library services);
- the library catalogue (tested factual knowledge on how to use both basic and advanced features of the catalogue);
- formulating a search strategy (testing ability to perceive an information need and how to formulate a strategy);
- selecting resources to search (testing ability to meet information need);
- citation (testing synthesis, ethical use and presentation of information).

Library staff were encouraged to complete the tests and to provide feedback. Several Library Assistants comprehensively tested the tests and provided very useful data that enabled the test to be enhanced. Feedback centred round confusion caused by the wording of questions, comments on distractors used in the multiple choice and multiple response and queries regarding the marking scheme. Unlike the Open University we were not able to undertake small pilots with students and academic staff due to the timescale of the project. The tests were piloted with the PhD students. The online tests were made available to all PhD students through Learn. An email was sent to all academics and PhD students announcing their availability. Students were encouraged to take the tests in their own time and in some cases during courses. The tests were embedded into teaching with varying degrees of success.

The most popular test was that on citation with 20% of the PhD population completing it. The next most popular tests were formulating search strategies and Library services (13%), followed by the Library catalogue and where to search (8%). After examining the results of each test, it became apparent that the PhD students did not score very highly on the tests. On average only 3 to 5 students scored over 50% on a test, with the majority scoring 30% or less. Similar discrepancies between performance in tests compared with students’ self-assessment have been discovered by Cox and Housewright (2001). The project team also discovered that the number of correct responses for each question fluctuated. This is similar to the findings of Lawson (1999) and Mittermeyer and Quirion (2003). The project team needs to carry out a more in depth comparison of the results with the Quebec study, but the brief review suggests they are very similar. Also a more detailed investigation of whether the questions are correctly worded and pitched at the right level needs to take place, rather than assuming the poor test results are just related to the students’ lack of knowledge and understanding.

Student feedback

All new PhD Students were surveyed to ascertain their thoughts on the new learning material, especially the checklists and tests. A response rate of 10% was achieved. 95% of respondents felt all the supporting material (Learn pages, checklists and tests) was useful, pitched at the right level and encouraged reflection of their searching skills. On average each test took 5 minutes or less to complete.

Conclusion

The results of the project show that PhD students can find it difficult to reflect on their own skills and a reasonable proportion estimates their information literacy skills. The students' journey is still in its infancy. The Library will continue to use the tests to demonstrate the need to attend the information literacy courses provided by the Library. The Library recognises that it needs to review the questions in more depth and ascertain their quality and level of difficulty. The project team hopes to enhance the question bank and re-model the materials for both postgraduate and undergraduate students.

Following the eLit 2004 conference the project team has learnt of similar research in other higher education institutions and is looking forward to productive collaborative ventures with Leeds University, Leeds Metropolitan University, Leicester University, the Open University and the University of Sunderland. In partnership with these institutions and the Higher Education Academy: Information and Computer Sciences Centre³, the project team aims to produce a good size question bank, which can be more thoroughly tested and made publicly available to all.

Appendix A – Diagnostic tools

Aston University (Knowledge – reference, evaluating information)
<http://www.aston.ac.uk/lis/infoskills/>

Bolton Institute (Checklist – searching strategy)
<http://www.bolton.ac.uk/lskills/TLTP3/entersite.html>

University of East London (Knowledge – catalogue, Internet)
<http://www.uel.ac.uk/lss/webctfiles/starter.htm>

Glasgow Caledonian University (Questionmark Perception)
<http://www.lib.gcal.ac.uk/infoskills.htm>

Leeds Metropolitan University (Knowledge)
http://www.lmu.ac.uk/lis/lss/developing_skills/index.htm

Leicester University (Knowledge – keywords & databases)
http://www.lmu.ac.uk/lis/lss/developing_skills/index.htm

³ <http://www.ics.heacademy.ac.uk/>
Journal of eLiteracy, Vol 2 (2005)

Portsmouth (Checklist – searching) <http://infoskills.port.ac.uk/>

Appendix B Checklists

How confident do you feel using the Library catalogue?

	Very confident	Confident	Not confident
Finding books using the key word search option			
Requesting a book that is out on loan			
Renewing a book online			
Finding journals			
Setting up alerts			

How confident do you feel when finding journal articles?

	Very confident	Confident	Not confident
Selecting appropriate databases for your topic			
Searching more than one database in MetaLib			
Searching databases outside of MetaLib			
Using multiple keywords to focus your search			
Using controlled vocabulary			
Using truncation & wildcards			
Modifying your search strategy			
Selecting appropriate material to read			
Linking to the full text of articles			
Saving / exporting / emailing the references			
Browsing the subject-based list of e-journals			

How confident do you feel in tracing completed and ongoing research?

	Very confident	Confident	Not confident
Finding theses			
Finding conferences			
Finding reports			
Using Community of Science			
Using discussion lists			

How confident do you feel when searching the Internet?

	Very confident	Confident	Not confident
Searching the Internet using a search engine, e.g. Google			
Using the advanced search options on search engines			
Searching subject gateways, e.g. EEVL			
Evaluating web sites			
Citing web sites in your work			

How confident do you feel in avoiding plagiarism, citing ideas and using RefWorks?

	Very confident	Confident	Not confident
Quoting an author in your work?			
Paraphrasing an author in your work?			
Understanding and avoiding being a plagiarist?			
Citing a book correctly?			
Citing a journal article correctly?			
Citing a web page correctly?			
Creating a bibliography / list of references?			
Using RefWorks to manage your references?			
Using RefWorks to create your bibliography?			

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