Article

Picking up the cool tools: working with strategic students to get bite-sized information literacy tutorials created, promoted, embedded, remembered and used

Hazel Rothera, Academic Development Team Leader, Oxford Brookes University Learning Resources. Email: hrothera@brookes.ac.uk Twitter: @hrothera

Abstract

This small-scale practical action research project set out to investigate how undergraduate Primary Teacher Education students in a UK university find and evaluate information, and whether short online tutorials hosted in the university's Virtual Learning Environment (VLE) could support their information literacy development. Surveys and focus groups were used to explore students' information-seeking behaviours. Students then collaborated with the researcher in selecting, designing and creating a series of short video tutorials demonstrating key information literacy-related Library tools.

The project found that many students navigate both physical and online information environments with their focus on immediate short-term goals, without exploring; that key IL messages only communicated once are quickly forgotten; and that without frequent reminders of Library tools students devise their own workarounds to their IL problems, with varying degrees of success.

The article therefore argues, from the project findings and the existing higher education literature on strategic student behaviour online, that while students value short visual IL tutorials, librarians' time and effort in producing these risks being wasted if it is simply assumed that students will find and use them unprompted. These findings have implications for professional practice in terms of how such resources are positioned and promoted.

This is believed to be one of the first studies within the librarianship literature exploring the effect of students' strategic navigation of online environments on their awareness of information literacy tools and resources, and suggesting tactics to address the resulting issues. It is also unusual in having collaborated with students in designing and producing information literacy resources.

Keywords

1. Introduction

Many librarians working in higher education (HE) settings devote significant time to producing information literacy (IL) support resources such as online tutorials, videos and guides. This article argues, from the findings of a two-year action research project and the existing HE literature on strategic student behaviour online, that while students are in favour

of short visually-based help resources such as videos and tutorials, much of the time and effort which goes into producing these resources risks being wasted if it is assumed that students will proactively find and use them unprompted. These findings have implications for professional practice in terms of how such resources are positioned and promoted. The project's findings suggest that embedding frequent, bite-sized, multi-channel reminders to students about online tutorials and help resources, at regular intervals throughout their undergraduate experience, is essential if students are to use and benefit from such resources in developing their information literacy.

The article describes an action research project for an Oxford Brookes University Learning and Teaching Fellowship, which set out to investigate how undergraduate Primary Teacher Education (PTE) students find and evaluate information, what barriers they experience, and whether short online tutorials hosted in Moodle (the University's VLE) could support them in overcoming these. Surveys garnered data on the students' difficulties in searching and locating information; later focus groups explored their information-seeking and evaluating behaviours in more detail and investigated what forms of support they would prefer. In Years 2 and 3 of the project, the author collaborated with students in storyboarding and creating a series of short tutorial videos demonstrating the Library tools students felt it most important to promote. Such student collaboration in designing and creating information literacy resources is evidenced in very few, recent, examples in the literature and is thus believed to contribute to an innovative but growing area within IL.

The project's findings are related to existing literature on: blended learning; student navigation and use of VLEs; "bite-sized" embedded information literacy interventions versus the "one-shot" approach; the use of short online video tutorials to support IL development; and student involvement in producing IL resources.

2. Rationale

The original drivers for the Fellowship project (awarded for 2012-14) came from the University's student experience strategy and from internal and external survey evidence. The Strategy aimed to "empower students' development as self-regulating, digitally literate learners" (Oxford Brookes University 2010, p.2). Evidence from quality reviews and surveys suggested that where students were not well equipped to make full use of the Library's e-resources, and either found them difficult to access or were unaware of what was available, this reduced their satisfaction with the Library and the University.

The project therefore aimed both to investigate how and why students were struggling to locate and access appropriate resources, and to provide tailored online support in the form of short tutorials, presentations or videos, which would empower students to take more control of their own IL development.

2.1 Institutional context

Oxford Brookes University is a post-1992 university in the south of England, with approximately 18,000 students. Its School of Education is one of the largest in the UK (Oxford Brookes University 2015a) with some 1000 students from Foundation Degree to doctoral level, of whom approximately 100 per year are on the three-year BA Primary Teacher Education course. The School is based on a satellite campus (Harcourt Hill) with other courses from the Faculty of Humanities and Social Sciences, with a campus library; the author heads the Library's Academic Liaison team for the campus, and is the lead Academic Liaison Librarian for the School of Education.

2.2 Information literacy context: shifting definitions

Definitions and models of information literacy (IL) are numerous and evolving. SCONUL (the UK's Society of College, National and University Libraries) suggests that information literate people are those who can *"demonstrate an awareness of how they gather, use, manage, synthesise and create information and data in an ethical manner and… have the information skills to do so effectively"* (SCONUL 2011). More detail of what this might mean in a range of settings is provided through "lenses" of which the Digital Literacy lens and some elements of the Research lens are particularly relevant to students in Higher Education (HE). The author's institution (Oxford Brookes University 2015b), includes digital and information literacy as one of its five core graduate attributes, defining this as:

> To be able to use appropriate technology to search for high-quality information; critically to evaluate and engage with the information obtained; reflect on and record learning, and professional and personal development; and engage productively in relevant online communities.

However, this is a continually developing field; the US Association of College and Research Libraries' new Framework for Information Literacy for Higher Education highlights the "dynamic and often uncertain information ecosystem" and as a result places new emphasis on the student's role in creating new knowledge and on the importance of librarians collaborating more extensively with other colleagues in HE (ACRL 2015).

3. The research approach: Practical Action Research

This was a small-scale project rooted in the author's everyday professional practice; as such it was a fitting project for action research, defined by McNiff (2010, p.5) as "a practical way of looking at your work in any profession to check that it is as you would like it to be."
By investigating the existing information-seeking practices and difficulties of a specific student group, the research would help determine how effective the author's IL support was and how to improve it. This aligned with action research literature's dual focus on the researcher's own practice and on the experience of those she works with (Kemmis and Wilkinson 1998; Stringer 2007; McNiff 2010).

Action research is not a single methodology, but rather a research approach which can embrace a range of methods and which "focuses on specific situations and localised solutions" (Stringer 2007, p.1). This project employed a *practical action research* approach (Coats 2005), long used in education and arguably widely applicable in librarianship, as it involves a hermeneutic activity of investigating one's own socially situated professional practice and attempting to improve it through reflection (Cohen et al 2000, p. 231).

Action research is generally seen as a **cyclical** process (Elliott 1991; Stringer 2007; McNiff 2010) akin to reflective practice models such as Kolb's (1984) experiential learning cycle. Typical models involve phases such as "plan, act, observe, reflect" (Kemmis and McTaggart 1998) or Look, Think, Act (Stringer 2007). The model chosen to inform this project was a three-phase questioning approach devised by Rolfe (2001) and expanded by Eoyang (2006): ***What? So what? Now what?***

- **What?** – what is the situation we want to investigate, what data do we obtain when we enquire?
- **So what?** – how do we interpret our data? What is going on, and what does that mean for our practice?
- **Now what?** – what action do we need to take based on what we have discovered?

4. Data Collection: "What?"

4.1 Investigation of the professional landscape: Other university libraries' use of their VLEs to support IL development

Initial scoping work (via the moodle.org forums and moodle-he and lis-infoliteracy Jiscmail lists) investigated how other University libraries worldwide were using their VLEs to support IL development. Many had space on their institutions' VLEs either mirroring, or substituting for, Library Web sites holding suites of static guides; some did this subject-by-subject, while others provided generic support. The University of East London had a well-developed IL site, Info Skills, but this did not sit within their VLE (University of East London Library and Learning Services 2011). Institute of Technology Tallaght in Ireland was creating SCORM tutorials to place within its VLE (Russell et al 2013). Some, such as York St John, were involved in Moodle primarily in individual course spaces (McCluskey 2012). A few, such as New Zealand's University of Waikato, had created a broader IL support ecosystem providing not only guides but FAQs, discussion forums and regular updates (University of Waikato Library 2007).

Investigating the question via the literature revealed that while VLEs were still being used to support the IL needs of distance learners (Kirsch and Bradley 2012; Thornes 2012), university libraries around the world recognised the more blended or hybrid nature of 21st century HE and were increasingly using their VLEs to provide IL resources and support to all student groups (Ashley et al 2012; Bowen 2012; Kelley 2012).

4.2 Initial investigation of student behaviours: surveys

The first stage of exploration of PTE students' information-seeking behaviours, in order to frame the hypothesised student issues which the project hoped to address, was via surveys. When each group of students was asked to complete a survey, the context of the Fellowship research was explained; students were assured that the survey was optional, was not in any way an assessment or judgement of them, and was anonymous unless they chose to give their student number in order to be entered into a prize draw (after which student numbers were de-linked from names).

First-year students:

At the end of their one-hour induction, the first-year students (92 students, 91 responses, 99% of cohort) were asked to fill in a very short paper survey. They were asked:

Table 1

How confident do you feel now about using the Library compared to before this session?	**82** (90%) more confident **9** (10%) about the same **0** less confident
Is there anything you will now go and do in the Library as a result of this session and if so, what?	**Most popular responses:** Use Library Catalogue (29 responses, 32%) Find/borrow books (21 responses, 23%) Investigate e-books (19 responses, 21%) Reserve a book (17 responses, 19%)
Do you have any questions/concerns about using the Library which have not been answered by this session?	**82** (90%) No **9** (10%) Yes – issues such as more information on printing or on fines

While the majority had no remaining questions or concerns about the Library, many comments recognised that they might have questions later but now knew where to ask for help.

This initial benchmark survey confirmed that beginning students were primarily focused on finding and borrowing books, and that induction was largely meeting their early Library needs.

Second-year students:

In order to investigate the behaviours and problems of more experienced students, a survey of second-years was conducted in Moodle at the end of Semester 1 2012. There was a prize draw for respondents who provided their student number. Response rate was 26% of the cohort (21 out of 81 students).

The survey asked two open questions, one on Library use and one on support.

> **Q1. What (if anything) have you found difficult about researching, finding or accessing the right Library resources for your assignments this term? (Library resources could include: books, e-books, journal articles in print or online, or any Library resource)**

Responses fell into seven categories, with the majority in three (Table 2):

Table 2

Question 1 results		
Researching/accessing journals:	**9** (43%)	
Book availability/shelving:	**5** (24%)	(Percentages do not add up to 100% as
Navigating e-resources:	**5** (24%)	respondents could give more than one issue
Shelfmarks:	**1** (5%)	in their answers)
Catalogue:	**1** (5%)	
Own spelling errors:	**1** (5%)	
Nothing:	**2** (10%)	

These results, with the detailed student comments, confirmed previous anecdotal evidence: despite having been taught these skills in Library-based IL sessions, and shown the various paper and online reminder guides, many students were confused about both locating specific known journal articles and researching articles on a given topic, as well as struggling with technical hurdles of login and access to e-resources. This was frustrating, but not unexpected feedback:

> *I can't work out a way to search all of the journals you are subscribed to, and have to instead search each individual provider. Would be easier to have a list and which provider to go to to get the journal from.*

There were fewer navigational issues with print books; only one student mentioned difficulty following shelfmarks, while other "books" comments related to insufficient copies or books not being correctly shelved.

Question 2 investigated students' help and support preferences:

Q2. What kind of support or revision materials to help you with searching skills, or locating and evaluating information, would you find most helpful? Please rank the suggestions below from 1-5, where 1 is *most* helpful and 5 is *least* helpful.

Table 3

Question 2 results Suggestions in order of popularity:	Average (mean) score: (lowest score = most helpful)	Mode (most frequently given) score: (lowest score = most helpful)
Short videos in Moodle	2.43	2
Printed guides *	2.48	1 and 2 equal
1-2-1 help from a Subject Librarian *	2.67	2
Step-by-step Moodle tutorials	2.90	2 and 3 equal
Formal teaching session from Subject Librarian *	3.48	4

* = this help already available, although the survey did not point this out to students

(Academic Liaison Librarians were titled "Subject Librarians" at this time).

No student made any alternative suggestions under the "Something else?" option.

This suggested there was merit in exploring further the Fellowship project's proposal to create short tutorial videos, since these were the most popular form of potential new support.

Repeat of second-year survey:

To help establish relatability of the 2013 survey to other students, it was repeated a year later, in January 2014, with the following second-year cohort. 19 out of 86 students responded (22% of the cohort).The same open question about what students had found difficult was asked, with similar results:

Table 4

Q1 repeat results (What students found difficult)		
Researching articles/accessing journals:	12 (63%)	(Percentages do not add up to 100% as respondents could give more than one issue in their answers)
Availability of books:	6 (32%)	
Accessing full-text articles:	3 (16%)	
Book signage:	1 (5%)	
Searching within resource content:	1 (5%)	
Nothing:	3 (16%)	

Students were again asked in Question 2 what support or revision material they would find helpful. However, to eliminate possible confusion over the previous year's scoring system,, they were asked to rank each option on a 4-point scale as *Very helpful/Quite helpful/Not very helpful/Not at all helpful.*

Table 5

Support materials suggestions in order of popularity	No of	students	rating:	
	Very helpful	Quite helpful	Not very helpful	Not at all helpful
Short videos demonstrating how to search/access resources	13	5	1	0
Step-by-step online tutorials	6	12	1	0
One-to-one help with searching from a Subject Librarian *	6	12	1	0
Printed guides to searching and accessing resources*	6	9	1	0
Formal teaching session from Subject Librarian in a module*	2	4	11	2

* = this help already available, although the survey did not point this out to students

This confirmed that short videos were the most popular suggested support resource, followed by *Step-by-step online tutorials* and *One-to-one help with a Subject Librarian* (the latter already being available).

They were also asked where any online tutorials or videos should be placed (Question 3), and what topics these should focus on (Question 4).

Table 6

Question 3 results

If we created some online tutorials or short videos to help you, where should we put these? (responses in order of popularity)	
On the Library Web site	10
In Moodle – in the BA Primary Teacher Education course	5
In Moodle – in a general "Library skills" course	4
Somewhere else	0

Table 7

Question 4 results

I would like 2-minute videos or short online tutorials to help me with: (tick as many as apply) (responses in order of popularity)	
Using databases to find journal articles and other research	15
Getting better search results from the Library Catalogue	10
Getting to full-text journal articles from off-campus	10
Referencing	8
Logging on to the Electronic Library	3
Using e-books	2
I wouldn't find 2-minute videos or short online tutorials helpful	1
Another help topic (say what below)	0

The similarity in overall themes between the two surveys, a year apart with different cohorts of students, suggested that help around researching and accessing journal articles would continue to be key and that short video tutorials would continue to be valued; in other words, while it might not be safe to *generalise* from one cohort to other education students, the concerns of those surveyed were likely to be *relatable* to others (Bassey 1981).

4.3 In-depth investigation of student behaviours: focus groups

The initial Moodle survey gave a general indication of barriers and issues the BA PTE students experienced; however, these needed to be probed more deeply. In May 2013 three one-hour focus groups with first-years were held in a group study room in the Library. Students were recruited by posters, emails and publicity in lectures; online bookshop vouchers (and cake during the sessions) were offered as incentives. The focus group participants were therefore a self-selecting convenience sample; however, all students in the cohort (not just frequent Library users) were reached by the publicity, and in total 25% of the cohort (20 students) took part. Krueger and Casey (2009, p.21) suggest that, particularly in a single-category design like this one (where all participants were students in the same year of the same course), 3-4 focus groups may be enough to reach "saturation", the point where no further significant new ideas appear.

The focus groups were moderated by a recent Oxford Brookes graduate who was an intern with Learning Resources. The researcher, although present throughout each session, remained in the background taking notes, potentially reducing power relationship issues which might have arisen had the researcher, as the students' librarian and thus an authority figure, been asking the questions (Litosseliti 2003, p.52). Equally, as the intern was a non-Education graduate of a similar age to the participants, she proved very able to manage what Krueger and Casey (2009, p.87) describe as the "balancing act" of moderating: sufficiently non-threatening for participants to share with her, yet not so familiar that they assumed issues could go unmentioned or unexplained. The focus groups were audio recorded, with participants' consent both to being recorded and to being anonymously quoted in subsequent publications of the findings.

The focus group questions were developed to explore first-year students' information-seeking behaviours after nearly a full academic year, to probe any difficulties they were experiencing for comparison with those identified by the second-year student survey, and to investigate which of the intended Fellowship project deliverables, if any, might meet their needs. Students were asked about:

- the information or resources they most often needed for assignments
- how they found and selected these
- what difficulties they experienced
- how the Library could help
- which existing Library support resources they knew about and/or used
- whether Moodle could be used to provide more effective support

(For full list of questions, see Appendix).

Following each focus group, the full audio recording was transcribed by the researcher. This was a laborious process, but enabled the "more intensive experience with the data" identified as a benefit by Krueger and Casey (2009 p. 131). Krueger and Casey's "Classic Analysis Strategy" (pp. 118-122), recommended for novice qualitative analysts, was then used to group individual comments and answers into themes.

5. Focus group findings and discussion: "So What?"

Figure 1: Focus group findings
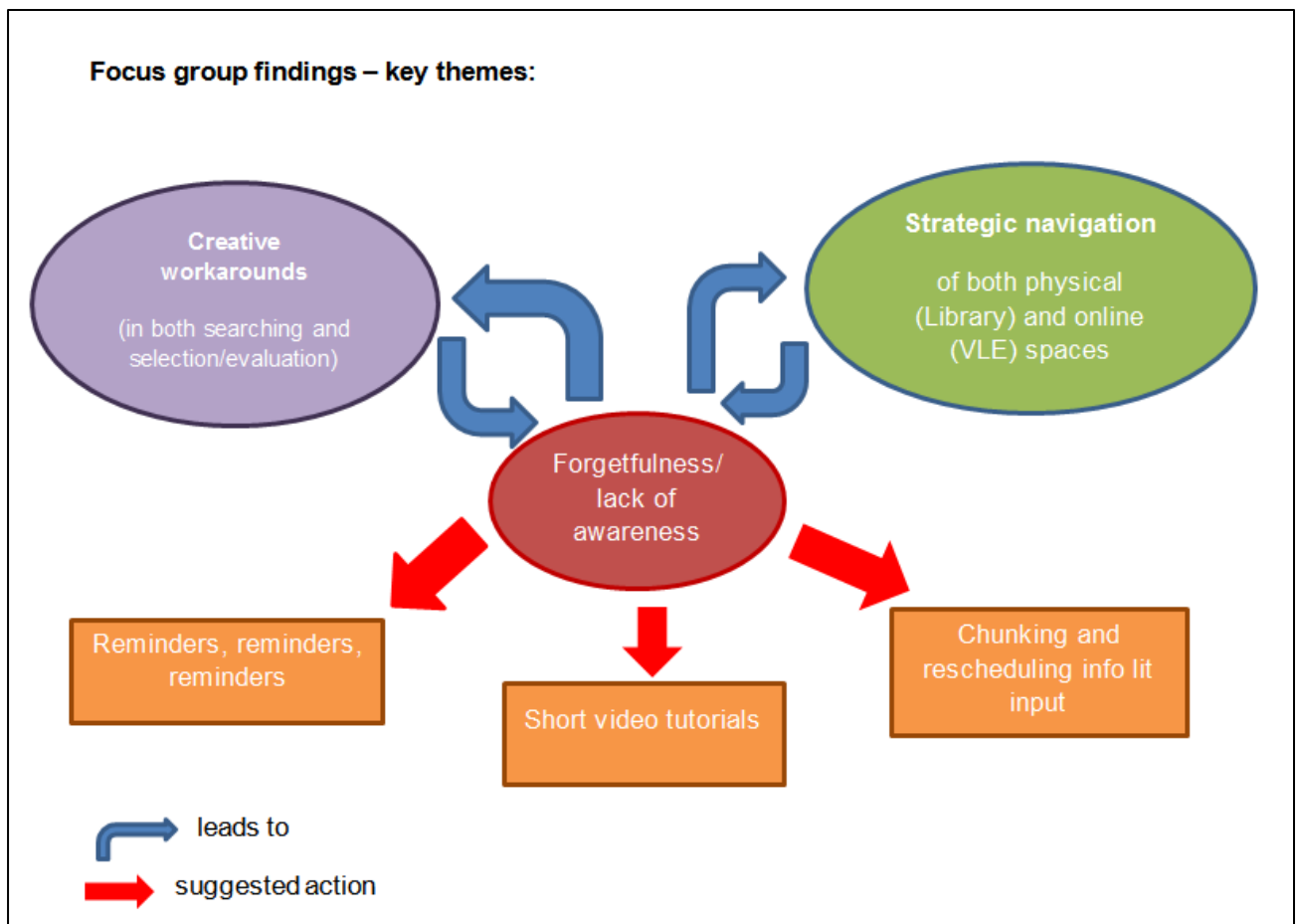
Analysis of the focus group data, as themes began to emerge, moved the action research forward from the "What?" to the "So What?", or from the "Look" to the "Think" phase.

5.1 Predicted findings

Some of the responses were in line with previous anecdotal and general Library survey feedback:

- **Print vs online:** there were mixed preferences for print vs e-books. Two students expressed active preference for e-books; one for searchability, one preferring all reading on his iPad. Others found print books easier for reading, highlighting and Post-it marking. However, students wanted all key textbooks available online (as well as amply in print!) for off-campus and peak-time access. E-journals were almost universally preferred to print journals for convenience (one student preferring browsing print holdings).

- **Technical access difficulties:** as expected, all three groups mentioned difficulties with confusing off-campus login (via Athens Devolved Authentication), obtaining full-text articles from abstract-only databases, and remembering where to access Education databases.

- **Never enough print copies:** with competing deadlines and where e-books were not available, all groups mentioned frustration with reservation queues and waiting for books not returned on time.

However, in addition to these largely predicted views, a number of powerful and more surprising messages emerged. These, while supporting one key aim of the Fellowship project (creation of short online video tutorials) also suggested additional actions were needed (see Section 6) and are described below.

5.2 Range of creative workarounds: for both searching and evaluating

It was striking that where students struggled to obtain effective results from Library tools – either due to the tools' genuine limitations, or because the students were unaware of their full features or found them too difficult to use – they had devised their own solutions to these issues.

All three groups commented on the limited effectiveness of keyword searching on the Library Catalogue (many older books, in particular, have very limited content data beyond their title); students were aware of the system's limitations, but not of compensating advanced features, such as the Catalogue's subject tags. They therefore used a range of creative strategies, including: searching on Google Books or Amazon to identify relevant content, then returning to the Catalogue to locate the identified titles; Catalogue searching to obtain a rough idea of shelfmarks, then shelf browsing; locating one relevant text, then Catalogue searching for items in that text's bibliography.

Similarly, when they had searched index-only databases but not understood how to locate full text, they would turn to Google for the articles (with mixed success):

> *in terms of showing you that stuff is there, [the databases are] quite good, but it's not always good access… For a lot of them, I've been able to Google Scholar them from the title and found at least parts of them.*

While some regularly used a key full-text database (Education Research Complete) for journal article searching, others were content to *Google **everything***.

For selection and evaluation of resources, students in all three groups showed awareness of academic strategies (using peer-reviewed journals, turning to key journals, authors or publishers in the field, reliance on authority in the form of lecturers and reading lists) but also made extensive use of popular recommendations (Google and Amazon stars or reviews, word-of-mouth from peers) and the purely strategic:

> *if we make a point about something we have to be able to back it up with literature, so it's quite good to be able to find someone who backs up your point and quote that...*

5.3 Strategic navigation: of both physical and online spaces

A significant theme which emerged from the groups was that of students' navigational habits, with clear parallels between navigation of physical and of virtual environments. Students described highly strategic, goal-focused, linear navigational strategies in both the physical Library and the VLE:

> *I only use Moodle if I'm going on for one specific thing; I've never spent time on Moodle just looking around. I just go and find that specific thing, use it, and then come out.*

> *Yeah, that's what I do,[in the Library] I tend to walk in and go straight to the computer, find the thing, and then go straight to the Library* [ie the main reading room], *go straight to the thing, and then take it out...*

These navigational practices affected students' awareness of help, resources and information made available by the Library and other areas of the University, both physically (such as the paper guides and leaflets prominently displayed around the Library walls, which many said they had never noticed) and on Moodle (information on school placements encountered months after it would have been useful).

These findings reinforce those of Dalal and Lackie (2014) and map closely to White's (2011) typology of online "visitors" and "residents" (suggested as a replacement for Prensky's (2001) contested "digital natives/digital immigrants"). White describes Web "visitors" as those who "understand the Web as akin to an untidy garden tool shed. They have defined a goal or task and go into the shed to select an appropriate tool which they use to attain their goal. Task over, the tool is returned to the shed." By contrast he suggests that "residents… see the web as a place, perhaps like a park or a building in which there are clusters of friends and colleagues whom they can approach and with whom they can share information about their life and work." He points out that individuals may take different approaches to the Web according to context. Viol (2015) similarly found in recent research that students very familiar with some online contexts, such as Facebook, can remain very reticent about using other online spaces such as wikis in the VLE. It might be argued that in this case, students who were comfortable residents in certain online environments, such as Facebook, and physical environments, such as their social spaces, are describing "visitor" behaviours both in Moodle and in the Library (though the latter is hopefully a rather tidier tool shed!)

The focus group findings in this respect also align with recent research into strategic use and navigation of VLEs by many students. The notion of the "strategic student" who organises their time and effort primarily around assessment tasks dates back over 30 years (Entwistle and Ramsden 1983, p.155). While the first decade of VLE use in UK HE saw educational and librarianship research journals report on the use of VLEs by distance learners (Rovai 2003), students' use of VLEs for directed tasks such as accessing specific course materials or taking quizzes (Patalong 2003; Nortcliffe and Middleton 2008), and comparisons of VLE-only learning with blended or face-to-face learning (Kraemer et al 2007; Anderson and May, 2010), only more recently has investigation begun into whether and how full-time on-campus students proactively explore their VLEs (the researcher found no literature comparing students' navigational practices in online environments with the way they navigate physical libraries).

Heaton-Shrestha et al (2007) investigated first-year undergraduate students' VLE use and preferences in relation to learning styles; they found that while the relatively low proportion (21%) of learners they characterised as "planned and organised" were high VLE users who would "fully exploit whatever facilities were available" (p.458), the "strategic" learners (at

least 33% of their sample) were lower VLE users overall and "said their consulting the VLE was driven by specific queries or circumstances" (p. 459), matching White's "digital visitors" (2011). Deepwell and Malik (2008) argue that both campus-based and distance learners need in effect to be self-directed learners when engaging with learning technology; some of the students they interviewed were struggling with this concept and "There was… a call for more direction from the lecturers about what to do in the online space" (p. 11). A recent study of third-year undergraduate engineers by Saunders and Gale (2012) asked students which of a range of learning support tools in the VLE they had used, and which had enhanced their learning experience, but did not probe whether students were aware of the tools they did not use. Jeffcoate (2009, p.2) identified one challenge for course tutors in balancing students' varying motivations for using online learning environments as "the danger that VLEs will be used to provide an increasingly wide range of materials and activities that students can selectively neglect."

These findings have significant implications for librarians, educational technologists and others who invest considerable time and resources developing resources to be placed in VLEs and other online spaces which students may be left to explore undirected. While it has long been acknowledged that IL development is generally most effective when embedded within courses and modules (Lindstrom and Shonrock 2006; Anderson and May 2010), it is not always practical to embed every learning object in a specific module or assessment. Macfarlane (2015, p. 342) points out that "students (and academics) must cope with the demands of information overload in the same way as anyone else in modern society." Estimates of the proportion of "strategic" students, whose VLE navigational practices might mirror those in the present study, vary. However, given that Heaton-Shrestha et al (2007) identified up to 33% of the students in their study as "strategic", and there may well be an additional group of "surface" learners who make even less use of the VLE, there is clearly a significant number of students who are unlikely to proactively explore virtual spaces. These students may therefore miss support materials placed there by librarians and others altogether, unless they are frequently and specifically reminded about the resources and how these can help them learn more effectively and efficiently.

5.4 Forgetfulness/lack of awareness

A third important theme emerging from the focus groups, linked to the effect of students' strategic behaviours, was forgetfulness of key messages and information they had been given at earlier stages in their course. Students acknowledged that their tendency not to explore physical or virtual learning spaces proactively had led to lack of awareness of guidance and resources (see above). However, the focus group question which asked whether students had used Library guides, handouts, Web pages or tutorials to help them (see Appendix) was revealing, while the question asking what additional help the Library could provide led to further rich discussion. Every student had used the Library Catalogue and at least one of the Library's paper guides (the Referencing guide being most frequently mentioned). However, the Education Librarians' Web pages, the Library's few existing generic video guides, and the Library block in Moodle (on every student's VLE home page) had been used by only 2, 3 and 4 students (out of 20) respectively. Students had only vague recollections of being told of many of these resources during either induction or their follow-up IL seminar (several weeks post-induction). In many cases they had completely forgotten even those existing services which they now recommended the Library should provide, such as online reading lists and a Harcourt Hill Library Facebook page.

> *I think that's one of the things you told us* [the Education Librarians' Web pages], *the very first time we came here,* [agreement] *and it just went, Whoosh, straight over...* [our heads]

Yeah, we're quite forgetful, aren't we.

5.5 Reminders, reminders, reminders

The role of repetition and reminder in learning (often referred to as the "spacing effect") is well established in educational research (Bahrick and Hall 2005), and this was borne out by the focus group participants' perception of their own needs. They had a range of practical suggestions for increasing their awareness of the Library's many resources and tools. They wanted regular reminders ("Tip of the Week") via various channels (Facebook, Twitter, email), and also suggested that communication via student representatives could be effective, either via reps' email or group Facebook pages.

I think it's reminders, isn't it, that stuff is here, because obviously you told us so early and we've just forgotten over time...

Although their IL input from the Library had been staggered, with basic induction in Week 0 of the academic year and a more detailed session linked to an academic literacy module in Week 3/4, students in all three focus groups still argued for much more granular and frequent IL input, with refreshers at key points when they were working on assignments. Students strongly endorsed the idea of short video tutorials to use as reminders:

I tend to go back on YouTube to find how to use something, and that really helps me.

However, they wanted these to be specific to their context and tools, feeling that generic, non-subject-related videos would be dismissed as less relevant.

6. Actions: "Now What?"

The rich data arising from the focus groups suggested a number of directions for action, not all envisaged by the original Fellowship project – this is common in action research: "It is possible to begin at one place and end up somewhere unexpected." (McNiff 2013, p.67)

Several "quick wins" were actioned in the weeks immediately following the focus groups. Topic-based shelf-end guides were created for the Education sections of the Library to help students browse. Reading guides previously only available on paper were put on relevant Library Web pages. Paper bookmarks and posters were created to publicise the Library Facebook page more effectively. From the first semester of the next academic year, the Academic Liaison Librarian attempted to establish regular email contact with student representatives to pass on tips and reminders (meeting with mixed success due to problems with rep recruitment that year).

Other barriers revealed, or confirmed, by the research were being addressed by wider Library projects. Planning was already underway to replace AthensDA e-resource login with a simpler combination of EZProxy and Shibboleth, so that login was the same on-and-off-campus (implemented summer 2014). The Library was also planning to implement a resource discovery service (RDS) intended to make it easier for students both to find journal articles, and to identify relevant book content. In autumn 2013 the Library's Acquisitions department started circulating lists of heavily-reserved titles weekly rather than once per semester, helping address the issue of insufficient copies of key texts at peak times by identifying priorities for e-book or multiple-copy purchase.

Other actions took longer to come to fruition: embedding bite-sized IL, and creating tutorial videos.

6.1 Embedding bite-sized information literacy

Whether occasional one-off taught sessions are effective in developing students' IL skills is a contested area in the literature (Spievak and Hayes-Bohanan 2013). The focus group findings suggested that eight to nine months after their Library induction and follow-up session, these students had poor recall of the sessions' content: *... we did have a thing as part of Becoming a Researcher, didn't we? When we came into the Library for something?* Embedding additional lengthy sessions in module time was neither feasible, nor desired by students: however, as demonstrated by Van Epps and Nelson (2013) and Emary et al (2014), "bite-sized" sessions can be very effective. The author and her team therefore began contacting lecturers proactively from autumn 2013 to offer such mini-sessions, with gradual growth in take-up from 7 mini-sessions in the 2013-14 academic year to 30 in 2014-15 and very positive anecdotal feedback from both staff and students (as yet the impact of this initiative has not been formally investigated).

Bite-sized drop-ins provide ideal opportunities not only to deliver IL content, but to promote online guides, tutorials and videos such as those created by the present project (as discussed below) since they provide face-to-face contact with whole cohorts of students, including Library non-users. They also enable librarians to show sections of tutorials or videos, which more powerfully promotes such audiovisual resources than merely talking about them; and since lecturers are more likely to be present when a librarian briefly drops in to their lecture or seminar than when sending a class to the Library, their notorious reluctance to attend IL sessions themselves (Badke 2009; White 2003) can be overcome by stealth, and IL content, support and the librarian's expertise advertised to them.

6.2 Creation of short tutorial videos

As endorsed by students in all three focus groups (and confirmed by the January 2014 second-year student survey), the principal deliverable from the Fellowship project was to be a series of short tutorial videos. While some academic libraries have collaborated with media or communication departments to help students create video for course requirements (Blithe et al 2015), and there are many examples of academic librarians creating video resources or online tutorials to use in IL teaching both face-to-face and online (Dennis et al 2011; Eva and Nicholson 2011; Russell et al 2013), there is little evidence until very recently in the literature of librarians collaborating with students in designing and producing video or online tutorials aimed at supporting students' information literacy development. Venecek and Giglio (2011) required students to collaborate using wikis to produce research guides on Shakespeare for future students. Mestre (2012, p.104) recommends involving students as stakeholders in the design of learning objects, but in her own study (2010) was only able to include their feedback via usability studies after RLOs were created. The only examples identified of projects similar to the present one are Thornton and Kaya (2013) who collaborated with Fine Art students to design and create short videos promoting Library tools and resources, and Dalal and Lackie (2014), who worked with students to produce a similar video series. This aspect of the project can thus be seen as contributing to an innovative but growing area of IL.

While the discussion and literature around Reusable Learning Objects often assumes that "reusability" should be as wide as possible, and that RLOs should therefore be quite generic and "decoupled in that there are no 'link outs' to external resources" (Littlejohn and Cook no date), the focus group participants had stressed the importance of the videos demonstrating specific tools they needed and wanted to use. Concentrating on these would inevitably limit reusability outside the institution (and in some cases outside the School of Education), but seemed likely to increase student engagement with the tutorials, which would still be reusable by courses and students throughout the School and in some cases the University.

The JISC (2004) model of learning activity design was employed; this model triangulates **learners** (their needs, preferred learning styles and levels of competence) with the **learning environment** (considering the tools and resources available) and the intended **learning outcomes** in order to design an appropriate **activity.**

The survey and focus group evidence confirmed students' preference for a visual learning style to achieve these particular learning outcomes (understanding how to use specific Library search tools) and thus the appropriateness of videos.

Video creation tools were available in the form of Powerpoint and Camtasia, and appropriate spaces to host the videos already existed in the Library Web pages and the VLE.

The topics for the videos were selected using data from the 2013 and 2014 surveys and the focus groups as to what students either needed most help with, or would find it most useful to know about (leaving out issues already improved by other Library initiatives), thus matching the proposed resources with the learners' needs:

- Getting more from the Library Catalogue (more effective searching and result management tips)
- Finding and using online reading lists
- Finding full-text journal articles using the Library's Education databases
- Using the RDS (resource discovery service)

Each video was planned to last between two and four minutes.

Progress on the videos was slowed by several external factors. Central to the project, but logistically challenging, was the goal of co-creation of the videos with students; while working with Education students was very positive and rewarding, their packed on-campus timetables and their absence for multi-week blocks of school-based training inevitably restricted their availability. Coupled with this were the major changes planned to Library e-resources such as the change to login and the introduction of the RDS; tutorials could be no more than sketched out until the changed services were available to be used and captured.

Storyboarding of the 4 videos therefore eventually took place in summer 2014, adopting and adapting the process outlined by Jade Kelsall at a LILAC conference presentation (Kelsall 2014). Each topic was worked on by a small group, consisting of the author plus two or three students from among the original focus group participants (who were now nearing the end of their second year, and were again rewarded with online bookshop vouchers for their time).

For each topic, the group worked out the learning objectives for the video and produced a skeleton plan, covering the messages about the topic which the students felt were key and walking the viewer through the necessary steps screen-by-screen. This process took into account Biggs' (1999) principle of constructive alignment of learning activities with desired learning outcomes, and fulfilled the requirement of the JISC model that the activity designed should be consistent with the learners' needs, the learning environment and the intended learning outcomes. Since the designing group included learners, who were already familiar with the learning environment, and a librarian who was very familiar with how best to use the Library tools, the group was confident of designing a clear activity path for each video which would align with the intended outcomes (learning how to use a specific Library tool more efficiently and effectively). Over the summer, the author developed the plans into detailed storyboards and wrote scripts for the video voiceovers, on which the students were invited to comment (no substantial changes were suggested).

Screen capture for the videos could not take place during summer 2014 as the RDS, new login and other e-resource changes were not yet in place. Screen capture using a combination of Powerpoint and Camtasia was therefore worked on by the author during the following academic year (January – March 2015) and once the visual element of the videos was complete, student volunteers were recruited to record the voiceovers during April and May 2015. It had been hoped to again use students from the original focus group cohort; however, these students were now in their final year, working on dissertations during March and in schools for most of their final term. Students from the year below, the then second-years, were therefore recruited and approached the project with enthusiasm, though several expressed initial difficulty with recording a voice-over originally drafted by others and suggested tweaks to the wording.

The videos are being completed in summer 2015. Based on the feedback from focus group participants, they will not be made available solely from Moodle but also from the Library's Education Subject Help page at http://www.brookes.ac.uk/library/educ.html, and possibly on YouTube as the Library is currently investigating its own YouTube channel.

7. The future: the reflective cycle continues

With the initial Fellowship project objectives delivered, the action research cycle will turn once more to reflection in order to inform further, future action. Disseminating the project's implications for professional practice and further research may also inspire action beyond the original researcher and her institution.

7.1 Evaluation

Students have already reflected and fed back on their experience as participants in the research: in order to include the student voice in a poster presentation to a University teaching conference (Rothera 2014), focus group participants were invited to comment on their participation. Students identified several valuable elements of the experience; they had discovered services they did not know the Library had, they had learnt from their peers, they had enjoyed giving feedback that they felt was listened to, and they had already seen benefits from initial actions, which made them feel positive about potential further developments.

Both empirical evidence and qualitative feedback on the videos will be important, and will be gathered via usage statistics, social media surveys and polls, and an email feedback link on the pages where the videos are placed.

7.2 Action and promotion

The existence of the Fellowship project, and the opportunity to present work with students within the framework of action research, has opened up numerous fruitful conversations about student support within the School of Education and has enriched opportunities for collaboration between Academic Liaison Librarians and academic staff. Promotion of the research project, and of the resulting work on the videos, to academic staff took place throughout the project at course committees, university Learning & Teaching Conferences, and departmental away days and research conferences.

Once the videos are complete, further promotion by all these routes will intensify in order to encourage academic colleagues to make full use of them and remind students regularly about them, mindful of Dalal and Lackie's (2014) initial experience that "The Libraries built and published these short promotional videos, but the students did not magically find them" (p. 235).

They will also be extensively and repeatedly promoted through all the channels endorsed by the students – Facebook, Twitter, email and in face-to-face teaching. The author and her team will work with academic colleagues to embed use of the videos at appropriate points in teaching (such as during IL bite-size sessions). As an Academic Liaison Librarian the author has full access to all Moodle courses she supports, and will embed the videos at appropriate points in modules such as when students are required to use the search tools in question to locate key reading for seminars. This approach was endorsed by students in the focus groups, who suggested:

> the majority of the time we need readings or literature is when we're doing assignments, so maybe it could come under Assignment Help, or Assignment Guidance…

In addition to the bite-sized drop-in IL programme and staff's increased awareness of the possibility and role of video tutorials, a project is underway in the School of Education to create a new Moodle space for BA PTE student support and study skills, which will highlight these videos and other Library support as well as resources from elsewhere in the School and the University.

This multi-channel promotional strategy aligns with recent literature on promoting mini-tutorials and guides, and IL more generally, to the academic community. While there is a well-recognised need to promote library services and IL both to academics (Badke 2009; Shea 2015) and to students (Ouellette 2011), both groups often show low awareness of online IL tutorials (Creaser et al 2014). Successful promotion of such resources, such as University College Dublin's marketing of its Libguides (Dalton & Pan 2014) have relied on using multiple communication tactics including face-to-face promotion in meetings and teaching, Library websites, social media, printed flyers and on news screens. The importance of also embedding such resources both in teaching and in the VLE is endorsed by Thornton and Kaya (2013): "In addition, however, it is important for the Library to **use** these videos in its various orientation and instructional activities".

7.3 Implications for wider professional practice

- **Bite-sized resources**

  As already well-attested in the literature (Coulter et al 2007; Spievak and Hayes-Bohanan 2013), one-shot IL interventions are not always very effective (confirmed in the project's focus group findings). The students involved in the study valued brief, bite-sized, visually-focused aids and tools as support for developing their information literacy; mini-tutorial videos can be designed to fulfil this brief.

- **Just because you build it does not mean they will come**

  Academic librarians involved in supporting IL spend considerable time developing e-tutorials, videos and other online resources to support students. However, the professional librarianship literature indicates relatively little awareness of the effect that students' strategic approach to navigating their online spaces may have on the likelihood of their finding and using such materials.

- **Reminders - little and often**

  The highly strategic approach of many current undergraduate students to learning and to VLE use (demonstrated by the higher education literature) means that even where mini-tutorials are already available, many students do not find or use them (confirmed

by the study's findings). Students described a non-exploratory, very focused in-out approach to navigation both of physical Library spaces and of the VLE – acting as White's (2011) "digital visitors" – which meant they did not come across resources supporting IL even when these would have been very useful to them.

Students indicated that they therefore also needed brief, bite-sized, strategically positioned reminders of the existence of mini-tutorials, whether these were hosted in the VLE or elsewhere.

These findings have implications for wider professional practice; academic librarians investing time and resources in tutorial creation need to consider carefully how they will ensure the embedding of these resources, and of reminders about them, in strategic students' academic practice if much of this time and resource is not to go to waste.

7.4 Implications for research

- **Student involvement in creating IL support resources**

   Student-led initiatives, student participation in curriculum and activity creation and design, and the effect of these activities on student engagement with learning are currently topics of considerable interest in many areas of HE (Pike et al 2011; Carey 2013; Gourlay 2015; Ní Uigín 2015).

   It may be hypothesised that the involvement of students in the selection, design and creation of video mini-tutorials will lead to greater student takeup of these resources (Thornton & Kaya 2013). The project videos have been created with considerable student consultation and input; qualitative and quantitative evaluation of their use after their deployment will aim to begin to address this hypothesis and thus provide a suggested direction for future research in this area.

- **Navigation of physical versus virtual Library spaces by strategic students**

   The striking parallels noted in the focus group findings between students' navigation of physical library spaces and their navigation of the VLE, via goal-focused, in-out behaviours (White's "digital visitors" garden-shed approach, 2011) are under-explored in the literature; this too may be a fruitful area for further research into information-seeking practices.

8. Conclusion

This project originally aimed to investigate undergraduate Education students' difficulties in finding and evaluating information, and to provide a set of RLOs in Moodle to support students in developing their information literacy.

Work with students confirmed that short, bite-sized visually-based help resources, particularly short videos, would be highly valued and students engaged enthusiastically with collaboration in designing and creating these.

As the project progressed, findings regarding student navigation of the VLE shifted emphasis away from locating RLOs in one particular space, towards ensuring that wherever videos and other resources were placed, students were given frequent, repeated and embedded reminders of their existence and relevance through a range of channels. A key finding was that many students did not explore either physical or virtual Library spaces proactively, and

therefore did not discover IL guides and tutorials that would be very useful to them; nor did they remember hearing about these resources in one-off IL teaching sessions.

This finding is confirmed by recent higher education literature investigating strategic student navigation of VLEs. However, the librarianship literature indicates relatively low awareness in the profession of the significance of these strategic behaviours, which make it unlikely that many students will simply come across online IL tutorials and other resources unless they are frequently and repeatedly reminded about them; having created "cool tools", we need to ensure that students are finding them in the digital tool shed, picking them up and using them.

Finally, it should be noted that even small-scale, local action research projects of the type described here, reflecting on individual librarians' professional practice, offer a powerful means for academic liaison staff and others in libraries to begin engaging with the key challenges posed by the Association of College and Research Libraries' new Framework for Information Literacy (ACRL 2015):

> The *Framework* opens the way for librarians, faculty, and other institutional partners to redesign instruction sessions, assignments, courses, and even curricula; to connect information literacy with student success initiatives; to collaborate on pedagogical research and involve students themselves in that research; and to create wider conversations about student learning, the scholarship of teaching and learning, and the assessment of learning on local campuses and beyond.

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Appendix: Focus group questions

		Follow-up questions:
Introductory question:	"Think back over the academic year so far and the sorts of information and resources you've needed to read or use for assignments. What sort of information or resources do you tend to need most often?"	"Did you find those resources through the Library? Via online Library resources such as e-books or e-journals? Or mostly elsewhere?"
Transition question:	"Thinking about those kinds of information and resources, how do you usually go about finding them?"	
Key question 1:	"How do you decide which resources or sources of information are the best ones to use?"	"How would you say you use those information sources in your assignments?"
Key question 2:	"What are the hardest things when it comes to finding and using resources or information?"	"Which is the biggest of those difficulties?"
Key question 3:	"What could the Library provide to help you develop more confidence with finding and using resources or information?"	
Key question 4:	"Have you used any of the following to help you, and if not, did you know they existed?" [List provided for participants to tick off] • The Library Catalogue • Library's paper guides and handouts (eg on e-books, the Electronic Library, finding journal articles, referencing) • The Education Librarians' Web pages • Library video tutorials eg the short videos on how to use the Library catalogue • The "My Library" block on your Moodle "My Home" page	If so how did they help?
Key question 5:	"If the Library was going to use Moodle to help you find and use information for your assignments more effectively, what could they do?"	"Where should the Library put help on Moodle? My Home? Course home page? Individual module pages?"