E-learning and Libraries by Nazlin Bhimani[1]

INTRODUCTION

Higher education libraries all over the world today are spending a significant amount on purchasing electronic resources in the form of databases, and subscriptions to backfiles (archives) of electronic journals and electronic books (Imperial College London, 2014). Libraries are also digitising paper collections both for preservation purposes and to make their collections more widely known and accessible. However, a common complaint among librarians and academics, especially those working with students at undergraduate level, is that students are not always making use of this quality material. Instead, many students continue to rely heavily on Internet resources (and some even pay for material which the library has already purchased on their behalf). Furthermore, these students often limit themselves by relying heavily on readings listed in their course or module handbooks and rarely explore the digital and print libraries at their institutions. This in turn can curtail their experience of serendipitously finding resources and bringing the seemingly irrelevant into relevance – which is one of the ways in which new ideas and knowledge are generated.

For higher education institutions (HEIs) worldwide, the market has changed and the impact on libraries is being felt more widely now than ever before. The difference between supporting face-to-face and online learners is becoming progressively opaque because increasing numbers of students, whether full or part time, tend to come into their institutions' libraries infrequently and rely heavily on remote access to resources. Additionally, there is an increase in the number of students who are work-based learners – many of them mature adults. Further, with more and more institutions marketing their courses abroad, this trend

[1] Published in Haythornthwaite, C. A. (Ed.). (2016). *The Sage handbook of E-learning research* (Second edition). SAGE Reference. Accepted manuscript 12/3/2015

towards the globalisation of education is resulting in many more international and second-language speakers applying to universities around the world. From the perspective of the library, the user base and user type have changed and both have expanded exponentially.

But what good is the large user base if these users do not have the skills necessary to access quality resources? The Information Behaviour of the Researcher of Tomorrow report (JISC, 2008), which focuses on the 'Google generation's' information-seeking behaviours, concludes that students generally limit themselves to what is offered on the Internet and discoverable on Google or Google Scholar. The report goes on to state that the problem often is that many students do so without any understanding or consideration of the quality of the resources found on the Internet. Most will search for and find materials 'blindly' and it is often through sheer luck that they are able to find materials relevant to their academic work (British Library & JISC, 2008). Additionally, there is little understanding of the limitations of different search engines and of whether what students find is perhaps the most up-to-date information, peer-reviewed or the best source to use for their research. Further, many students will not consider how the different search engines or portals 'curate' or bring together information. They may not, for instance, appreciate how a library's 'federated search engine', a Google-like search interface, works or how this type of search engine can simultaneously search all library content including library catalogues, subscribed databases, open source resources and archived content (British Library & JISC, 2008).

What follows below is an attempt to understand the ways in which libraries are meeting the changing needs of users and the evolving role of the librarian in teaching information literacy skills. The chapter will not focus on issues to do with the complexity of searching platforms and library systems per se, although the importance of these cannot be wholly excluded from any discussion on access to information. It will also attempt to provide a summary of user behaviour studies conducted over the past decade in order to facilitate an understanding of the broad social and attitudinal behaviour of 'the millennium generation', so that successful information literacy practices can be forged in the learning environment. It

is hoped that by giving this context, those responsible for delivering online courses can ensure that their students receive parity of support similar to that enjoyed by students attending classes on campus.

TWENTY-FIRST-CENTURY LIBRARIES

Almost every library has been or is experiencing a sea change in the way users are accessing information resources and most are feeling the tremors brought about by the information explosion we have experienced since the end of the twentieth century. As Yelland (2006, p. 17) states:

> Living in the twenty-first century means that we need to be able to deal with the vast amounts of information and have the ability to absorb, synthesize, and transfer it into understandings that have relevance to our lives … it is hard to negotiate meaning in the face of such massive quantities of information.

To deal with these changes within the educational context, librarians have been at the forefront of providing skills training to library users so as to ensure that they are able to navigate around the changing information landscape. This training is referred to as ‘information literacy’ training.

The Russell Group libraries in the UK (which are broadly equivalent in status to the Ivy League institutions in the USA) spend almost half their total budgets on resources (more than on staff costs) and the majority of their acquisitions budgets are spent on acquiring electronic resources to fulfil a growing demand for digital content (see, for example, the annual report at Imperial College London, 2014). The most common reason given for this demand is that many more academics and research students are accessing resources remotely, especially as more and more universities are offering online courses to an increasingly large international student population (see the UK government statistics from the Department of Business, Innovation & Skills 2013, which show an increase in the number of international students) and to a full-time student population that prefers to access resources remotely (see also White & Creaser, 2012).

The questions most often asked in the literature on academic libraries are: what is the return on investment for this high level of expenditure on electronic content? Are these collections visible and readily accessible to library users, and are these resources being used (Tenopir, 2011)? Why is it that despite strong marketing campaigns, the book is still seen as the library's brand (De Rosa et al., 2011)? And why are so many undergraduate students duped into thinking that all online content can only be found on the Internet via Google or Google Scholar (Brabazon, 2007, 2014), and if Google provides all the information required by students, are libraries redundant?

This trend towards focusing on providing access to a greater number of e-resources has taken off in another direction in the USA where the concept of the 'bookless' library is a recent phenomenon. In 2000, Kansas State University's Engineering School Library became the first library to become 'bookless'. The University of Texas' Applied Engineering and Technology Library at San Antonio followed suit in 2010, then Stanford University's Engineering School in 2011, Drexel University in 2012 and, more recently, Cornell and Harvard (Haq, 2012; Massis, 2013). The latest American 'bookless library' is the Florida Polytechnic University Library, which opened its doors in 2014. Interestingly, all the bookless libraries focus on engineering and technology, subjects which tend to rely heavily on current journal literature for research and study. It would be impossible for an arts and humanities or a social sciences library to take this course as publishing patterns in these disciplines have traditionally favoured the monograph. In particular, much of the scholarly output in the arts, humanities and the social sciences is published in books and as book chapters (Sivertsen & Larsen, 2012). Further, it is unlikely that older content will be available in digital format, despite Google's promises to digitise the world's knowledge (Rapple, 2005)! It is therefore not surprising that user behaviour studies confirm that library use varies depending on the academic discipline of the user (Silipigni Connaway and Dickey, 2010).

Perhaps it is more important for the online instructor to acknowledge that the 'bookless' library is a fallacy – as these so-called bookless libraries have

books in digital format (e-books) instead of in print; there are no longer physical books housed on the open shelves. Instead, these ‘learning spaces’, ‘learning centres’, ‘learning commons’ or ‘learning grids’, as these libraries are referred to, are furnished with banks of computers instead of rows of book shelves, giving the impression that the entire library is available digitally. More worrying is the notion that only old-fashioned libraries contain books and/or printed content that is either irrelevant or perhaps only needs to be consulted for historical research purposes.

Interestingly, even the bookless libraries have to ensure they have the necessary procedures in place to obtain print materials. The Florida Polytechnic University Library, for example, has made arrangements with the Florida State University Library to borrow books through the interlibrary loan system (Flood, 2014). Of course, bookless libraries are by no means the norm and in many other parts of the world, hybrid libraries that collect (and sometimes create and publish) both print and electronic resources, whether subscribed to or freely available, are more common. It is therefore important that online learners are aware of the wealth of materials available both in print and in electronic format outside the core set of digitised readings in the virtual learning environment, and that students are expected to discover these readings as part of their learning. This needs to be more than a statement in the course handbook.

If, as the librarian of the Florida Polytechnic University Library states, the objectives of a high-tech library are to ‘prepare students for the high-tech workforce by giving them hands-on experience with advanced technology … [and to] help students become better technology users and learners’(Flood, 2014, online), then this may be at the expense of other equally important skills that the student needs to take with them to the workplace. It is not, for instance, balanced by an exploration of print collections. In response to this library opening, Kathleen McCook, professor of librarianship at the University of South Florida, points out:

> Great libraries have changed lives. [This library may] … reflect the digital life today but I don't think in the long run it's going to give people the same quality of experience of walking through shelves of books … that very quiet and intimate connection between people and the printed word could be lost. It's just not going to give people the serendipitous experience of walking through shelves of books – a tremendous rite of passage. (Flood, 2014, online)

However, the American Library Association policy analyst, Carrie Russell, offers an opposing view, arguing that 'the digital is in some ways better. People can find things easier, and they can discover more things by accident' (Stein, 2014, online). Which of the above is true? Are e-learners who rely heavily on digitised course readings and the digital library at a disadvantage compared with students who use the physical library to find their readings? Are we discouraging e-learners from using print collections? What happens on courses where students are spoon-fed to such an extent that even the readings are linked to full-text digitised articles and chapters or where students are asked to purchase portable devices with pre-loaded content (like the reading or course packs for face-to-face teaching)? Should the seamlessness of the user experience within the e-learning platform be given priority over the experiential learning that includes serendipitously finding related and new content whilst searching and accessing content from a variety of online platforms? Would this allow learners to build on their digital literacies? By providing a seamless interface within the e-learning environment between reading list and digital reading, are we in fact dulling the research imagination as students will simply read what is provided rather than venture out into the 'great unknown'? In order to answer these questions, there are a number of connected issues both from the user's perspective and from the position of the supporting librarian.

Although this chapter is written from the point of view of a 'tutor-librarian' working in an UK HEI a university library in the UK, many of the issues raised above and the examples given in this chapter are based on the experiences of librarians all over the world. They are equally relevant to educators working in

the e-learning environment.

INFORMATION LITERACY

Before discussing information literacy training, it is necessary to define 'information literacy' or IL as it is commonly referred to. The phrase 'information literacy' was first used in 1974 by Paul G. Zurkowski, President of the Information Industry Association, in a report for the National Commission on Libraries and Information Science. He used it to describe the skills required to 'utilize a wide range of information tools as well as primary sources in molding information solutions to their problems' (Zurkowski, 1974: 6). The following definitions have been selected here to reflect the general understanding of IL within education. The Chartered Institute of Library and Information Professionals (CILIP) defines IL as 'knowing when and why you need the information, where to find it, and how to evaluate, use and communicate it in an ethical manner' (CILIP, 2004, online). The Society of College, National and University Libraries (SCONUL) first came up with a model for IL in 1999, which it updated in 2011. Today SCONUL defines IL thus: 'Information literate people will demonstrate an awareness of how they gather, use, manage, synthesise and create information and data in an ethical manner and will have the information skills to do so effectively' (SCONUL, 2011, online).

SCONUL'S definition incorporates an inherent understanding that 'information' is the umbrella term to include all types of information (in all media and in all formats, including data) and that in the synthesis and creation of information, the ethical use and management of information are equally important. Further, SCONUL (2011, p. 3) states:

> In the 21st century, information literacy is a key attribute for everyone irrespective of age or experience. Information Literacy is evidenced through understanding the ways in which information and data is created and handled, learning skills in its management and use and modifying learning attitudes, habits and behaviours to appreciate the

> role of information literacy in learning. In this context learning is understood as the constant search for meaning by the acquisition of information, reflection, engagement and active application in multiple contexts (NASPA 2004).

SCONUL updated its model to reflect the additional skills required by researchers in 2011. The Research Information Network (RIN) supports both the conventional CILIP definition and the SCONUL one but adds to the latter by suggesting that information literacy must 'clearly also encompasses the ability to manage, and where appropriate preserve and curate one's own information and data' (RIN, 2010a, online). This definition suggests that users also need to acquire the necessary skills in the relevant new technologies to manage information. Since 2012, Vitae, an organisation previously funded by the Research Councils UK (RCUK) and the UK HE funding bodies, including Northern Ireland's Department for Employment and Learning (DELNI) and the Higher Education Funding Councils for England, Wales and Scotland, has worked in collaboration with SCONUL and RIN to develop an information literacy and a digital literacy lens to fit into its Researcher Development Framework for postgraduate students and academics. It is 'dedicated to realising the potential of researchers through transforming their professional and career development' (Vitae, 2012, online).

In the USA, the American Library Association's Association of College and Research Libraries defines information literacy as follows:

> Information literacy is a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information.
>
> Information literacy also is increasingly important in the contemporary environment of rapid technological change and proliferating information resources (ACRL, 1989, online).

The Association of College and Research Libraries (ACRL) formally adopted the ALA's IL standards in 2000 as recognition that IL was an essential learning

outcome in HEIs. ACRL is currently in the process of revising the standards in light of technological developments and their impact on the learning and information environment. Similar developments in defining IL and designing models for IL instruction have taken place in most parts of the English speaking world – Australia and New Zealand, for example, jointly published an IL framework in 2004 (Bundy, 2004).

What is clear from all these definitions and initiatives is that there is an acknowledgement that IL is not a static concept but an evolving one, as it takes into account the technological and informational developments in online environments. In addition, IL incorporates within it other academic literacies such as, for example, critical thinking. As Vitae states:

> Information literacy is an umbrella term which encompasses concepts such as digital, visual and media literacies, academic literacy, information handling, information skills, data curation and data management. Interacting with information is at the very heart of research and informed researchers are both consumers and producers of information(Vitae, 2012, online).

Given the myriad skills required to negotiate the information landscape, it is clear that librarians, though among the first to embrace IL, can no longer claim territorial rights over this domain. IL has expanded beyond library search skills. The authors of the *Learning Literacies in the Digital Age* (LLiDA) report confirm this:

> While librarians can be regarded as pioneers in articulating the impact of digital technologies on their area of expertise, and adapting their practices of support, digital literacies cannot be left to librarians if they are to be embedded throughout the institution (Beetham et al., 2009, p. 11).

Collaboration between teaching and support staff is thus the key to successful implementation of any information literacy agenda. Australia and New Zealand have been successful in ensuring that an institutional framework for information literacy is adopted widely within educational establishments (Bruce, 2001;

Bundy, 2004). In the UK, things are not as promising as so many information literacy policies appear to be paid lip service in HEIs and librarians are successful on a piecemeal basis, depending on whether they have found academic IL 'champions' to work collaboratively with across different support departments. IL is not an issue that the library alone can deal with any longer. In order to be embedded into teaching, Jacqui Weetman (2005), in her research on collaboratively working with academic staff at De Montfort University in Leicester, asks, tongue in cheek, whether information literacy skills are developed by osmosis. She rightly points out that much of the literature on information literacy has been authored by librarians and in library and information science journals, which begs the question of whether academic staff are aware of the need for students to be information and digitally literate and whether these skills are required graduate skills for survival in the workplace and for lifelong learning (Weetman, 2005, p. 456). In order to answer these questions, Weetman surveyed academic staff and found that the general perception among the faculty was that these skills would be 'picked up' by students and did not necessarily require teaching, but, as Thompson (2003) confirms, information literacy cannot be developed by osmosis – these skills need to be taught. However, embedding IL within the curriculum requires cooperative effort across the institution, as Weetman (2005), Bent (2008) and Bhimani (2011), amongst others, conclude. More recently, Whitworth (2014) has come to the same conclusion while bringing in the disparity between IL practice and theory.

It is important to recognise that IL is also not a finite, learned set of skills but skills that continue to develop over time reflecting the iterative nature of searching, finding, accessing, evaluating, synthesising, using and managing information. Coonan (2011), in her Theoretical Background Report (to 'A New Curriculum for Information Literacy' – ANCIL), agrees:

> There is an imperative need to rehabilitate the perception of information literacy and recognise that it is not merely a set of skills and competences, but a continuum that starts with skills and competences and ascends towards high-level intellectual and metacognitive behaviours and approaches (p. 20).

Therefore, IL must be considered ‘in the context of the broad information landscape in which an individual operates and their personal information landscape’ (Bent, 2008). The ACRL in the USA broadens this understanding, stating that teaching IL skills requires ‘an implicit awareness of the social, economic, and legal conditions for the communication of scholarship within certain disciplines’ by the librarian (2013, p. 4).

Given the advocacy of IL over the last ten years through various institutional studies and by national and international professional bodies, what is becoming clear is that IL is increasingly being recognised as a key learning outcome in education by larger numbers of educators and policy makers. It is gradually shifting conversations among librarians to those that include different actors within educational establishments (Whitworth, 2014).

With the globalisation of information through new technologies, IL has also been a target for society at large. In 2003, national and international organisations such as the International Federation of Library Associations and Institutions (IFLA), the National Forum on Information Literacy, and the National Commission on Libraries and Information Science (now the Institute of Museum and Library Services) met with representatives from 23 countries under the aegis of UNESCO to discuss the importance of IL within a global context. The result was the Prague Declaration (UNESCO, 2003, online) which described IL as a ‘key to social, cultural and economic development of nations, communities, institutions and individuals in the 21st century’, and in 2006 in the Alexandria Proclamation, UNESCO went further in defining IL as a social justice issue, for it declared that information literacy ‘empowers people in all walks of life to seek, evaluate, use and create information effectively to achieve their personal, social, occupational and educational goals. It is a basic human right in a digital world and promotes social inclusion in all nations’ (UNESCO, 2006, online).

Since October 2009, the USA has had an ‘Information Literacy Awareness Month’ which was instigated by President Obama. In his proclamation, Obama stated:

> Our nation's educators and institutions of learning must be aware of – and adjust to these new realities [that is that the information world has changed]. In addition to the basic skills … it is equally important that our students are given the tools required to take advantage of the information available to them. The ability to seek, find, and decipher information can be applied to countless life decisions, whether financial, medical, educational or technical … An informed and educated citizenry is essential to the functioning of our modern democratic society (US Government, 2009, online).

Information literacy, as can be seen above, goes hand in hand with digital literacies, which allow users to make best use of the technologies employed by information providers, including libraries. These literacies, in turn, form the gamut of academic literacies that ensure that learners leave formal education with the appropriate skills to enable them to survive in the workplace and to continue their learning throughout life.

As can be seen, much work has been done over the last 40 years in defining IL and agreeing to standards that influence practice. However, several authors concur that IL lacks a theoretical framework. Authors such as Christine Bruce (2000), Troy Swanson (2004), Peter Elmborg (2006), Annemaree Lloyd (2010) and Andrew Whitworth (2014) have highlighted the gap between theory and practice. These authors have considered the following theories and methods for IL: sociocultural practice theory, phenomenography and variation theory, discourse analysis (see Bruce, 2000; Lloyd, 2010; Limberg et al., 2012) and critical theory based on Paulo Freire's philosophy (see Swanson, 2004; Bruce et al.,2006; Elmborg, 2006; Whitworth, 2014). In her work on information landscapes Annemaree Lloyd (2010) argues that information literacy cannot be contained rigidly within the walls of the library as meanings and knowledge constructs are dependent on different socio-cultural experiences. This greatly expands IL and allows for a holistic application of the skills. Whitworth (2014) confirms this and states that IL will be marginalised if it does not align itself to a theory. The key to this is how these skills are taught and how transferable they become.

It is often the case that the phrases ‘information literacy’ and ‘digital literacy’ are used interchangeably. As Bowden states in his writings on digital literacies, the terminology is confusing. Other authors have also tried to clarify the term. For example, referring to work undertaken by Robinson et al. (2005) in health libraries, Lankshear and Knobel (2008) state:

> Not only must the idea of digital literacy find its place among information literacy, computer literacy, ICT literacy, e-literacy, network literacy, and media literacy, but it must also be matched against terms which avoid the ‘literacy’ idea, such as informacy and information fluency. Indeed in some cases, mention of information or anything similar is avoided –particularly in workplace settings – as in ‘basic skills,’ ‘Internet savvy,’ or ‘smart working’ (p. 17).

In this chapter, the phrase ‘information literacy’ will refer to the information searching skills required for research in the academic context. These skills go hand in hand with digital literacies, which allow users to make the best use of the technologies used by information providers, including libraries. These literacies, in turn, form the spectrum of academic literacies that ensure that learners leave formal education with the appropriate skills to enable them to survive in the workplace and to continue their learning throughout life. IL skills are therefore transferable skills if criticality is part of this teaching. So the question is: how do we ensure graduates on our courses, whether they are taught face to face or online, leave the institution with the relevant IL skills in order to function in society and the workplace? If we are to understand this question and tailor library support to match these needs, it is necessary to first understand user behaviour. And one way to do this is to look at the outcomes of the various research studies conducted on the information-seeking behaviours of different groups of users.

A REVIEW OF RECENT USER BEHAVIOUR STUDIES

Over the last ten years, there have been numerous user behaviour studies conducted to understand the impact of new technologies and the expanding information world confronting library users. Many of these studies have looked at the

information-seeking behaviour of the digital library user and at the impact of the digital on the use of print resources. Findings from these studies are relevant to an understanding of how students function in the e-learning environment and thus are equally important for e-course designers to consider. The summary below is selective, focusing mainly on quantitative and qualitative studies conducted in the UK and the USA. These findings generally complement each other and provide a profile of the information-seeking behaviour of the digital researcher. In 2010, the UK's Joint Information Systems Council (JISC) commissioned an analysis of user behaviour studies funded by US-based OCLC and UK-based RIN and JISC. Much of what follows below is an overview of this cumulative report entitled The Digital Information Seeker (Silipigni Connaway and Dickey, 2010).

Books are the libraries' brand for many younger users despite libraries providing access to an increasingly large collection of electronic resources (De Rosa et al., 2011). This may have been because of the unnecessarily complicated access arrangements to digital resources which have been identified as a key problem (RIN, 2006). A RIN-CURL study, Researchers' Use of Academic Libraries and their Services (2007), found that the demand for e-resources increased once access was standardised. The expectation that younger users would be savvier at accessing digital resources was confirmed but a report commissioned by JISC and the British Library in 2008, *The Researcher of Tomorrow*, also found that:

> although young people demonstrate an ease and familiarity with computers, they rely on the most basic search tools and do not possess the critical and analytical skills to assess the information that they find on the web. [The study] also shows that research-behaviour traits that are commonly associated with younger users – impatience in search and navigation and zero tolerance for any delay in satisfying their information needs – are now the norm for all age-groups, from younger pupils and undergraduates through to professors.

This report sent 'a stark message to government – that young people are dangerously lacking information skills [and] well-funded information literacy

programmes are needed … if the UK is to remain a leading knowledge economy with a strongly-skilled next generation of researchers'. At the launch of this report, Malcolm Read, the Executive Secretary of JISC, explained that the study added to the overall understanding of online user behaviour and that it was imperative for librarians to consider how they were meeting the needs of digital researchers, especially with respect to having the necessary skills to navigate the information landscape appropriately. He was also hopeful that the findings would encourage debate and inform practice in further and higher education (BL-JISC, 2008).

Dame Lynne Brindley, the Chief Executive of the British Library, echoed the same sentiment (BL-JISC, 2008), which no doubt helped to ensure that politicians and educational policy makers heard the message. It gave credibility to IL, ensuring that librarians could push the IL agenda further within their educational establishments. Additionally, more funding was made available for further studies on understanding the information-seeking behaviour of the researcher. The 'researcher' in these studies was defined as the library user at all levels, i.e. undergraduate, postgraduate, researcher and academic staff.

For the above-mentioned research project, the Centre for Information Behaviour and the Evaluation of Research (CIBER) team at University College London analysed web logs of two online services from the British Library and JISC. In order to confirm the findings from the web log analyses, JISC commissioned an ethnographic study in the following year. This was the *User Behaviour in Resource Discovery* (UBiRD) study, which observed the information-seeking behaviour of 34 undergraduate and postgraduate students studying business and economics in three higher education institutions (Cranfield University, London School of Economics and Middlesex University) in the UK. Though this study looked at a small sample of users in a specific subject category, it confirmed some of the findings from CIBER's analyses and contributed further to understanding of the online search and retrieval process in digital environments.

The UBiRD study (commissioned in 2009 and published in 2010; Wong et al., 2010) found that students needed to be competent in both IT and information

literacy skills in order to search, find and access information relevant to their studies. However, the way in which students formulated their queries (that is, their search strategies) was highly dependent on the functionalities provided by the information systems they were using, whether they were library catalogues, databases or search engines. Information overload was a persistent problem – whether it was in terms of information provided by the institution or when finding information through searching online resources. The information provided to students at the start of their course was not always relevant at the time it was given, nor was it subject-specific enough to warrant the attention it deserved. Some students confirmed that they were not expected to use library or online resources as many of their readings were available on the virtual learning environment (VLE) in digitised format. They were therefore unaware of the digital resources until much later on in their programmes (usually in the second or third year). Thus, students generally stayed within the boundaries of their reading lists (Wong et al., 2010). As Bhimani states:

> this in itself may not be bad news if it is part of a deliberate strategy by academics working closely with librarians to develop a gradualist approach to information literacy with a clear intent to introduce more advanced skills and awareness of library subscribed electronic resource in the second year. However, it rarely is. The development of advanced information literacy skills is too often dependent on the natural wit of the student, the chance encounter with an enlightened academic who has foregrounded skills development in a particular module, or a very valuable one-to-one session with a librarian (2011, p. 48).

The UBiRD study also found that students expected their experiences of searching on Google and YouTube to be replicated on library resources, particularly on the databases that index journal articles. The complexities of using too many different library systems to search for a resource was an issue raised by the majority of students, which often led users to revert back to using Google or, in some cases, students would contact a family member or a friend to help them locate a resource. Further, the study found that some students relied on the same online resources and rarely experimented with new ones,

and they also very rarely used new technologies to stay current or manage information, even though their institutions enabled access to new software and provided training in its use. Finally, the study found that though students were able to use a search engine to retrieve information, they did not necessarily know how to get quality information or gauge its appropriateness for academic use (Wong et al., 2010).

UBiRD confirmed the findings of a similar study conducted by the Centre for Research-Informed Teaching at the University of Central Lancashire. The study, *Students' Use of Research in Teaching and Learning*, surveyed and interviewed undergraduate students at four UK universities (the University of Central Lancashire and three anonymous institutions representing the different types of UK HEIs: University A – a traditional, research-led Russell Group university; University B – a large, post-92 metropolitan university with a well-developed research culture; and University C – a small, 'new' teaching-led university, formerly a university college) (Hampton-Reeves et al., 2009). The study found that the majority of students mostly used the library catalogue as their first port of call and also used Google and Google Scholar. The students seemed to be bewildered by the large number of results that Google and Google Scholar generated. These students were aware that Wikipedia was a source that was considered to be inappropriate for citing in their academic work but what is unclear is whether they were generally aware of the pitfalls of using Wikipedia. Students also appeared to be were unaware of criteria that could be used to evaluate web resources. They were, however, generally aware that conventionally published research – that is, the materials found in libraries via the library catalogue – was of a higher quality than resources found on the Internet (Hampton-Reeves et al., 2009). The students largely overlooked dissertations or theses. The study also found that those students who used a discipline-specific database to access research tended to stick with the same resource, especially if they had had a positive experience, thus limiting themselves to the holdings in a single database. Additionally, the perception of the students was that research was useful only in an academic context and not something that could be used or conducted outside of formal education. Students were often reluctant to approach their tutors directly for advice on content or access and relied on the library staff to advise them. They also preferred to

use the limited preview facility in Google Books rather than come to the library and source the book itself. The study also found that students used the library in conjunction with, rather than instead of, the Internet (Hampton-Reeves et al., 2009). As with the UBiRD study, students rarely used social media or Web 2.0 technologies during their studies to identify and access research.

In 2010, JISC commissioned Lynn Silipigni Connoway and Timothy J. Dickey of OCLC Research in the USA to analyse and synthesise the findings from the different user behaviour studies which the two organisations had thus far undertaken. The authors found some common themes running through the studies which included user groups across ages and which identified the following: that there are disciplinary differences in the way researchers seek information (this was discussed above in the context of the 'bookless' library); that e-journals are becoming an increasingly important resource and users want quick and easy access to digital content in all formats from wherever they are; that students rely heavily on Internet resources and Google is almost always their first port of call for general enquiries, with Google Scholar the tool used most frequently to access e-journal content; and, finally, that access is becoming a major problem for most users. In addition, users want better descriptions (metadata) for e-resources in order to make them searchable and findable.

What these studies have not been able to compare is the students' ability to critically evaluate the resources accessed from the library and the subsequent impact on their grades. The Library Impact Data Project, funded by JISC in 2012 and coordinated by the University of Huddersfield, attempted to study the link between library use and student attainment by collating data from eight university libraries in the UK. The study looked at the use of e-resources, the number of books loaned to students and the footfall in the libraries over a six-month period, and compared these to the final degree results of 33,074 undergraduate students. Stone and Ramsden (2012) state that although the analysis of the data demonstrated 'a statistically significant relationship' between library use and level of degree, there was no causal relationship between library use and student attainment.

On the back of the Connoway and Dickey report, the British Library and the Higher Education Funding Council (HEFCE), via JISC, commissioned a longitudinal study culminating in *The Researchers of Tomorrow* report, which was published in 2012. This three-year longitudinal study, the largest of its kind, involved just over 17,000 doctoral students from 70 UK HEIs at different stages of their PhDs. Of these, 6,161 students were 'Generation Y' (born between 1982 and 1994) and the rest, 7,432, were older students. The majority of these students were conducting research in the social sciences and the humanities, though many of the younger students (29 years and younger) were pursuing research in the sciences. The findings from the report highlight five areas of concern (BL and HEFCE, 2012):

1 Doctoral students are increasingly reliant on secondary research resources (e.g. journal articles, books), moving away from primary materials (e.g. primary archival material and large data sets).

2 Access to relevant resources is a major constraint for doctoral students' progress. Authentication access and licence limitations to subscription-based resources, such as e-journals, are particularly problematic.

3 Open access and copyright appear to be a source of confusion for Generation Y doctoral students, rather than encouraging innovation and collaborative research.

4 This generation of doctoral students operates in an environment where their research behaviour does not use the full potential of innovative technology.

5 Doctoral students are insufficiently trained or informed to be able to fully embrace the latest opportunities in the digital information environment.

It is interesting to learn that postgraduate students (in all age groups and disciplines) were almost exclusively relying on secondary sources in the form of journal articles, even when content could be found in other types of resources. To some extent, whether a student focuses on primary or secondary resources very much depends

on the context of their research question and also on their discipline. However, the report raises concerns about the over-reliance on secondary resources, stating that this may have an impact on the long-term quality of doctoral research output in the UK. There is a requirement for doctoral students to consult original sources – that is, the primary source – whenever possible for their research but if, as the findings suggest, students are relying on journal articles for their research, they may be regurgitating knowledge that already exists, instead of looking at the primary source through a new lens – the lens of their research question in order to question anew and create new knowledge. Primary sources tend to be found in print and historical collections, which, unless they are digitised (and this is often not economically viable to do), require users to use physical libraries and archives. The study found that most Generation Y students were less likely to use other academic libraries and that the printed book was most used by arts and humanities students (BL and HEFCE, 2012, pp. 21–24). The fact that students do not make use of other libraries is particularly surprising, given that in the UK students have access to over 170 higher education libraries through the SCONUL scheme. Further, depending on the mode of study – that is, part or full-time, research or taught – students can borrow and use the electronic resources on site in those libraries that provide 'walk-in access' facilities, licences permitting. Of course, this scheme is not open to international students who have to make their own arrangements to access the relevant libraries in their countries.

PRACTICAL SOLUTIONS

A solution to the first key finding very much involves the thesis supervisor encouraging the student to consult context- and discipline-specific primary sources locally and internationally. Students are often confused about what constitutes a primary source and an understanding of this could come from readings and case studies on historical inquiry. Using such material to generate debate and investigate resources to become better informed about library, archive and special collections will allow students to become more aware of these types of collections at their own institutions, locally and in their own country. This can only enhance scholarly output.

Access constraints due to authentication and license limitations have been an ongoing problem. The UBiRD study confirmed that the lack of standardisation by publishers and database vendors was the major stumbling block (Wong et al., 2010). Users who begin searching with Google and Google Scholar often end up being asked to purchase content from publishers' websites. This can be frustrating for both user and librarian, as often libraries have already subscribed to the content. To circumvent access issues, many institutions have introduced 'single sign-on' – that is, one username and password to access all online services and resources, usually via the institution's intranet. However, without the necessary IL training, students fall back on Google and/or Google Scholar.

The BL study also noted that students were both mystified and circumspect about open access. Students assume that open access content is not of the same calibre as the articles indexed by databases, and, interestingly, many of the students felt that their supervisors would not approve of the use of open access content. Students do not often see the potential of using open access platforms to disseminate more widely their own work. Many were unaware of their own institution's research repository. Further, these students were also confused about intellectual property rights, including copyright. They did not, for instance, understand how copyright law could be used to protect their work. Thus, understanding types of resources, how content is curated in databases other than the library-subscribed subject and indexing databases and copyright is just as important as being able to access and evaluate resources for a research project.

Although many students use referencing software, the majority were unaware that they could keep updated on new research using some of the new technologies like RSS. They were also unaware of the potential use of social media both as a research tool and as a means of establishing their digital presence so as to network, collaborate and disseminate their work. It is therefore not surprising that the report concludes that more training is required in order for future scholars to benefit from the opportunities presented by new technologies.

UK librarians who had, in the majority of cases, been struggling to communicate the

importance of embedding information literacy into the curriculum welcomed the report for it gave them extra ammunition to take the IL and digital literacies training agenda forward at their institutions.

It is clear from these user behaviour studies that many of the IL issues are compounded at postgraduate level. What is more worrying is the fate of online students who are not adequately represented in these studies and who are likely to be struggling even more, especially if they have been out of formal education for a while and/or are not as IT-literate as their on-campus counterparts. For these students, the issues raised above are likely to be magnified. These students need additional support perhaps in the form of pre-sessional training on IT and IL. Increasingly too, the need to ensure that IL is systematically embedded within the school curriculum is imperative. An IL training programme that begins pre-university and is continued and built on progressively throughout higher education is a requirement'. This will ensure graduates develop these skills systematically so that they leave university with the necessary transferable skills for the workplace and for lifelong learning.

THE CURRENT SITUATION

As more content is made available in digital format, and as remote access to e-resources becomes more common among library users, academic libraries have had to re-evaluate the provision of service and support to e-learners. The various professional bodies and funders of online user behaviour research have produced advice, guidelines and standards. In the UK, these bodies include the Information Literacy Group of the Chartered Institute of Library and Information Professionals (CILIP) (www.informationliteracy.org.uk), SCONUL (www.sconul.ac.uk/tags/information-literacy), InformALL (www.researchinfonet.org/infolit/ridls/), which is part of the Research Information Network (RIN), and Vitae (www.vitae.ac.uk/news/the-informed-researcher-booklet-and-information-literacy-lens-on-thevitae-researcher-development-framework-out-now). There are also the education bodies in Scotland and Wales who work with cross-sector education partners and relevant non-governmental agencies to provide IL guidance and support. The

Scottish Information Literacy Project is the outcome of one collaborative project of this kind (see www.therightinformation.org/archive-silp/). The Welsh have also developed the Welsh Information Literacy Framework in collaboration with Welsh Libraries (http://welshlibraries.org/uploads/media/Information_Literacy_Framework_Wales.pdf). In Canada and the USA, guidelines and standards have also been drawn up by the appropriate professional bodies (see, for example, the Canadian Library Association Guidelines, 1993, revised 2000; and the Association of College and Research Libraries Standards 2004 (Johnson et al., 2008)).

The latest report commissioned by JISC considered both digital literacies and the use of physical and virtual study spaces by postgraduate students at one UK institution. The *Digital Literacies as a Postgraduate Attribute* report (Gourlay et al., 2013) confirmed much of what has been summarised above with respect to digital and information literacy, and emphasised the importance of support departments working together to ensure user needs are met. As study spaces for all modes of students (whether on campus or online, full or part time, etc.) become increasingly distributed and at times random (for students tend to access resources from home, from the workplace, from public spaces and from libraries), the issue of access (permissions and bandwidths) to resources, support and systems is becoming increasingly important. This has implications for both the library and the institution as a whole (Gourlay et al., 2013).

IL training is evident in academic libraries in various guises: at the lower end of the spectrum, use is made of multiple-choice questions in order to ensure users can identify access points and key resources; and some libraries have created web pages and online guides which provide instructions on how to search, find, access resources and provide information on different library collections. These can be consulted at the point of need. At the top end of the spectrum, librarians have developed the ultimate standalone IL course using a ‘stepped approach’, allowing students to develop IL skills over a period of time. Nevertheless unless these are embedded into the curriculum so that they are subject specific and relevant, they will sit in isolation and be of little relevance. At the UCL Institute of Education, for example, an online enquiry service, a knowledge base of frequently asked questions, a chat service and instructional web pages with embedded video

content on a YouTube channel, attempt to ensure parity of service to remote users' and provide support materials for face-to-face IL teaching. The Institute is not alone in having developed these services. At the time of writing, the software vendor Springshare, claims that over 4,800 libraries in 78 countries are using Springshare's software libguide, libanswers, libchat, etc., to create similar content to support their learners.

However, information literacy training is not provided systematically across all UK educational establishments, as the RIN report of 2008 confirms (Secker and Coonan, 2011). This scattered provision is the result of 'a lack of clear ownership at institutional level' about who provides this training and how it should be implemented (Beetham et al., 2009, p. 5). The result of this is that, for the most part, the majority of library inductions and information literacy teaching are isolated from the courses being taught, usually outside the VLE. If IL materials are contained in the VLE, they are commonly in the form of hyperlinks. Given this, it is not surprising that students tend to be of the mindset that Google and Google Scholar (and increasingly YouTube and Wikipedia) will suffice should they need to look beyond the core and suggested readings on their courses. The situation is markedly better in the USA and in Australia, judging by the evidence-based studies authored by librarians in such key journals as the Journal of Information Literacy, the *Journal of Information Literacy in Higher Education* and *Communications in Information Literacy*, *Reference Services Review* and the *Journal of Academic Libraries*. A gradual shift is also evident in that the term 'embedded librarian' is increasingly appearing in the literature to describe the role of the tutor librarian in providing subject-specific IL training (Johnson et al., 2012).

THE ROLE OF THE LIBRARY AND INFORMATION PROFESSIONAL

The rapid changes in the information landscape have necessitated a recognition that the librarian's role and focus are significantly different from what they used to be, particularly for those working in HEIs. In the UK, this change began in the early 1990s following the publication of the John Fielden (1993) and the Dearing

(1997) reports. According to Bury, Martin and Roberts (2006, p. 25), there is ‘a noticeable shift post-Dearing, from “support” to “active engagement” in the delivery of learning and teaching’, especially for support staff:

> The key messages emerging from the literature are that the role of the academic librarian is growing closer to that of the academic, and is also closely related to the relatively new role of the learning technologist, particularly in the context of e-learning where the information professionals have developed new approaches to supporting learners in the electronic environment, for example using online tutorials and embedding e-resources into the virtual learning environments (VLEs). With the development of e-learning, the erosion of boundaries and barriers between different professional groups [and the] moves towards team working are viewed as positives and the key to future professional practice for learner support staff in HE.

Several authors (see Bruce, 2000, 2006; Pinfield, 2001; Moore, 2003; Beetham et al., 2009, for example) have confirmed that librarians are ‘at the forefront of change and role development’ (Bury et al., 2006, p. 24) in the early years of the present century. They have acknowledged that librarians were the first educators to recognise that a new set of skills were required to navigate effectively around this new information landscape. It should therefore not come as a surprise that, over the years, the librarian’s job title has changed and evolved to include ‘knowledge mobiliser’, ‘information facilitator’, ‘para-academic’, ‘educationalist/learning facilitator’, ‘information consultant’, ‘tutor librarian’ and ‘information technologist’, to name but a few. Whatever the title, many librarians have obtained teaching certificates (the PGCHE in the UK) in order to be more effective in the way they teach IL skills and to lend themselves credibility among teaching staff. Perhaps it is time for academics to acknowledge librarians (and other support staff) as equal partners. As Tara Brabazon (2010) reports in her interview in *The Times Higher Education Supplement*, librarians cannot remain invisible if we are to benefit our students:

> Librarians bring to the table their expertise, which is from the front line … Librarians will continue to be, very literally, the interface between, on the one hand, resources and systems for accessing these resources and, on the other, people, individuals, and groups in pursuit of information and eager to transform that information into knowledge that is meaningful and useful to them. Librarians may work in large facilities in even larger institutions, but our work is to help the individual in their quest (2010, online)

Related to the above is the notion of 'third space professionals' that include librarians working in both a professional and academic capacity (Whitechurch, 2008). This is a trend that is likely to continue not just among the librarians but among other support staff supporting all aspects of elearning.

COLLABORATIVE PRACTICE: A MODEL FOR THE FUTURE

In many institutions, the librarian tends to work in isolation from the lecturers and other support staff. Occasionally, the librarian and IT specialist may work together or the librarian and writing centre staff may collaborate, but rarely do all groups of staff work together in a cooperative way to deliver course content. This gives a sense of a fractured service and is not ideal. Those on campus are not affected by the present set-up as students coming into campus can engage with library and IT staff at various service points. However, the effect on online learners can be significant (even though they may not be aware of how or how much). According to Secker and Price (2008, p. 343), 'distance learners appear to experience greater difficulties using electronic resources than their on-campus counterparts'. A possible solution is to create collaborative teams made up of the course lecturer, 'tutor librarians' (the term is used to differentiate librarians who teach information literacy skills from librarians working in other sections of the library, e.g. cataloguing and acquisitions), learning technologists and academic writing support staff to work together so that IL can be embedded within the course or programme and support can be provided seamlessly. This, in turn,

provides a richer learning experience and would perhaps even increase student engagement with educational technologies.

Tara Brabazon's (2007) example of assigning the task of creating an annotated bibliography to encourage criticality is used below to portray how collaborative teams could work: The lecturer, with the tutor-librarian, plans the research question in order to ensure that it requires the utilisation of several subject-specific and multidisciplinary resources; the librarian then teaches students how to construct a search strategy in order to identify the most relevant resources and how to access these 'quality' resources following a critical evaluation of them. This may also require the use of software to construct a mind-map of the research question in order to demonstrate the different keywords and concepts found through searching which are required to 'break down' the larger topic and understand the question. IT staff may simultaneously assist the student if access is problematic and if the student needs help in creating a visual map of the research question showing the keywords and concepts. Next, the academic writing centre tutor can teach the student to engage critically with the texts, both in terms of reading and writing about the topic. The student could then be shown how to reference the information resources both manually and by using bibliographic management software in order to use the information in an ethical manner and make use of new technologies to manage time. Thus, this single, collaborative exercise is an example of how collaborative practices can be used both to develop the learner holistically so as to ensure that the student meets the expected academic standards and develops the necessary skills. It also gives the teaching team a shared purpose – one of developing the learner's academic competences, including the necessary IL skills. This is just one example. There are others where librarians could provide links to digitised primary source materials and students are tasked to create digital essays using primary and secondary materials including web based content such as documentary video clips, online interviews, music, text, etc ensuring that they are evaluating information against set criteria. A research project such as this will enable the e-learner to develop both research skills and the necessary information and digital literacies within the context of the course that is being taught.

Several studies have looked at student retention figures and find that one of the reasons for students leaving higher education is a poor quality learning experience and the inability to cope with the academic demands of the course (Yorke and Longden, 2008). It is therefore crucial that educators work collaboratively to transform the way they approach information literacy/user education and to ensure that they understand the information-seeking behaviours of their learners so that they are better able to engage with their users, especially in the e-learning environment. They can no longer afford to ignore IL as the repercussions of doing so are serious. Nor can they provide IL in an isolated and disjointed manner. A change of practice and mindset for both academic and support staff is required to ensure that HEIs enable their students to leave with the appropriate twenty-first-century graduate skills. Collaborative practices need to be the norm in the delivery of teaching and learning in institutions. This has to be the way forward – towards a holistic, enriching and satisfying educational experience for our students. IL becomes far more than graduate skills for the university graduate; it is also a social justice issue and a basic human right in a digital world and one that contributes towards the making of an informed citizen, whether it is in health, political or economic terms, in a democracy.

Clearly, such endeavours necessitate an increase in workload for all concerned. It is generally acknowledged that online courses are labour-intensive to create. The issue was recently highlighted in discussions on Massive Open Online Courses (MOOCs): Stanford University's Robert Sedgewick spent hundreds of hours creating content, giving as much as two weeks to each recording for his online course – the preparation itself is a 'full time job', he stated in an interview for the Chronicle of Higher Education (Kolowich, 2013, p. A21). Many other professors interviewed in the same article stated that they gave up a large part of their time to supporting online students. Although this article focuses on MOOCs, the workload issue could be shared among collaborative teams. Another way to get mileage out of content is to ensure that the materials created for online courses can be re-used and made available as a library of learning resources which e-learners can utilise at the point of need (Fields, 2014, p. 46). Making content freely available (for example, as YouTube video lectures, podcasts,

web pages or blog posts) has the added benefit of positively enhancing the creator's career.

CONCLUSION

Teaching staff are usually under pressure to ensure the pedagogy employed enhances students' learning. Although academic staff acknowledge the importance of information literacy, they may not see the importance of embedding it into their courses. But unless these skills are planned into the curriculum, they are not likely to be developed in a systematic manner and considered relevant by students. The longer-term implications of continuing with a practice that is disjointed from the perspective of improving student experience and creating a 'multi-literate' student needs to be considered seriously by all educationists. The need to ensure that students leave university with the appropriate graduate skills for the workplace is becoming increasingly important. There is growing recognition that economic uncertainties bring high competition for employment in the global knowledge economy. Most of us live in highly networked societies where the boundaries between different environments, whether public or virtual, are decreasing. The rapid social and techno-social changes resulting in the ubiquity of information, via virtual and often social networks, need to be acknowledged. It is in this context that we need to ensure that we are equipping our students with the information literacy skills they need. In 2011, the Confederation of British Industries (CBI), in conjunction with the National Union of Students (NUS), launched a new employability skills guide in the UK. Aaron Porter, then the NUS President, stated the following:

> Access to higher education opens the doors to a world of possibility but it is incumbent on universities to do more … to equip their students to face the challenges the future brings. Students are increasingly demanding of their institutions and quite rightly expect more in the way of information, support and resources to prepare them for life after university. (CBI-NUS, 2011)

The *Learning Literacies in the Digital Age* (LLiDA, 2009) report specifies the

key learning literacies students need to survive the workplace. These include information (and digital literacy), critical and evaluative skills, self-awareness, self-confidence and the ability to develop strategies for their own learning. Independence in learning and autonomy are key skills for the future graduate and educators must achieve this outcome for the students in collaboration with colleagues at their institutions. Many university and support departments have embedded this message in their mission statements. It is time now to ensure that the promises contained in these mission statements are actioned throughout the organisation through collaboration.

FURTHER READING

Bawden, D. (2001). Information and digital literacies: a review of concepts. *Journal of Documentation*, 57(2), 218–259.

Borg, M., & Stretton, E. (2009). My students and other animals: or a vulture, an orb weaver spider, a giant panda and 900 undergraduate business students. *Journal of Information Literacy*, 3(1), 19–30.

Brabazon, T. (2007). *The University of Google: Education in the (Post) Information Age*. Aldershot, Hampshire, England; Burlington, VT: Ashgate.

Cerbo, M. A. (2012). The academic library online: is the future of academic libraries a virtual reality? *Technical Services Quarterly*, 29(3), 181–192.

Jelfs, A., & Kelly, P. (2007). Evaluating electronic resources: Personal Development Planning resources at the Open University – a case study. *Assessment & Evaluation in Higher Education*, 32(5), 515–526.

Johnston, B., & Webber, S. (2003). Information literacy in higher education: a review and case study. *Studies in Higher Education*, 28(3), 335–352.

Limberg, L., Sundin, O., & Talja, S. (2012). Three theoretical perspectives on information literacy. *Human IT*, 11(2), 93–130.

Littlejohn, A., Beetham, H., & McGill, L. (2012). Learning at the digital frontier: a review of digital literacies in theory and practice. *Journal of Computer Assisted Learning*, 28(6), 547–556.

McGuiness, C. (2003). Attitudes of academics to the library's role in information literacy education. In A. Martin & H. Rader (eds), *Information and IT Literacy: Enabling learning in the 21st century* (pp. 244–254). London: Facet Publishing.

Obama, B. (2009). *National information literacy awareness month: A*

proclamation.Retrieved December 30, 2014, from http://www.whitehouse.gov/node/5142

Slade, A. L. (2000). International trends and issues in library services for distance learning: present and future. Keynote Address at the Libraries without Walls Conference, 10–14 September 1999. In P. Brophy, S. Fisher & Z. Clarke (eds), *Libraries Without Walls 3: The delivery of library services to distant users*. London: Library Association Publishing.

Slade, A. L. (1993; revised 2000). Canadian Library Association | Guidelines for Library Support of Distance and Distributed Learning in Canada. Retrieved January 1, 2015, from http://www.cla.ca/AM/Template.cfm?Section=Position_Statements&Template=/CM/ContentDisplay.cfm&ContentID=3794

Tenopir, C., & Volentine, R. (2012). UK Scholarly Reading and the Value of Library Resources: Summary results of the study conducted spring 2011 (p. 138). Tennessee: Centre for Information and Communication Studies. Retrieved from http://crl.acrl.org/content/early/2012/11/08/crl12-406.full. pdf+html

Thornes, S. L. (2012). Creating an online tutorial to develop academic and research skills. *Journal of Information Literacy*, 6(1), 82–95.

REFERENCES

ALA Association of College and Research Libraries (ACRL) (1989). Introduction to Information Literacy. Retrieved from www.ala.org/acrl/issues/infolit/overview/intro (Accessed 8th November 2014)

ALA Association of Colleges and Research Libraries (ACRL) (2013). Intersections of Scholarly Communication and Information Literacy: Creating strategic collaborations for a changing academic environment. Retrieved from http://acrl.ala.org/intersections (Accessed 24th February 2015)

Beetham, H., McGill, L., & Littlejohn, A. H. (2009). Thriving in the 21st Century: Learning Literacies for the Digital Age (LLiDA project). Retrieved from www.voced.edu.au/node/29835 (Accessed 28th October 2014)

Bent, M. (2008). Perceptions of Information Literacy in the Transition to Higher Education. Retrieved from http://eprint.ncl.ac.uk/pub_details2.aspx?pub_id=55850 (Accessed 9th November 2014)

Bhimani, N. (2011). Information literacy: a 21st century graduate skill. Middlesex Journal of Educational Technology, 1(1), 44–51. Retrieved from http://eprints.mdx.ac.uk/7259/1/information%20literacy%20Nazlin%20Bhimani.pdf (Accessed 7th November 2014)

Brabazon, T. (2007). *The University of Google: Education in the (post) information age.* Aldershot and Burlington, VT: Ashgate.

Brabazon, T. (2010). Tara Brabazon: the invisible support network. The Times, 12 January. Retrieved from www.timeshighereducation.co.uk/news/tara-brabazon-the-invisible-support-network/414491.article (Accessed 2nd November 2014)

Brabazon, T. (2014). The disintermediated librarian and a reintermediated future. *The Australian Library Journal*, 63(3), 191–205.

Brabazon, T., & Bhimani, N. (2012). 'The invisible woman'. In *Digital Dialogues and Community 2.0: Beyond avatars, trolls and puppets*. Oxford: Chandos.

British Library and JISC (2008). Information Behaviour of the Researcher of the Future (Briefing paper) (p. 35). London. Retrieved from www.jisc.ac.uk/media/documents/programmes/reppres/gg_final_keynote_11012008.pdf (Accessed 2nd November 2014)

British Library and Higher Education Funding Council for England (HEFCE) (2012). Researchers of Tomorrow: the research behavior of Generation Y doctoral students. JISC, London: Retrieved from http://www.webarchive.org.uk/wayback/archive/20140614205429/http://www.jisc.ac.uk/media/documents/publications/reports/2012/Researchers-of-Tomorrow.pdf (Accessed 7th November 2014)

Bruce, C. S. (2000). Information literacy research: dimensions of the emerging collective consciousness. *Australian Academic and Research Libraries* (AARL), 31(2), 91–109. Retrieved from http://eprints.qut.edu.au/46274/2/46274.pdf (Accessed 11th November 2014)

Bruce, C. (2001). Faculty–librarian partnerships in Australian higher education: critical dimensions. *Reference Services Review*, 29(2), 106–116.

Bruce, C., Edwards, S., & Lupton, M. (2006). Six frames for information literacy education: a conceptual framework for interpreting the relationships between theory and practice. *Innovation in Teaching and Learning in Information and Computer Sciences*, 5(1), 1–18.

Bundy, A. (ed.) (2004). Australia and New Zealand Information Literacy Framework: Principles, standards and practice (2nd edn). Adelaide: Australian and New Zealand Institute for Information Literacy. Retrieved from www.library.unisa.edu.au/learn/infolit/infolit-2nd-edition.pdf (Accessed 30th December 2014)

Bury, R., Martin, L., & Roberts, S. (2006). Achieving change through mutual development: supported online learning and the evolving roles of health and information professionals. *Health Information & Libraries Journal*, 23, 22–31.

Chartered Institute of Library and Information Professionals (CILIP) Information Literacy Group (2004). Definitions & Models: Information literacy. Retrieved from www.informationliteracy.org.uk/information-literacy-definitions/ (Accessed 8th November 2014)

Confederation of British Industry & the National Union of Students (CBI-NUS) (2011). Universities must Embed Employability Skills in Course Structures. Retrieved from www.cbi.org.uk/media-centre/pressreleases/2011/05/universities-must-embed-employability-skills-in-course-structures-cbi-nus/ (Accessed 28th October 2014)

Coonan, E. (2011). A New Curriculum for Information Literacy: Teaching learning – Perceptions of information literacy: theoretical background. Retrieved from http://ccfil.pbworks.com/f/emma_report_final.pdf (Accessed 28th October 2014)

Dearing, R. (1997). *Higher education in the learning society. The National Committee of Inquiry into Higher Education. Summary report*. London: HMSO.

De Rosa, C., Cantrell, J., Carlson, M. L., Gallagher, M., Hawk, J., Sturtz, C., et al. (2011). Perceptions of Libraries, 2010: Context and community – A report to the OCLC membership. Retrieved from http:// oclc.org/reports/2010perceptions.en.html (Accessed 8th November 2014)

Elmborg, J., 2006. Critical Information Literacy: Implications for Instructional Practice. *The Journal of Academic Librarianship* 32, 192–199.

Fields, A. (2014). Engaging learner support: an investigation of faculty–library collaboration to provide live course-specific learner support within the online classroom environment. *Journal of Open, Flexible and Distance Learning*, 18(1), 46–57.

Flood, A. (2014). Bookless library opened by new US university. The Guardian, 29 August. Retrieved from www.theguardian.com/books/2014/aug/29/bookless-library-new-us-university-florida-polytechnicdigital?CMP=fb_gu#start-of-comments (Accessed 19th October 2014)

Gourlay, L., Oliver, M., Fransman, J., Clark, W., Hill, S., Bhimani, N., & Sakarya, B. (2013). Digital Literacies as a Postgraduate Attribute. London: JISC & Institute of Education. Retrieved from http://jiscdesignstudio.pbworks.com/w/page/50732695/Digital%20Literacies%20as%20a%20Postgraduate%20Attribute%20project (Accessed 9th November 2014) with key findings from http://libguides.ioe.ac.uk/digital_literacies (Accessed 9th November 2014)

Great Britain: Department for Business, Innovation and Skills. (2013). International Education – Global Growth and Prosperity: An Accompanying Analytical Narrative (No. BIS/13/1082). Crown Copyright, London. (Accessed 10th October 2014)

Hampton-Reeves, S., Mashiter, C., Westaway, J., Lumsden, P., Day, H., Hewertson, H., & Hart, A. (2009). Students' Use of Research Content in Teaching and Learning: A report for the Joint Information Systems Council (JISC). Retrieved on 25 September 2015 from www.uclan.ac.uk/research/explore/groups/assets/students_use_of_research_content.pdf (Accessed 9th November 2014)

Haq, H. (2012). 'Bookless libraries': has it really come to this? Christian Science

Monitor, 17 July. Retrieved from www.csmonitor.com/Books/chapter-and-verse/2012/0717/Bookless-libraries-has-itreally-come-to-this (Accessed 1st November 2014)

Imperial College London (2014). Library Services Overview. Retrieved 19 October 2014 from https://workspace.imperial.ac.uk/library/Public/library-services-overview.pdf (Accessed 1st November 2014)

JISC (2008). 'Google Generation' is a Myth Says Research. Retrieved from www.jisc.ac.uk/news/googlegeneration-is-a-myth-says-new-research-16-jan-2008 (Accessed 30th December 2014)

John Fielden Consultancy (1993). *Supporting Expansion: A report on human resource management in academic libraries, for the Joint Funding Councils' Libraries Review Group*. London: Higher Education Funding Council for England (HEFCE).

Johnson, A. M., Sproles, C., Detmering, R., & English, J. (2012). Library instruction and information literacy 2011. *Reference Services Review*, 40(4), 601–703.

Johnson, K., Trabelsi, H., & Fabbro, E. (2008). Library support for e-learners: e-resources, e-services and the human factors. In T. Anderson (ed.), *Theory and Practice of Online Learning* (2nd edn, pp. 349–365). Alberta, Canada: Athabasca University. Retrieved from http://cde.athabascau.ca/online_book/ch14.html (Accessed 30th December 2014)

Kolowich, S. (2013). The professors who make the MOOCs. *Chronicle of Higher Education,* 59(28), A20–A23. Retrieved from http://publicservicesalliance.org/wp-content/uploads/2013/03/The-Professors-Behind-the-MOOC-Hype-Technology-The-Chronicle-of-Higher-Education.pdf (Accessed 9th November 2014)

Lankshear, C., & Knobel, M. (eds) (2008). *Digital Literacies: Concepts, policies and practices*. New York and Oxford: Peter Lang.

Lefebvre, L. A., & Yancey, M. C. (2014). Graduate information literacy in online education using the embedded librarian model. *Journal of Information Literacy*, 8(1), 93–96.

Limberg, L., Sundin, O., & Talja, S. (2012). Three theoretical perspectives on information literacy. *Human IT*, 11(2), 93–130.

Lloyd, A. (2010). *Information Literacy Landscapes: Information literacy in education, workplace and everyday contexts*. Oxford: Chandos.

Massis, B. (2013). The 'bookless' curriculum and the academic library. *New Library World*, 114(9/10), 443–446.

Moore, K. (2003). Building new partnerships: changing institutional relations. In E. Oysten (ed.), *Centred on Learning: Academic case studies on learning centre development*. London: Ashgate. pp.127–152.

Oblinger, D., Oblinger, J. L., & Lippincott, J. K. (2005). Educating the Net Generation. Boulder, CO:EDUCAUSE. Retrieved from http://digitalcommons.brockport.edu/bookshelf/272

Pinfield, S. (2001). The changing role of subject librarians in academic libraries. *Journal of Librarianship and Information Science*, 33(1), 32–38.

Rapple, B. A. (2005). Google and access to the world's intellectual heritage. *Contemporary Review*, 286(1673), 338–443.

Research Information Network (RIN) (2006). Researchers and Discovery Services: Behaviour, perceptions, needs (Study). Retrieved from www.rin.ac.uk/our-work/using-and-accessing-information-resources/researchers-and-discovery-services-behaviour-perc (Accessed 9th November 2014)

Research Information Network (RIN) (2010a). Information Literacy. Retrieved from www.researchinfonet.org/infolit/ (Accessed 9th November 2014)

Research Information Network (RIN) (2010b). What is Information Literacy? Retrieved from www.rin.ac.uk/our-work/researcher-development-and-skills/what-is-information-literacy (Accessed 8th November 2014)

Research Information Network (RIN) and the Consortium of Research Libraries (CURL) (2007).

Researchers' Use of Academic Libraries and their Services. London: RIN. Retrieved from www.rin.ac.uk/our-work/using-and-accessing-information-resources/researchers-use-academic-librariesand-their-serv (Accessed 11th November 2014)

Robinson, L., Hilger - Ellis, J., Osborne, L., Rowlands, J., Smith, J. M., Weist, A., et al. (2005). Healthcare librarians and learner support: competencies and methods. *Health Information and Libraries Journal*,22, 42–50.

Secker, J., & Coonan, E. (2011). A New Curriculum for Information Literacy: Executive summary. Cambridge: University of Cambridge Arcadia Project. Retrieved from www.repository.cam.ac.uk/bitstream/handle/1810/244639/Executive_summary.pdf?sequence=1 (Accessed 28th October 2014)

Secker, J., & Price, G. (2008). Virtual libraries as virtual learning spaces: the experience of the LASSIE project. Presented at the 6th International Conference on Networked Learning, Halkidiki, Greece.Retrieved from http://eprints.lse.ac.uk/4401/1/__lse.ac.uk_storage_LIBRARY_Secondary_libfile_shared_repository_Content_Secker,%20J_Virtual%20libraries%20virtual%20learning_Secker_Virtual%20libraries%20virtual%20learning_2014.pdf (Accessed 1st November 2014)

Silipigni Connaway, L., & Dickey, T. (2010). The Digital Information Seeker: Report of findings from selected OCLC, RIN and JISC user behaviour projects (No. 706) (p.

56). London: JISC. Retrieved from www.jisc.ac.uk/publications/reports/2010/digitalinformationseekers.aspx (Accessed 29th December 2014)

Sivertsen, G., & Larsen, B. (2012). Comprehensive bibliographic coverage of the social sciences and humanities in a citation index: an empirical analysis of the potential. *Scientometrics*, 91(2), 567–575.

Slade, A. L. (1993; revised 2000). Canadian Library Association Guidelines for Library Support of Distance and Distributed Learning in Canada. Retrieved 1 January 2015 from www.cla.ca/AM/Template.cfm?Section=Position_Statements&Template=/CM/ContentDisplay.cfm&ContentID=3794 (Accessed 1st January 2015)

Society of College, National and University Libraries (SCONUL) Advisory Committee on Information Literacy (1999). Information Skills in Higher Education: A SCONUL briefing paper. London: SCONUL. Retrieved from www.sconul.ac.uk/sites/default/files/documents/Seven_pillars2.pdf

Society of College, National and University Libraries (SCONUL) Task Force on Information Skills (2011).The SCONUL Seven Pillars of Information Literacy: Core model for higher education. London: SCONUL. Retrieved from www.sconul.ac.uk/sites/default/files/documents/coremodel.pdf (Accessed 11th November 2014)

Stein, L. (2014). Library without books debuts at Florida's newest college. *The New York Times*, 25 August. Retrieved from www.nytimes.com/reuters/2014/08/25/technology/25reuters-usa-floridalibrary.html (Accessed 29th December 2014)

Stone, G., & Ramsden, B. (2012). Library impact data project: looking for the link between library usage and student attainment. *College & Research Libraries*, crl12–406.

Swanson, T. A. (2004). A radical step: implementing a critical information literacy model. *Portal: Libraries and the Academy*, 4(2), 259–273.

Tenopir, C. (2011). Beyond usage: measuring library outcomes and value. *Library Management*, 33(1/2), 5–13.

Thompson, S. (2003). Information Literacy Meeting of Experts: Report of a meeting sponsored by the US National Commission on Libraries and Information Science (NCLIS) and the National Forum on Information Literacy (NFIL) with the support of the United Nations Education, Scientific, and Cultural Organization (UNESCO) (No. ED-03-PO-259). Prague: UNESCO. Retrieved from www.bibalex.org/infolit2005/finalreportprague.pdf (Accessed 30th December 2014)

UNESCO (2003). The Prague Declaration: Towards an information literate society. Retrieved from www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/PragueDeclaration.pdf

(Accessed 9th November 2014)

UNESCO (2006). The Alexandra Proclamation on Information Literacy and Lifelong Learning: Beacons of the Information Society. Alexandra, Egypt: International Federation of Library Associations. Retrieved from http://portal.unesco.org/ci/en/ev.phpURL_ID=20891&URL_DO=DO_TOPIC&URL_SECTION=201.html (Accessed 10th October 2014)

US Government (2009). National Literacy Awareness Month: A proclamation by the President Barack Obama. Retrieved on 30 December 2014 from www.whitehouse.gov/assets/documents/2009literacy_prc_rel.pdf (Accessed 30th December 2014)

Vitae (2012). Information Literacy Lens on the Vitae Researcher Development Framework. Retrieved from www.vitae.ac.uk/vitae-publications/rdf-related/information-literacy-lens-on-the-vitaeresearcher-development-framework-rdf-apr-2012.pdf/view (Accessed 8th November 2014)

Weetman, J. (2005). Osmosis: does it work for the development of information literacy? The Journal of Academic Librarianship, 31(5), 456–460.
White, S., & Creaser, C. (2012). SCONUL Library Statistics: Trends 2000–2001 to 2010–2011.Loughborough: LISU.

Whitchurch, Celia. (2008). Shifting identities and blurring boundaries: The emergence of third space professionals in UK higher education. Higher Education Quarterly 62 (4), 377-396.

Whitworth, A. (2014). *Radical Information Literacy: Reclaiming the political heart of the IL movement*. Waltham, WA: Chandos Publishing.

Wong, W., Stelmaszewska, H., Bhimani, N., Barn, B., & Barn, S. (2010). User Behaviour in Resource Discovery (UBiRD): Final report (p. 50). London: JISC. Retrieved from www.jisc.ac.uk/media/documents/publications/programme/2010/ubirdfinalreport.pdf (Accessed 25th October 2014)

Yelland, N. (2006). *Shift to the Future: Rethinking learning with new technologies in education*. New York: Routledge.

Yorke, M., & Longden, B. (2008). The First-Year Experience of Higher Education in the UK: Final report. York: The Higher Education Academy. Retrieved on 25 September 2015 from www.improvingthestudentexperience.com/library/UG_documents/FYE_in_HE_in_the_UK_FinalReport_Yorke_and_Longden.pdf (Accessed 28th October 2014)

Zurkowski, P. G. (1974). The Information Service Environment Relationships and Priorities. (Related Paper No. 5, Ref. NCLIS-NPLIS-5). Washington, DC: National Commission on Libraries and Information Science. Retrieved from http://eric.ed.gov/PDFS/ED100391.pdf (Accessed 1st November 2014)