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CONNECTING THE KNOWLEDGE COMMUNITY

From historical inquiry to e-learning: understanding the metaliteracies and digital capabilities required of researchers of tomorrow

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Following my presentation at the INFORUM 2016 conference in Prague, I was invited to write an editorial for *UKSG eNews*. The theme of the conference was "looking beyond the horizon" and here are the key messages from this presentation. I have to say that many of the messages are not new – but there is, in my opinion, an urgent need to action some of what we have heard over the years in order to future-proof ourselves. To put these messages into context, I began by looking at some user behaviour studies as I believe that in order to become future-proof it is incumbent upon us to understand our users, who after all are our raison d'être. We need to understand who they are, how they make use of our resources and what they want from us. For the sake of brevity, I will in this editorial focus mainly on the findings of the 2012 'Researchers of Tomorrow' study published by the British Library and JISC. 'Researchers of Tomorrow' was the first large-scale, longitudinal user behaviour study conducted over three years. It looked at the information seeking behaviours of 17,000 PhD students at 70 different higher education institutions. The findings are particularly relevant for me as my day-to-day work involves supporting the PhD students at the Centre for Doctoral Education at the UCL Institute of Education (IOE). The key findings from this study are:

- these students are heavily reliant on secondary sources
- they find access to relevant resources a major constraint
- they are confused about open access and copyright which stops them from networking and collaborating
- they do not use the full potential of innovative technology
- these students are insufficiently trained to be able to fully embrace the latest opportunities in the digital information environment

Students [and researchers] are heavily reliant on secondary sources

The fact that students (and researchers) rely almost exclusively on secondary sources is not surprising given the vastness of many of our digital libraries. When the 'Researchers of Tomorrow' report was published, this finding raised some concern in academic circles. Questions were asked about the quality of scholarly output among doctoral students and whether this is getting lower in the UK if students are simply regurgitating content that is in secondary sources. In relation to this, I

highlighted the importance of historical inquiry, not just because it allows for new ways of looking at the old and questioning knowledge we take for granted, but because historical inquiry develops analytical and critical literacies. The importance of history is being recognised by many official bodies responsible for curricula in different subjects – the requirement to include a history component in computer science and medical education are just two examples.

But what is the role of libraries here? Clearly we need to reconsider our priorities. The 2010 Research Libraries UK 'Hidden Collections' report drew attention to the growing problem in libraries of large amounts of uncatalogued materials which are essentially hidden from our users. The problem is compounded by the fact that most libraries attempt to obtain funding for retrospective cataloguing and/or digitisation from the same pot of money (the same small group of funders). We must therefore consider ways in which we can allocate some of our budgets to creating metadata for our unique collections because it is these collections that make our libraries unique – and if we want to look beyond the horizon to fulfilling the needs of future scholars, many of whom will be distant learners based around the globe, we need to ensure that they too have access to these primary sources so that they are able to create new knowledge and enhance our understanding of the present day.

Students [and researchers] find access to relevant resources a major constraint

Today our users want access to information resources anywhere, anytime and from anyplace (a key finding from 'Spotlight on the Digital', a report by the independent consulting firm SERO and also from the 'Digital Literacies in Higher Education' study). However, access continues to be problematic and for many users is the key stumbling block between accessing library-subscribed resources and going on the internet to find content for their academic work. Users are constantly faced with virtual doors shutting on them – whether this is because of the myriad usernames and passwords they have to use and remember and/or because there simply is no single standard for a publisher's website or an e-book portal. The lack of standardisation is something that was highlighted by the User Behaviour in Resource Discovery report too. It is the sheer frustration that many users feel that takes them away from the library's digital resources to Google, Wikipedia and illegal hubs such as Sci-Hub – even if the user's library provides the same content.

Publishers may blame libraries for not providing the appropriate training but it is the publishers themselves who have created this problem in the first place by not allowing us to take control of our digital library (in the same way we have control of our physical spaces and know who can have access to the library). Further, we need more apps such as Browzine to ensure users have *seamless access* to the digital resources we spend so much on acquiring. We also need to focus more of our resources on promoting open access within our institutions and collaborating with academics to create open education resources such as DERA (the digital education resource archive created by librarians at the UCL Institute of Education to archive born-digital content on UK education which would have been lost when government websites are updated or closed down). Some of the IOE LibGuides which have been jointly created with teaching staff are open education resources freely available online (see for example, the Children's Book Corner which suggests reading materials by age, and Early Literacy Attainment which links to digitised resources that track the expansion of elementary education in the UK in the 19th century). Today, our role is no longer simply being custodians of collections, but being curators and educators. By selecting content that is appropriate for academic study, whether it is in the form of guides that provide links to resources or creating learning materials, we are sharing our expertise more widely, especially with learners who may not be able to come onsite.

Students [and researchers] are confused about open access and copyright which stops them from networking and collaborating

In addition to the above, I also focused on the multiple literacies required in a constantly evolving information world. As Mackey and Jacobson state in their book, information is a dynamic entity that is produced and shared collaboratively on various platforms and in different formats. This understanding requires us to be not just information and digitally literate, but also to be visual, media and cyber literate. Increasingly, our users need to understand intellectual property rights, including copyright, in order to reuse content that is so widely shared over the social web. It is about being aware of the licences that enable this wider sharing. It is also about learning when and how to cite content and understanding the importance of the ethical use of information. I used Will Self's digital essay Kafka's Wound as an example of the digital capabilities required today and to illustrate the possibilities of what can be achieved in terms of a digital publication, which includes content from primary and secondary sources as well as user-generated content.

Students [and researchers] do not make use of the full potential of innovative technology

In terms of collaboration and networking, the power of the social web should not be underestimated. In 1929, the Hungarian author, playwright, poet, journalist and translator came up with the six degrees of separation theory in his short story 'Chains'. The theory proposes that everyone and everything is six or fewer stops away from each other by way of introduction. Tested by the psychologist Stanley Milgram in 1967 but considered an urban myth by Judith Kleinfield, six degrees continues to be a popular way to measure degrees of separation for social networks. For instance, a group of international researchers found that, on average, networks on Twitter demonstrate 3.43 degrees of separation and 4.74 on Facebook. LinkedIn is itself based on this theory with its grouping of first, second and third connections. The message is simple: social networks are powerful – and Twitter is one of the most powerful of these new technologies. It is therefore advisable not to ignore even the weakest link in your connections and to use all available technologies, including social media, to disseminate research and to establish researcher expertise online for potential networking opportunities.

Researchers and students often complain to me about the lack of time to establish their digital identities on the social web. My message to them is that if they don't jump on this bandwagon, they will soon get left out as other experts will take their places. It is proven that research that is tweeted about is eleven times more likely to get cited than research that is not mentioned. It is not surprising that alternative metrics, which are now being used to measure research activity online, are gaining ground and many publishers are now showing alternative metrics on their journal websites. These altmetrics, as they are now referred to, track impact by counting the number of times research is mentioned (through tweets, re-tweets, likes and shares on social media), downloaded on bibliographic referencing sites such as Mendeley and CiteULike, and/or discussed in the news and in policy documents.

In this context of developing the digital researchers, I discussed the six elements in JISC's digital capabilities model. I did not use the original circular diagram which suggests a circular path but separated the six elements into a list: information, data and media literacy – which in my view is a crucial first requirement, for without being information literate, one cannot know what software or hardware is required for the task at hand; digital creation, innovation and scholarship; digital communication, collaboration and participation; digital learning, self-development; digital identity and wellbeing; and of course, ICT proficiency, which is required for all of these elements. Which of these the researcher embarks on first will depend on what s/he wants to achieve.

However, it is important that researchers acknowledge that the digital environment is not static. Change is constant and therefore, as Alvin Toffler wrote in his book *Future Shock* (1970) (quoting

the psychologist Herbert Gerjuoy), "the illiterate of the 21st century will not be those who cannot read and write, but those who cannot learn, unlearn and relearn". There is a tendency to think that once we've learnt something that is the end of the story. Actually, the story could get more interesting if we change our mindsets and learn to experiment by unlearning and then relearning so that we can apply digital solutions to existing frameworks. But central to this is digital wellbeing. We all have a lot more work to do today. It is important therefore to use technology to automate tasks that can be automated. Tweets can be set up so that they are fired off at the most opportune times – say, for example, when the other side of the world is waking up to ensure maximum exposure. A blog can be set up so that when a post is published, an alert is sent to sites such as Twitter, Facebook and LinkedIn. Thinking strategically about how best to make use of new technologies given the limited time we have is an art that needs perfecting and one that requires time and thought. This is an important aspect of researcher development. Too often we rush to get things done as quickly as possible. Researchers need to have a strategy that will ensure that their work and expertise have maximum exposure on the social web in order to increase visibility of their work and establish their expertise.

Students [and researchers] are insufficiently trained to be able to fully embrace the latest opportunities in the digital information environment

Here I highlighted the importance of engagement in the online environment in order to enrich the e-learning experience of students – and that of our role as educators - which we must not sideline. And to do this I used my online course as a case study. I showed how at the UCL Institute of Education, our LibGuides, LibAnswers and Library blog, Newsam News, as well as demonstration videos on YouTube, scaffold the learning that takes place on our information literacy training sessions.

I explained how the e-learning environment needed to be 'trigger rich' to ensure serendipitous findings by students and how I used my Twitter feed (which is embedded into my online course) as a way of suggesting additional readings relevant to the topic being discussed. In doing this, I 'prepared' the students so that they could make connections with what I was tweeting about and what they were learning in any particular week. This is particularly important for e-learners who are not able to use the university's physical library. Unlike the students who are onsite, these e-learners do not have the same experience of walking through shelves where a book can catch their eye and a serendipitous finding is made. The concept of preparing one to experience serendipity is not new. Two scientists, Barber and Fox, were the first to discover this in 1958. McCay-Peet and Toms (2015) confirmed this when they studied over 100 research groups and found that researchers were more likely to experience serendipity if they were 'prepared' to expect chance findings. However, Jack Lynch, Professor of English at Harvard University, believes that the e-learning environment is not sophisticated enough to enable this. In his recent book, *You Could Look It Up: the reference shelf from ancient Babylon to Wikipedia* (2016) he states the following:

> "The serendipity of browsing has yet to be successfully recreated in electronic form. An online encyclopedia can show you links to related articles, but what about all the unrelated ones? The printed codex allows its user to gain an impressionistic overview of the whole, and to skim through at high speed until something intriguing catches the eye: something that no online resource can replicate . . . For in a world where we can search for anything, it is getting harder and harder to happen across what we never knew we wanted to know."

Therefore it is important for us, as educators, to ensure that the technologies we offer to our researchers and students for discovery (which are under our control) are 'trigger rich' to enrich their search experience. Using tag clouds and Amazon-like algorithms with an element of 'fuzziness' to suggest content is one way in which we can do this. Another is to include citations (including

altmetrics) in our discovery systems. Yet another more literial way, which is often neglected, is to ensure that students are trained to 'read the screen' so that they can see whether the article they have found is one of many in a themed issue on their research topic – something which can be easily missed. Too often users have a tendency to click and download without reading the screen. These seemingly small gestures go a long way towards ensuring students find the search experience enriching and stay within the library to access content.

Conclusion

In conclusion, I believe it is important for us to revisit the issues that I have raised above: our unique collections and the importance of historical inquiry, the issue about access and taking control of our digital library, embedding information literacy and digital capabilities into our training and, most importantly, understanding online user behaviour in order to ensure that we create rich online environments. Of utmost importance is that we recognise the uniqueness of our hidden collections and reconsider our expenditure on these collections. These collections are our 'brand'. As librarians, we need to accept our new roles – as curators, content creators and as educators and begin to take control of our relationships: our relationships with the teaching staff and the decision makers at our institutions – so that we can embed information and digital literacies as core skills in the curriculum and so that we can develop collaboratively open education resources to enhance the teaching and learning and to promote the library and its collections to a wider audience. And we must take control of our relationship with publishers so that we can manage our digital space more effectively and efficiently – as we do with our physical spaces.

Finally, we need to be prepared to meet the student who may not have had experience of using libraries. So many libraries in the UK are closing and the first thing that is cut in UK schools is the library. Many schools worldwide do not have libraries. In the US the phenomenon of the 'bookless' library is growing. Perhaps now it is more important than ever to widen our participation to schools so that the future students are better prepared for higher education. This is what we need to do if we want to look beyond the horizon into the future and take the next step forward.

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