UKSG

Technology and the contemporary library

There are many challenges provided by contemporary higher education (HE) that impact all aspects and services provided. This article considers some of the challenges and developments in HE that might be reflected in, and impact upon, the library service.

New challenges have been created by developments in technology. Massive open online courses (MOOCs) have shone a spotlight onto the university, leading it to open up access to content and resources. The buildings that maintain very traditional ideologies are evolving, as are the services they provide. As today's students meander through their university life, we seek to understand them and their motives in greater detail. The author discusses these issues and focuses on people, on technology and on partnership.

Introduction

Predicting the future can be a near impossible task. Add in to the mix the rapid developments in technology, and the future of higher education (HE) really is anybody's guess. This article expands upon an earlier editorial in *UKSG eNews* entitled: 'The Libraries of Tomorrow'[1] and discusses a range of issues that are impacting on and shaping the face of the libraries – both the libraries of today and of tomorrow. In particular, this article will consider trends in HE – such as innovations in pedagogy (massive open online courses [MOOCs]), technology (e-books), and how we understand the nature of students today – in order to draw conclusions as to how the library service can not only keep up with the changing nature of HE, but also serve as a pioneer in driving it.
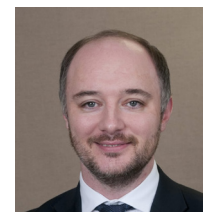
PETER REED

Lecturer (Learning Technology)
Institute for Learning and Teaching
University of Liverpool

An increasingly open education

In 2008 a group of scholars experimented by offering an online course to anybody who wanted to participate, and few people would have predicted the impact. CCK08, as it was known, recruited thousands of participants to work collaboratively in forming new ideas and understanding around 'connectivism', a theory which emphasizes the connections between people in the learning network[2]. The success of the course – largely measured by the number of recruits and an innovative approach to teaching and learning – saw the birth of the MOOC. Ivy League professors experimented, saw similar results in terms of recruitment, and ultimately spurred the formation of a number of Silicon Valley start-ups, such as Coursera and Udacity. *The New York Times* declared 2012 the 'Year of the MOOC' and, according to some commentators, it was set to revolutionize (or even destroy) traditional higher education as we knew it[3].

As the start-ups began offering their free courses from the best of what Ivy League institutions had to offer, huge enrolments were common across the board. However, there were associated challenges, as Kolowich notes: 'Massive open online courses have gained renown among academics for their impressive enrollment figures and, conversely, their unimpressive completion rates'[4]. With this in mind, a systematic review of MOOCs suggests the majority had completion rates of less than 10%[5]. Katie Jordan's live feed has become the go-to place for such current data, demonstrating average drop-out rates of 85% (at the time of writing)[6].

'Predicting the future can be a near impossible task'

As the debates around the importance of completion/drop-out rates have raged on, some proponents have begun to make comparisons with newspapers – 'pick it up and read what you want', even though in reality they are nothing like a newspaper[7]. Commentators began to question the very innovation of the pedagogy behind the MOOC. The earlier innovation of connectivism (often referred to as a cMOOC) encompassed an extremely social approach, encouraging learners to explore, reflect and make connections. With this approach, knowledge resided in the connections rather than just in the mind of an all-knowing professor. This appeared to give way to a model whereby video lectures delivered materials to learners and communication was a supplementary activity (termed xMOOCs) – a stark contrast.

> 'knowledge resided in the connections rather than just in the mind of an all-knowing professor'

Thus the future of the MOOC is evermore unclear. As time has passed, the criticisms have lessened, as has the hype machine provided by Silicon Valley and the educational media, but this does not imply MOOCs themselves are giving up and going away. There is increasing realization that, for all of their shortcomings, they have caused educators to question existing approaches to the delivery of online learning. What will their impact be on education in, say, another ten years? The interest amongst Vice Chancellors to pilot MOOCs has been piqued – will sustainable investment follow? How will publishers respond? How will libraries evolve as education is becoming a more open and online experience than ever before, and what of their responsibility, civic or otherwise?

The library as hub

In discussing the Library of Celsus, Pickles et al discuss the pilgrimages scholars would make to study: 'The Library of Celsus was built in 135AD in honour of a Roman senator. It stored 12,000 scrolls and those who wished to read them would travel long distances to visit. They would stay until their work was complete, sometimes for weeks at a time, and were given a place to eat, sleep and do some sort of athletic activity.'[8]

Today library facilities are much more common than in these foundational years, and staff and students come and go with much greater ease and frequency. Nevertheless, the library's focus on its civic responsibilities continues to grow and adapt to the varying needs of its users. It seems apparent that the library must not only be responsive, but also proactive, in order to realize these needs.

Examples of library buildings continue to amaze from an architectural perspective as much as a practical one. Oxford University has recently blogged the story of their Bodleian and Weston Libraries[9], and Glasgow Caledonian has long been heralded as creating innovative, technology-rich learning spaces. So whilst these buildings will have some similarities to Celsus in terms of dedicated spaces for study and research, there is a new emphasis on socializing, social learning and on partnership.

> 'there is a new emphasis on socializing, social learning and on partnership'

Whilst it can be easy to think things continue to tick along in our daily roles, huge strides have already been made in transforming the traditional and silent library. The place where students go to not only access the many printed artefacts that line the shelves in collections, but also to use the facilities that have become an integral part of their university life: the computing facilities; the flexible group and social learning spaces, and so much more. A different picture of students can be seen today compared to yesteryear – perched on comfortable sofas, gadgets and coffee in hand whilst discussing coursework. And it is in these dynamic environments where the library space becomes the hub of the university.

The staff, too, have evolved. No longer are library staff pigeon-holed into just ordering new books to stock the shelves. They have become central in the shift to an innovative and learner-centric institution, be it through leading on digital literacies or engaging with the open content movement (which in itself contains the huge area of open access [OA]).

Take, for example, the Digital Commons area at the Martin Luther King Jr Memorial Library in Washington DC, which, as well as the 3D printers and collaborative meeting spaces, boasts a 'digital bar' where students can test various tablet devices and learn about accessing library resources. It also provides a range of training opportunities to some 500-700 library users per month, including introductions to blogging, 3D printing and computer programming[10], to enhance their digital skills and literacies.

This notion of 'the hub' of interaction also extends beyond the physical. Pickles[11] shares how the library service at Oxford is using Twitter to engage with staff and students by tweeting photographs – linking digitization with open access to specific collections. Achieving the right balance on such platforms is a tough but achievable challenge that many institutions are getting to grips with. The tone taken by the Library at the University of Liverpool on Twitter (@LivUniLibrary) returns us to the point of partnership. The collective 'we' – the staff and the students – are 'The University', and this tone is perfectly met.

These various acts tell us more about the evolution of the library service than one of just bricks and mortar. They tell of a much richer evolution of people and partnerships, and of understanding the complex relationships between both. Just as the physical spaces encourage rich communication and collaboration, so too does our engagement with technology. Gone are the days where tools such as MSN Messenger are blocked from library computers, or social media use is frowned upon. The likes of Facebook and Twitter are increasingly proven to be viable and valuable platforms to support and enhance learning and teaching[12–14], and libraries are beginning to realize this potential for themselves.

Electronic books and the digital native

Whilst being positive about the pace of change in technology, it is also important to avoid techno determinism and utopian prophecies. Further to the earlier MOOC predictions, another example could be seen to be the transition from print to e-books: an innovation many predicted would completely replace their printed predecessors. In considering what the information environment might be like in 2017, Nicholas et al. foresaw 'the inexorable rise of the e-book', where print sales would diminish sharply and e-books would become the established primary format for textbooks[15]. However, the reality has once again been shown to be rather different as universities are beginning to share their insight from e-book projects. A collaborative study between Hewlett Packard and San Jose State University in 2014 investigated the experiences and attitudes towards print and e-books amongst 527 students, primarily from the US. Of respondents, 51% preferred the printed version with only 21% in favour of the electronic counterpart. The preference for print was even higher in the 18-35 age bracket. Interestingly, many respondents were willing to pay further sums for printed versions in addition to the US$80 e-book[16].

Whilst this study is based in the US, the data accurately reflects the experiences within the School of Life Sciences at the University of Liverpool. Undergraduate students were bought an e-book by the School as a partnership with McGraw Hill. However, due to student preferences, many went on to purchase the (discounted) printed version of the book with their own money. Not only does this data and anecdotal evidence run counter to digital-only approaches, it also further fuels the case against Prensky's Digital Native argument[17]. This argument suggested younger students of today, born in the digital age, are 'fluent in its language' and, remarkably, their 'brains have physically changed – and are different from ours'[18]. They think and process information differently to 'us', and so it would be natural to presume such a student would relish the e-book-only route. Selwyn attempts to rein in such discussion and encourages us to instead 'concentrate on enhancing our understandings of the realities of technology use in contemporary society'[19].

White and Le Cornu have emphasized a similar message, and offered the notion of 'digital visitors and residents' – a friendlier suggestion for the way in which learners engage with digital technologies. Their continuum builds upon Prensky's work but moves away from harsh categories based on age and suggestions of brain mutations, and proposes that residents see the web as a space where they can be seen, whereas visitors engage with specific tools to carry out specific tasks:

'Visitors understand the Web as akin to an untidy garden tool shed. They have defined a goal or task and go into the shed to select an appropriate tool which they use to attain their goal. Task over, the tool is returned to the shed. It may not have been perfect for the task, but they are happy to make do so long as some progress is made.'[20]

Discussion

In taking the viewpoint or presumption that White and Le Cornu's visitors and residents model is more relevant and accurate to students of today/tomorrow, what does this say about the future of learners' engagement with the library space, be it physical or digital? Well, it tells us those suggestions of an all tech-savvy student demographic may not be quite so clear-cut, but this may not be too surprising given the previous insight into search strategies amongst the so-called 'Google Generation'[21]. The CIBER Briefing Paper was a result of their study: 'Information Behaviour of the Researcher of the Future', commissioned by the British Library and Jisc to identify how young people are likely to access and interact with digital resources in the future. Amongst their findings and suggestions was identification of significant age-related difference in article discovery methods, with young people more likely to capitalize on personal recommendations and Google Scholar. This compares to older generations who were more likely to visit libraries in person to seek out information and resources. The publication also emphasizes skill gaps between generations, suggesting young people skim-read websites, will move about the web via hyperlinks rather than reading sequentially, and also lack skills in evaluating information from electronic sources[22].

So how does a greater understanding of libraries, staff and students equip us to better respond to the challenges we face?

Without doubt, a key challenge for the library is in the actual realization of what its role should be going forward. As alluded to throughout this paper, this will be one focusing on people and partnerships. Along the lines of the notions proposed by the Connectivism MOOC, libraries certainly must understand that knowledge does not just live in the books and collections in their stacks, but in the connections people make. These connections need to be not only with content but with each other because, ultimately, universities are about people. This, then, is where our challenges lie.

'knowledge does not just live in the books and collections in their stacks, but in the connections people make'

The CIBER report suggests students will continue to see access to information guarded by the gateway of Google, and for many, their search strategies will begin and end there. Thus the resolution is twofold: not only will the education of students' searching and evaluation skills (or as writer and critic Howard Rheingold eloquently puts it, 'crap detection') continue, the systems we expect students to engage with must also become as easy to use as Google Scholar.

Furthermore, we must overcome concerns of an under-skilled digital academic workforce so we can match student expectations in relation to the use of technology in all aspects of learning, teaching and assessment. The CIBER briefing suggests one of the key challenges in looking to the future is in becoming more 'e-consumer-friendly' and 'less stodgy and intellectual'. It offers proven models such as Amazon as beacons of success for finding new content based on personal and social recommendations[23].

There are many other questions that can be, and are being, asked about technology in education. If MOOCs are to truly introduce learners to university life, for example, they must open the doors slightly wider – and it is the doors to the library that will probably have the biggest impact. Once again, dealing with issues of access returns us to discussions of civic responsibility: responsibility to people, between people, in partnership.

References

1. Reed, P, Editorial: Impact of technology on the libraries of tomorrow, *UKSG eNews*, August 2014,(327):
   http://www.jisc-collections.ac.uk/UKSG/327/Impact-of-technology-on-the-libraries-of-tomorrow/?n=121b8a3f-e721-4bc0-8354-7ad4d47f99de
   (accessed 27 May 2015).

2. Siemens, G, Connectivism: A Learning Theory for the Digital Age, *International Journal of Instructional Technology and Distance Learning*, 2005,2(1):
   http://www.itdl.org/Journal/Jan_05/article01.htm (accessed 27 May 2015).

3. Shirky, C, 12 November 2012, Napster, Udacity, and the Academy, Clay Shirky blog:
   http://www.shirky.com/weblog/2012/11/napster-udacity-and-the-academy/ (accessed 27 May 2015).

4. Kolowich, S, 8 April 2013, Coursera Takes a Nuanced View of MOOC Dropout Rates, Wired Campus blog (The Chronicle of Higher Education):
   http://chronicle.com/blogs/wiredcampus/coursera-takes-a-nuanced-view-of-mooc-dropout-rates/43341 (accessed 27 May 2015).

5. Liyanagunawardena, T R, Adams, A A and Williams, S A, MOOCs: A Systematic Study of the Published Literature 2008-2012, *The International Review of Research in Open and Distributed Learning*, 2013, pp. 202–27:
   http://www.irrodl.org/index.php/irrodl/article/view/1455/2573 (accessed 7 May 2015).

6. Jordan, K, MOOC completion rates, 2015:
   http://www.katyjordan.com/MOOCproject.html (accessed 27 May 2015).

7. Kernohan, D, 23 June 2014, Why do you hate learning? Why do you hate the future? Followers of the Apocolypse blog, 2014 [cited 2015 May 8]. Available from:
   http://followersoftheapocalyp.se/why-do-you-hate-learning-why-do-you-hate-the-future/ (accessed 27 May 2015).

8. Pickles, M, 2015, How do you design the library of the future? Medium blog:
   https://medium.com/@Oxford_University/how-do-you-design-the-library-of-the-future-22d9344e40f7 (accessed 8 May 2015).

9. Pickles, M, ref. 8.

10. Blake Johnson, N, How Technology Is Reinventing the Library Experience, *StateTech Magazine*, 2 July 2014:
    http://www.statetechmagazine.com/article/2014/07/how-technology-reinventing-library-experience

11. Pickles, M, ref. 8.

12. Reed, P, Hashtags and retweets: using Twitter to aid Community, Communication and Casual (informal) learning. *Research in Learning Technology*. 2013,21(4),1–21; DOI:
    http://dx.doi.org/10.3402/rlt.v21i0.19692 (accessed 29 May 2015).

13. Roblyer, M D, McDaniel, M, Webb, M, Herman, J and Witty, J V, Findings on Facebook in higher education: A comparison of college faculty and student uses and perceptions of social networking sites, *The Internet and Higher Education*, 2010,13(3),134–40:
    http://linkinghub.elsevier.com/retrieve/pii/S1096751610000278 (accessed 27 May 2015).

14. Junco, R, Heiberger, G and Loken, E, The effect of Twitter on college student engagement and grades, *Journal of Computer Assisted Learning*, 2010, 27(2),119–32:
    http://doi.wiley.com/10.1111/j.1365-2729.2010.00387.x (accessed 27 May 2015).

15. Nicholas, D, Rowlands, I and Huntington, P, information behaviour of the researcher of the future: CIBER briefing paper, University College London, 2008:
    http://www.jisc.ac.uk/media/documents/programmes/reppres/gg_final_keynote_11012008.pdf (accessed 27 May 2015).

16. Tan, T, College Students Still Prefer Print Textbooks, *Publishers Weekly*, 2014:
    http://www.publishersweekly.com/pw/by-topic/digital/content-and-e-books/article/63225-college-students-prefer-a-mix-of-print-and-digital-textbooks.html (accessed 27 May 2015).

17. Prensky, M, Digital Natives, Digital Immigrants Part 1, *On the Horizon*, 2001, 9(5),1–6:
    http://www.emeraldinsight.com/10.1108/10748120110424816 (accessed 27 May 2015).

18. Prensky, M, ref. 17

19. Selwyn, N, The digital native – myth and reality, Aslib Proceedings, *Aslib Journal of Information Management*, 2009, 61 (4),364–79:
    http://www.emeraldinsight.com/10.1108/00012530910973776 (accessed 27 May 2015).

20. White, D and Le Cornu, A, Visitors and Residents: A new typology for online engagement, *First Monday*, 2011, 6 (9):
    http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/viewArticle/3171/3049 (accessed 27 May 2015).

21. Nicholas, D et al., ref. 15.

22. Nicholas, D et al., ref. 15.

23. Nicholas, D et al., ref. 15.

Peter Reed

Lecturer (Learning Technology)
Institute for Learning and Teaching, Faculty of Health and Life Sciences, University of Liverpool Cedar House, Ashton Street, Liverpool. L69 3GE, UK
E-mail: Peter.Reed@liverpool.ac.uk

ORCID ID: http://orcid.org/0000-0002-0207-1131