Northumbria Research Link

www.northumbria.ac.uk/nrl

northumbria
UNIVERSITY NEWCASTLE

Title: Higher Education student pathways to ebook usage and engagement, and understanding: Highways and cul de sacs

Abstract

Ebooks have enthusiastically been adopted by academic libraries, viewed as a golden bullet by library professionals, resulting in efficient resource use, space saving, student satisfaction, and accommodating millennial generation study habits.

A small scale online survey undertaken at Northumbria and Durham Universities investigated students' ebook use, examining; aspects of learning ebooks support, searching strategies, devices used for ebook access, and reading and use strategies. Ninety-two responses were analysed using a mixed methods approach.

Despite many advantages of ebooks including portability, availability, functionality, and searching, results demonstrated sentiment regarding ebooks was not wholly positive. There were frustrations regarding the complexity of ebook provision, publisher's restrictions, and the lack of compatibility with reading devices. A key finding related to ebook interrogation which involved greater targeted searching of content, and a 'bite-size' approach to reading.

Caution must be observed to ensure that library collections facilitate a complexity of learning styles, and provide opportunities for students to better digest content.

Introduction

This article explores the results of survey research, which investigated student perceptions, expectations and experiences of using ebooks as a learning resource at two Universities in the Northeast of England.

Ebooks have become an increasingly important part of UK academic library collections, with both staff and students utilising a hybrid collection of resources to support their working. Academic ebook use has grown sharply as a result of improved provision within libraries, "from an average of around one per FTE user in 2004-05, to almost 90 in 2013-14 – more than double the average number of physical loans (including renewals) per FTE user" (SCONUL, 2015). Consequently in the past 3 years the average number of ebook accesses per FTE user has increased by 77% (SCONUL, 2018) , compared to a fall in print book loans of 27%, such that ebooks have become the norm for many users.

The survey research undertaken attempted to answer the following objectives:

- To consider what student perceptions are regarding ebook availability as a learning resource.

- To investigate the reasons why students choose ebooks as a learning resource.

- To explore the ways in which students access ebooks.

- To establish how students use an ebook as a learning resource, considering the ways in which they find specific information in the ebook, and engage with the content.

- To understand whether ebook use satisfies student-learning requirements.

- To understand the information literacy skills that students must adopt when using ebooks as a learning resource.

- To identify what students expect from using an ebook as a learning resource.

The remainder of this article will briefly consider the literature related to this topic, and the research methods used, before providing discussion of the results, and concluding remarks.

Literature review

E-book use in UK higher education

Whilst an ebook can be viewed as a "digital body of content that is primarily text and has a defined scope" (Hernon et al., 2007: p. 3) it is worth noting that in our hybrid world, there still exist many permutations of such a digital item. Such that an ebook may be simply a digitised version of a printed book, or it may be 'born digital' (Mulholland and Bates, 2014: p. 493), possessing enhanced features that bring added value to its use, such as advanced searching or links to other web sources.

Many UK academic libraries have openly embraced ebook acquisition, due to greater numbers of publishers making books available electronically (JISC, 2017). Other influencing factors include a desire to satisfy user expectations driven by increased tuition fees and the National Student Survey; being able to cope with a diversity of study patterns, and providing services for a generation of students who are more digitally savvy than their predecessors (Jones and Shao, 2011) (Pedró, 2006).

Frederick (2015: p.12) suggests that "ebooks are an important presence in the vast majority of academic libraries", providing multiple benefits related to availability, portability, space saving aspects, interactivity and the ability to satisfy millennial demand. However, she also hints at their disadvantages particularly related to collection management, and it is worth noting that JISC (2017) warns that the increased transition to ebooks presents many challenges for academic libraries, and may not be as straight forward as the change to electronic journals. For this reason, the literature review will focus more fully on the disadvantages of ebooks, enabling the researcher to better understand and provide recommendations for encouraging better use of this growing resource.

Benefits of ebooks

"Ebooks are now part of the academic mainstream" (Ian Rowlands et al., 2009: p.5), providing a solution for staff and students wishing to cope with the challenges of work and study. Convenience is a key benefit of ebooks (Anon, 2010: p.11) (Enis, 2018), together with accessibility (Mizrachi, 2015: p.309), which are the most frequent reasons for students choosing to use ebooks as a learning resource (Jeong, 2012: p.391). Walton (2014: p.267) also suggests that a student's ebook use has a positive correlation with convenience, in addition to forced adoption through the non-availability of a printed book. In addition, ebooks are portable (Marques, 2012: p.15) (Frederick, 2015) and available 24/7 (Jeong, 2012: p.391). Their content is keyword searchable and there are navigation aspects enhanced within a digital environment (Wu and Chen, 2011: p.300), such as links to other digital content, and the ability to copy and paste sections direct from the text. These technological advances further enhance attitudes towards ebook use, with usage growing exponentially (Safley, 2006: p.456). From the Library's perspective, ebooks provide 24/7 access to information (Ferguson, 2016), underpin distance and part-time learning modes, can meet high demand reading list access (if simultaneous multi-user access is available) (Riha and LeMay, 2016) and save on space compared to multiple print copies (Frederick, 2015).

Disadvantages of ebooks

However, the many benefits of ebooks can also result in a variety of challenges for users (Raynard, 2017: p.84). Therefore, "while the ebook has been lauded as a replacement for the printed book, students continue to indicate a preference for using the printed book" (Walton, 2014: p.264). This may be dependent on the context in which the information needs exist (Abdullah and Gibb, 2008), but also this preference for print is argued to be strongly linked to the failings of ebooks, particularly related to:

- Eyestrain and reading fatigue.
- Being less tactile in nature, with less memory cues.
- Lacking a linear reading approach, and reduced comprehension.
- Loss of context and wider author perspectives.
- Providing barriers to active learning (Mizrachi, 2015).
- Publishers' restrictions on institutional online access to high demand textbooks.

Eyestrain

Much research considers the challenges related to reading from a screen (Wu and Chen, 2011; Hobbs and Klare, 2016; Jeong, 2012; Li, 2016; Marques, 2012). The discomfort of reading from a screen, particularly when using a computer monitor rather than an ebook reader inhibits sustained reading and causes eye fatigue, thereby affecting concentration and comprehension (Jeong, 2012: p.402). As a consequence, there is discussion concerning the reading of ebooks from 'cover to cover' (Mulholland and Bates, 2014: p.494), with a suggestion that complementary uses persist, whereby ebooks become reference tools, retrieving snippets of information (Hobbs and Klare, 2016: p.12) (Hernon et al., 2007: p.8), whereas printed books enable sustained reading, facilitating deep learning (Mizrachi, 2015: p.307).

However, it is also worth considering Zipfs' principle of least effort which Mizrachi (2015: p.308) suggests plays an important part in the use of ebooks, as, despite drawbacks they are often easier to get hold of.

Less Tactile in nature

"The role of physicality in reading, where structure of the text can facilitate comprehension" (Li, 2016) is a key challenge for the use of ebooks as a learning tool. It is argued that disorientation may occur when reading a text on screen, and Li (2016) offers a useful analogy of reading in different formats, related to running outside in a park, versus running on a treadmill.

"I know what 15 miles feels like, based in part where I am in Golden Gate Park when I run 15 miles and how it feels on my body. But when I run on a treadmill, I don't have an effective imprinting about what any amount of time or space feels like, because it is uniform" (Li, 2016).

In addition, the familiarity of reading from print means that users are often more comfortable with this experience (Hobbs and Klare, 2016), and prefer the fact that they can "flip between sections easily, or find where in a book's thickness a salient portion might be located" (Hobbs and Klare, 2016: p.13). This "sense of place" (Berg et al., 2010: p.523) which print books possess is an important cognitive factor.

The recursive nature of reading, whereby reading requires comparison of content between pages and other books "is often inhibited by reading a single virtual page on a screen" (Li, 2016).

Ebook interrogation

Abdullah and Gibb (2008) suggest that ebook use is similar to that of reference books, whereby users search for snippets of information using the tools that exist in the book, and avoid reading the book from cover to cover in a linear fashion. Berg et al (2010) also suggest that users don't follow a linear path in ebooks, and can be somewhat frustrated, and prone to abandon a search if they experience obstacles.

Therefore ebook use is predominantly for quick reference, and fact finding (Marques, 2012), using multiple search methods (Berg et al., 2010), often resulting in quite specific information (Anon, 2010). As a result, user behaviour with this type of resource results in a change in behaviour in terms of how it is utilised, and read (Raynard, 2017; Wu and Chen, 2011). Reliance upon keyword searching leads to students locating specific words, which may be removed from the wider context that the author intended.

It has been suggested that "the process of linear reading in print format appears to be more effective for deeper learning and comprehension goals" (Mizrachi, 2015: p.301). Indeed, one survey (Baron *et al*. 2017, p. 599) noted that nearly 92% of students 'indicated they perceived that they concentrated best when reading in print'. However, this contradicts the findings of Porion *et al*. (2016) and Rockinson- Szapkiw *et al*. (2013) that there is little significant difference in comprehension between paper and electronic presentation.

Ian Rowlands et al. (2009: p.11) conclude that the new "virtual scholar" has a tendency to bounce and flick through digital content, spending more time on navigation and power browsing in order to extract facts quickly, rather than read content deeply.

Barriers to active learning

Using ebooks can be very distracting for users, particularly when they may be viewing the ebook on a device that has other functions that deter the reader away from full engagement (Li, 2016). Disorientation can be a factor, and "the poor layout of certain ebook platforms makes them hard to navigate and doesn't show the whole book in context" (Li, 2016). Li (2016) mentions that challenges with annotation, note making and requirements related to software can occur with ebooks.

With regard to the interactive features of ebooks, it is vital that they are intuitive and function well, in order to enable a positive user experience. Berg et al (2010: p.523) suggest that because "ebook tools are expected to function like known web technologies", users can easily get frustrated as a result of these preconceived expectations. Indeed, Hobbs and Klare (2016: p.12) mention that the despite ease of using ebooks, users "rarely make use of advanced features".

Other disadvantages

Other key disadvantages relate to misunderstandings on the part of users as to what an ebook actually is (Berg et al., 2010), in addition to lack of awareness regarding how to access ebooks (Marques, 2012).

Digital rights management means there can be restrictions regarding what a user can print out, or copy and paste from an ebook, thereby frustrating users further (Hobbs and Klare, 2016; Anon, 2010). Leading academic publishers are reluctant to provide institutional access to digital versions of textbooks, as this may affect sales directly to students. The higher costs of institutional access and limited concurrent access models may deter librarians from purchasing ebooks, when a greater number of print copies can be purchased instead (Colbron 2017a). For researchers, there is also the problem of out-of-print but in-copyright titles, which are unavailable as ebooks from current publishers but are too recent to appear on free ebook collections such as the Hathi Digital Library or Google Books (Colbron 2017b).

Print preference

It is argued that readers have a familiarity with print, and therefore are more comfortable with the reading experience (Hobbs and Klare, 2016; Woody et al., 2010), with many exhibiting an emotional attachment to print books (Myrberg, 2017). Indeed, Woody et al (2010: p.947) argue that "ebook users still preferred print texts for learning, and their preference ratings did not significantly differ from those of non-users".

Highlighting and note-making by hand can enhance engagement and absorption of text (Hobbs and Klare, 2016), and Moore (2015: p.129) identifies that there is link between print book preference and subject studied, in addition to age and academic status.

Users also enjoy studying in a library that is stocked with print books, with a suggestion that such an environment is more conductive to study radiating "peace and scholarship" (Wilders, 2017: p.389).

Therefore reading print books is perceived as desirable when long and deep reading is required (Li, 2016; Abdullah and Gibb, 2008), due to the ease and pleasure associated with print reading (Marques, 2012).   Jeong (2012: p.403) outlines the paradox regarding users showing satisfaction with using ebooks, but preferring print books, especially when texts are lengthy.

The future

Some authors suggest that the perceived differences between reading from a screen and reading from print are diminishing (Porion et al., 2016), whereas others claim that a hybrid arrangement persists whereby "ebooks will complement but not necessarily replace printed books for the foreseeable future" (Anon, 2010: p.11)

Woody (2010: p.947) discusses the discomfort of using ebooks as compared to print books, and that indeed it may be that ebook design needs to actively differ from that of print books in order to enable "a more constructive user experience".

The assumption that Digital Natives have greater technological expertise and different learning styles by virtue of their birth after the creation of the Internet, should be considered with caution, as Digital Natives may "speak with a variety of tongues" (Kennedy et al., 2008: p.117). Today's diverse student cohorts contain individuals, each with a unique economic, cultural and social upbringing, whilst gender and educational opportunities are other factors influencing technological knowledge in many countries (Lai and Hong, 2015: p.727).

Visibility of ebooks within a library is an important factor to consider, with users finding their ebooks using a range of tools that are often not the traditional library search tools (Anon, 2010). Therefore Wu and Chen (2011) discuss the importance of making ebooks visible, with user friendly interfaces and more open digital rights. This latter point is something that Hobbs and Klare (2016: p.13) suggest is vital as users engage with digital content differently, and seek to organise content within their own digital systems. Therefore, ebook vendors need to ensure that they actively work with users regarding platform design and development.

The creation of tutorials that help users to locate and work with ebooks are viewed as an important part of improving ebook use (Hobbs and Klare, 2016; Berg et al., 2010). Li (2016: p.3) identifies that "digital learning can be taught and encouraged so that deep reading can happen online as well", so it is therefore a learned skill. Indeed, the very function of an ebook may require redefining, as users rely more on keyword searches, browsing, reading chapters rather than engage with the whole book in a linear sense (Wu and Chen, 2011). It is therefore important to consider the indexing of ebook chapters within bibliographic databases, in order to increase their usage (Anon, 2010).

Summary

Although ebooks have many advantages, there also exist disadvantages, which hinder the successful use of this important resource. Therefore this research attempted to explore further student perceptions of ebooks and explore their awareness and attitudes to using ebooks, which Shelburne (2009: p.60) sees as an area where gaps in the literature remain. Ashcroft (2011: p.405) highlights the gap in librarians awareness of ebook users' needs and concerns, and therefore this research attempts to explore these areas further.

Methodology

This research used a mixed methods approach, using a survey method to explore student perceptions more fully. An online questionnaire consisting of open and closed questions, enabled a better understanding of how and why students used ebooks for their studies. A convenience sampling approach was used, 'based on the researcher's ease of access to the sample' (Pickard, 2007: p.63); as the authors worked for Durham and Northumbria Universities they made use of their contacts in order to invite students to undertake the survey. The online questionnaire was distributed to students at Durham and Northumbria Universities during the Autumn term of 2017/18 using the Bristol Online Survey tool.

All respondents were fully informed about the purpose of the research, and intended data use (Pickard, 2007: p.74) as directed by the Northumbria Ethics Policy.

Analysis of the data made use of the Bristol Online Survey software for the creation of basic graphs, charts and cross-tabulation, and thematic analysis of the more qualitative data was undertaken using NVIVO software. Qualitative data was analysed using a constant comparative analysis

approach (Strauss, 1987) , whereby similarities and differences between the data was better understood through the comparison of incidents (Corbin and Strauss, 2008).

Results and analysis

Survey overview

The online questionnaire was completed anonymously by a sample of students from Durham and Northumbria Universities during the first term of the 2017/18 academic year. Of the 92 responses returned, just over half were from Northumbria University (53%), with the remainder from Durham University (47%). There was a good range of students, with a third (34%) of all respondents working at doctoral level, 19% at postgraduate level, 43% at undergraduate level, and 4% at foundation level. This ensured that a varied set of responses was obtained.

 [insert Figure 1.]

Respondents came from a diverse range of subject areas, although it is worth noting that a larger proportion of students came from the project management and health subject areas, as indicated from Figure 2.

 [insert Figure 2.]

Most respondents studied on campus full time (83%), and equal quantities of students studied part-time (6%), and distance learning (8%). Nearly two thirds of the respondents were female (62%), and a third (38%) male.

The profile of the respondents at the institutions was such that Durham University respondents were predominantly campus based undergraduates (level 4-6, 86%), and Northumbria University respondents were skewed towards doctoral students (level 9, 61%) in addition to a smaller more general mix of other levels of students and modes of study. This was partly due to the ways in which data was collected at the two institutions: Durham University obtained access to respondents through library training sessions face to face in addition to emails to module cohorts, whereas Northumbria University relied on the latter means of collection entirely. Therefore, this made comparison between Universities less relevant, so this was largely discounted.

 [insert Figure 3.]

Cross-tabulation largely concentrated on analysis of study level, which was deemed more useful to this particular research, particularly as Raynard (2017: p.84) suggests that "type of group is a major factor in the resistance or acceptance of academic ebooks".

Information sources used when studying or completing an assignment

 [insert Figure 4.]

Respondents relied most heavily on ejournals (95%) for their study and completion of assignments, predominantly using the library search tool (90%) and the Google search engine (89%) in order to search for them.   This reinforces the continued dominance of Google compared to other search engines, and indeed 80% of respondents seldom or never used the latter.

Google Scholar was most strongly favoured by post graduate and doctoral students, and less favoured by undergraduate students, whereas all levels of student used the Google search engine to find sources. This discovery was aligned to the findings of Rowlands *et al.* (2008: p.296) who discovered that "many young people do not find library-sponsored resources intuitive and therefore prefer to use Google or Yahoo! instead". Hard copy journal articles were 'seldom' or 'never' used by all respondents (70%), reflecting library collection policies to remove print journals where permanent online access is available, and the increase in connectivity of virtual learning environments linking to electronic journal articles.

Ebooks (71%) and hard copy books (74%) were used in equal measures, with hard copy books coming out slightly higher when considering frequent and partial usage together, and this was consistent with other studies of format preference, such as Yuan *et a*l. (2018: p.44).

Student study level clearly influenced choice of sources and doctoral students exhibited key source usage traits that were unlike the lower study levels of student; they were less keen on ebooks, displaying the lowest percentage of frequent usage amongst respondents (57%), and the highest percentage of seldom use (29%). They were more frequent users of specific databases (61%) demonstrating an increased awareness of search tools, particularly subject specific databases. They were also more positive with regard to hard copy journal usage (15% frequent use, and 27% partial use) compared to other users, which may be due to the fact that many of these students are often based in office locations on campus, in addition to having professional subscriptions to their own hard copy journal collections.

There was little difference between the two institutional cohorts, however it is worth noting that there did appear to be differences regarding the use of Google Scholar, organisational websites and specific databases. Google Scholar was more frequently used by Northumbria University students (59% compared to 13% of Durham University students), although as previously mentioned, the higher study levels of student appeared to favour this method, which may help to explain the lower

percentage at Durham University, where there were significantly lower numbers of doctoral level respondents.

Northumbria students had higher levels of use for organisational websites (27% compared to 7% at Durham), and specific databases (49% at Northumbria, compared to 18% at Durham), which again relates to respondent study levels. Postgraduate and doctoral students were more aware of specific databases, in addition to organisational websites of interest.

Undergraduate students were more likely to use the generic library cross-searching software, rather than specific databases, due to training they received in how to use this search tool thereby removing the requirement to use individual publisher databases, except for higher level research and some specific databases that are not cross-searched by the software.

The remaining results from the survey will be analysed using the key research objectives originally identified at the start of this article.

Objective 1: To consider what student perceptions are regarding ebook availability as a learning resource.

Ebook availability

Although half of all respondents (51%) felt there was sufficient ebook availability for their studies, nearly a third (29%) of respondents suggested that there were not enough ebooks. There was little difference between Northumbria and Durham student responses in this aspect, although Northumbria students tended to be more positive, and Durham University students were more negative.

 [insert Figure 5.]

Access

There was some ignorance displayed amongst respondents as to the best way to access electronic resources, and ebooks. Such a lack of visibility, is something that Hobbs and Klare (2016) consider as important and suggest enhancement through digital rights management, and making interfaces more user friendly.

Respondents noted that that some specialist topics were lacking in ebook availability. This affected both taught undergraduate and postgraduate respondents with publishers restricting the ability of libraries to buy electronic copies of certain textbooks, affecting those students undertaking research for dissertations or theses where there was less online availability of research monographs, especially in the case of older books. Many academic monographs have short print runs and although still in copyright, publishers may not view digitisation or reprinting as cost-effective (Colbron 2017b). Amalgamations of publishing houses, death of authors and lack of commercial incentive to digitise these books create lacunae in online research access between new sources and out-of-copyright books available through *Google Books*, *Hathi Trust* and *Archive.org* online libraries.

Respondents also noted that there appeared to be a mismatch between course reading lists and the ebooks available in their library, such that often core textbooks or peripheral reading was only available in hard copy, which was particularly frustrating for those who were distance learners. In addition, there existed some confusion as to how to access ebooks, and difficulty reading formats for some users.

"There should be more books available digitally for convenience of study. Also, many website provide inconvenient ebook versions that are difficult to read and irritatingly hard to access".

It was clear that a few respondents actually resorted to buying digital copies rather than searching out a hard copy, or using an inter-library loan, due to access difficulties.

"As a student the accessibility of ebooks is vital. Some books would not be in the library portal and you have to resort to trying to find it on Google instead which is costly".

Licences

Licence agreements also caused challenges for respondents, especially where reading was limited to one user at a time, and reduced loan periods caused problems for respondents wishing to refer to books over a longer period.

"The fact that some ebooks can only be used by one person at a time is extremely frustrating and prevents one from achieving a well-rounded understanding of the subject, particularly in time-sensitive situations where essential reading cannot be done because someone else is using up the slot".

"Some ebooks have time-limited or content-limited access. You haven't always got it when you need it, like a physical book or article".

Such aspects related to digital rights management can frustrate users, particularly as such aspects may not be fully understood (Hobbs and Klare, 2016), though students at both Universities receive research training where they are told about these restrictions in order to manage student expectations about the availability of ebooks.

Objective 2: To investigate the reasons why students choose ebooks as a learning resource.

Convenience and accessibility

Ebooks were extremely useful to respondents, with most using them for reading about their subject area (50%) and assignment preparation (37%), and no significant difference existing in usage for different levels of study. Very few respondents were non-users of ebooks (1%), reflecting the broad growth of ebook use in the wider UK higher education environment (SCONUL, 2015).

[insert Figure 6.]

Ebook usage was predominantly about convenience for many respondents, easily accessible

anytime, anywhere and in line with findings from Enis (2018) and Mizrachi (2015). They were accessible without having to visit the library in person, and were sometimes available for multiple users. In addition, the immediacy of an ebook was a key benefit for many respondents, saving valuable time in terms of searching for, accessing and using the book.

"The instantaneous nature of them, being able to access them when you need them and not having to order them and wait particularly if they're newly published".

"There is no reason in my mind for me not to choose the more accessible ebook version of a hard copy".

As many lecturers provided online reading lists that included ebooks, this further enhanced the convenience of locating and finding a book for the student. One interesting aspect related to the fact that often respondents preferred to read electronic journal articles rather than ebooks, and it would be useful to explore this preference further, to better understand the reasons behind this.

"When attempting to learn more about a specific aspect of a subject I find ebooks easier to navigate through the use of key words, but I make much greater use of research papers, from journals and databases, than I do of books".

Ebooks were also sometimes used by certain respondents as a last option, when hard copy books did not exist.

Preview

Respondents considered the role of ebooks as a convenient first step for establishing the usefulness of a particular book. Therefore, ebooks acted as a preview, where they could assess the usefulness of the book before visiting the library in order to locate the hard copy version.

"Ebooks are useful when hard copies are not available, when quick searching of texts is important, or when considering whether a book is worth reading fully".

Ease of use

Ebooks were considered easy to use, searchable, and facilitated note making and referencing. Respondents discussed the simplicity of cutting and pasting sections, which is perhaps

symptomatic of how students work with regard to digital note making.

"During my assignments I have been using online books rather than going to the library as it is easier to refer to them and take notes from them".

Respondents particularly liked the navigability of ebooks, enabling them to keep track of what they had read, and allowing speedier determination of whether a particular book was suitable or not for further investigation. Keyword searching within the book was viewed as an important asset, and this method of ebook use featured quite heavily in qualitative responses.

Respondents relished being able to find desired content without having to fully read a book, through the use of keyword searching to hone in on relevant passages. This saved time, and resulted in users often scanning an ebook and searching in a similar way to how they might search using Google on the internet, resulting in a change in a changed user behaviour compared to paper based study habits (Raynard, 2017).

"Time efficiency via keyword search".

"Find desired content immediately by using keywords".

Portability

Portability was viewed as a key benefit of ebooks, with many respondents discussing the fact that they could carry many ebooks on one device; indeed the storage benefits of creating a personalised library, which could then be revisited, were seen as particularly favourable. Respondents were grateful not to have to carry around physical books, considered as heavy and bulky.

"Can store many on my computer to refer to later without taking up any physical space".

Part-time and distance learning respondents felt that ebooks were particularly valuable for those facilitating learning off campus, although it was also evident that remote access had advantages for all categories of respondent, whether campus based or a learning at a distance.

Objective 3: To explore the ways in which students access ebooks.

Searching for ebooks

The library search tool/catalogue was the most popular tool used when searching for ebooks (44%), followed by Google (31%), and electronic reading lists (15%). Very few students used an ereader service (6%), and of the 2% who selected 'other' as a category, one respondent stated that they were not aware they could access ebooks to download to an ereader. In addition, Amazon and Libgen were mentioned as search tools together with ebook provider websites.

[insert Figure 7.]

The use of electronic reading lists for finding ebooks predominantly related to undergraduate students. Doctoral students were less inclined to use an ereader or a reading list, favouring the library search tool/catalogue and Google as their ebook searching tools. This may help to explain the differences between the institutions, which showed that Durham University students (predominantly undergraduate in composition) made more use of electronic reading lists, and Northumbria University students (predominantly postgraduate in composition) made greater use of Google when ebook searching.

[insert Figure 8.]

The device most favoured when searching for an ebook from qualitative responses was a personal computer, predominantly based at home, and easily accessible. University computers were also popular, as for some respondents they worked better in the University environment, whilst others preferred the chance to use better-specified equipment. Laptops were less popular, but fared better than the use of tablets, smartphones and Kindles. It is worth noting that terminology needs to be considered here, as students may have referred to their laptop as their personal or home computer.

Ease of searching

Respondents were asked how easy it was to search for ebooks using this preferred device, and just under three quarters of all respondents found searching on this device easy (71%), with the remaining quarter undecided or more negative.

[insert Figure 9.]

Regarding the challenges of the ebook search experience, these predominantly related to issues concerning the lack of a seamless ebook service, such that there were often multiple logins required; and clunky online reading tools. Some publishers (e.g. Hart, a publisher of Law books)

limited viewing to one page at a time, which frustrated users.

"It is not difficult, per se, but the constant requirement of signing in to new pages, having to divert away from the results of an original search, and being constantly directed to other platforms and services can be exhausting".

In addition, the device on which they searched for and accessed ebooks caused issues for respondents, especially when using ipads and smartphones. Often, the downloading of ebooks (if permitted by publishers) was reliant on having suitable hardware, and access to a reliable internet connection. There is often an assumption that all students have equal access to suitable technology off campus, but it was evident that this was not always the case for the respondents involved in this survey.

"I had a lot of technological problems (the site kept crashing and kept putting me back to the beginning of the book) but I think this was largely my internet connection".

Objective 4: To establish how students use an ebook as a learning resource, considering the ways in which they find specific information in the ebook, and engage with the content.

Reading ebooks

As previously discussed personal computers were the preferred way of reading ebooks, both at home and at University and in this instance personal computer relates to either laptops, or personal computers at home, or in an office. Respondents favoured laptops and personal computers due to factors such as a large screen, ease of navigation, convenience, and portability. Some respondents also mentioned the fact that they could make notes in Word as they read the book.

Tablets and smartphones were less favoured; however respondents cited portability, and the fact that the reading and holding experience was more akin to that of a hard copy book, as reasons for choosing these devices. Interestingly one respondent stated that they use their tablet in combination with a personal computer, when note making and using multiple sources. A few respondents suggested that they would print off ebook chapters rather than read them on screen, if licences permitted.

[insert Figure 10.]

Respondents highlighted the challenge of working with a variety of ebook platforms, and their associated logins. Many platforms appeared to work best in a PC/laptop environment, and were less compatible with other devices, such as Kindles, iPads and smartphones. Respondents who used Kindles were unhappy that they could not download a version to their e-reader, which would improve their reading experience, and mitigate some of the issues of reading from a computer screen. Others mentioned that downloading an e-reader version of an ebook incurred a charge.

"I would like to use my kindle as I find it difficult reading off a bright screen. However, I am unable to do this unless I buy the book from Amazon which I won't do if the library has a copy".

There was an even spread of usage related to different levels of study, although it is worth noting that smartphones and e-readers were used more frequently by undergraduate level students.

[insert Figure 11.]

Strategies for ebook use

Just over two thirds (67%) of respondents clearly identified that they used ebooks in a different way to hard copy books; although a number of qualitative responses also suggested that usage was similar regardless of the medium.

"Both are learning material just formatted in a different way. Electronic v paper makes no difference to how I learn".

"A book is a book regardless of which media you access it through".

[insert Figure 12.]

There were several strategies that emerged for respondents regarding use of ebooks as a learning resource. A key strategy related to the selective reading of certain parts of the ebook, utilising a 'scanning and dipping approach'. This included use of the contents page to select chapters of interest, and use of the keyword function to narrow down to parts of the ebook perceived as relevant to the reader. This type of information behaviour can manifest itself with horizontal information seeking where small amounts of information are skimmed from a resource, and power browsing so the time spent on a resource site is minimal. Navigation

becomes a large part of the overall time spent searching, information is squirrelled away, and users favour certain brands for ensuring that information is trusted (CIBER, 2008).

Indeed, keyword searching within ebooks was mentioned frequently when respondents provided qualitative discussion of their approach to reading an ebook, suggesting that this was something particular to ebooks and not part of hard copy book use. Many respondents perceived ebooks as having better functionality and interactivity, particularly regarding quick scanning, selective reading, bookmarking, and cut and pasting, thereby saving time and effort.

Therefore, this altered the way that users engaged with the ebook. This type of strategy is argued to be more in line with reference book usage (Abdullah and Gibb, 2008), and therefore results in a different type of user behaviour.

"With ebooks, I mostly just search for a word or phrase of interest and then read around that page".

"Keywords only go for related content. Time is the most valuable thing ever! Until I need to be number one person in a specific topic, I won't need to read all ebook contents".

 This particular approach to using ebooks was backed up by general disagreement from respondents with the statement that an ebook is read from cover to cover, and indicated a preference for reading bite size chunks of text that served their needs, rather than reading a whole book. When one drills down to response by study level on this issue, it is the undergraduates and post graduate research students who disagree most with reading an ebook from cover to cover with percentages of 63% and 85% respectively.

The fact that some respondents typed up their notes as they went along into separate Word files, meant that ebooks were viewed as a convenient resource which supported an active study approach. In addition, some respondents copied and pasted content from ebooks, as an alternative to making notes, indicating less active engagement with the content.

"I do copy and paste from ebooks - I like to actually have the material so I can access it whenever I need to".

It was also interesting to note that many respondents didn't read ebooks fully, due to the physical challenge involved in reading an ebook, particularly related to reading from a screen (Jeong, 2012), and the distracting nature of working with a computer. This mirrors Li (2016) who suggests that other functions on a device that accesses ebooks can distract the reader from engaging fully with the intended content.

"I think I don't persevere as much with ebooks. If I get fed up or find them difficult to navigate I'll just abandon them whereas with hard copy I stumble on it serendipitously and am reminded to revisit it".

Regarding the printing out of ebook sections for subsequent reading, postgraduate and doctoral level respondents agreed more strongly with this statement, indicating that these groups of students were perhaps more able to complete deeper learning using hard copy materials. Undergraduate students were the highest number who agreed with the statement regarding the making of hand written notes whilst reading an ebook, which may illustrate the need for further processing, and also the fact that undergraduate students may not be able to afford the printing costs compared to those tackling higher levels of study. Durham University students strongly agreed with cutting and pasting parts to a separate file as they went along, displaying the need to further process information when using an ebook.

The use of hard copy books, as a way of mitigating the challenges of reading ebook content, was something 39% of respondents carried out, with a further 22% undecided. Hence, respondents implied that the benefits of hard copy books were often the key reason why they did not use ebooks, particularly regarding the tactile properties of a physical book, in terms of enabling flicking and skimming, together with the enjoyment and ease of reading. Some respondents also suggested that recall of content was better with hard copy books. The fact that hard copy format serves to enhance a reader's "sense of place" within a book is vital for enhancing the understanding of a reader (Berg et al., 2010: p.523).

"I can read a hard copy book from cover to cover but an ebook makes my eyes strain".

"I find ebooks much more difficult to read and this normally means I don't understand the literature very well. To avoid this I print off the reading if it is not too long".

Navigation

Navigation was another key benefit of ebooks, however it also caused challenges for some respondents. The digital presence of a book was quite daunting for some, with respondents outlining the challenge of not being able to view the physical entirety of a book, its size, and volume, and that resorting to a keyword search for interrogation dehumanised the physical entirety of the book.

"Too much to handle virtually. There is no sense of the size and volume of the book and it involves too much screen exposure".

Obviously, this depends on the type and focus of the book, and reasons for reading, but disorientation leading to a reduction in engagement with the text is something Li (2016) considers. Some respondents also found the concept of flicking through an ebook more challenging in a digital environment, they described navigation as annoying, and comparing chapters of a book as difficult. Ebooks demanded a more search driven approach, which did not facilitate the spontaneity of reading a hard copy book, and lacked a linear reading process often perceived as more effective to deep learning (Mizrachi, 2015).

"I think sometimes they can also be a little awkward to use, if I want to check something on another page, sometimes I have to scroll back to that whereas it's easier with a hard copy".

This situation may have greater impact on Humanities subjects that tend to use Endnotes for references, which may be several pages away from the text being cited.

Objective 5: To understand whether ebook use satisfies student-learning requirements.

Proportion of ebook to hard copy book usage

Examination of usage provides a rough indication of whether ebooks are being accepted as a learning resource, and satisfying learning requirements. As previously considered, respondents used ebooks (71%) and hard copy books (74%) in equal measure, with just over half of all respondents feeling that there was sufficient availability of ebooks for their studies. However, 29% of respondents considered that there were not enough ebooks, particularly regarding specialist subject areas, and some reading lists.

Postgraduate students used the highest proportion of ebooks compared to hard copy books, in order to support their studies, particularly on taught courses. The reasons for this could be due to the proliferation of online reading lists, which more commonly make use of ebooks and other online sources, plus the fact that some of these students may have been distance learners, or studying part-time with other commitments, and therefore found the convenience of an ebook attractive.

[insert Figure 13.]

Undergraduate students displayed less reliance on ebooks only, and exhibited a more balanced approach to hard copy and ebook usage, whereas foundation students were less reliant on hard copy books. It is also worth noting that foundation students were small in number, and predominantly on computing related courses. Doctoral students were more reliant on hard copy format for their studies with almost a half of these respondents favouring a lower proportion of ebook usage compared to hard copy books. Reasons for this related to their being based predominantly on campus, together with a desire to better digest the information contained within the books resulting in deeper learning (Mizrachi, 2015). It is also worth noting the importance of hard copy for some humanities based doctoral students (*Education for Change*, 2012: p.20), together with the fact that age and level of study can also affect print book preference (Wilders, 2017). In addition, the lack of ebooks for many research monographs (Colbron 2017b) and publishers' restrictions on access to textbooks may oblige students to use print versions.

Hard copy book usage was very much a preferred option for some respondents, and again indicates that ebook use only partly satisfies student-learning requirements. The reasons for such use related predominantly to usage factors, such as ease of reading and navigation. In addition, some respondents suggested that hard copy books enabled better engagement with the content, improving knowledge assimilation and retention, as identified by Hobbs and Klare (2016). For a small number of respondents there was a strong link to their personality and study style, which resulted in them finding reading on screen more tiring. Other respondents displayed a clear preference for using hard copy books stating, "you can't beat the feel of reading a real book", and exhibiting clear emotional attachments to this type of medium (Myrberg, 2017). Therefore habit was a key factor in the perception of satisfaction.

"I am just more of hard book person. And however stereotypical that may be, as a historian, I prefer to actually see/feel/have the book".

Some respondents considered that hard copy books could be used in more complex ways, particularly when using multiple books, and reading a whole book from cover to cover. They discussed their use of post it notes, and the fact that using paper helped the information stick better in their mind, thereby improving engagement with the text (Hobbs and Klare, 2016). It was also interesting to note that sometimes hand written notes in a hard copy book written by other people, proved useful to respondents.

There was a suggestion that hard copy books were particularly useful for the reading of key texts. Whilst, for a small number of respondents, hard copy books were a last resort when wanting to read outside in the summer months, avoiding technological issues, or due to the proximity to hard copy books when finding themselves in the library for other reasons.

Should a library be ebook only

Exploring respondent views on a library with just ebooks, also helps to indicate satisfaction with this medium as a learning resource, and qualitative comments regarding this question were generally slightly more negative than positive, suggesting that ebooks might not necessarily fully satisfy student requirements.

Negative sentiment was varied, with a spectrum of comments ranging from extreme statements such as; 'absolutely enraged', 'hate it', 'mortified', 'terrified' and 'I would kill myself', to comments suggesting; 'sad', 'uncomfortable', 'not happy', and 'annoyed'. Reasons for these statements related to technological issues, in addition to the physical impact of working this way. Some respondents suggested that their individual learning styles were not suited to ebook use, causing them to work less efficiently, thereby limiting their ability to study. Finally, some respondents discussed the enjoyment of physically visiting a library (with access to a whole host of other services), and the satisfaction of using a hard copy book, clearly exhibiting a respect and nostalgia for the hard copy format.

"I would not like it. I like to browse shelves because you come across useful stuff in a way that online searches can't provide. Also online searches are restricted by the way they've been created - sometimes I know an article or source exists but I can't get access to it because my search methodology doesn't correspond to the way the search function has been set up. And I like to handle books, and to work from several at a time".

There also existed a spectrum of positive sentiment comments, ranging from those who saw ebooks as a good thing with statements such as; *'awesome, great', 'super', 'perfect'* and

'extremely happy'. Whilst other responses were more tentative stating it would be *'fine, 'convenient' or 'practical'* or respondents would *'get used to it'*. Benefits to do with availability, time saving, and creating more space in the library for study were mentioned. Some respondents provided a caveat that new styles of learning would need to be adopted for using ebooks, whereas others commented on the importance of e-reader compatibility, and the fact that some sources, such as music scores, did not work well in a digital format.   In addition, they felt that certain subject areas did not have a sufficient range of books in digital format only.

Several respondents commented on the necessity for a balance of ebooks and hard copy books, they felt happy with a hybrid system, which provided greater inclusivity, enabled reading for pleasure, and provided a broader selection of books in certain subject areas.

"Although it would be beneficial in terms of sustainability for the environment, I would rather have a mix of hard copies and ebooks so people could choose to use what works best for them".

 [insert Figure 14.]

Nearly half (41%) of all respondents identified that there were times when they would not use ebooks in their study, with doctoral, and postgraduate research students feeling most strongly regarding this matter. This was probably due to the complex usage that higher level students made of books, and the fact that hard copy books were perceived as being more suitable for higher level engagement, and deep learning. As noted earlier, it is also the case that many research monographs are unavailable in electronic form (Colborn 2017b).

Learning

Some respondents felt that the very nature of an ebook resulted in a different learning experience, whereby information was harder to process, due to the different ways in which an ebook was negotiated and read. One respondent suggested that the experience felt "less real", whilst another likened the experience to Blade Runner, therefore for some respondents ebooks lacked authenticity, and challenged their ability to fully engage with and digest the information they required, as detailed by a variety of scholars (Berg et al., 2010; Li, 2016; Raynard, 2017).

When one respondent was asked if they would welcome a library of ebooks only, they posited, *"It might feel a bit like Blade Runner 2049. I might want to have a digital implant in my brain to be able to browse 100% digital libraries even faster (just kidding). One would also not be able to use books at all in case of outage/interference on the IT networks. Furthermore, I would not be*

able to absorb the content of the material as efficiently, particularly challenging work dealing with complex theory and methodology. After first hand experiential learning (the best source of learning), hard copy books allow me to absorb material much more effectively and efficiently".

Therefore, the interactivity that comes with using hard copy books was felt by some respondents to be vital in the role of enabling greater understanding and learning.

"Just doesn't feel the same as having an actual book in your hand. I suppose it is like the difference between reading over your essay on the screen and actually printing it out and reading it".

Distractions
Other respondents argued that ebooks were distracting to read, as they required an internet connection, thereby enabling access to other distractions of being online. It was also equally easy to drop reading an ebook, due the ease of effort in obtaining them in the first place.

"I think I don't persevere as much with ebooks. If I get fed up or find them difficult to navigate I'll just abandon them whereas with hard copy I stumble on it serendipitously and am reminded to revisit it".

This joy of serendipity was identified as a key benefit of searching the physical bookshelves, and although users were able to browse ebooks, there was less opportunity to find those real gems through bumping into them during a search of the bookshelves.

"Often I find other relevant books whilst looking for a hard copy book, because they are on the surrounding shelves".

Finally, some respondents exhibited a real love of the physical book, its tactile nature, smell, and physical presence were of key importance to them, compared to an ebook.

Objective 6: To identify what students expect from ebooks as a learning resource

By considering respondent perceptions so far, it is possible to establish what students expect from an ebook:

- Students expect ebooks to be fully accessible on and off campus, and easy to search for and locate. Ebooks should be found using a variety of search tools, using formal and informal search strategies.
- Students require simplicity of use, with an easy to use interface, avoiding too many logins, and enabling them to read an ebook on whatever device they choose.
- Students like an interactive interface, which is easy to navigate, with the facility to keyword search.
- Students want multiple copies of ebooks, with access for as long as they want.
- Students expect ebook coverage is a broad range of subject areas.
- Students prefer an alternative to ebooks as they often find deep learning a challenge with ebooks.
- Students would benefit from user education which focuses on improvement of their ebook use skills.

Objective 7: To understand the information literacy skills that students must adopt when using ebooks as a learning resource

Having analysed the results it is clear that there are key information literacy skills that students require in order to fully utilise ebooks for their learning.

These include searching and locating ebooks, viewing ebooks, and navigating and engaging effectively with ebooks to enable deep learning. Students also need to be taught engagement strategies such as note-making to enable them to work more carefully with the resource.

Enabling serendipity whilst searching for ebooks requires having knowledge of the functionality of the library catalogue and knowing how to browse rather locate a specific book.

Building on active learning skills to enable better use and recall of information contained in ebooks is also vital as a way of ensuring that students don't just use ebooks as a preview tool, but try to engage more fully with the content.

Conclusion

Ebooks have been adopted with great enthusiasm by academic libraries, enabling efficient use of resources, and providing multiple simultaneous access to reading list sources. They support part-time and distance learning students, free up space for study and other functions within the library, and improve student satisfaction, better suiting the study style of a predominantly millennial student generation.

However, almost half of the respondents were concerned about ebook availability, although whether this was due to a physical lack of ebooks in certain subject areas, or due to a

misunderstanding regarding how to find out about and access ebooks is debateable. It was also evident that personal preference for hard copy impacted on respondent feelings about ebook use, and their engagement with such texts.

Respondents chose ebooks because of certain key advantages, particularly relating to convenience and accessibility, portability, navigability and the fact that act as a preview in order to determine usefulness of a particular book. Despite these advantages, sentiment regarding ebooks was not wholly positive. For many respondents there existed a 'soft spot' for hard copy format, and there was a perception that this format enabled an authentic, 'real' and enjoyable reading experience.

Respondents accessed ebooks in a variety of ways, with online reading lists being an important access tool for undergraduate students. The personal computer was the favoured way of viewing ebooks, and this included laptops, in addition to home computers. However, this did result in challenges with reading digital content, particularly with regard to physical issues to do with eyestrain and headaches, in addition to practical issues related to navigation, such as flicking between pages, and appreciating the entirety of the physical book.

Respondents also expressed frustration regarding the complexity of ebook provision, and the apparent incompatibility with their own ebook readers. The importance of having a seamless ebook service with simplified logins was viewed as very important to respondents, and acted as a deterrent for some users, impacting on the access experience. The availability of books in online form is also a challenge for libraries and all study levels of students. Publishers' restrictions on the availability of new core text books, and their preference for individual purchases by students rather than collective access through a library, has often resulted in libraries buying multiple copies of print books, despite this being born-digital information. The high cost of individual purchase of ebooks hints that perhaps the savings publishers have made in publishing ebooks have not yet been passed on to students or libraries. Publishers' restrictions on the percentage of an ebook that can be downloaded or the number of concurrent readers (if available at all), also caused challenges for respondents. For respondents looking for research sources there was the further problem that books from the mid-twentieth to early twenty-first centuries were out of print but still in copyright.

A key finding from this research was that respondents clearly used a different strategy by which to interrogate an ebook, compared to a hard copy book. The keyword functionality that many ebooks possess enabled a different user behaviour with targeted searching of the content, thereby saving time, and acting as a taster for determining the usefulness of content. This resulted in a search style

more akin to Google searching, which millennial students are well used to, however this did not necessarily enable full appreciation of the text, and tended to disconnect searched terms from the overall context and meaning of the book. Such a bite size approach meant that respondents were less inclined to engage fully with the book content, and avoided the linear reading process more commonly found used with hard copy books.

Therefore ebook use did not fully satisfy respondents, partly due to the historic paradigm of hard copy and the fact that many respondents are more familiar with using this medium, however it was also partly due to lack of cognition and the difficulties respondents had in working with this format. Therefore the learning styles that students adopted were sometimes challenged by using ebooks, and in addition the technology used to access the ebook resulted in difficulties in fully engaging with content. As previously mentioned some subject areas were not well provided for by ebooks, whereas other publications were too old. Therefore, respondents predominantly exhibited a hybrid approach to their book use.

Respondents expected the ebook service to be accessible, and easy to use. They liked the interactivity of an ebook, but didn't want licenses to impact on what they could and couldn't do. They wanted a good range of books, accessible on whatever device they want to use, and also have the option of viewing a hard copy. Although not explicitly expressed, it was evident that they required user education to help them to refine their ebook interrogation sills, and to enable them to learn more deeply.

Therefore information literacy training is vital for students; particularly training that focuses on searching for ebooks, and the role of digital serendipity, in addition to examining strategies for enhancement of active learning using digital resources.

In summary, caution must also be observed in ensuring that a library collection facilitates the learning styles of all student levels, and provides the opportunity for students to better digest and engage with book content, through the use of hard copy format. There is a danger that ebooks may be frustrating certain users to engage less deeply with concepts, or result in long term physical harm for the user, depending on how they choose to read the ebook.

Further research questions that arose from this research included a variety of aspects, including why respondents preferred ejournals to ebooks; what level of recall do they have after engagement with an ebook; the extent to which the challenges of ebook use deter user engagement; the ways in which hardware impacts on the ebook use experience; the new learning styles that result from

ebook use; and to establish the key information literacy skills that would help to improve deep learning with ebooks.

Recommendations: What can academic libraries do?

- Provide a sufficient mix of hard copy and ebooks, through close liaison with teaching staff and students.
- Provide information literacy sessions so users better understand how to search for, download and read ebooks, including use of effective note-making strategies to better engage with ebook content.
- Consider use of tablets/kindles to facilitate a more authentic reading experience.
- Acknowledge that hard copy books are written as a physical entity, which deserve to be viewed as a complete entity. This is something that is hard to translate to current ebooks.
- Consider the value of a bite sized approach to e-reading and cascade this to academics for reading list creation.
- Work with academic colleagues to provide online access to born-digital new sources through open access in university repositories.
- Work collectively through JISC to establish common criteria for multiple concurrent access to academic ebooks.

References

Abdullah N and Gibb F. (2008) Students' attitudes towards e-books in a Scottish higher education institute: part 2: Analysis of e-book usage. *Library Review* 57: 676-689.

Anon. (2010) *A Survey of eBook Usage and Perceptions at the University of Liverpool: University of Liverpool eBook Study: part 2*. Available at: http://www.springer.com/cda/content/document/cda_downloaddocument/V7671+Liverpool+White+Paper+Part2.pdf?SGWID=0-0-45-1037538-0.

Ashcroft L. (2011) Ebooks in libraries: an overview of the current situation. *Library Management* 32: 398-407.

Berg SA, Hoffmann K and Dawson D. (2010) Not on the Same Page: Undergraduates' Information Retrieval in Electronic and Print Books. *The Journal of Academic Librarianship* 36: 518-525.

CIBER. (2008) *Information behaviour of the researcher of the future: A CIBER briefing paper*. Available at: https://www.webarchive.org.uk/wayback/archive/20140614113419/http://www.jisc.ac.uk/media/documents/programmes/reppres/gg_final_keynote_11012008.pdf.

Corbin J and Strauss A. (2008) *Basics of qualitative research 3e. Techniques and procedures for developing grounded theory.*: Sage.

Education for Change. (2012) *Researchers of tomorrow: The research behaviour of Generation Y doctoral students*. Available at: https://www.jisc.ac.uk/reports/researchers-of-tomorrow.

Enis M. (2018) Academic:Survey: Print for Reading, "E" for Research. New York, 14.

Ferguson CL. (2016) Textbooks in Academic Libraries. *Serials Review* 42: 252-258.

Frederick DE. (2015) On eBooks in academic libraries: an article based on a presentation at the Library 2.014 Conference. *Library Hi Tech News* 32: 12-15.

Hernon P, Hopper R, Leach MR, et al. (2007) E-book Use by Students: Undergraduates in Economics, Literature, and Nursing. *The Journal of Academic Librarianship* 33: 3-13.

Hobbs K and Klare D. (2016) Are we there yet?: A longitudinal look at e-books through students' eyes. *Journal of Electronic Resources Librarianship* 28: 9-24.

Ian Rowlands, David Nicholas, Paul Huntington, et al. (2009) *JISC national e-books observatory project: Key findings and recommendations* Available at: http://observatory.jiscebooks.org/files/2011/08/JISC-national-ebooks-observatory-project-final-report.pdf.

Jeong H. (2012) A comparison of the influence of electronic books and paper books on reading comprehension, eye fatigue, and perception. *The Electronic Library* 30: 390-408.

JISC. (2017) *E-book usage: counting the challenges and opportunities*. Available at: http://repository.jisc.ac.uk/6681/1/jisc-e-book-usage-report-august-2017.pdf.

Jones C and Shao B. (2011) *The net generation and digital natives: Implications for higher education*. Available at: https://www.heacademy.ac.uk/system/files/next-generation-and-digital-natives.pdf.

Kennedy GE, Judd TS, Churchward A, et al. (2008) First year students' experiences with technology: Are they really digital natives? *2008* 24.

Li C. (2016) The Future of Academic E-reading, Still a Long Way to Go *Proquest Blog.* Proquest.

Marques S. (2012) E-textbooks usage by students at Andrews University: A study of attitudes, perceptions, and behaviors. *Library Management* 33: 536-560.

Mizrachi D. (2015) Undergraduates' Academic Reading Format Preferences and Behaviors. *The Journal of Academic Librarianship* 41: 301-311.

Moore KB. (2015) Are We There Yet? Moving to an E-Only Collection Development Policy for Books. *The Serials Librarian* 68: 127-136.

Mulholland E and Bates J. (2014) Use and Perceptions of E-books by Academic Staff in Further Education. *The Journal of Academic Librarianship* 40: 492-499.

Myrberg C. (2017) Why doesn't everyone love reading e-books? *Insights* 30: pp.115-124.

Pedró F. (2006) The New Millennium Learners: Challenging our Views on ICT and Learning.

Pickard AJ. (2007) *Research methods in information*: Facet.

Porion A, Aparicio X, Megalakaki O, et al. (2016) The impact of paper-based versus computerized presentation on text comprehension and memorization. *Computers in Human Behavior* 54: 569-576.

Raynard M. (2017) Understanding Academic E-books Through the Diffusion of Innovations Theory as a Basis for Developing Effective Marketing and Educational Strategies. *The Journal of Academic Librarianship* 43: 82-86.

Riha EC and LeMay D. (2016) Saving students money with ebooks: A cross-departmental collaboration between interlibrary loan and course reserve. *Technical Services Quarterly* 33: 386-408.

Rowlands I, David N, Peter W, et al. (2008) The Google generation: the information behaviour of the researcher of the future. *Aslib Proceedings* 60: 290-310.

Safley E. (2006) Demand for E-books in an Academic Library. *Journal of Library Administration* 45: 445-457.

SCONUL. (2015) *Changing trends in loans, visits & the use of e-books*. Available at: https://www.sconul.ac.uk/sites/default/files/documents/Analysis%20_Loans%20ebooks%20visits%20June%202015.pdf.

SCONUL. (2018) *Commentary on the SCONUL Annual Statistical Return 2016 - 2017: The continuing evolution of UK academic libraries*. Available at: https://www.sconul.ac.uk/sites/default/files/documents/The_continuing_evolution_of_UK_academic_libraries.pdf.

Shelburne WA. (2009) E-book usage in an academic library: User attitudes and behaviors. *Library Collections, Acquisitions, and Technical Services* 33: 59-72.

Strauss AL. (1987) *Qualitative analysis for social scientists,* Cambridge: Cambridge : Cambridge University Press.

Walton EW. (2014) Why undergraduate students choose to use e-books. *Journal of librarianship and information science* 46: 263-270.

Wilders C. (2017) Predicting the Role of Library Bookshelves in 2025. *The Journal of Academic Librarianship* 43: 384-391.

Woody WD, Daniel DB and Baker CA. (2010) E-books or textbooks: Students prefer textbooks. *Computers & Education* 55: 945-948.

Wu Md and Chen Sc. (2011) Graduate students' usage of and attitudes towards e-books: experiences from Taiwan. *Program* 45: 294-307.

Yuan W, Van Ballegooie M and Robertson JL. (2018) Ebooks Versus Print Books: Format Preferences in an Academic Library. *Collection Management* 43: 28-48.
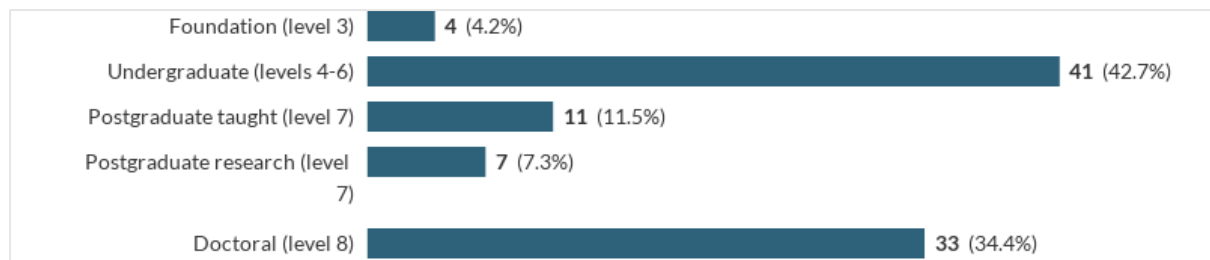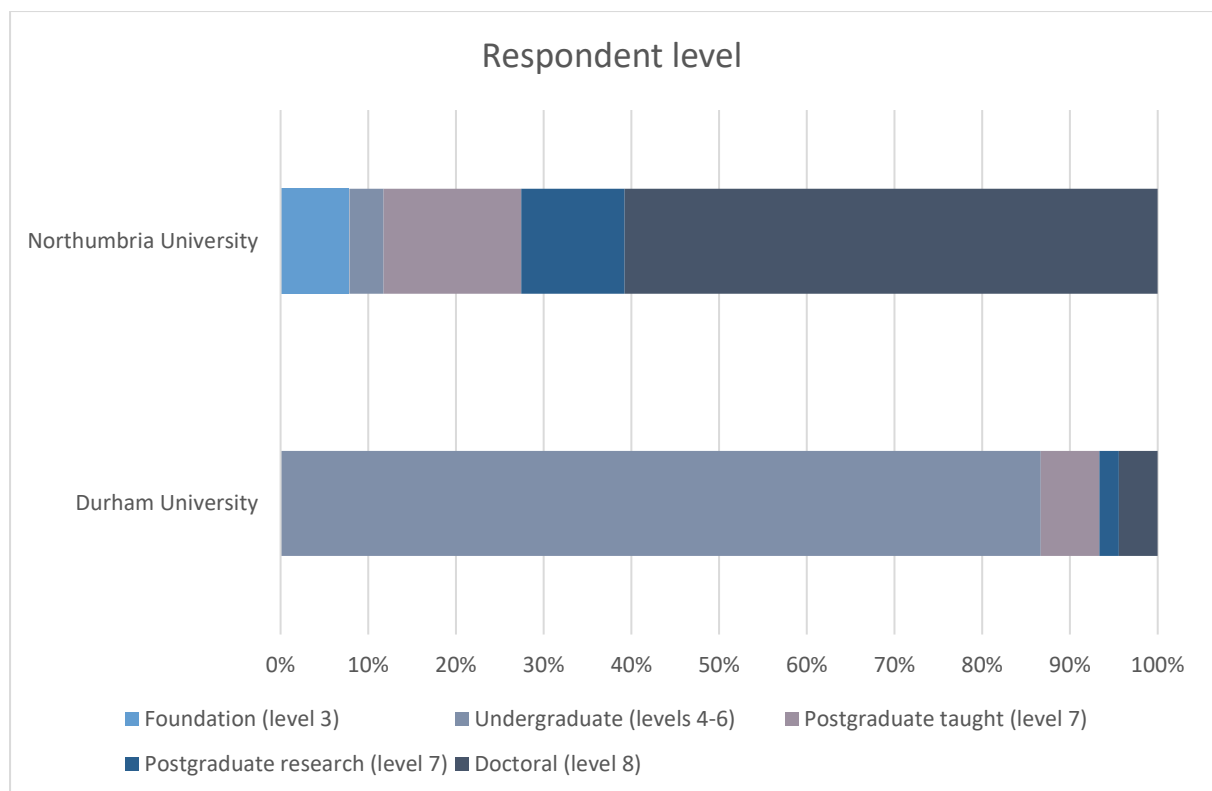
Figure 1. Level of study

Figure 2. Word cloud of subject areas (Word it out)

Figure 3. Comparison between Durham and Northumbria University respondent level

What information sources do you tend to make use of when studying or completing an assignment

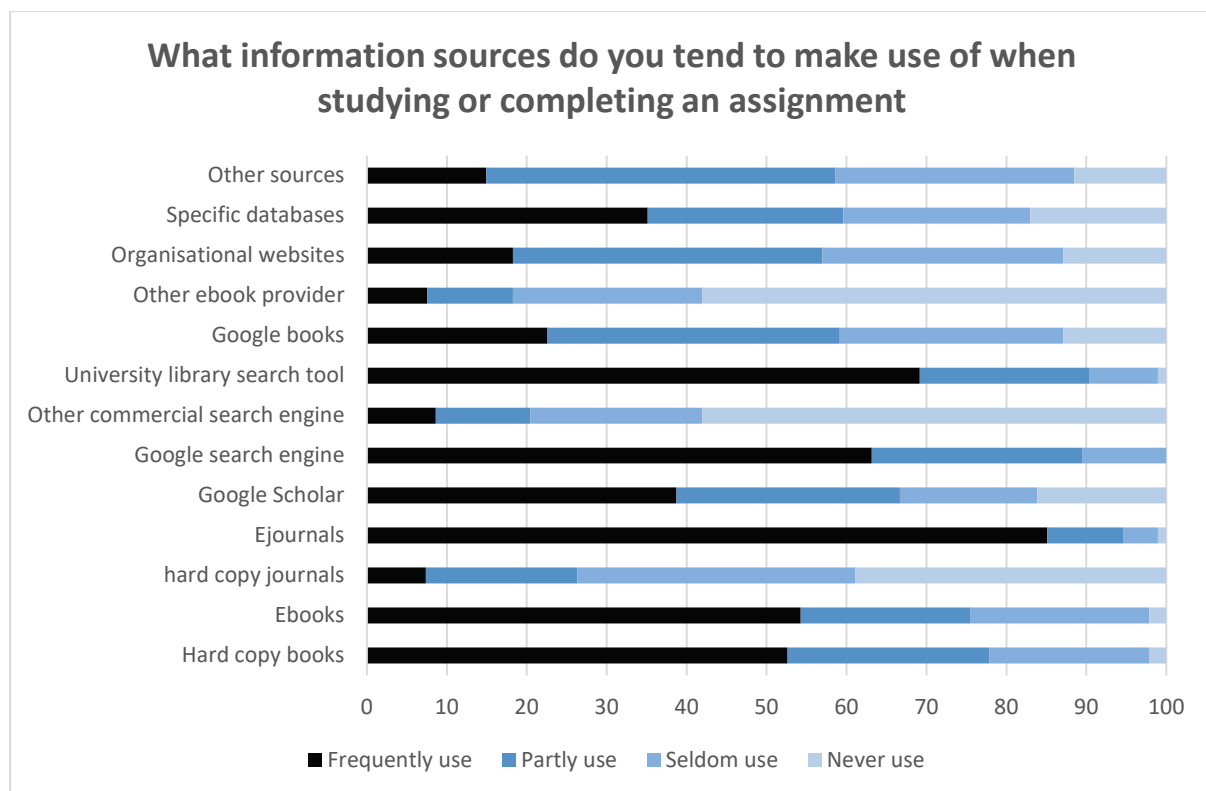■ Frequently use ■ Partly use ■ Seldom use ■ Never use

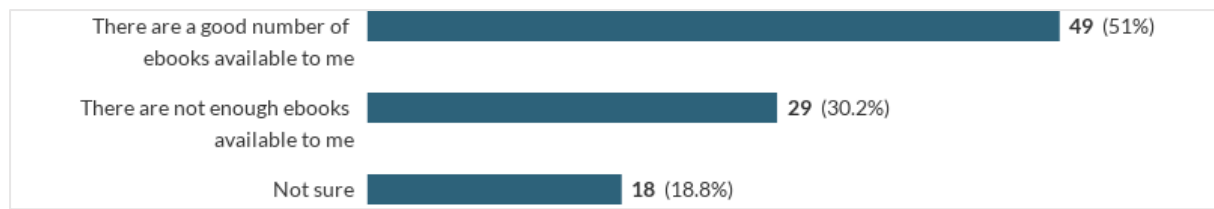**Figure 4. Information sources used**

Figure 5. What do you think about ebook availability for your studies at present?
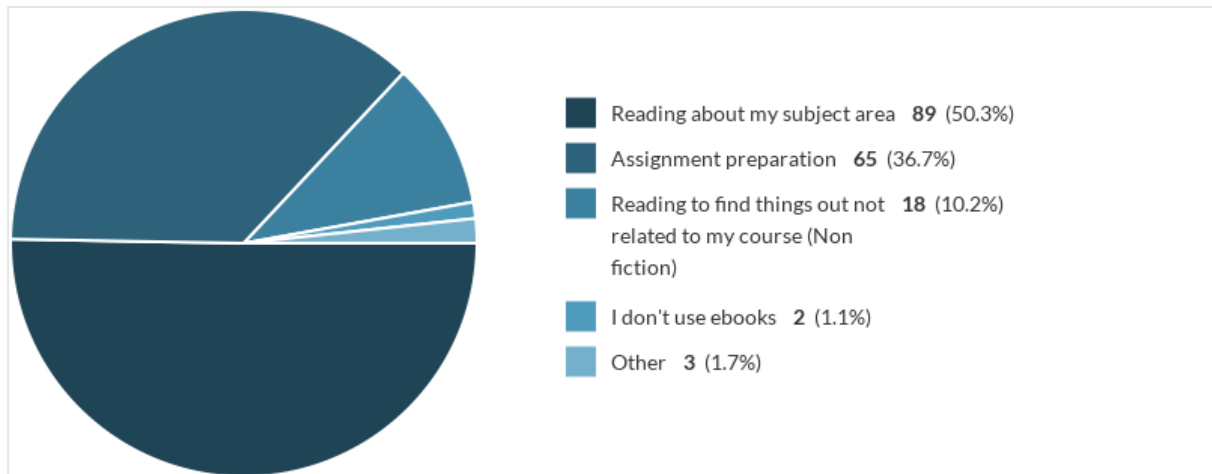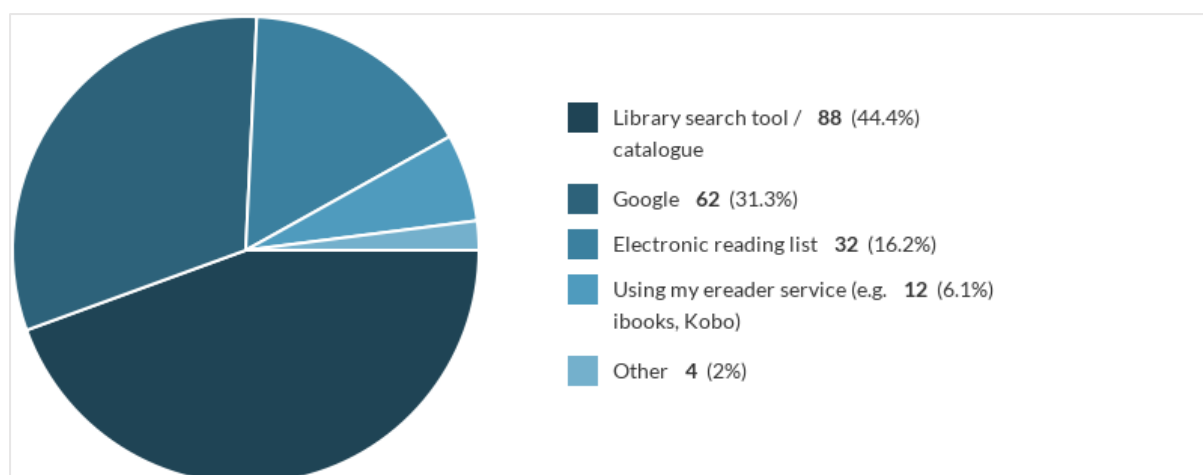
Figure 6. What do you use ebooks for?
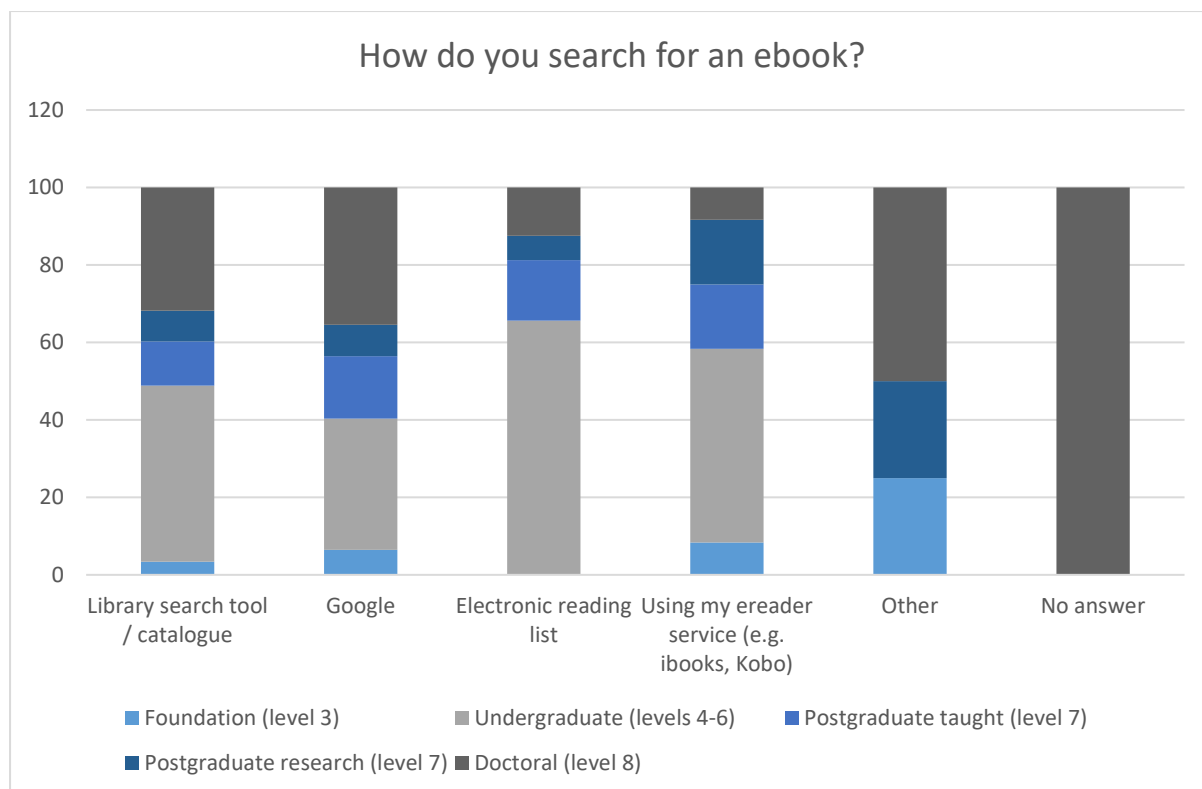
Figure 7. How do you search for an ebook?

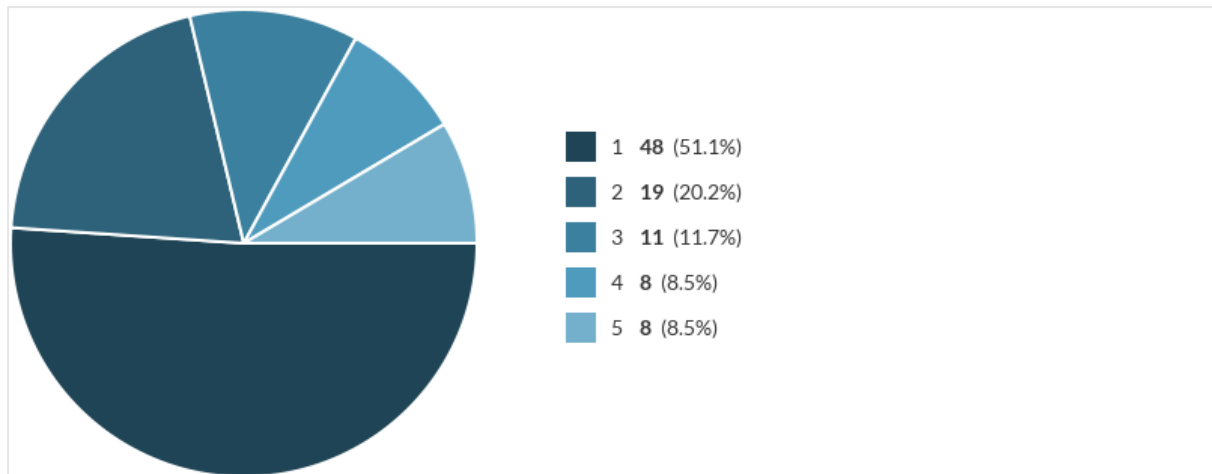**Figure 8. How do you search for an ebook?**

Figure 9. How easy is it to search on your preferred device (1 is very easy, 5 is very hard)?
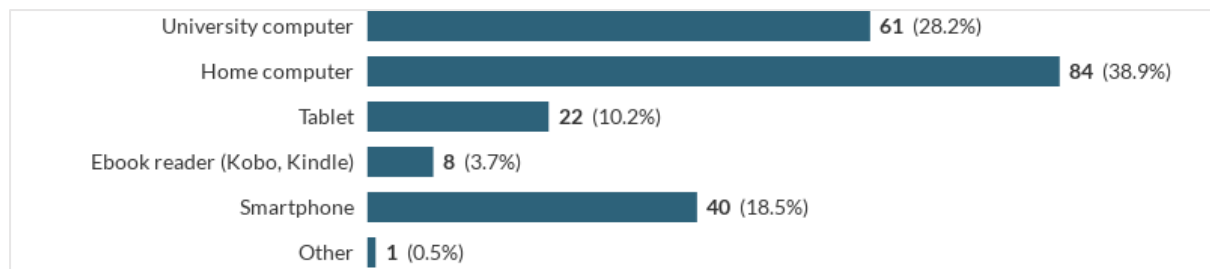
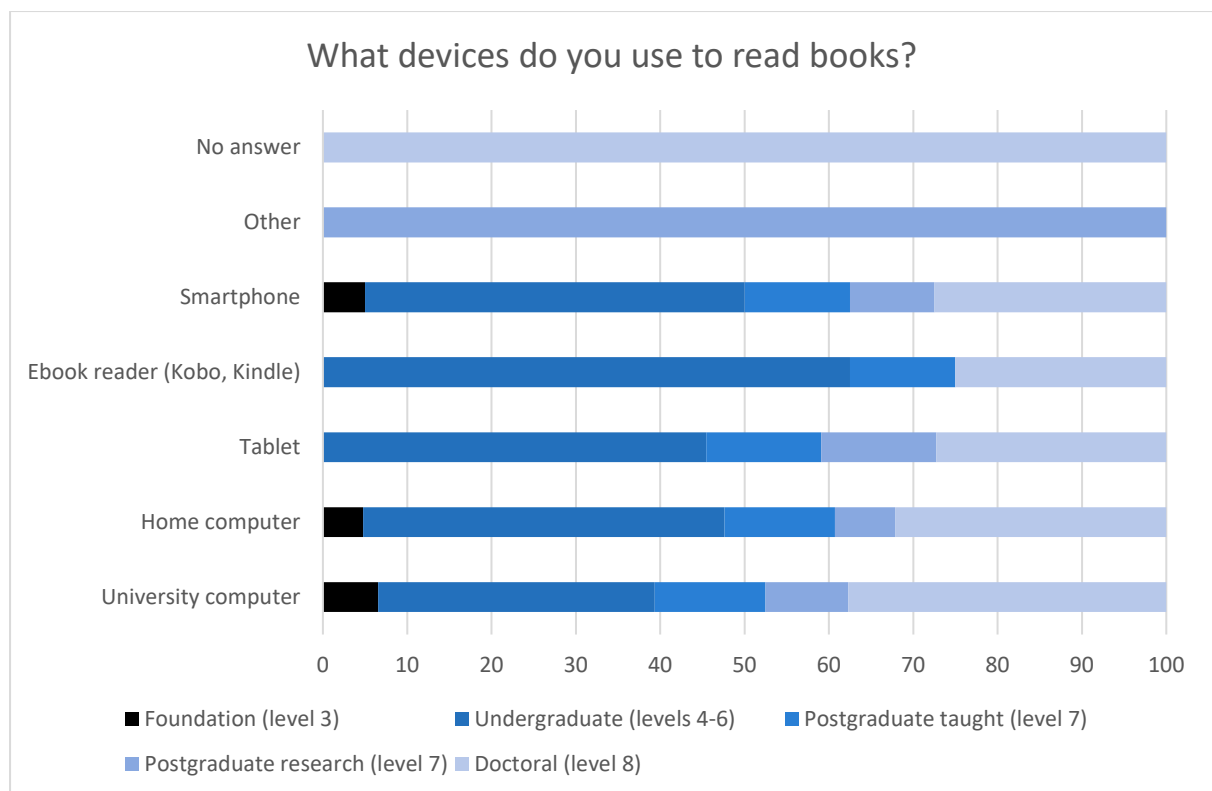**Figure 10. What devices do you use when searching for ebooks?**

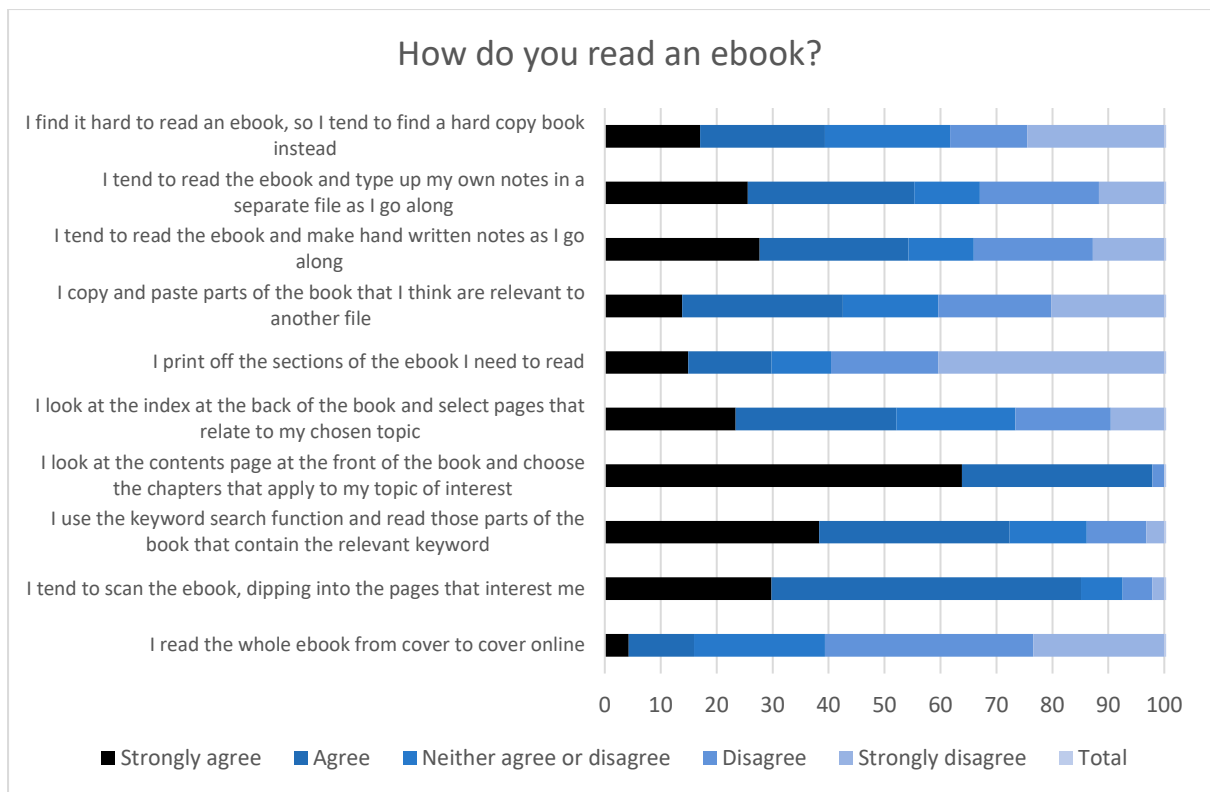**Figure 11. What devices do you use to read books by level of study**

How do you read an ebook?

Legend: Strongly agree, Agree, Neither agree or disagree, Disagree, Strongly disagree, Total

Categories (top to bottom):
- I find it hard to read an ebook, so I tend to find a hard copy book instead
- I tend to read the ebook and type up my own notes in a separate file as I go along
- I tend to read the ebook and make hand written notes as I go along
- I copy and paste parts of the book that I think are relevant to another file
- I print off the sections of the ebook I need to read
- I look at the index at the back of the book and select pages that relate to my chosen topic
- I look at the contents page at the front of the book and choose the chapters that apply to my topic of interest
- I use the keyword search function and read those parts of the book that contain the relevant keyword
- I tend to scan the ebook, dipping into the pages that interest me
- I read the whole ebook from cover to cover online

Figure 12. How do you read an ebook?

Roughly what proportion of the books you use to support your study are electronic, compared to a hard copy format?

Legend:
- 100% ebooks : no hard copy books
- 80% ebooks : 20% hard copy books
- 60% ebooks : 40% hard copy books
- 40% ebooks : 60% hard copy books
- 20% ebooks : 80% hard copy books
- No ebooks : 100% hard copy books

Categories: Doctoral (level 8), Postgraduate research (level 7), Postgraduate taught (level 7), Undergraduate (levels 4-6), Foundation (level 3)
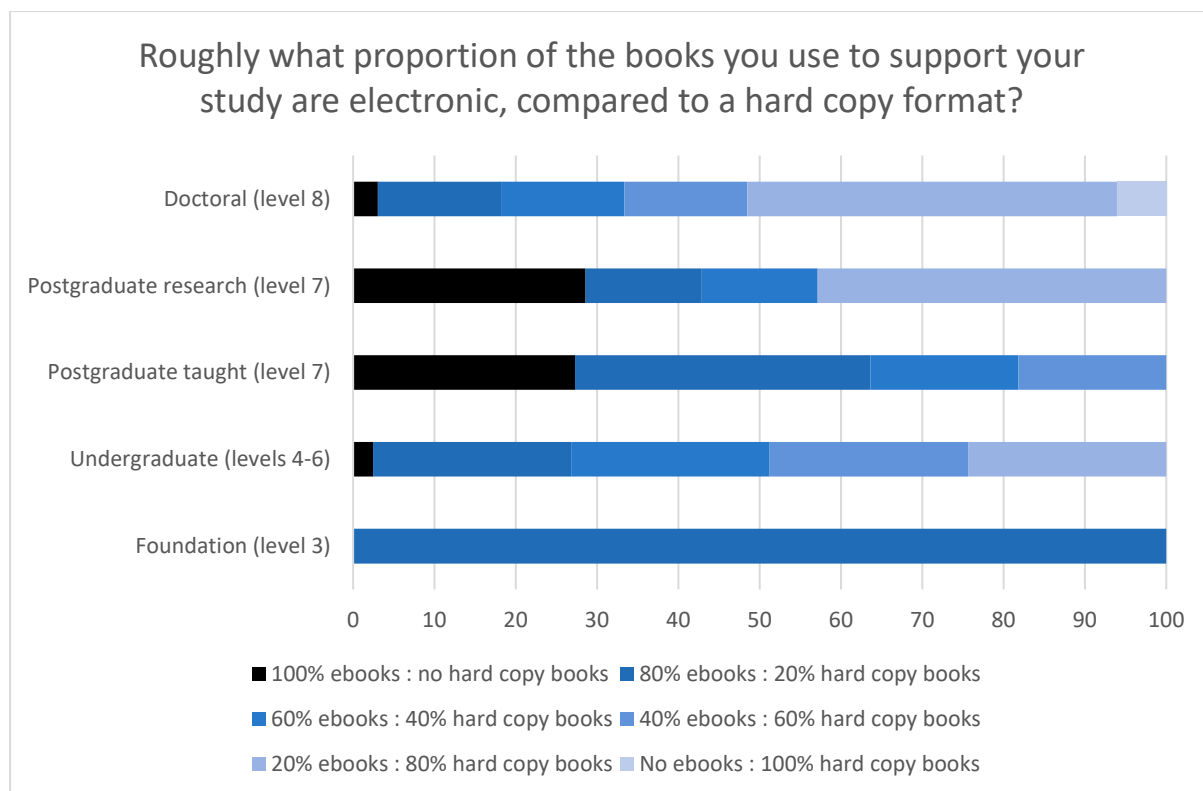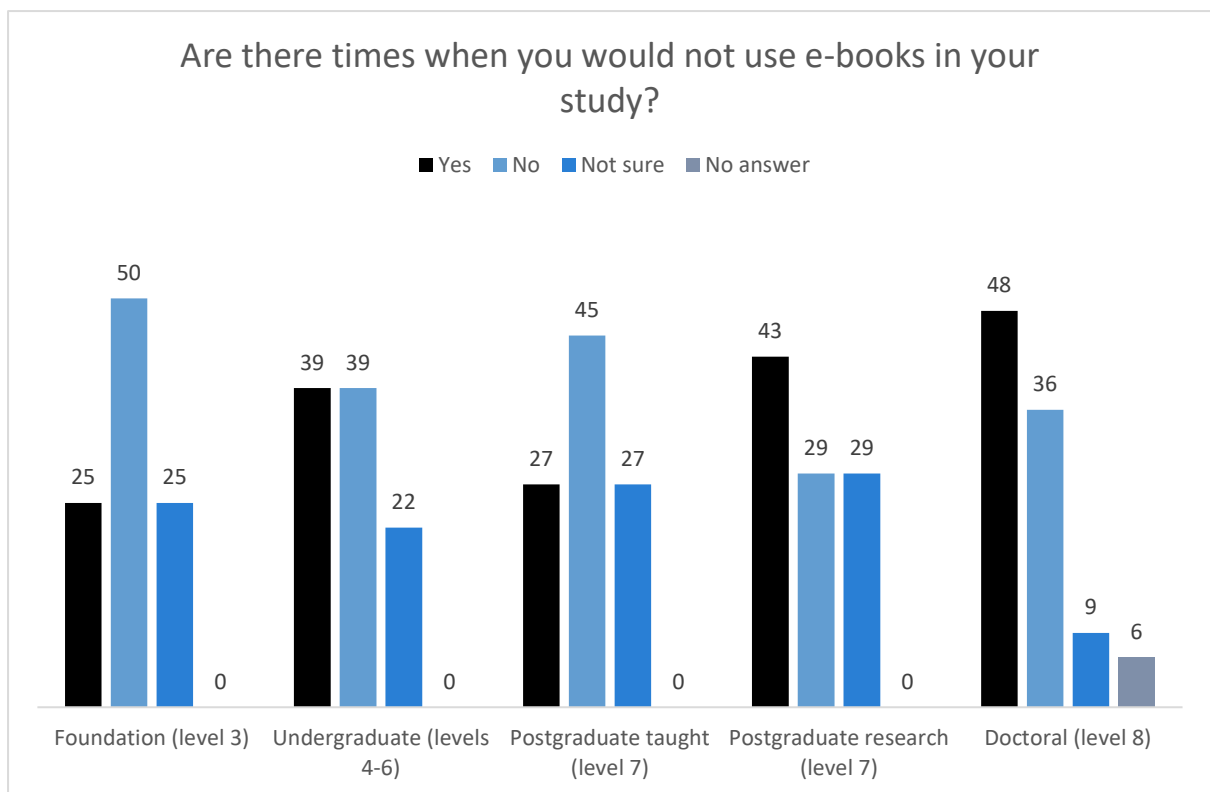
Figure 13. Proportion of ebooks to hard copy books used

Figure 14. Are there times you would not use ebooks in your study?