Module Delivery Research
(Print and Online/Onscreen)

1. Foreword

One of the burning issues of the past few years among students has been the method by which module material has been delivered. The OU has always been in the forefront of using new technology in teaching and so a move towards providing more online or onscreen tuition is a logical development of this.

But is this what students want? Does it enhance their learning experience? Many students have been vocal in their opposition to a move away from printed material to an online or onscreen model. Are they representative of the student body as a whole or just a vocal minority? This research project looks to answer those questions and to give a broad overview of students' views as to what helps them study best.

I am indebted to the staff in the OU Students Association Office for the work they have put in, in particular Pooja Sinha, our Research and Information Officer, for her commitment to the whole project. I would also like to thank my colleagues on the Central Executive Committee for their helpful suggestions as the project was developed and to the OU's Institute of Educational Technology for their advice and support.

And most of all I would like to thank those students who contributed. The quality of responses to the questions asked in both the formal survey and the consultative forum clearly showed how important students consider this issue.

This preliminary report highlights the major findings from the survey and consultations. It shows where students feel online is not necessarily the best option for learning as well as those areas where it can enhance it. It is to be hoped the lessons learned will translate into improving the effectiveness of OU teaching and enhance the student learning experience.

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Vice President Educational Support and Research

Contents

2. Executive Summary

- This report presents the findings from the OU Students Association's Module Delivery (Print and Online/Onscreen) research project. This research project was undertaken to systematically explore students' preferences for different delivery methods, and to gain a better understanding of the factors that influence these preferences.

- Student feedback was collected in a two-stage process during 2015-2016. Each stage had two components, a survey with both open and closed questions sent to a demographically representative sample of students, and feedback invited on the Association's Student Research Forum. These surveys were facilitated by the Open University's Student Research Project Panel. The research project was also promoted through the Association's social media pages.

- The research project explored student preference for print and online/onscreen module delivery, and asked questions such as: the kind of information students would like about module delivery before registering for a module, the benefits and limitations of different delivery methods, and whether print and online/onscreen delivery methods are particularly suited to specific study-related activities.

- The pilot study identified several themes relevant to the topic of module delivery. These included the effects upon study habits (such as highlighting or annotating learning material, and revising from print vs. online material). The survey that followed explored module delivery with regard to study habits, and found that for key study-related activities such as highlighting and revision, students prefer print delivery.

- The findings suggest that students' perceptions of how flexibly they can study is closely tied to choice regarding module delivery, and at present that choice necessitates the availability of both print and online delivery. The availability of print material also needs to be open to all students who wish to study with the OU, and cannot be restricted to need-based provision of printed material. The emphasis on student preferences in this research project underscores this need for choice.

3. Methods

The aim of this study, as stated in the proposal for the pilot study presented to the Association's Central Executive Committee in July 2015, has been to:

"*Systematically gather and analyse students' perceptions of how module delivery may affect their learning experience, together with the factors that influence students' engagement with different delivery methods*".

To achieve this purpose, both qualitative and quantitative data was collected through surveys and the Student Research Forum (http://learn1.open.ac.uk/mod/forumng/view.php?id=8670). We used the surveys to collect data from a demographically representative sample of OU students, and opened the Students Research Forum to invite feedback from all students.

In preparation for the pilot study in 2015 and the larger survey in 2016, applications were submitted to the Open University's Student Research Project Panel (SRPP) and the Human Research Ethics Committee (HREC) and received the approval of both. The pilot survey was open for five weeks from Monday 3 August to Monday 7 September. The questionnaire was emailed to a sample of 800 students, based on demographic variables such as age, gender, occupation, disability, subject area and level of study. The survey received 74 responses, a response rate of 9.25%.[1]

Preliminary findings from the pilot study helped in the identification of themes that were explored in more detail in the second stage of the project, when a modified questionnaire was emailed to a sample of 2000 students. The survey questionnaire (Appendix) was distributed by the Surveys Office, and was open for three weeks from 4 April 2016 to 26 April 2016. It targeted a demographically representative sample of 2000 students and received 312 responses (a response rate of 15.6%).[2] The Association's social media pages were used as a platform for promoting the research project during this period (for example, by directing members to the OU Students Association Research Forum).

Figures 1-3 show a breakdown by age, gender and faculty of those respondents who completed the survey in 2016. Students gave very considered feedback, carefully weighing the benefits and limitations of different delivery methods. Their participation in this research project has helped us explore both student preferences for delivery methods and the reasons for these preferences. Our key findings are discussed in the next section.

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[1] The total number of respondents who engaged with the questionnaire was 114 (a potential response rate of 14.25%). However, only 74 of these responses were complete, bringing the response rate down to 9.25%.
[2] The total number of respondents who engaged with the questionnaire was 351 (a potential response rate of 17.6%). However, only 312 of these responses were complete, bringing the response rate down to 15.6%.
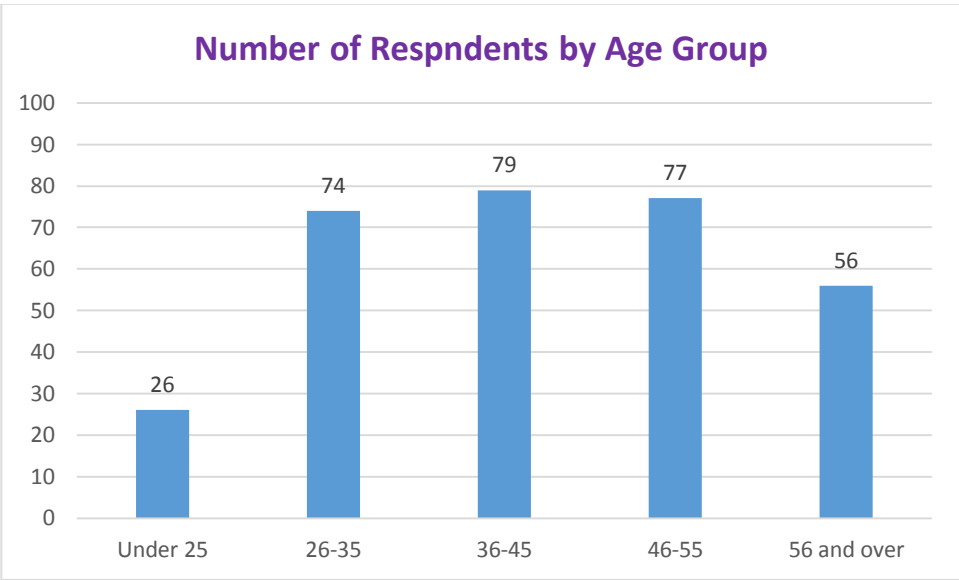
Figure 1. Respondents by age group for the 2016 survey (312 respondents completed the survey).
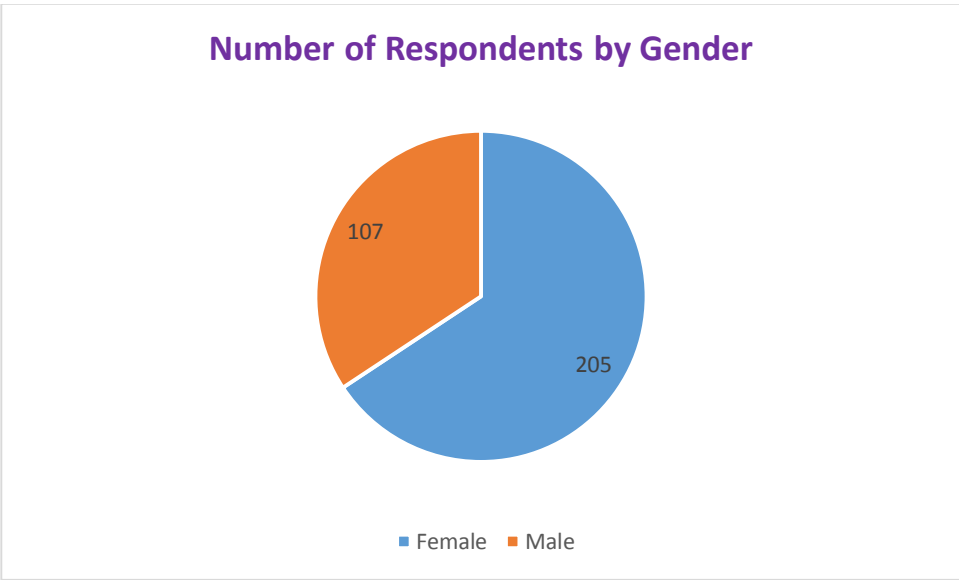

Figure 2. Respondents by gender for the 2016 survey (312 respondents completed the survey).
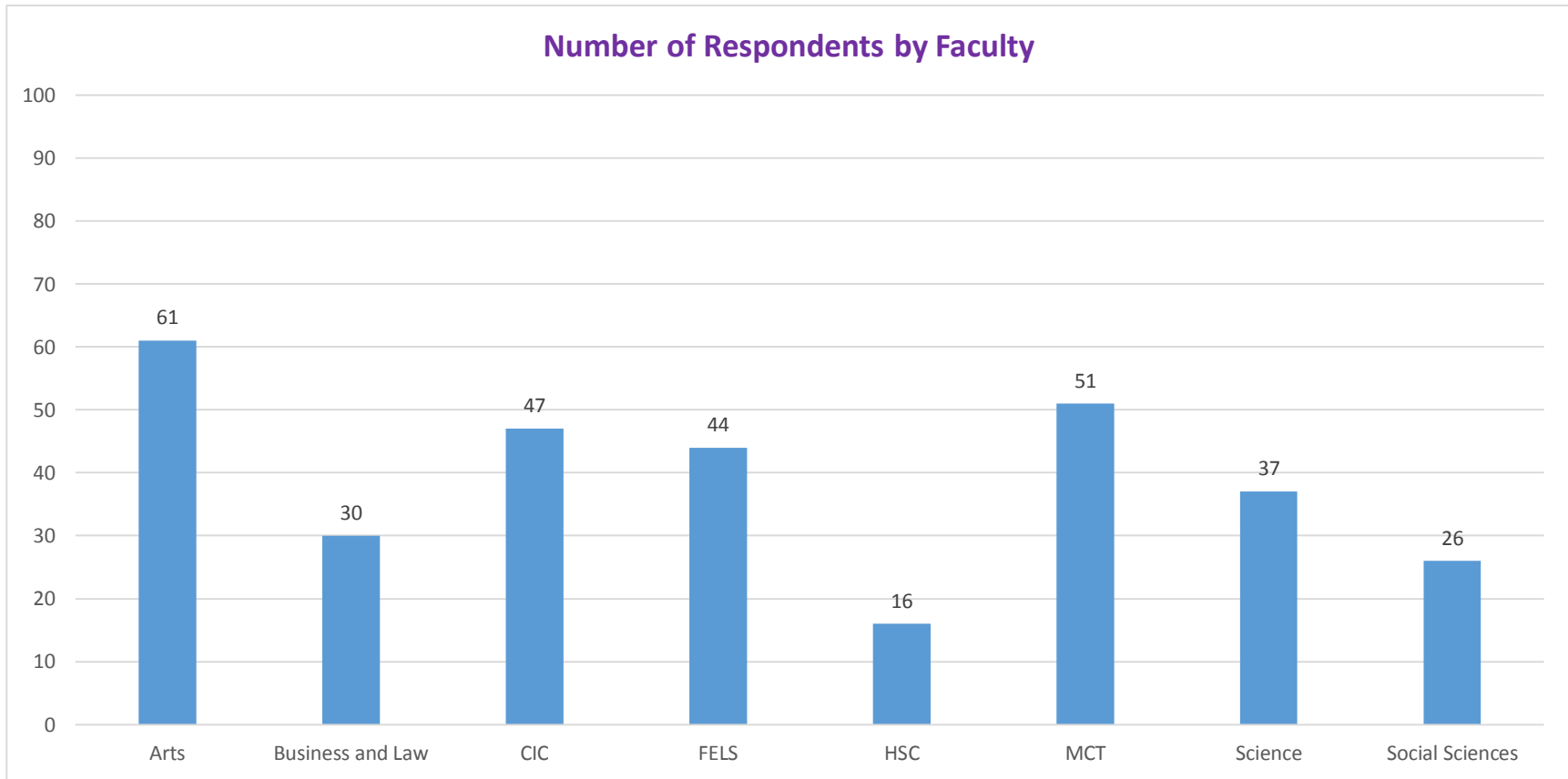
Figure 3. Respondents by faculty for the 2016 survey (312 respondents completed the survey).

4. Findings

Analysis of the student feedback gathered through this research project offers a nuanced understanding of how different delivery methods lend themselves to specific study-related activities. Qualitative feedback, supported by quantitative data from the survey, has helped us identify key themes around the topic of module delivery: ease of highlighting learning material, the effectiveness of revision with print and online/onscreen delivery, the ease of navigating module material with print and online/onscreen delivery, the perceived portability of books and digital devices, and the hidden costs of printing module material. All of these factors contribute to the flexibility with which students feel they are able to study, as discussed below.

4.1 Annotating and highlighting material

Of those students who used annotation as a study skill, feedback in response to the 2016 survey and research forum questions indicates an overwhelming preference for highlighting and annotating print material (Figure 4). The ability to highlight and annotate module material was viewed as enabling students to learn more effectively. The strong preference for annotating printed material was further detailed in the open comments.

> *"I mainly take notes by annotating the text and writing in the margins...by flicking back through the book I am able to clearly see these marks but annotating online is awkward and the tools which the OU have provided do not work effectively and are not accessible on all the devices I use to access the texts."*

> *"useful to be able to highlight printed text and bookmark pages relevant to TMA questions"*

> *"I find it easier to work from printed material where I can highlight important points. The highlights in printed material are easier to find that digital formats."*

> *"engage better with material when I annotate printed copy. I read onscreen material in a more cursory way, and rarely make notes from it. A lot of hyperlinks in onscreen material can be distracting and disorientating"*
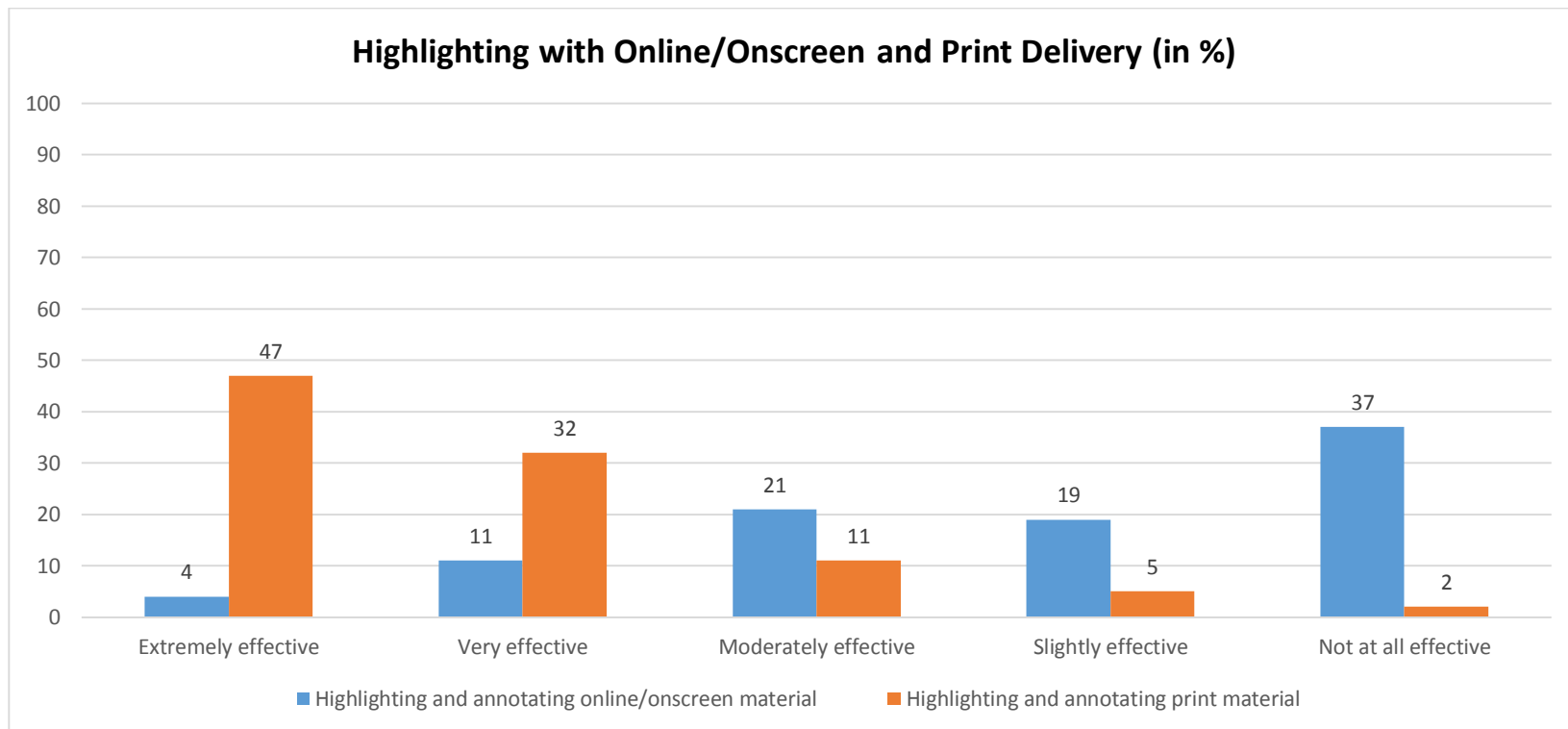
Figure 4. Students indicated how effectively they were able to highlight and annotate print and online/onscreen material. The percentage figures are based on all 351 respondents who engaged with the survey in 2016.

Highlighting and annotating with print delivery was rated as 'extremely effective' by 47% of the respondents and as 'very effective' by 32% of the respondents. Very few respondents thought that this could not be done effectively with print delivery, as evidenced by the number of respondents who thought it was 'moderately effective' (11%), 'slightly effective' (5%) or 'not at all effective' (2%) to highlight and annotate with print delivery.

The reverse is true for how effectively students felt they were able to highlight and annotate online/onscreen material. 4% thought it was 'extremely effective' and 11% thought it was 'very effective', and the trend continues so that 37% of students indicated that highlighting and annotating online/onscreen material was 'not at all effective'.

Annotation was felt to be easier with print and students stated they were able to quickly highlight and annotate print material, especially when making use of a few spare moments to study. Furthermore, the ability to highlight and annotate print material made it easier for students to return to the signposted material, thus helping their exam revision.[3]

While it is possible for highlighting, bookmarking and annotation to be done online, a number of students commented that they were not aware of online annotation tools. This indicates that current provision for annotating online material is not well-signposted for students. Moreover, modules vary in their recommended use of online annotation tools. These support structures need to be in place before one can reasonably expect students to learn effectively with online materials.

Engaging with the module content, and using online tools in the process, are two separate learning activities. The part-time nature of OU study means that students need to incorporate their study time alongside work and family responsibilities placing competing demands on their time. In such a scenario, new online tools pose an extra learning task, where a student must divide study time set aside for learning with acquiring new skills.

A common assumption in the student feedback seemed to be that difficulty in studying with online delivery would not be felt by younger students accustomed to the use of digital devices. The response to the survey feedback, however, suggests that the preference for reading materials in print format is shared by young students. Figure 5 takes the example of young students under the age of 25 and compares their preference for reading OU learning materials with that indicated by all the students who completed the survey.

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[3] See Mueller and Oppenheimer (2014) for their study exploring the benefits of writing notes on paper, rather than typing them.

Preferences for Reading OU Learning Material - Age

Mainly Online/Onscreen (in %): 5, 8
Mainly print (in %): 63, 62
A combination of print and online onscreen (in %): 32, 31

- Reading OU learning materials (312 respondents)
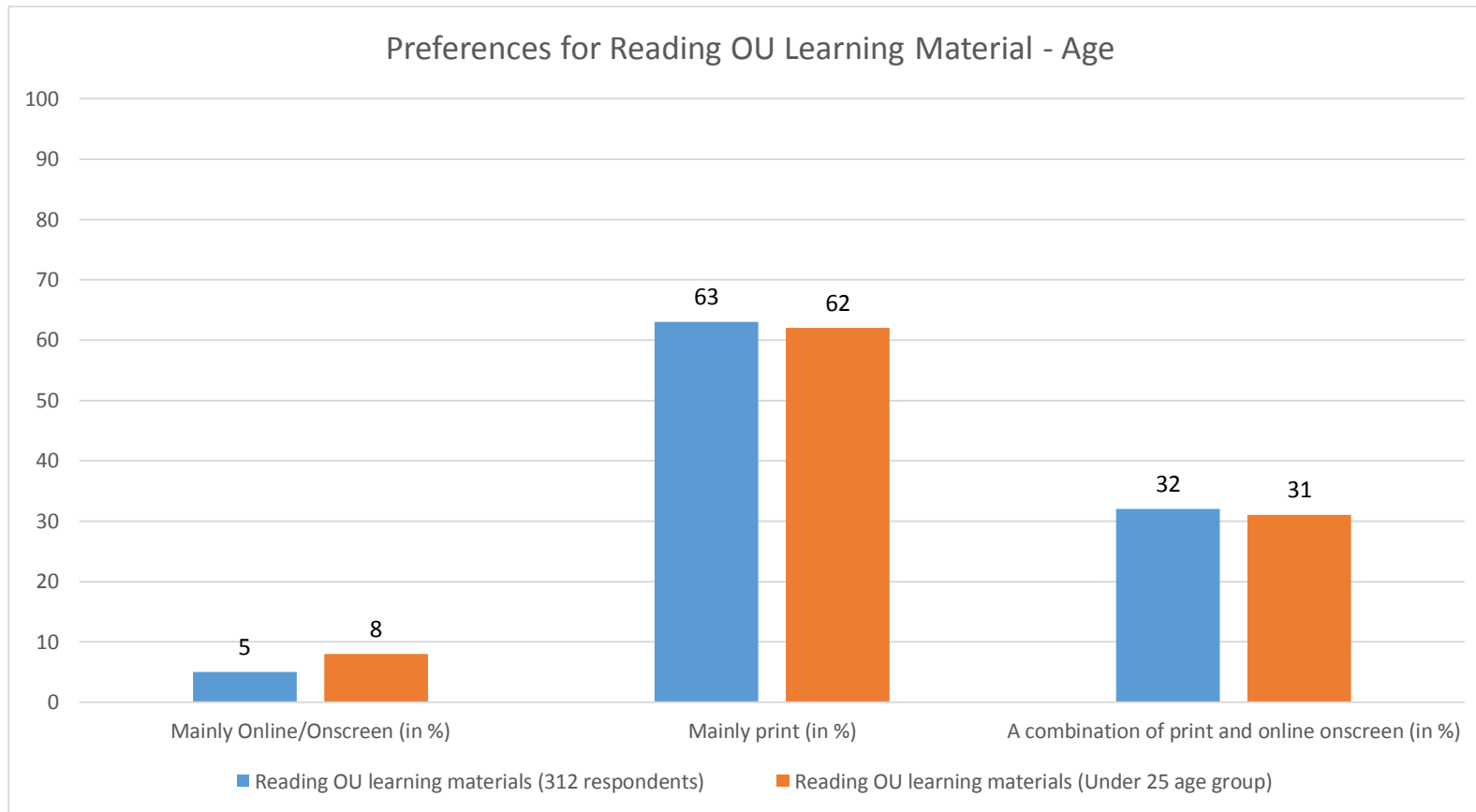- Reading OU learning materials (Under 25 age group)

Figure 5. The preferences indicated by students under the age of 25 are remarkably similar to that of the general body of OU students. For reading OU learning materials, 8% of the under-25 respondents preferred to learn with mainly online delivery, compared to 5% of overall respondents. Young students' preference for reading OU learning material with mainly print delivery and a combination of print and online/onscreen delivery differs from the overall number of respondents by 1% in both cases.

4.2 Revision

The portability of digital devices such as laptops and tablets, the ability to store all one's study materials on one device and the ability to quickly search for words and phrases in a digital file are often cited as some of the benefits of online delivery. These features can potentially help students revise effectively; respondents to the 2016 survey also indicated that they felt online quizzes were useful for revision.

> *"Electronic delivery of content has helped me quickly locate items of interest. It's also made studying easier, as I am able to carry more material stored electronically than having to lug loads of heavy books around everywhere."*

> *"I'll use the on-line element for speed of looking up items if necessary. Saves time…I use pdf's of the course materials to search for keywords quickly."*

> *"When revising, I make my own summary notes from the texts. I've usually found it more convenient to use PDFs on a tablet is they are more compact and portable than original texts, and are searchable."*

These comments illustrate some of the benefits of online delivery. However, as shown in Figure 6, students still prefer their study materials in print for activities like revising for exams. As the following comments suggest, the potential benefits of online delivery are offset by the attendant screen fatigue, a consistent theme in student feedback. As students need to take regular breaks due to screen fatigue, study time is not used effectively and has an impact on overall time management.[4]

> *"studying from a screen significantly reduces the length of my study sessions, both due to increases eye strain and to difficulty in concentrating on the material…I will often use my pc to take notes, produce summary power points etc. when studying from the books, but find that when I have to read material online I cannot concentrate."*

> *"when studying online material I cannot study for longer than 30/45 mins without taking a significant break (30-60 mins or longer). When you have to fit your studying around other work/family commitments, you may be limited to block times to study, so studying like this is also not practical."*

> *"I find it much more difficult to study online. I find myself easily distracted and it's more tiring because of staring at a screen so I have to make sessions shorter and take more breaks."*

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[4] These factors are acknowledged as influencing students' preference for print in Wook Ji et al (2014).

Revising with Online/Onscreen and Print Delivery (in %)

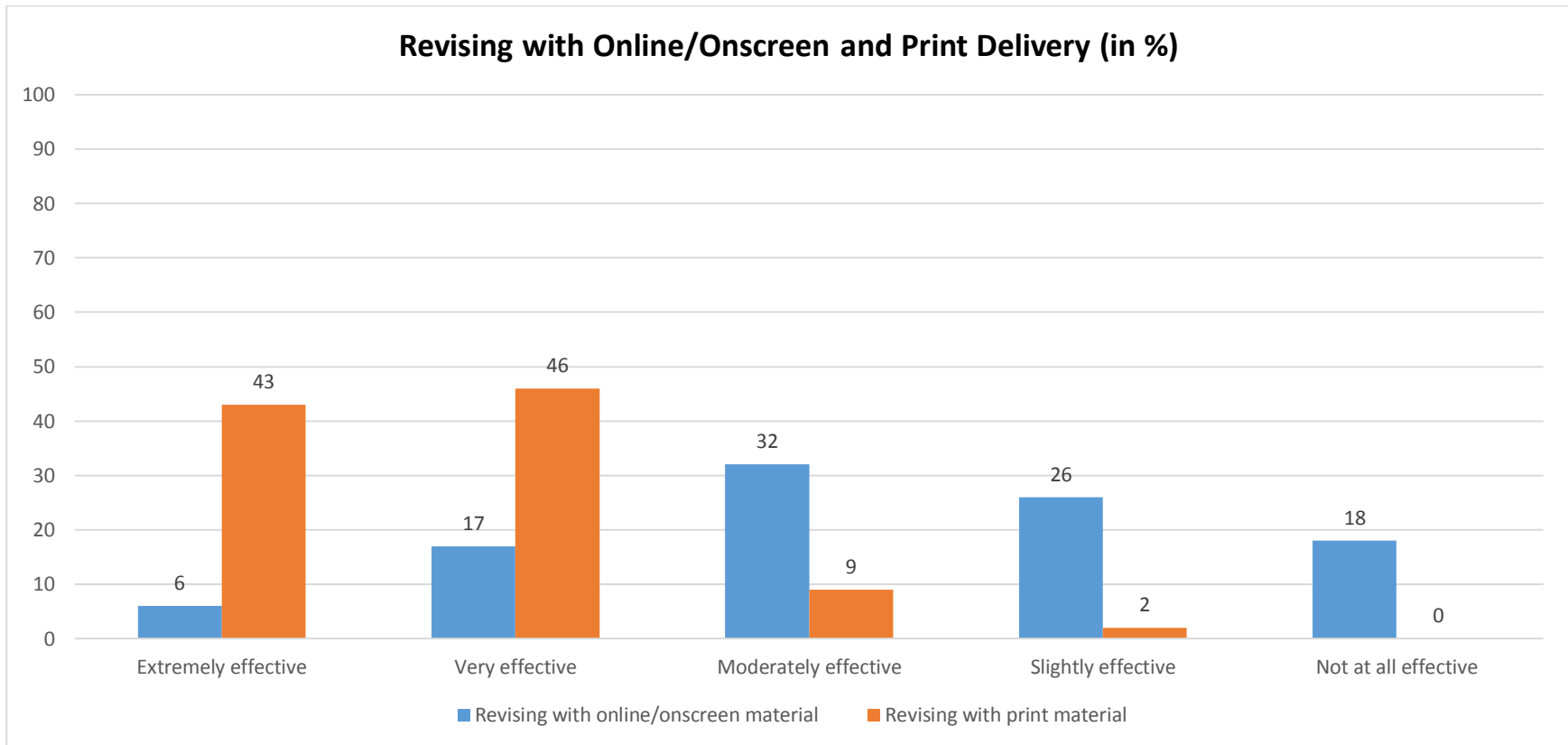|	Extremely effective	Very effective	Moderately effective	Slightly effective	Not at all effective
Revising with online/onscreen material	6	17	32	26	18
Revising with print material	43	46	9	2	0

Figure 6. In a manner similar to the effectiveness of highlighting and annotating print and online/onscreen material (Figure 4), student preferences for revising with print and online/onscreen material show very different trends. While 43% of respondents felt revising with print material was 'extremely effective' and 46% found it to be 'very effective', 6% found revising with online/onscreen material to be 'extremely effective' and 17% found it to be 'very effective'. Very few students found revising ineffective with print material, while more students felt revising with online/onscreen material to be 'moderately effective' (32%), 'slightly effective' (26%) or 'not at all effective' (18%).

4.3 Access to digital devices

The following charts show access to digital devices and students' preference for using them for study-related activities. For each of the activities, students were given an additional answer choice of 'I prefer not to use a digital device for this activity, and the numbers choosing this option give one pause. Of the 351 respondents who engaged with the survey, 43% chose this option for 'Reading OU learning materials', 70% chose it for 'Writing or taking notes', and 60% chose it for 'Revising for an assignment/exam'.

The preference not to use a digital device for key study-related activities such as reading, note-taking and revising also reflect how effectively students thought online delivery lent itself to effective highlighting (Figure 4) and revision (Figure 6). In contrast, students were more likely to use a digital device for 'Reading non-OU learning materials', 'Preparing an assignment (TMA)' and 'Doing a module-related activity (such as practice quizzes)'.

The following charts suggest that ownership of digital devices should not be presumed as evidence of students' preference for studying with those devices (Figure 7, Figure 8 and Figure 9). The figures for daily access to digital devices also show that all students do not have regular access to such devices. These findings echo the study undertaken by the OU Students Association in Scotland in 2012, which highlighted the difficulties students face regarding online delivery with a particular focus on online access.

A common assumption is that digital devices are more portable as they store all the information in one place, which can then be accessed from any location. However, online-only delivery poses its own restrictions which may set up other barriers to access for students. One is internet connectivity, which is not always reliable, and which can be weak in rural areas and commuting routes. A digital device may also be shared among household members, which means that access to them has to be negotiated with other users.

"I do most of my reading on the bus or during breaks at work. I don't own a tablet, so I need printed materials to read from."

"laptops are too large to carry everywhere"

"Anything in the module that needs the PC has to be carefully planned in my house, as I am not the only one that uses it."
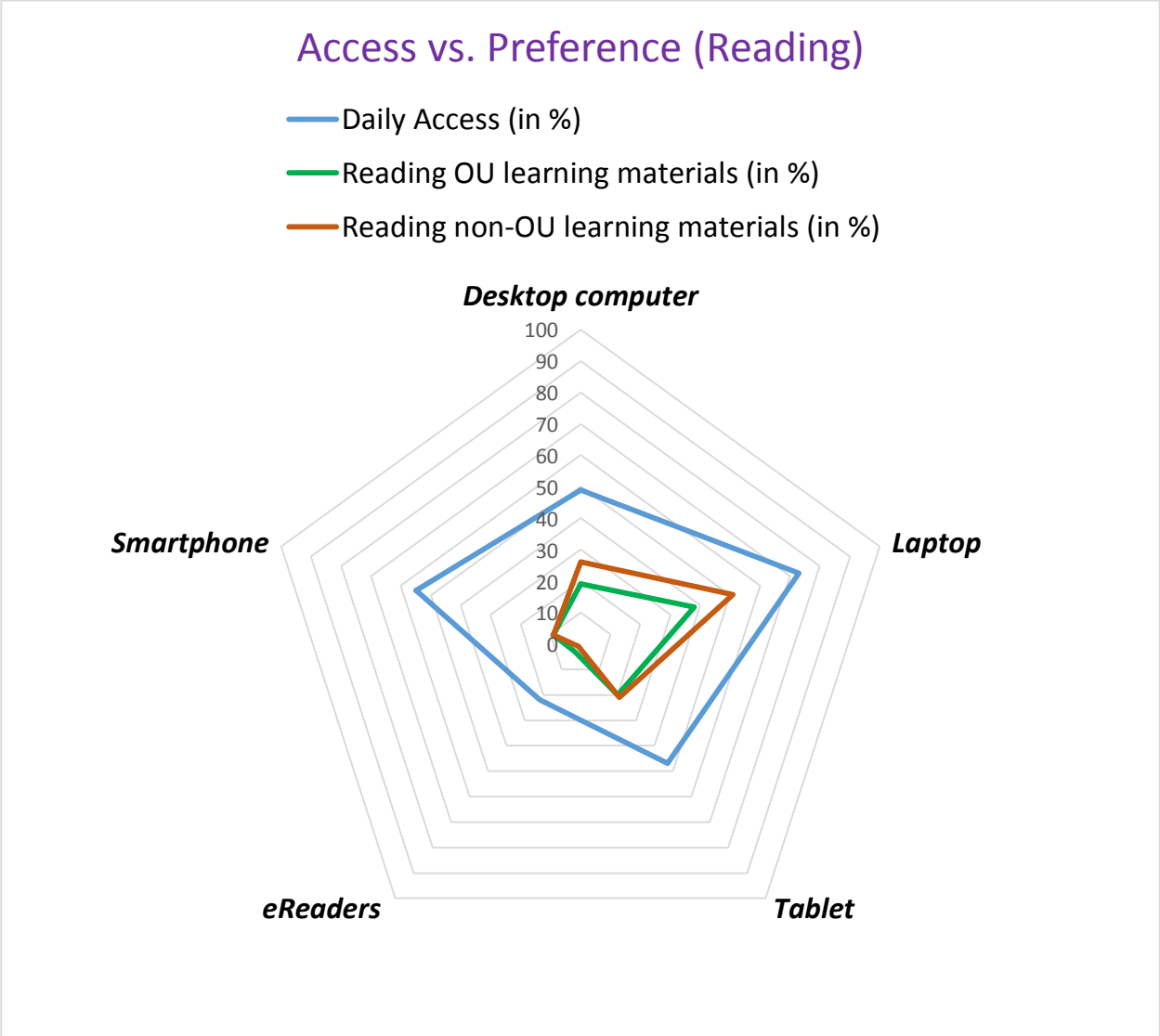
Figure 7. Respondents' daily access to digital devices were charted together with their preferences for using digital devices for reading OU and non-OU learning material. The inclination to read material with desktop computers (19% for OU and 26% for non-OU learning materials), laptops (38% for OU and 51% for non-OU learning materials) and tablets (20% for OU and 21% for non-OU learning materials) were higher, while there was little inclination for using smartphones (9% for OU and 9% for non-OU learning materials) and eReaders (3% for OU and 1% for non-OU learning materials) for reading OU and non-OU learning materials. In each case, students indicated that they prefer not to use a digital devices for reading OU (43%) and non-OU learning materials (22%). These figures challenge the assumption that access to digital devices makes students likely to use them for their studies.
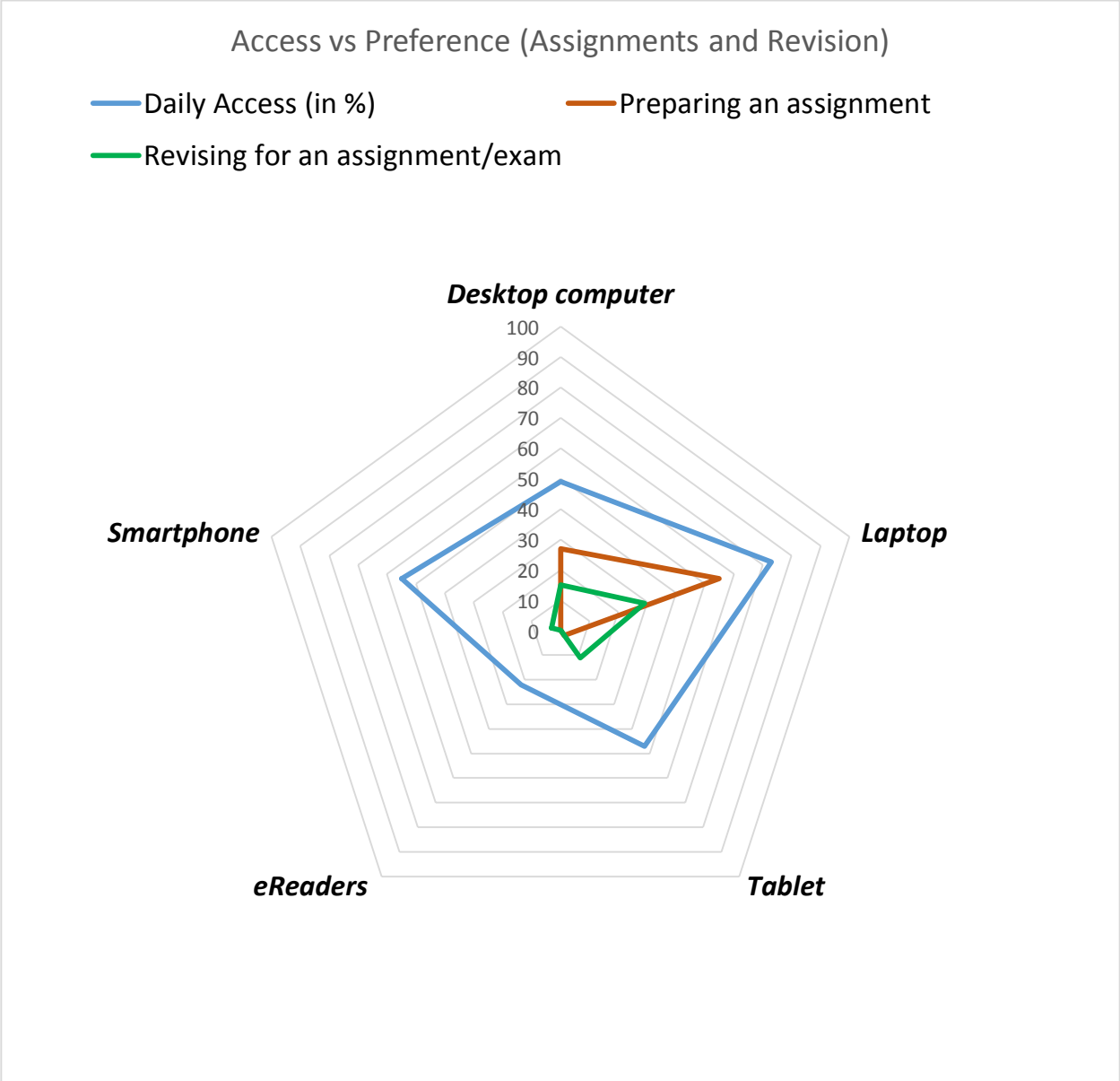
Figure 8. Respondents' daily access to digital devices were charted together with their preferences for using digital devices for preparing assignments and revising for an assignment/exam. Preferences for using eReaders (0% for preparing assignments and 0% for revising) and smartphones (0% for preparing assignments and 3% for revising) were very low, and not much higher for tablets (2% for preparing assignments and 11% for revising). These figures were higher for desktop computers (27% for preparing assignments and 15% for revising) and laptops (55% for preparing assignments and 29% for revising). 60% of respondents indicated that they would not use a digital device for revision, while 26% chose this option for preparing assignments. These figures indicate that all digital devices do not lend themselves to specific study-related activities.
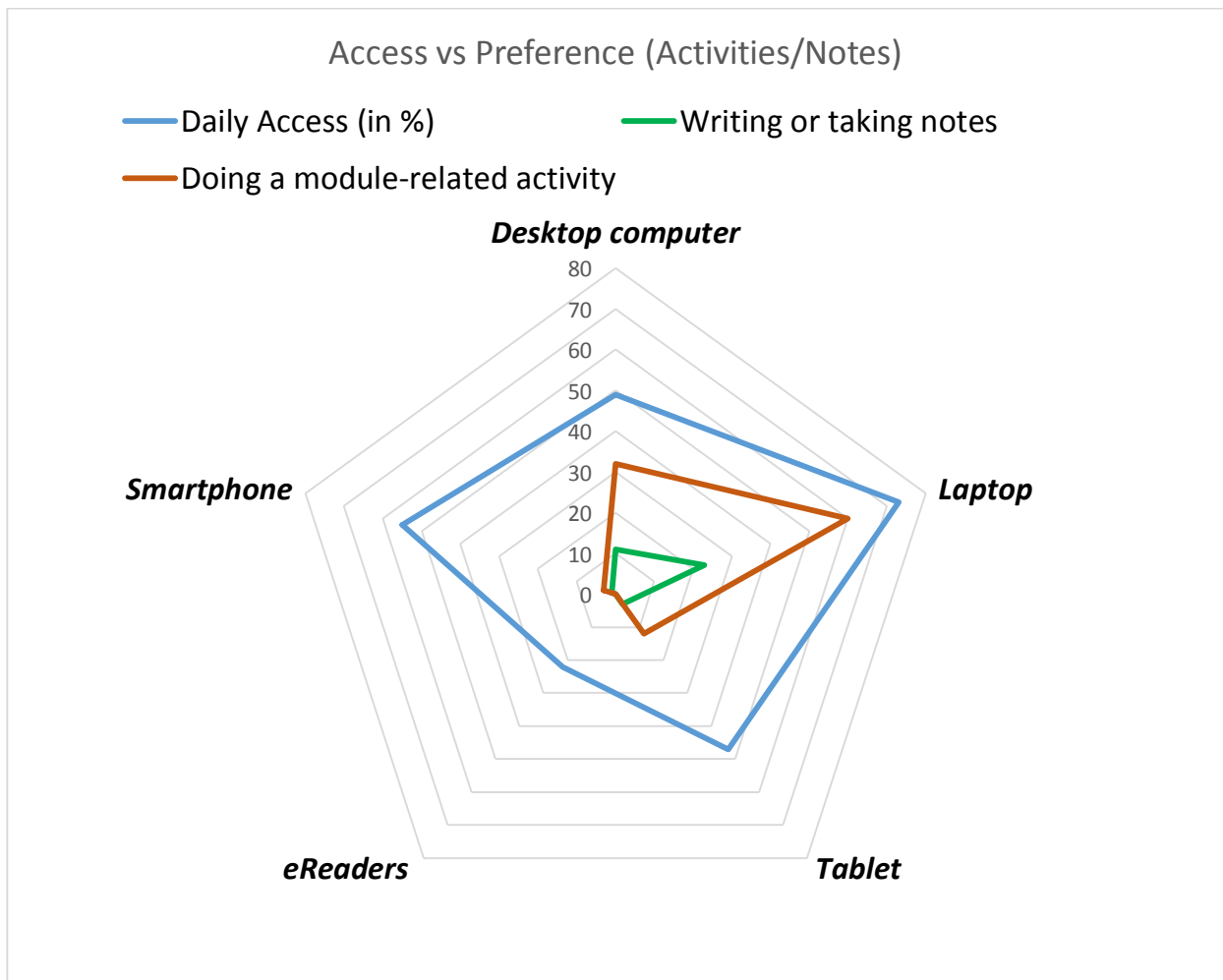
Access vs Preference (Activities/Notes)

Daily Access (in %)   ——— Writing or taking notes
——— Doing a module-related activity

Figure 9. In contrast to Figures 7 and 8, this figure shows two very different trends. Students would prefer to do those activities online that make the best use of the interactive feature of online delivery, such as a practice quizzes (60% would use a laptop, 32% a desktop computer, 12% a tablet, 0% an eReader and 3% a smartphone). Online delivery lends itself well to these activities, and only 11% of respondents said they would not use a digital device to access these activities. In contrast, there is a high disinclination for using digital devices for writing and taking notes (23% would use a laptop, 11% a desktop computer, 3% a tablet, 0% an eReader and 1% a smartphone). 70% of students did not want to use a digital device for writing and taking notes, which reflects the data trends for effective highlighting and revision with print delivery.

Interestingly, some students found printed material as making their study *more* mobile, as the following comments illustrate. With online delivery, material is not always available as downloadable files, or in a format that the student needs. What one can do with the material is also restricted; for example, online annotation does not work well across all devices and formats.

> *"I can take my materials with me to places like the playground or to a café when I can't study at home. I don't have to worry about sand or battery life."*

> *"it is not always practical to be in a place with internet access for using online materials or to have some other electronic means of reading. I much prefer having printed materials that can be taken with me and used anywhere at any time."*

> *"In order to access the module materials I need to have a working device at all times.. this is often not easy in a hotel room with poor wifi or on a bus where I could easily read a book."*

> *"on more than one occasion in the current module, I have lost material or struggled with access offline / had software compatability issues. A book and pdf versions would be more reliable."*

> *"I prefer mainly print materials so that I have flexibility on when and where to study. I only have a desktop computer so it cannot follow me around."*

> *"I do not have access to the internet at home, so I tend to download pdfs at work, and then either print them or read them onscreen at home. This is not always possible with some of the ebooks available at the OU library; you must be online to read them."*

Many of features of online delivery are not always available to students. For example, all content is not available onscreen, and online access requires a reliable internet connection; all students do not own portable digital devices or have internet access, which makes study difficult. These restrictions of online access and availability of a device show the weaknesses of an online-only model.

> *"Printed material allows me flexibility to study when and where I like such as on my daily commute. Online content has to planned around when I have access to a computer, so is quite restrictive."*

> *"like online material in principle, but I live in the country…where the internet connection can be temperamental. I can't be the only one! I would therefore be dismayed if there were no print material. It would make continuing to study quite hard."*

> *"I do not own a tablet, so online course content is only accessible when I'm at home. With online-only modules, this rules out study elsewhere, and makes me reliant on my PC."*

4.4 Concentration and Retention of Information

Students often used the word 'distraction' when thinking about online study, such as emails and social media, and felt they were better able to shut them out when reading from print books.[5] These distractions have an impact on how well students feel they can concentrate on their studies, which further determines how long they are able to study for. The ability to focus on the learning material further influenced how effectively students felt they engaged with online and print delivery. With online delivery, some students first skim-read the online sections and then print out specific sections for more in-depth reading. This has an overall impact on how well they feel they can learn with online/onscreen delivery.

> *"onscreen material is more distracting, with constant switching between pages"*

> *"I feel I focus on the content on paper longer than I do for online materials. I find myself skim reading online and thorough read on paper/book."*

> *"I find studying with online less effective as distractions such as Instagram, Facebook, etc are only a click away"*

A number of students stated that they found it more difficult to 'assimilate information' with online delivery, and used words such as 'absorb' and 'sink in' to describe their study experience with print. One explanation for this perception could be the attendant problem of not being able to highlight and annotate effectively with online delivery, as mentioned earlier, and screen fatigue limiting the amount of time students could read online.

> *"find it easier to assimilate information...words on a screen don't 'sink in' as well"*

> *"I don't absorb information as well from a screen."*

> *"I struggle with reading for too long online which then affects my concentration and my ability to take in knowledge"*

> *"For reading, particularly intensive or longer periods of reading, I overwhelmingly prefer print as I struggle concentrating reading screens for any length of time."*

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[5] Such 'multitasking' by students when engaging with online delivery has been studied by Daniel and Woody (2013).

4.5 Navigating Content

Students commented that the layout of a book felt more intuitive when navigating module content, the physical pages making it easier to recall where they had read a particular text. Some students commented on their reliance on spatial cues to find specific text, which helped them find their place with more ease.

> *"ease of movement between pages if necessary. On-screen involves clicking and scrolling between pages, which is awkward and distracting when in the middle of something - not always easy to find the right page."*

> *"text books more useful than online materials to quickly flick from one section to another"*

The design of online content requires the text to be in shorter sections interspersed with activities; such a design means that content is spread over several webpages, which makes navigation difficult.

> *"Another issue is quickly looking forward and backwards in a text. This is easy with a book...Navigating hundreds of pages (or multiple pdfs) to find the exact page you want can be difficult and awkward...Try finding 2 paragraphs out of 150 pages of hyperlinked text!"*

> *"When preparing a TMA I've found it easier to have a book beside me than having to flit back and forth through multiple tabs"*

> *"It is far easier to have more than one book, or set of materials open when you have the printed version against having everything onscreen and having to close one PDF down to access another"*

> *"The textbooks were one of the glories of OU modules - and it's a real pain attempting to prepare TMAs and activities using multiple sources if all of them are competing for display space on the same screen!"*

The ease with which students felt they could navigate print material is related to the ease with which they felt they were able to highlight and bookmark printed material. Other students underscored the fact that these actions are equally possible with online content; for example, using online annotation tools to highlight material or using Dropbox to store all study materials in the same place.

And yet, students seem to prefer print for key learning activities. For example, one student commented on the lack of an online index, which makes it difficult to find words and phrases that approximate the meaning, instead of specific search terms. The find function may also not work well with words that are spelt differently.

> *"I definitely prefer to revise from books or from my own notes; searching for a term doesn't always find all the locations with information relevant to a concept (in geology, for example, a search for 'water' might miss a section on 'volatiles')."*

> *"Searching for relevant information can take a lot longer to find, even with module website searches. There is no bookmark function for the onscreen embedded material. I find this really slow and tedious for revision."*

These comments explain why some students found print to offer easier navigation, so that they were able to quickly find the sections they were looking for. This perceived ease of navigation makes print the preferred format for revision and for preparing assignments, when students need to refer to several sources of information together.

4.6 Time Planning

There are certain requirements of being online, such as charging the device and having a reliable internet connection, which slow the process down for some students. Students commented that they were spending longer to get through the content when it was delivered online, and that this had an impact on how effectively they could manage their time.

> "I like to take materials to work, to the garden, to cafes and I don't want to buy a laptop/tablet then rely on it to be charged, carry it around, keep it safe, take it out, wait for it to load, search for the file and finally start reading"

Feedback also indicates that students make pragmatic choices about online activities. Some choose to set aside some time to do all the online activities together, when they can ensure access to digital devices and internet connectivity. Others only engage fully with these sections when they can print out all the material. When access to a digital device or internet connection is not available, students are restricted in how they use their study time.

> "Modules with printed material allowed me to study anywhere anytime…online meant that it was harder to allocate study time because I needed to be online"

> "I found that I had to delay study when an online unit section came up due to lack of Internet access or unsuitability of taking a device with me."

Earlier we referred to the spatial cues that help students recall where they had read specific material; these cues also help them gain a quick overview of the module content and to estimate how much time to aside for each block. With online delivery, especially embedded content and hyperlinks, students found it difficult to estimate how long online activities would take. Planning is also made difficult when material is released in an ongoing fashion rather than at the start of the module.

> "It is simpler with a book to scan ahead and see how much work needs to be done in different areas."

> "poor sense of context when reading onscreen material, which gives visual access to less material at a time (making it hard to know one's place in the text)"

> "People also seem to use onscreen delivery (and its inherent ability to update information in real time) as an excuse for trickle feeding material...people get carried away controlling access to that material as they (or the study planner) sees fit, as a way of "helping the student use their time wisely". This is patronising at best, and damaging at worse. You need to be empowering students to learn independently, not control them. The key is that just because onscreen delivery makes something now possible doesn't mean it's a good idea."

As the comments below illustrate, students try and fit in their studies when they have a few spare moments; if they then have to negotiate time on the PC, or leave online activities until they have internet access, that hinders effective time-management. The benefits of online delivery are thus lost to them.

> *"Printed materials mean that I am able to study at a moment's notice wherever I am if I have my book with me. Setting up my laptop and establishing an internet connection means that unless I am at home in my study, I just won't bother."*

> *"The text in the block books is broken up so frequently with online activities that I can essentially make no progress unless I'm near a computer."*

This also suggests that students' decisions may often be guided not by the logic of online activities, but by practical issues around access. Rather than lending itself to effective study, in such cases online-only delivery begins to dictate when and where students can study. This makes OU study, at least, less accessible for students who wish to study during their lunch breaks at work, while travelling, or while managing family responsibilities, when access to a digital device and online connection cannot be guaranteed.

4.7 Value for money

With the availability of print material felt to be essential to key study related activities, students have resorted to printing out module blocks themselves in cases where print material has not been provided. Students feel shortchanged when they realise the full extent of this hidden cost, and feel that print versions should be made available on request.

> "I print almost everything I need so that I can write notes/memo on the text"

> "have resorted to printing each block as I work through it"

> "It's outrageous that they have not sent books. I was sent a print out which was in black and white. But we are still paying the same cost."

> "I generally print out key elements of the text e.g. e-books & study guides & use these for learning, TMAs & revision."

The loss of access to online module materials after a stipulated period of time also makes students feel shortchanged, whereas books can be kept indefinitely.

> "Most of the material from previous modules is no longer available to me, and I feel I am missing out"

> "no books for future reference which may be referred to in courses I move on to later"

4.8 Screen fatigue

Screen fatigue was cited numerous times as a reason for preferring print over online delivery. Screen fatigue not only makes it a less enjoyable experience, but also impacts on how effectively students can plan their study time.

> "Reading on screen hurts my eyes...I just sit at a desk all day and resent spending all evening and the weekends at a desk too."

> "reading from a screen increases eye strain and headaches and therefore reduces how long I am able to study for"

> "After leaving work which involved sitting at a computer all day, I relished the idea of not having to sit at a computer for long periods."

> "I spend all day at work on a laptop so prefer to read print in the evenings /weekends to give my eyes a break!"

5. Recommendations

Students stated that they had offered feedback on the subject of module delivery through several channels, such as online consultations, face-to-face consultations, end of course surveys, speaking to tutors and speaking to the Student Support Team.

The University could do more in terms of making students aware of how their feedback on module delivery has been considered and what measures are in place for current students who have difficulty studying online. This calls for clarity about how specific student concerns are being addressed, beyond reiterating the University's broad direction of travel regarding module delivery. This gains added urgency when comments such as the ones below suggest that how comfortable a student feels with delivery methods may well determine future study choices.

> *"If a module was delivered purely online at undergraduate level I simply would not do it."*

> *"online modules are not necessarily chosen because they are online, for me I needed the modules but didn't have a choice"*

What students need is better clarity of information, and the following are recommendations based on student feedback collected through this research project.

Student Feedback

- Ensure students are aware of formal channels for making enquiries about module delivery, both before registration and while studying with the OU.

- Ensure students are aware of how their feedback has been considered within the University when making decisions about delivery methods.

Online annotation tools

- If new online tools are required to engage effectively with online delivery, then students need some time before the start of the module to familiarize themselves with these tools, and thus reduce the burden of managing two separate learning activities at once.

- Ensure students are aware of the availability of online annotation tools; identify and recommend online tools that have the capability of annotating PDFs and eBooks.

Module Materials

- Availability of taster material before registering for a module.

- Module material to be made available from the start of the module, rather than being released at intervals.

- To make available transcripts of all audio and video content of the module.

- Estimates of how much time to devote for online activities should be arrived at from student testing in the module design process.

Module Descriptions

- Clarifying the balance of online/onscreen and print delivery for each module.

- Information about whether print versions are available, and the format in which they are available (bound or loose leaf sheets).

- Clear information of the cost of requesting print versions, such as when using the print on demand service. If there is no provision for print versions, then for many students this means printing material themselves, a hidden cost of study.

6. Closing remarks

When thinking about the effectiveness of learning, it is important to consider the actual environment in which study takes place. Student feedback in response to our questions suggests that study takes place not only at specific times, but more fluidly in spare moments - lunch breaks, between family duties, after a full working day, or while commuting. There are numerous ways in which print and online delivery lend themselves to flexible study, but they offer this flexibility in their combination.

Module delivery formats have the ability to enhance different aspects of the learning experience – how one studies, where one studies, and how enjoyable the experience is. The student feedback received as part of this research project alerts us that a move to online-only delivery is not necessarily the best means to achieve this. Moreover, far from being a vocal minority, concerns regarding the loss of print materials is widespread among OU students. While the University keeps apace with innovation and learning technologies, it also needs to provide students choice and flexibility regarding their learning experience.

Screen fatigue Availability of print versions
Hidden costs Ease of navigating module content
Annotating and highlighting study materials
Balance of print and online delivery
Flexibility of study

7. Reference list

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8. Survey Questionnaire 2016

Q1 For the following activities, which delivery method would you prefer most? (Please select one for each row)

	Mainly online/onscreen (1)	Mainly print (2)	A combination of print and online/onscreen (3)
Reading OU learning materials (1)	○	○	○
Reading non-OU learning materials related to your OU studies (2)	○	○	○
Writing or taking notes (3)	○	○	○
Preparing an assignment (TMA) (4)	○	○	○
Revising for an assignment/exam (5)	○	○	○
Doing a module related activity (such as practice quizzes) (6)	○	○	○

Q2 What are the reasons for the preferences that you have indicated above? For example, are there specific benefits and/or limitations that you associate with different delivery methods?   If possible, please give examples of mainly print and/or mainly online/onscreen modules that you might have studied with the OU.

Q3 How effective do you find the following module delivery methods for study-related activities? (Please select one for each row)

	Extremely effective (1)	Very effective (2)	Moderately effective (3)	Slightly effective (4)	Not at all effective (5)	Not applicable (6)
Highlighting and annotating online/onscreen material (1)	○	○	○	○	○	○
Highlighting and annotating print material (2)	○	○	○	○	○	○
Revising online/onscreen material (3)	○	○	○	○	○	○
Revising with print material (4)	○	○	○	○	○	○
Planning your study time when online/onscreen studying is involved (5)	○	○	○	○	○	○
Planning your study time when studying with print material (6)	○	○	○	○	○	○

Q4 Please comment on the factors that have affected your learning experience. (For example, if you found the delivery method engaging and well-suited to the subject matter, or if you found it difficult to revise material).

Q5 For the types of devices listed below, please indicate how regularly you are able to access them for your OU studies. (Please select one for each row)

	Daily access (1)	Weekly access (2)	Monthly access (3)	No access (4)	Not applicable (5)
Desktop Computer (1)	❍	❍	❍	❍	❍
Laptop (e.g. Netbooks, notebooks) (2)	❍	❍	❍	❍	❍
Tablet (e.g. Android/Windows/Apple's iPad) (3)	❍	❍	❍	❍	❍
eReader (e.g. Kindle/Kobo) (4)	❍	❍	❍	❍	❍
Smartphone (e.g. Android/iPhone) (5)	❍	❍	❍	❍	❍
Other digital devices (6)	❍	❍	❍	❍	❍

Q6 Please indicate your preference for using digital devices for the following study-related activities. (Please select all that apply for each row)

	Desktop Computer (1)	Laptop (2)	Tablet (3)	eReader (4)	Smartphone (5)	I prefer not to use a digital device for this activity (6)
Reading OU learning materials (1)	❏	❏	❏	❏	❏	❏
Reading non-OU learning materials related to your OU studies (2)	❏	❏	❏	❏	❏	❏
Writing or taking notes (3)	❏	❏	❏	❏	❏	❏
Preparing an assignment (TMA) (4)	❏	❏	❏	❏	❏	❏
Revising for an assignment/exam (5)	❏	❏	❏	❏	❏	❏
Doing a module related activity (such as practice quizzes) (6)	❏	❏	❏	❏	❏	❏

Q7 For any comments on the factors that influence your preference, such as travelling or ease of access, please use the box below:

Q8 Have you had the opportunity to offer feedback on the subject of module delivery using the following methods? (Please select one for each row)

	Yes (1)	No (2)	Don't know (3)
Speaking to your tutor (1)	○	○	○
Speaking to your Student Support Team (2)	○	○	○
OU Computing helpdesk (3)	○	○	○
OU Library helpdesk (4)	○	○	○
Feedback form on the module website (5)	○	○	○
Student Experience on a Module (SEaM) survey (6)	○	○	○
Online and/or face-to-face Student Consultations (7)	○	○	○
Other (8)	○	○	○

Q9 For feedback opportunities not listed above, please use the comment box below:

Q10 What information on module delivery would you have liked before registering for your module?

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