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'So, you want me to read for my degree?': a Universal Design for Learning approach to reading

It seems logical to those of us working in higher education that students need to read for their degrees. Yet both research and practical experience indicates this is not so obvious to students themselves. Even when students do understand the importance of reading, they may experience challenges in engaging with it, whether through physical or learning disabilities, or 'time poverty' (working long hours, commuting or care responsibilities). This article outlines a collaborative research project undertaken between Library Services and the School of Education at the University of Worcester aiming to address these issues. It utilized a Universal Design for Learning approach to enable all students to access reading materials in a variety of formats using accessibility tools. Our results explore how both students and staff have engaged with these tools and the impact on their learning and teaching experiences.
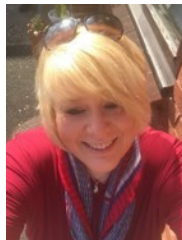
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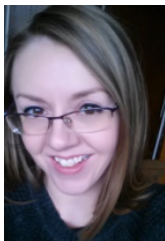
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Introduction

Academics and librarians in higher education have a shared expectation of students: that they should read widely to develop as independent learners, with some arguing that reading is the most important focus of the undergraduate experience.[1] However, Jolliffe and Harl suggest that patterns of student reading often do not reflect these expectations.[2] Lived experience from one of the researchers in our study bears out this mismatch between staff expectation and the reality of undergraduate learning behaviour, repeatedly having to issue the same feedback to students on their assignments, 'you need to read more widely'. Further, earlier research conducted by one of the researchers had highlighted that students often perceived reading as a pleasurable and nostalgic activity from their childhood, rather than as a key academic activity.[3] Encouraging students to engage with reading is at the heart of this collaborative

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research project conducted between Library Services and the School of Education at the University of Worcester.

Barriers to reading

Student expectations are not the only barrier to engaging with reading. Most university staff recognise the challenges that can be faced by students with physical and learning disabilities, such as dyslexia or visual impairment, which are documented in the UK in the annual Higher Education Statistics Agency (HESA) return. However, we are often less attuned to other barriers to engagement. For example, students may experience physical ailments like headaches and eye strain from spending too much time reading on a screen.[4] Many students are also not 'just' reading for a degree, with many experiencing high levels of time poverty, for example, working long hours or commuting,[5] or having care responsibilities. With widening participation being central to higher education institutions within the UK, this increased diversity of our student populations requires a shift in developing accessible approaches to learning and teaching.

'increased diversity of our student populations requires a shift in developing accessible approaches to learning and teaching'

Our research cohort is drawn from the University of Worcester's Early Years (0–8) Foundation Degree. This is taught both at partnership further education colleges in the West Midlands, Herefordshire and Worcester and through a flexible and distributed route which combines in-person and online teaching and learning. Staff that teach on this course are from both the university and partnership colleges and comprise both new and experienced lecturers. Students on the course are primarily female (97%) and 74% of the cohort are mature. The course is typical of one that has a widening participation remit: only 29% of the cohort enter with A-level qualifications, whilst 55% enter with a variety of vocational qualifications.

Forty-five per cent of students have an Index of Multiple Deprivation (IMD) count of quintile 1–2, compared to 25% in the overall student body. The IMD is an official measure of relative deprivation in the UK by geographic area, classified into five equal groups or quintiles, based on relative disadvantage, with quintile 1 being the most deprived and quintile 5 being the least deprived. Similarly, 50% fall into quintile 1–2 on the Participation of Local Areas (POLAR) Index compared to 27% in the overall student body. POLAR classifies areas of the UK by quintile according to the participation rate of their young people in higher education. Quintile 1 areas have the lowest rate of participation, whilst quintile 5 areas have the highest.

Universal Design for Learning (UDL)

In aiming to recognise and break down a range of potential barriers, our research is inspired by a Universal Design for Learning (UDL) approach.[6] UDL is an educational framework that informs the design of inclusive learning for all students, looking at 'our institutions, our classrooms, our curriculums and our teaching', proactively making adjustments to facilitate inclusion and bring down barriers for all students.[7] It acknowledges the range of issues that students may experience, not just those with declared disabilities. As such, it enables good quality teaching practice for all students, not just making exceptions for those with disabilities. The three pillars of UDL encourage practitioners to provide: multiple means of engagement with the curriculum and with teaching, multiple means of representation with resources and content and multiple means of action and expression of learning.[8] Understanding this has an implication for how reading material is presented to students and helps reshape and co-construct teaching and learning experiences. Our research touches on all three pillars, but primarily focuses on multiple means of representation, that is, different ways of accessing texts that might support a student who is time poor or struggling with eye strain or who simply finds they prefer to read in different ways.

'UDL is an educational framework that informs the design of inclusive learning for all students'

The intervention: accessibility tools in Resource Lists

Inspired by the principles of UDL and the work of Jackson and Lapinski,[9] we identified a technological solution: embedding audiobooks alongside print and e-books in our online reading list system (Talis Aspire, branded locally as Resource Lists) to facilitate multi-modal reading. In an ideal world, we wanted audiobooks that could be accessed both on- and offline to meet the needs of time-poor students who might benefit from listening to texts, for example, whilst driving, cooking or in the gym.

However, we quickly encountered a number of issues. Prime amongst these is that whilst there is a strong market for audiobooks in fiction (see for example, Amazon's Audible platform, or systems like Borrowbox and Overdrive that are frequently used in public libraries), academic options are limited. We identified only two suppliers who provided academic audiobooks on a library purchase model, EBSCO and Overdrive. Each had a limited selection of academic audiobooks overall and there was no overlap of titles with those on the Early Years course Resource Lists. Also, the licensing model from both suppliers was one that closely modelled print borrowing, i.e. an individual student could 'borrow' an audiobook, rendering it inaccessible to other students until they returned it. Whilst this might then help one student, barriers for the whole cohort would not be reduced.

Instead we turned to embedding free accessibility tools into Resource Lists, including:

- ATbar: a Google Chrome plug-in, that allows users to change the on-screen font style and size, add colour overlays to reduce screen glare and use text-to-speech

- Spreed and Zap Reader: speed readers which enable readers to break down large blocks of text into smaller chunks

- NVDA: a text-to-speech tool.

Each tool is introduced by a question which indicates why a student might want to use them, such as 'do you find reading from a screen to be difficult or uncomfortable?' or 'do you prefer to learn by listening?' The aim of these questions was to normalise these tools, highlighting their relevance and usefulness for all students, not just those working with a particular disability.

Research methodology

To explore the use of and responses to these tools we employed a mixed methodology approach. We gathered quantitative data from Resource Lists dashboards (i.e. the number of clicks on each tool). Qualitative data was also gathered from students by means of a short survey, circulated anonymously via Jisc Online Surveys in 2019. In the summer of 2019, we also conducted a focus group with staff from across the partnership, giving them the opportunity to reflect on their experiences of students reading and the accessibility tools we had been promoting. Following a short presentation on the research and a training session on the accessibility tools led by librarians, members of the group were asked to feedback on a number of questions via a Padlet board, with the researchers absent from the room to prevent bias or leading of the group.

Student results

Resource Lists metrics showed that students were clicking on links to the tools, albeit not in huge numbers (see Table 1).

Year	Number of students (across levels 4 & 5)	Number of clicks
2018/19	140	31 (by mid-March 2019)
		62 (by end academic year)
2019/20	120	62

Table 1. Number of clicks from Resource Lists to accessibility tools

In both academic years, ATbar was the tool that garnered the highest number of clicks (see Table 2).

Year	ATBar (download)	ATBar (guides)	NVDA (download)	NVDA (guides)	Spreed	ZapReader
2018/19	32	2	14	4	7	3
2019/20	24	6	12	6	6	8

Table 2. Number of clicks from Resource Lists to individual accessibility tools

Although these data suggest a level of engagement, it does not reveal how students actually used the tools. Did they, for example, download a tool and use it successfully in all their reading? Did they click on a tool and immediately decide it was not suitable for them? A student survey aimed to unpick this data through gathering qualitative data, as well as further interrogating assumptions and hypotheses about student reading habits. This survey ran at the beginning of the 2019/20 academic year. Seventeen students responded in total, with both part-time and full-time students at Levels 4 and 5 responding, with most respondents (82%) from partnership colleges. Several themes emerged from these responses.

Theme 1: reading and learning

All respondents agreed that they engaged with their Resource Lists, with their motivation for reading tied into external factors (seminars, lectures and so on) rather than internal ones (e.g. curiosity or the desire to know more), although admittedly the survey did not list internally motivating factors as reasons. However, it is still indicative that these students have some understanding of the importance of reading, a message that was being stressed by the course team throughout this research. Pecorari et al. suggest that such messages about the need to read must be integral to the learning and teaching strategy, including clear constructive alignment within a taught course, if there is any hope of students developing such an intrinsic desire to read.[10]

'messages about the need to read must be integral to the learning and teaching strategy'
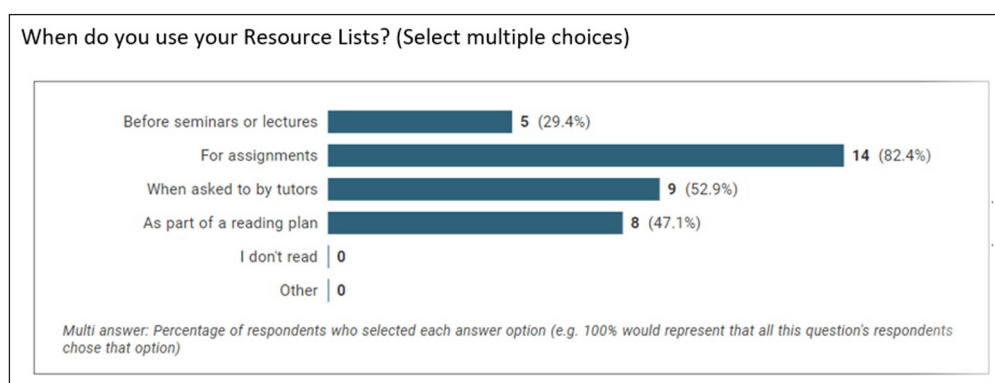

Figure 1. When do you use your Resource Lists?

This pedagogic understanding is also borne out in the results shown in Figure 2. All but one of the respondents agreed that they engaged with their Resource Lists regularly, with 29% stating they consult their lists daily. Notably, one student stated that they do not use their Resource Lists at all, although Figure 1 shows that no student stated that they do not read. This suggests either a mis-click in the online survey tool, or that the student in question has different reading strategies in place. The frequency of Resource Lists use is borne out by trends seen in Worcester's Google Analytics data for overall list use.

How often do you use your Resource Lists?

Every day	5 (29.4%)
Once a week	8 (47.1%)
Fortnightly	2 (11.8%)
Once a month	0
Never	1 (5.9%)
Other	1 (5.9%)

5.a If you selected Other, please specify:

Showing 1 response

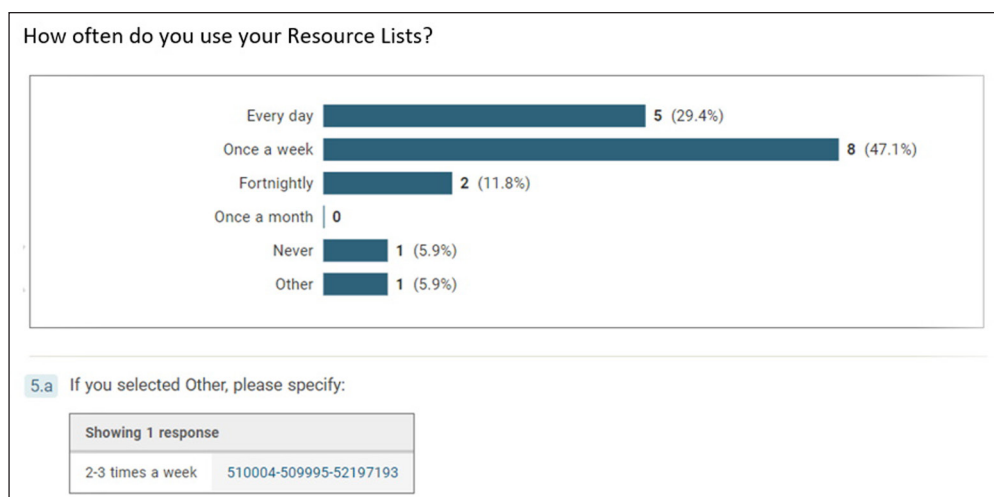| 2-3 times a week	510004-509995-52197193

Figure 2. How often do you use your Resource Lists?

Figure 3 shows student preferences for different kinds of reading material, both in format (print vs. online) and type (books, journals, etc.). Whilst print books are a clear favourite, e-books score relatively highly. This is in keeping with numerous other studies which demonstrate that students prefer reading in print vs. reading online, with surveys suggesting a preference as high as 70–90% for print texts.[11] The reasons behind these preferences are common across studies: students who prefer print cite the tactile experience of print, with the ability to highlight and annotate; the sense that they learn 'better' from print; and the impact of e-books on their health.[12] Students who prefer e-books cite the convenience and accessibility, with no need to access libraries at a distance or carry weighty tomes, and sometimes also refer to the ecological implications, saving trees by not using print books.[13] Some prefer the ability to highlight, annotate and search that is facilitated by e-books. Both sets of students, print and e-book users, note some of the issues with e-books, such as limited availability or poor functionality[14] or restrictions on printing and downloading.[15]

'students may have an unconscious bias for the "known mode" of reading'

Our survey results broadly back up these findings. However, it indicates that journals are preferred slightly in online format over print. Our hypothesis is that students may have an unconscious bias for the 'known mode' of reading. That is, despite the prevalence of Kindles and other online book readers, they will be likely to have experienced books in print prior to university, which may, in turn, inform their preferred use of books in print. Journals, in contrast, will have been introduced to them as primarily online materials when they start their university career and the known mode may inform their preferred use of this medium online.
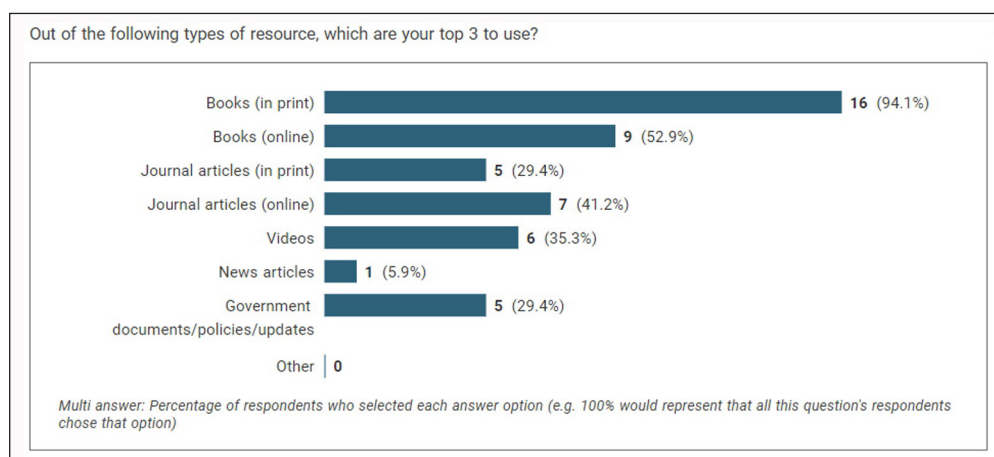

Out of the following types of resource, which are your top 3 to use?

Books (in print)	16 (94.1%)
Books (online)	9 (52.9%)
Journal articles (in print)	5 (29.4%)
Journal articles (online)	7 (41.2%)
Videos	6 (35.3%)
News articles	1 (5.9%)
Government documents/policies/updates	5 (29.4%)
Other	0

Multi answer: Percentage of respondents who selected each answer option (e.g. 100% would represent that all this question's respondents chose that option)

Figure 3. What are your top three resource types to use?

Theme 2: accessibility tools

The second section of the survey delved further into students' use of accessibility tools. Disappointingly, only 24% of students said they had noticed the tools embedded at the beginning of their Resource Lists, whilst another 24% were unsure. Despite engaging with their Resource Lists regularly, this means that nearly half of our respondents had not noticed the tools that were listed at the beginning of each of their Resource Lists. This suggests that the way in which students use resource lists is not driven by curiosity or completeness but is instead a functional task in which they seek out the material they need to engage with for a particular teaching session, task or assignment, like Vickers et al.'s 'digital magpies' who search out information only that they consider useful for completing their assignments.[16]

Of the students who had noticed the tools, only one had used any of them (NVDA) noting that:

> 'It has helped me to gain more knowledge for the uni [sic] that I was reading up on.'

Whilst this is a positive comment the results indicate that the survey was not answered by those responsible for the 62 clicks on the tools from the Resource Lists. Who are these students and why did they not engage with the survey and disclose their use? The next phase of our research will seek to address this.

> 'the way in which students use resource lists is not driven by curiosity or completeness but is instead a functional task'

Theme 3: barriers and constraints – how do you feel about reading for your course?

Respondents also reflected on the barriers they experience in engaging with reading, revealing mindset issues around anxiety, confidence and doubt. For example:

- 47% do not have enough time to read

- 30% said reading is hard

- 35% felt nervous about understanding

- 18% felt unsure about what to read

- 30% felt unsure about how much to read.

These issues tally with our starting assumptions around the need to embed a UDL approach, which helps students engage with reading.

Notably, however, 47% also stated that they enjoy reading. This is at odds with previous research where reading was identified by students as a pleasurable childhood activity, not an enjoyable academic one.[17] This shift in responses from earlier research could be the result of interventions put into place over the last three years since that research was undertaken. This has highlighted the need to read and has centred reading in the curriculum e.g. through putting week by week readings into the virtual learning environment (VLE) via a resource list integration tool (an LTI). An alternative solution is that our methodology is at fault; our sample group is small and is therefore more likely to be comprised of students who are engaged with their course and reading generally. The respondents included a high proportion of first year students who may be more inclined to give the 'right' answer, even though the research clearly spelled out the need for honesty and the anonymity of results. However, one free text student response highlighted the complexity of their relationship with reading:

> 'Sometimes it is enjoyable but other times I don't know the purpose of why I am reading something and/or exactly what I am supposed to get from the reading.'

This also confirms other research studies that demonstrate different conceptions as to the purpose of reading between students and lecturers. These differences need to be explored and clarified.[18]

Staff results

Much as with the student results, a number of clear themes and concerns emerged, most strikingly showing that rather than removing barriers for students, we had uncovered further barriers amongst the teaching team.

Theme 1: the need to be a super-user

Staff in the focus group were united in a lack of confidence in using these and other accessibility tools and techniques and this lack of confidence left them feeling unable to promote the use of any of them. They needed to feel secure in their own knowledge before they felt able to enter into conversation with students about them:

> 'When using apps with students the tutor needs to be beyond "ordinary"-user levels of competence so that they can troubleshoot when a student is having difficulties with the app.'

They reflected on their own fear and lack of confidence in using the tools, as well as expressing a lack of time to develop the comfort and 'super-user' status they felt they needed.

Theme 2: problems with the accessibility tools

The group were also quick to point out potential technical issues. Some of these were legitimate and came directly from lived experience in the training session, where we discovered that not all e-books worked with the accessibility tools. For example, screen readers could pick up all the metadata surrounding an e-book, but not the actual text of the book itself on one platform.

However, the team also discussed problems such as inadequate WiFi, lack of appropriate equipment, or lack of digital capabilities within the student cohort. Covid-19 has certainly shown that digital poverty or lack of digital capabilities are a broader problem, not one specific to this particular project.[19] As researchers, we feel that their own concern regarding the tools led to some projection on to the students, almost as if to find reasons as to why we should not promote these to students.

> 'Covid-19 has certainly shown that digital poverty or lack of digital capabilities are a broader problem'

Theme 3: challenging the validity of the concept

Finally, we received some challenge on the very concept of the research with one member of staff noting:

> 'The spoken word is a different set of skills to following a novel being read aloud – is there any research on this?'

Our initial response as UDL researchers was that we saw no difference in these skill sets; both visual and auditory are valid and complementary ways of engaging with reading. Indeed, one of the researchers regularly uses audio alongside print to help mark students' assignments. Some studies have been conducted into the efficacy of audiobooks for study, and whilst there is variation in results, one of the most recent studies[20] concludes there is no difference in comprehension or recall of information whether listening to an audiobook, reading online, or doing both, although there is an apparently popular conception that listening to a text is somehow less effective and/or more passive than reading by sight[21] as evidenced by this focus group feedback.

On reflection, we felt that what underpins this concern is the importance of the skill of reading an academic text, in whatever format that is, a viewpoint that we agree with as pedagogic researchers. The focus group spent some time reflecting on how students interact with reading materials. One respondent suggested that students regularly use and manipulate e-books in strategic ways to support reading for assignments, rather than for learning more broadly:

> 'the importance of the skill of reading an academic text'

'Students are developing a different approach to reading as e-books and pdfs enable the identification of specific words in texts, therefore they can "speed read" for references rather than reading sections or chapters.'

However, another respondent noted the opposite:

'Most of the time students think they have to read every book from cover to cover.'

'students are not always clear about what to read, how much to read, or when or why to do so'

Although these appear diametrically opposed, they reveal interesting assumptions about student reading practices from teaching staff. The first response suggests there is a mismatch between staff expectations (i.e. that students should read to learn), and student expectations (i.e. they are reading for necessity, for example to pass an assignment). The second response indicates that students are not always clear about what to read, how much to read, or when or why to do so. Both responses indicate a 'fuzzy' approach to reading that could be clarified within the pedagogy of the course – the very idea that kick-started our research journey.

One response noted the ideal situation:

'Considering my current students, I think curiosity is the key; I can see students whose curiosity lead [sic] them to read a whole article and follow it up with further research – they are "thirsty for knowledge" rather than just reading for assignments.'

Tapping into student curiosity is fundamental to spark and ignite the passion to read and the focus group recognized the need to bring down student barriers to achieving this. However, at this point in the research, they had not taken on the possible use of accessibility tools to achieve this.

'Tapping into student curiosity is fundamental to spark and ignite the passion to read'

Recommendations and conclusion

This is just the first stage in an ongoing piece of research. However, we can make several recommendations for the communities of practice around the student:

Recommendations for teachers

Students remain unclear about when to read, why and how much. Teaching teams need to provide clarity for students, using the reading list as a means of centring this information and scaffolding student learning.[22]

Recommendations for librarians

Our research, like countless other studies, indicates a preference for print books over e-books by students. A straightforward UDL approach would be to remove the e-book barrier for students and provide print, but this is an impractical solution. Space constraints, providing access for fewer students, distance learners – all are impacted on by a print-first policy, challenges highlighted by the Covid-19 world. Therefore, the role of the librarian is to address digital barriers in different ways, for example, incorporating information literacy sessions that help students use e-books and their functions (highlight, search, annotate) as well as highlighting accessibility tools that might help them.

'the role of the librarian is to address digital barriers in different ways'

Recommendations for publishers/vendors

This recommendation may seem obvious, but it is key that systems need to be easy to use. If audiobooks are a prohibitively expensive option for development, to create and supply on a suitable academic licensing model, then platforms must work with all third-party accessibility tools and/or have in-built tools that perform these functions. Our experience is that this is simply not happening at present.

Data accessibility statement

The data that support the findings of this study are openly available in Worcester Research and Publications (WRaP) at **https://eprints.worc.ac.uk/10268/** and **https://eprints.worc.ac.uk/10269/**.

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Abbreviations and Acronyms

A list of the abbreviations and acronyms used in this and other *Insights* articles can be accessed here – click on the URL below and then select the 'full list of industry A&As' link: **http://www.uksg.org/publications#aa**.

Competing interests

The authors have declared no competing interests.

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