



Online reading lists: evaluating students experience

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Abstract

Reading Lists have begun to play an important role in student-centric education. However, there is currently too little information about the students' experience in the use of the Reading Lists. This paper explores the students' experience with the Reading Lists, in particular, when accessing electronic materials such as eBooks via a Reading Lists. We conducted a survey using an online questionnaire that comprised multiple choice and open-ended questions for the students who engaged with the Waikato Reading Lists. Thematic analysis was used for the qualitative data obtained from open-ended questions. Students were found to appreciate the way that Reading Lists help in their learning and perceived the Reading Lists to be a useful tool for their learning process. However, their use of Reading Lists features varied due to the lack of awareness, visibility and interaction difficulties. We explore implications for Reading Lists implemented through Digital Libraries and recommend enhancing the usability and the pedagogical features of Reading Lists to increase students' engagement.

Keywords Online reading lists · Digital library · Tertiary education · Student engagement · eBooks

1 Introduction

The enduring role of Reading Lists (RLs) as a fundamental tool in tertiary education has been well-established [1, 2]. Historically confined to paper-based formats, RLs have served as a crucial reservoir of information. The pedagogical role of RLs in courses serves as a critical foundation for guiding students through the structured acquisition of knowledge and skills [1, 3]. RLs are not merely collections of references; they are carefully curated tools designed to align with course objectives, providing a scaffold for learners to engage with core concepts, theories, and debates within a discipline. They facilitate active learning by encouraging students to explore beyond lecture content, fostering independent inquiry and critical thinking [1, 3, 4]. Additionally, RLs promote equity

by ensuring all students have access to essential resources, thus supporting diverse learning needs and backgrounds [1, 2, 4].

In recent years, the advent of supplementary electronic resources has complemented this traditional framework. The evolution of RLs, coupled with the expanding digital landscape, presents a unique opportunity for their integration into digital libraries. Educators have recognized the potential of managing and monitoring reading materials through digital library platforms [5–7]. Furthermore, the prospect of seamlessly embedding digital libraries into academic learning environments has been acknowledged [5–10].

Academics create RLs for a number of purposes, chiefly the directing of student reading through given literature [1]. Typically, these lists are handed out or made available online to students at the start of their course. Also, academics usually provide these reading lists to the institution's library to support their collection development. Therefore, these lists represent an important channel of communication between academics, students and librarians. Current Reading Lists Management Systems are often integrated into an academic library's offerings [11–13]. Copyright Licensing New Zealand (CLNZ) requires all universities in New Zealand to provide software solutions to enable electronic reporting on copyrighted material [14, 15]. All eight New Zealand universities have started adopting RL systems since 2015 to

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meet these reporting obligations with CLNZ. The University of Waikato library has been offering Waikato Reading Lists (WRL) since 2016.

Existing research has identified a critical need for more in-depth examinations of RLs, particularly in the context of enhancing student engagement [12, 16, 17]. This study aims to fill this gap by conducting a nuanced exploration of RLs, investigating their role in the digital realm, and assessing their impact on student engagement within the broader context of digital libraries. In this paper, we explore how students engaged with RLs while enrolled in courses at the University of Waikato, seeking answers to the following research questions:

RQ 1: What are students' experiences with RLs in general?

RQ 2: What is the student experience in using the list of reading material in WRL?

RQ 3: What are students' experiences in accessing external resources, such as eBooks via WRL?

The remainder of the article is structured as follows: The following section provides an overview of related RL studies and students' perceptions of RL systems and identifies research gaps. Next, we explain our study method and then present the study results and data analysis. In the discussion, we compare our study insights with the results of recent studies. The final section presents the drawn conclusions.

2 Study background

2.1 Institutional context

The University of Waikato (UOW) has 13,136 students and 623 academic staff [18]. Our study was conducted across all eight faculties: Art and Social Sciences (FASS), Education (FEDU), Science and Engineering (FSEN), Waikato Management School (WMS), Maori and Indigenous Studies (FMIS), Computing and Mathematical Sciences (FCMS), Health, Sport and Human Performance (FHSHP) and Law (FLAW). (See Appendix A for faculty details). RLs are typically created for each course instance, being assigned to different semesters and years, such as Summer Schools S and T, Semesters A and B, whole year Y courses, and Semester C (all other periods). Most students attend Semesters A and B, with fewer in summer schools, S and T. Y and C are rarely used, mostly for postgraduate studies.

2.2 Waikato reading lists system

The Reading Lists Management System, known as WRL, implemented at the University of Waikato [15, 18, 19], is a commercially available product widely adopted by multiple educational institutions, including all eight universities in

New Zealand, as their preferred solution for managing reading lists. This system is powered by Talis Aspire, which has emerged as the predominant leader in the global market [20]. The WRL system primarily replaces traditional methods of managing and delivering course readings, such as printed course packs or static lists provided in course outlines. The university introduced this system in 2016 to streamline the creation and management of course reading lists and make copyright compliance easier. WRL serves as a dynamic, centralized platform for organizing and accessing course-related materials, simplifying the process for both staff and students. While WRL can sometimes replace traditional textbooks by providing access to core readings (some lists may include both physical and digital versions of an item, offering alternatives to users or accommodating their preferences), it is commonly used to supplement them by providing auxiliary materials alongside the core readings, such as journal articles, book chapters, online articles, web pages or blogs, audio-visual materials, and images. In addition to that it allows lecturers to add copyrighted materials such as scanned or photocopied print book chapters, book sections, or journal articles. By enabling lecturers to curate a mix of essential and supplementary resources, WRL supports a more adaptable and inclusive learning environment.

Lecturers can create context and provide guidance around the learning material intended for student engagement. The system supports students by allowing lecturers to actively guide them using features such as adding notes (to direct students to specific parts of a resource, pass on messages, or build discussions), and categorizing materials as optional or recommended readings etc. (see Fig. 15 in Appendix B). These features not only enhance interactivity but also promote deeper engagement with the material, fostering critical reading and comprehension skills.

Lecturers create reading lists, often with help from library staff, to ensure students have access to relevant learning materials. Each faculty is assigned two Academic Liaison Librarians to support in creating and managing reading lists. These librarians work closely with academic staff, offering individual assistance with the lists. They also provide resources such as user guides, workshops, and technical support to help faculty manage their reading lists within the system. Specialist staff assist with copyright compliance, reference services, and tutorials to help faculty access and use resources like Mātangireia (a hub of Māori, Pacific, Aotearoa, and Indigenous materials, guided by Kaupapa Māori values) and Map. These tools simplify the process of creating reading lists, making it easier for faculty to upload and organize materials for their courses. Once created, lecturers upload the required resources into the reading list for their course, which can be organized within a weekly schedule. Students can then access these materials by logging into their WRL account or through Moodle.

Once students are logged in, the published list of materials is accessible via the Resource Lists Interface which serves as the primary interactive hub for students, showcasing all the linked materials vital for their regular engagement. When a student clicks on the three dots situated in the right-hand corner of each section within this interface, it reveals a dropdown listing the available features. Here, students can conveniently access various functionalities, enhancing the overall usability and customization options within this pivotal interface (see Appendix B for details of the student view of the interfaces of the WRL).

The adoption of the WRL varies across different areas of study, reflecting the unique needs and practices of each discipline [10, 21, 22]. A “one size fits all” approach does not suit the diverse requirements of individual subject areas. For instance, some subjects rely on limited reading lists with core texts, while others use comprehensive reading lists to cover a broader range of materials. In some cases, reading lists are designed to function as guides, directing students to specific topics or areas of research rather than providing all required materials. Reading lists are used differently across areas of study, reflecting variations in the types of materials, conceptual approaches, publishing trends, and the structure of degrees and assessments. For example, engineering reading lists tend to be concise and primarily consist of books. In contrast, humanities reading lists are typically longer and rely more heavily on articles [2, 12, 21, 22]. In the field of education, there is significant variety in the resources used, while engineering generally utilizes fewer resources overall [12, 21, 22]. This highlights how different disciplines shape the composition and structure of the reading lists.

3 Related work

Our analysis of related work on RL systems in tertiary education focused on two aspects: (1) students’ experience and perception of the RLs [1, 2, 12, 16, 17, 23], and (2) contents of the RLs [2, 12, 24–31].

3.1 Student experience

Literature on students’ experiences in RLs is sparse. Only two studies explored the general use of RLs in universities [2, 32]. Other studies examined RLs use within portions of a university [1, 12, 16, 17]. One theme that consistently emerged from the studies is that the academics and librarians believed RLs ‘spoon-feed’ students as they hinder the students’ development of learning skills [1, 12, 27]. Krol [12] indicated that some students saw RLs as a resource that only helped them with their assessments rather than seeing it as a part of their independent learning journey. The literature detailed numerous reasons for students’ satisfaction or dissatisfaction with

RLs. On the positive side, students appreciated RLs as a pedagogical tool, with scaffolding that encouraged them to read and explore their subjects [1, 12, 17, 27]. A study conducted by Siddall and Rose [16] at the University of Northampton found that students felt that RLs provided assurance that they were reading the right content, as well as giving easy access to that content. Furthermore, according to the authors, well-structured and annotated RLs with plenty of explanation and signposting were valued by students as they helped to build their confidence to become independent learners. McGuinn et al. [32] also noted that the majority of students at the University of Huddersfield found RLs to be a valuable resource that enhanced their learning. Cross [23] observed that the students found the experience of RLs rewarding, when the content was easy to access, and allowed integration of RLs with their VLE and resource delivery systems. In line with the above findings, Brewerton [2] also mentioned that the students tended to consider their RLs to be more important than many lecturers did.

Several factors preventing students from using their RLs were identified. According to McGuinn et al. [32], students are dissatisfied if the lecturers do not regularly update the lists contents, organize poorly or are too lengthy. Brewerton [2] also highlighted some barriers which include visibility (how well the features of the RL systems are conveyed to students), content (type of materials included), length of the RLs and the availability of included items. Furthermore, Brewerton [2] noted that some students were confused as to the purpose of their RLs, and the expectations lecturers had of them regarding the listed materials.

3.2 RL content

The literature also discusses the types of content found in RLs. Krol [12] reported that books /eBooks were found to be the most popular material format in RLs with lower usage of digitized chapters/articles or audio-visual material. Marks [17] identified that though the students at the London School of Economics preferred reading in print format, the deciding factor for them was always based on the convenience of reading. Therefore, he noted that students chose e-resources and appreciated signposted RLs. However, his findings showed that students remained dissatisfied with eBooks and had a strong preference for e-journal articles as a result of their structure and functionality. Casselden & Pears and Johnston & Salaz [33, 34] also reported that the students’ satisfaction with accessing eBooks depended on availability, ease of both access and format. Another theme that emerges from the literature is the role of the RL system as a pedagogical tool. Siddall and Rose [16] mentioned that the RLs are under-used in their role as a pedagogical tool to develop students’ information literacy skills. They mentioned that well-structured and annotated content could help to enhance the RLs as a

pedagogical tool. Krol [12] also highlighted the importance of enhancing the RL systems as a pedagogical tool with the help of academics and the library staff. Importantly, none of the literature focused on evaluating the students' experience on the usability of the RLs tasks and its interfaces. However, according to the prior studies, it seems that students understood the importance of RLs as a piece of scaffolding which helped them to further information seeking. However, their engagement mainly depended on the quality and the ease of access to the RLs.

3.3 Identified research gaps

Table 1 compares the discussed studies. While six out of the seven studies focused on students' experience of the use of RL systems, only one study Cross [23] explored the challenges of the implementation of RL systems. None of the studies focused on evaluating the students' experience with the usability aspects of the RL systems, such as user interfaces or specific features. The studies of Brewerton [2], Cross [23] and McGuinn et al. [32] have focused on all faculties in a particular university. However, they did not analyze their data according to the faculty.

4 Method

This section presents the study method and the method deployed for data analysis.

4.1 Study method

In this survey, we focused on the RLs created by academics. At the University of Waikato, RLs are created by academics, often with assistance from library staff, to ensure students have access to relevant and high-quality learning materials (see Sect. 2.2: What support is provided for faculty creation of lists? How is the system's role presented to the faculty?). The survey was conducted using an online questionnaire that comprised multiple choice and open-ended questions for students who engaged with WRL (see Table 2 for summary of questions cut down version and Appendix C for a detailed version). Following ethics approval, the online questionnaire was distributed to all students enrolled in courses with reading lists in Trimester B 2020. The selection of a survey as the study method is justified for several reasons. Firstly, surveys are effective in gathering quantitative data, and the multiple-choice questions allow for structured and standardized responses, enabling easy quantification and analysis. This method is particularly suitable for understanding students' engagement with the WRL system in a systematic and measurable way. Secondly, the inclusion of open-ended questions provides valuable qualitative insights. It allows

participants to express their opinions, experiences, and suggestions in their own words, offering a deeper understanding of their perspectives beyond predefined options. This mixed-method approach ensures a comprehensive exploration of students' interactions with WRL, combining the benefits of quantitative data for statistical analysis and qualitative data for nuanced insights. Moreover, the online format of the questionnaire enhances accessibility and convenience for participants, potentially increasing the response rate and ensuring a diverse range of perspectives are captured. This method aligns with contemporary research practices, leveraging technology to efficiently collect data from a sample. The study population for the survey consisted of the UOW students who had registered for papers in Trimester B 2020 with at least one of those papers having a WRL. Students were not contacted directly, instead assistance was requested from academics in the distribution of the questionnaire via Moodle to students in their papers. The assistance request was emailed to 307 academics in October 2020; the survey ran for two weeks, with a total of 68 student participants. We anticipated receiving around 80 feedback responses, equivalent to 10% of the total student population who were registered in this semester for the papers that have online RLs. However, we obtained 68 responses, resulting in an approximate 8.5% response rate from the 800 students registered in papers with online RLs in this semester. This response rate aligns with those observed in similar surveys in the field [16], and trends in online educational surveys using indirect recruitment methods. Meta-analyses indicate that while studies with direct participant contact achieve average response rates of 44.1%, those relying on intermediaries (e.g., academics) often report rates below 15% [35]. This is true with our study also, where survey invitations were distributed via academics, a process known to reduce visibility compared to direct outreach. Wu et al. [35] emphasize that context shapes response rates, with logistical constraints (e.g., third-party recruitment) rather than sample bias driving lower participation. Their analysis of 1,071 education-focused surveys found low rates (5–15%) can still yield generalizable results when samples represent a defined population, as in this study (students actively using the Reading Lists system) [35]. Similarly, a 10-year meta-analysis in health sciences education observed no significant correlation between response rates and validity, stressing population relevance over quantity [36]. Thus, while modest, the rate reflects methodological norms for indirect recruitment and does not inherently compromise validity when contextual factors are considered [35, 36].

4.2 Method of data analysis

Since the questionnaire consisted of a mix of multiple choice and open-ended questions, several manual steps were taken

Table 1 Summary of the student experience on RL systems studies

Author	Institution	Aim of the study	Specific focus		Method		Study population		Participants				
			General experience	Specific function	Implementation challenges	Log analysis	Questionnaire	Interviews/ focus groups	All faculties	Selected faculties	Academic staff	Library staff	Students
Stokes & Martin [1]	-	Tutor and student experience/expectations	✓	-	-	-	✓	-	-	✓	-	-	✓
Brewerton [2]	Loughborough, UK	Student and lecturer experience	✓	-	-	-	-	✓	-	✓	-	-	✓
Siddall & Rose [16]	Northampton, UK	Explore the potential of RLs as a pedagogical tool	✓	-	-	-	-	✓	-	✓	-	-	✓
Cross [23]	Nottingham Trent, UK	Key components of new RL management system	-	-	✓	-	-	✓	-	✓	-	✓	✓
McGuinn et al. [32]	Huddersfield, UK	Student experience	✓	-	-	-	✓	-	-	-	-	-	✓
Krol [12]	West London, UK	Students & academics engagement with RLs	✓	-	-	2016–2019	✓	-	-	✓	-	-	✓
Marks [17]	London School of Economics Library	Student experience/expectations	✓	-	-	-	✓	-	-	-	-	-	✓
Our study	University of Waikato, NZ	Student experience with RLs, use of eBooks through RLs	✓	✓	-	-	✓	-	-	✓	-	-	✓

Table 2 Summary of the questionnaire

Section	Question number and question
Demographic	<ol style="list-style-type: none"> 1. I am [An undergraduate student /A postgraduate student] 2. I study [On campus/ Online] 3. I am a student at [Faculty of] 4. I am accessing WRL via the following mode/s [Moodle/ Student portal/ Library search/ Reading Lists home page/ Other]
Experience with the Waikato reading lists	<ol style="list-style-type: none"> 5. Waikato Reading List displays reading resources in an organized manner (Please provide more details about your rating on the above question) 6. The interface of the resources list in the WRL is clear and easy to use (Please provide more details about your rating on the above question) 7. Which of the following features have you used in the resources list interface of the WRL? 8. The features in the resources list interface of the WRL are easy to understand and use (Please provide more details about your rating on the above question) 9. Overall, I found the Waikato Reading List to be clear and easy to interact with (Please provide more details about your rating on the above question) 10. Any other feedback about your experience with the Waikato Reading List?
Experience of accessing eBooks via the Waikato reading lists	<ol style="list-style-type: none"> 11. I found accessing an eBook in the Waikato Reading List simple and clear (Please provide more details about your rating on the above question) 12. When accessing/reading eBooks via the Waikato Reading List have you encountered [eBook as a single PDF to download/ eBook as a PDF that separated into the sections/chapters to download/ eBook as an online viewing document loaded in the vendor supported platforms/ other] 13. From each of these, which option do you prefer most? (Please provide more details about your rating on the above question) 14. Any other feedback about accessing an eBook in the Waikato Reading List?

Table 2 (continued)

Section	Question number and question
Satisfaction with the Waikato reading lists	<p>15. The Waikato Reading List satisfies my needs for finding reading resources my lecturer requires me to read (Please provide more details about your rating on the above question)</p> <p>16. The Waikato Reading List has made my learning more effective (Please provide more details about your rating on the above question.)</p> <p>17. I found having the Waikato Reading List to be useful (Please provide more details about your rating on the above question.)</p> <p>18. Overall, I'm satisfied with using the Waikato Reading List for my learning (Please provide more details about your rating on the above question)</p> <p>19. Any other feedback about your experience with the Waikato Reading List?</p>

to prepare the responses for analysis. Data gathered through multiple choice questions were first grouped according to the ratings, frequent comments and the faculties they were attached to. Then they were analyzed and presented in a structured form using a range of representational tools such as charts, graphs, and tables. To analyze the responses to open-ended questions, we employed thematic analysis, a method rooted in identifying patterns of words and themes within the data. A theme, in this context, serves as a discernible pattern encapsulating information, offering a descriptive and organizational framework for potential observations, and, at a more intricate level, interpreting facets of the phenomenon being studied [37].

In our thematic analysis, we meticulously undertook a manual process to examine responses to open ended questions. This thorough examination aimed at discerning nuanced patterns and categorizing them into coherent and meaningful themes. The process involved a detailed scrutiny of the qualitative data, ensuring a comprehensive understanding of the varied perspectives expressed by the participants. Our analysis sought to capture the richness and depth of the responses, allowing for a nuanced interpretation of the participants' viewpoints. This approach was chosen for its precision in extracting valuable insights from qualitative data and ensuring a thorough exploration of the underlying themes within the responses. The process was carried out by four members of the research team, ensuring a collective and rigorous validation of the identified themes and their interpretations. This multi-member involvement added layers of scrutiny and validation, enhancing the robustness of our thematic analysis.

5 Results and analysis

We received responses from 68 participants, representing all 8 faculties: FEDU (22), FASS (17), WMS (16), FSEN (7), FLAW (2), FCMS (1), FMIS (1) and FHSHP (1). One participant did not indicate their faculty. In addition, out of all participants, 67% were undergraduate and 34% were post-graduate students. 61% of them study on campus whereas 60% study online (many participants study on both the modes). We now present the results grouped thematically.

The short acronyms for the eight faculties are as follows, with the detailed particularities of each faculty provided in Appendix A.

Faculty of Art and Social Sciences-FASS.

Faculty of Computing and Mathematical Sciences-FCMS.

Faculty of Education-FEDU.

Faculty of Health, Sport and Human Performance-FHSHP.

Faculty of Law-FLAW.

Faculty of Māori and Indigenous Studies -FMIS.

Faculty of Science and Engineering-FSEN.

Waikato Management School-WMS.

5.1 Experience with the resource lists interface

The students' experiences of engagement with the Resource Lists Interface were explored via Sect. 1 of our questionnaire (see Table 2 question number 4–10).

Figure 1 depicts the typical WRL access pathways as self-reported by the students. The results show that the majority (62 of 67, 93%) of the student participants reported accessing the WRL via Moodle. No faculty-specific differences can be seen. With academics directing students to the WRL reading resources by posting a link in their Moodle papers, it is not surprising that Moodle becomes the students' main mode of access to the WRL.

Figure 2 shows the rating participants gave to the quality of organization in the reading list (using a Likert Scale "WRL displays reading resources in an organized manner").

We see that 40 of 66 (60%) respondents had a positive impression of the organization of the reading resources in the WRL (agree and strongly agree). Only 8% of the respondents had a negative impression. 46 participants additionally gave detailed feedback on the WRL interface. In Table 3, we summarize the respondents' detailed feedback and their rating for Question 5. Light gray color indicates positive feedback, and the dark gray color indicates negative feedback. The positive comments by the participants included "I feel good as the WRLs in my papers are divided into sections in accordance with papers' themes", "easy to follow. It's on the lecturer's side to refer to which sub-category to click into. I can follow it easily enough" and "Readings were organized by week, so I knew which ones to read when". Negative comments included "Don't always have the best options first", "The title and author are clear, but not to which topic or week the reading belongs to", "It gives topics which are not needed and is not very specific" and "too much information at once".

Although 60% of respondents felt the WRL was well organized, many still suggested that the reading resources needed to be displayed in a more structured manner. We then explored the students' impressions regarding the clarity and ease of use of the Resource Lists Interface (see Fig. 3). While nearly 59% were positive (39 of 66), the number of negative answers doubled (10 of 66, 15%) in comparison to the previous question.

When exploring the detailed feedback on ease of interaction with the Resource Lists Interface (see Table 4), five of the 39 respondents who were overall positive, believed that the contents of the Resource Lists Interface were inconsistent and busy with misleading information. Their comments included "sometimes struggle to find resources and not consistent", "Once I figured out where I was going, as above there are a lot of clicks", "too much information at once",

Fig. 1 Accessing modes of the WRL (Q 4, n = 67) [more than one answer permissible]

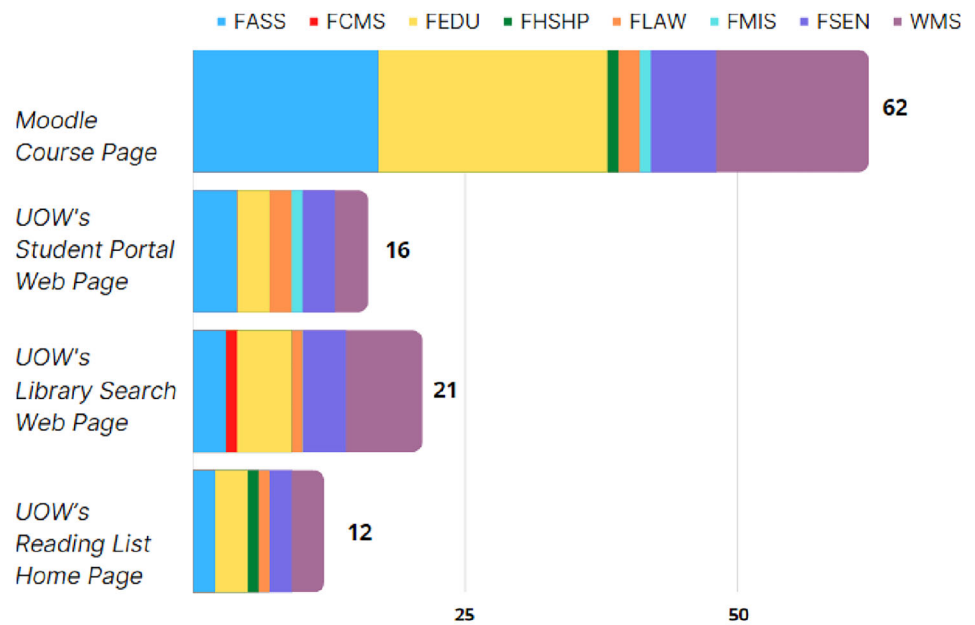


Fig. 2 WRL displays reading resources in an organized manner (Q 5, n = 66)

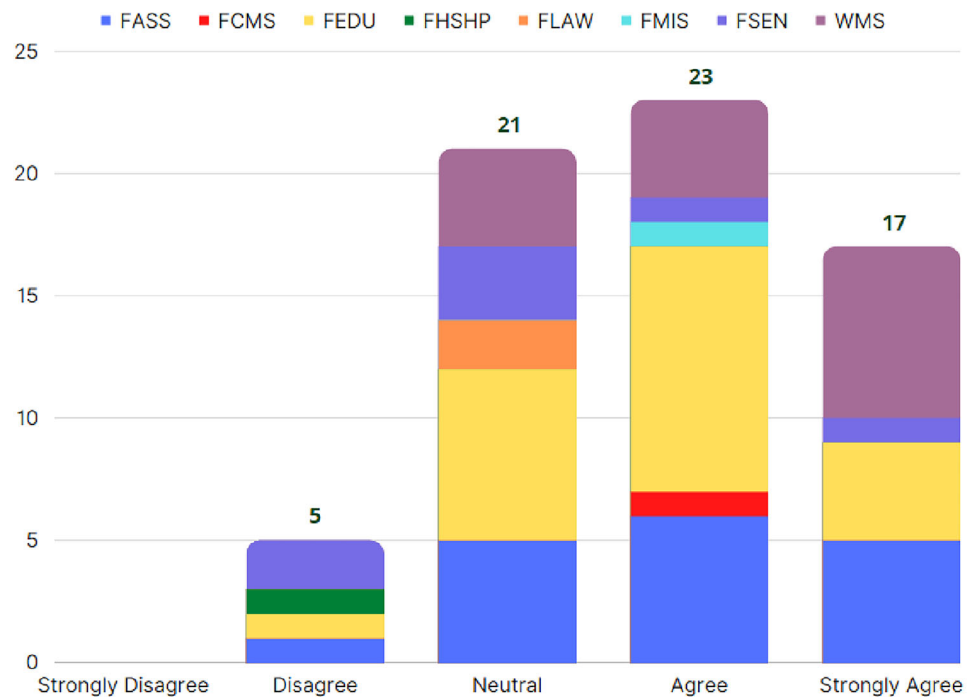


Table 3 WRL displays reading resources in an organized manner—detailed feedback. (Q 5, n = 46) [more than one answer permissible]

Feedback	Rating					Total
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
Well organized and easy to follow	–	–	–	9	9	18
Readings need to be properly structured to week/topic/author	–	2	7	5	–	14
Content information needs to be more specific	–	–	6	–	–	6
The interface isn't ideal	–	–	1	–	–	1

Fig. 3 The interface of the resources list in the WRL is clear and easy to use (Q 6, n = 66)

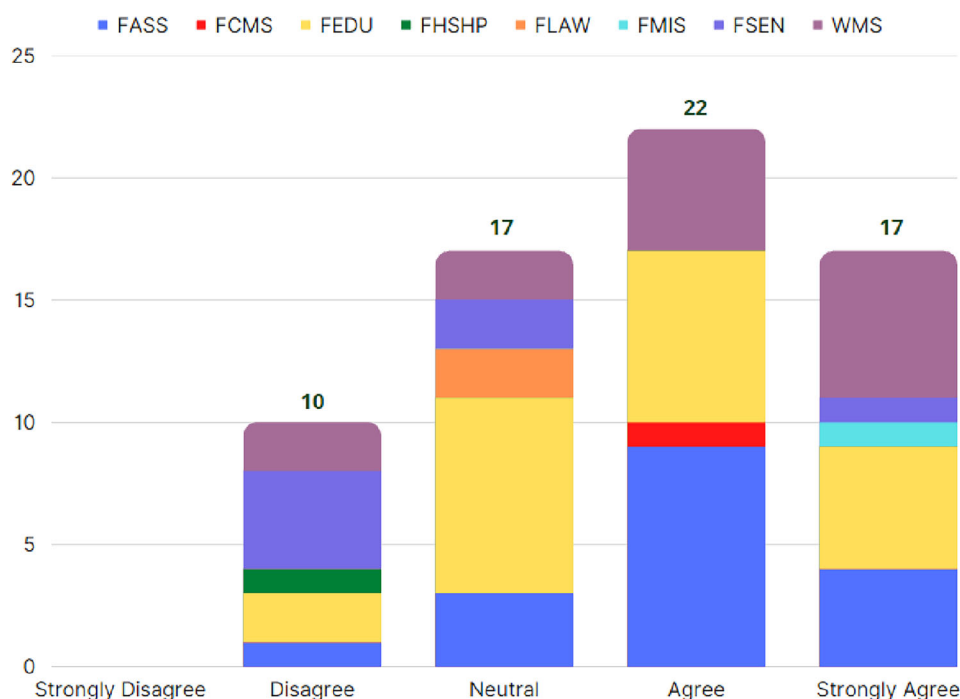


Table 4 The interface of the resources list in the WRL is clear and easy to use—detailed feedback (Q 6, n = 38) [more than one answer permissible]

Feedback	Rating					Total
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
<i>Clear and easy to use</i>	–	–	1	7	11	19
Many information and misleading	–	1	5	2	–	8
Not consistent	–	–	1	3	–	4
Not used most of them	–	2	1	1	–	4
Old fashioned	–	–	3	–	–	3

and “the little dot for checking if you have read the given article is not always that easy to use. It’s fine on computers, but not so much on tablets”.

Even though 59% of participants gave a positive rating, detailed feedback suggests that the Resource Lists Interface could be designed to be easier or clearer.

Next, we explored the RL features that respondents reported to have used (out of a list of 13 features). Figure 4 shows the summary of feature usage in the Resource Lists Interface: we note that the most used feature was ‘View Online’ (77%) which links to the resources. We note, however, that of the 66 participants only 51 seem to have used the option to view resources. More so, all other features were used by fewer than half the participants.

Question 8 asked how easy it was to understand the participants found the resource list features.

Only 50% of the respondents (33 of 66) found the Resource Lists features easy to understand and use (Fig. 5).

Half of the respondents expressed negative impressions (24%) or were neutral (26%). This may give an indication why the vast majority of features have not been used.

The comments by the participants (see Table 5) included ‘awareness of the existence of such features (10) and difficulties in finding the features (4). Again, this provides an indication of why so few features are used – many participants were not aware that the features existed. One conclusion may be that the features of the Resource Lists Interface should be more visible, and the purpose of the features should be clear enough to understand and use.

The students were also asked for their overall experience with WRL, and specifically on the clarity and ease of interaction (Question 9).

As Fig. 6 shows, 40 of 65 (60%) respondents expressed positive impressions, with 40% identifying as either neutral (22%) or disagree (18%). Difficulties in interacting with (4), understanding of, and visibility of (5) the features are the

Fig. 4 Features used in the Resource Lists Interface of the WRL (Q 7, n = 66)

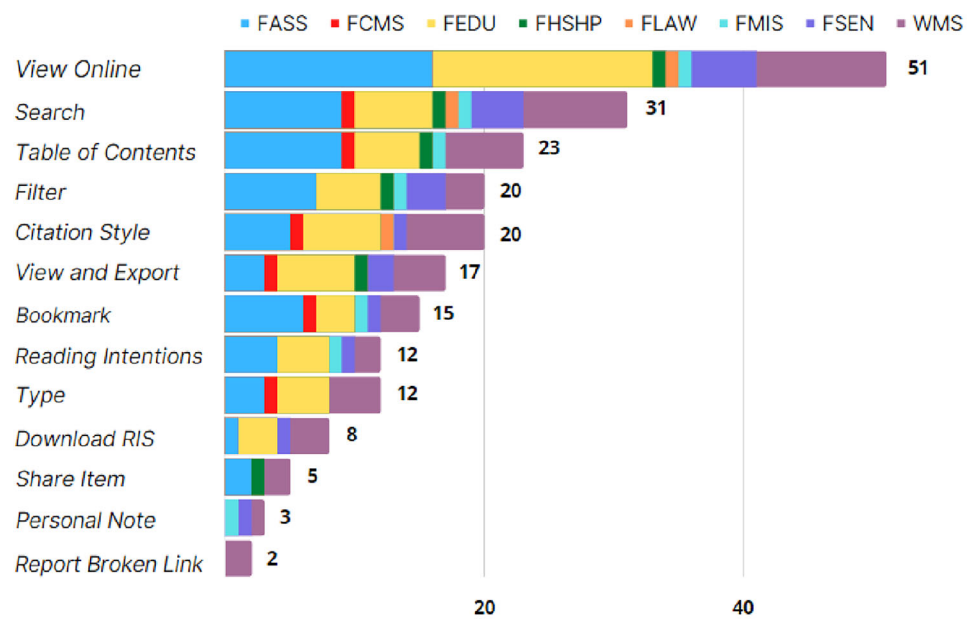
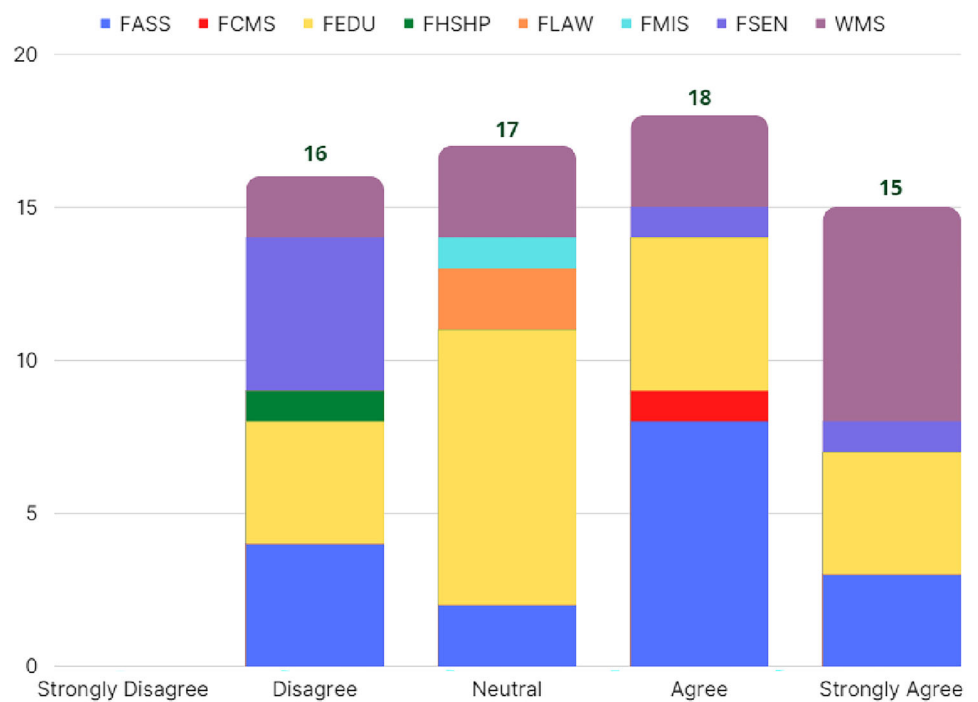


Fig. 5 Resource lists features are easy to understand and use (Q 8, n = 66)



main reasons given for dissatisfaction with the WRL (see Table 6).

In summary, we note that the usability of the Resource Lists Interface and its features is currently lacking.

5.2 Experience of the use of eBooks in the WRL

In this section we explore the students' experiences of the use of eBooks in the WRL (see Sect. 2 of the questionnaire in Appendix C for questions).

39 of 64 respondents (61%) considered access to an eBook in the WRL to be simple and clear, whereas 39% did not (see Fig. 7).

Reasons given (see Table 7) for participants' dissatisfaction were access difficulties (7) (their comments included "some ebooks are not loaded in my browser", "could be difficult to access some ebooks", "hard to get access, access was denied", "sometimes I have clicked where I think I am meant to go and then had to follow random pathways"), many clicks to reach the contents (4), ebook loading issues (3), lack

Table 5 Resources Lists features are easy to understand and use—detailed feedback. (Q 8, n = 39) [more than one answer permissible]

Feedback	Rating					Total
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
<i>Easy to understand and use</i>	–	–	1	5	9	15
Didn't know they existed	–	7	3	–	–	10
Difficult to understand	–	5	1	–	–	6
Difficult to find	–	4	–	–	–	4
Used only a couple of features	–	3	–	–	–	3

Fig. 6 WRL is clear and easy to interact with (Q 9, n = 65)

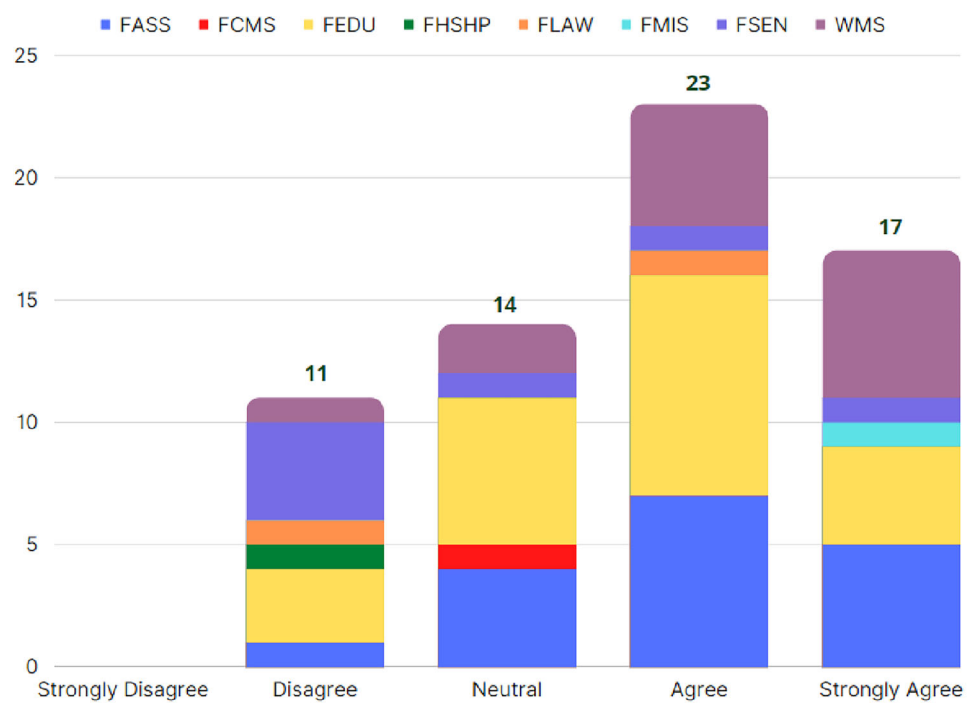


Table 6 WRL is clear and easy to interact with—summary of the detailed feedback. (Q 9, n = 28) [more than one answer permissible]

Feedback	Rating					Total
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
<i>Easy to use</i>	–	–	1	8	4	13
Should be simple to understand	–	2	3	–	–	5
Takes time to find the features	–	2	1	2	–	5
Difficult to interact	–	2	2	–	–	4
Concise layout	–	–	–	1	2	3

Fig. 7 Accessing an eBook in the WRL is simple & clear (Q 11, n = 64)

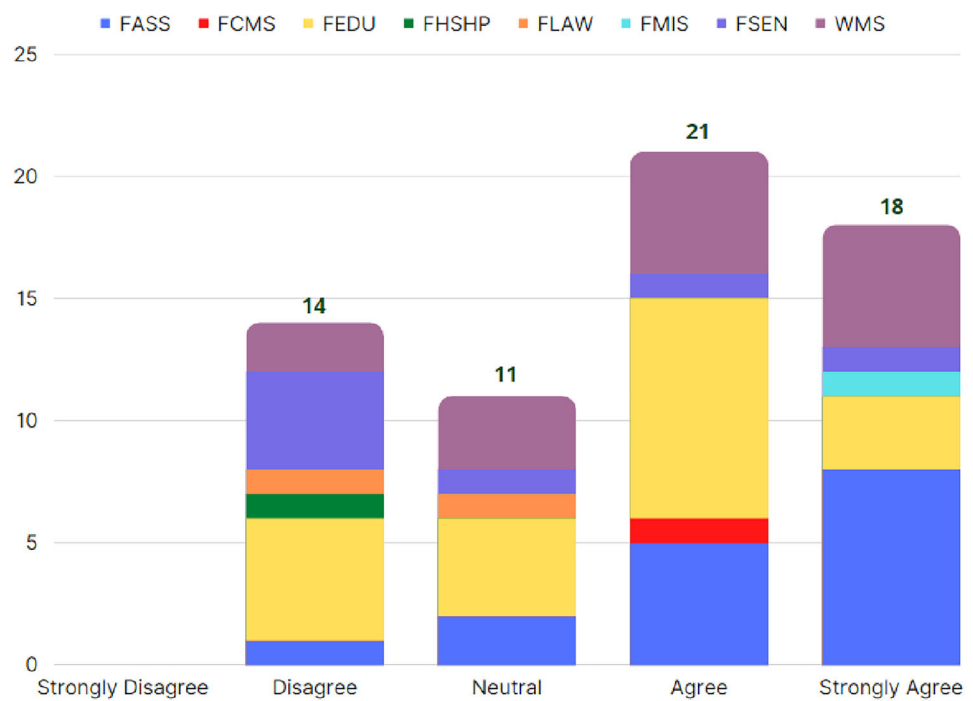


Table 7 Accessing an eBook in the WRL is simple and clear—summary of the detailed feedback (Q 11, n = 64) [more than one answer permissible]

Feedback	Rating					Total
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
<i>Simple and straightforward</i>	–	–	–	6	8	14
Difficult to access	–	6	1	–	–	7
Many clicks to reach	–	1	2	1	–	4
Not loading properly	–	1	2	–	–	3
Most of them were not free	–	–	2	–	–	2
Not in the required format	–	–	1	1	–	2

of free access to the contents (2) and issues in the required format (2). In addition to observing that the WRL requires a number of steps to get to the actual resource, all other feedback refers to the quality of the eBook access (which sits outside of WRL).

Finally, the student not having access to an eBook (“not free” comment) is most likely due to their not being logged into the university system. Here we see a potential mismatch in access rights between reading list systems and other learning support systems.

We then enquired in Question 12 about the modes of accessing eBooks that students encountered in the WRL (see Fig. 8). We note here the minor discrepancy between participants having used the View Online feature (Fig. 4) and participants having accessed eBooks via the WRL.

We then asked participants (Question 13) for their preferred mode of accessing eBooks, see overview of answers in Fig. 9.

We observe that the vendor-supported platforms are by far the least preferred option, even though more than half the participants encountered this mode of accessing eBooks.

The next question (Question 14) explores the driving factors behind their preference. These include the ease of download, print and search in the selected section rather than going through the whole document, faster access, and less confusion (see Table 8).

In contrast, students who preferred to access ‘eBook as a single PDF document to download’, mentioned that it saves their time and can access even without the internet connection once it is downloaded. Often students are only required to read a chapter or section for their class. In these cases, an eBook that is separated into sections/chapters to download

Fig. 8 Encountered modes of accessing an eBook in the WRL (Q 12, n = 64) [more than one answer permissible]

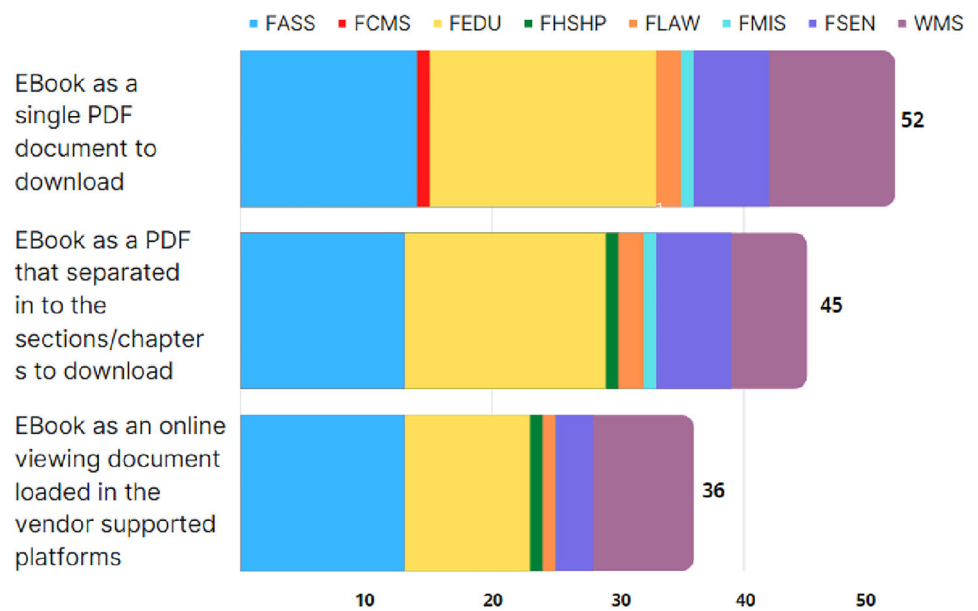
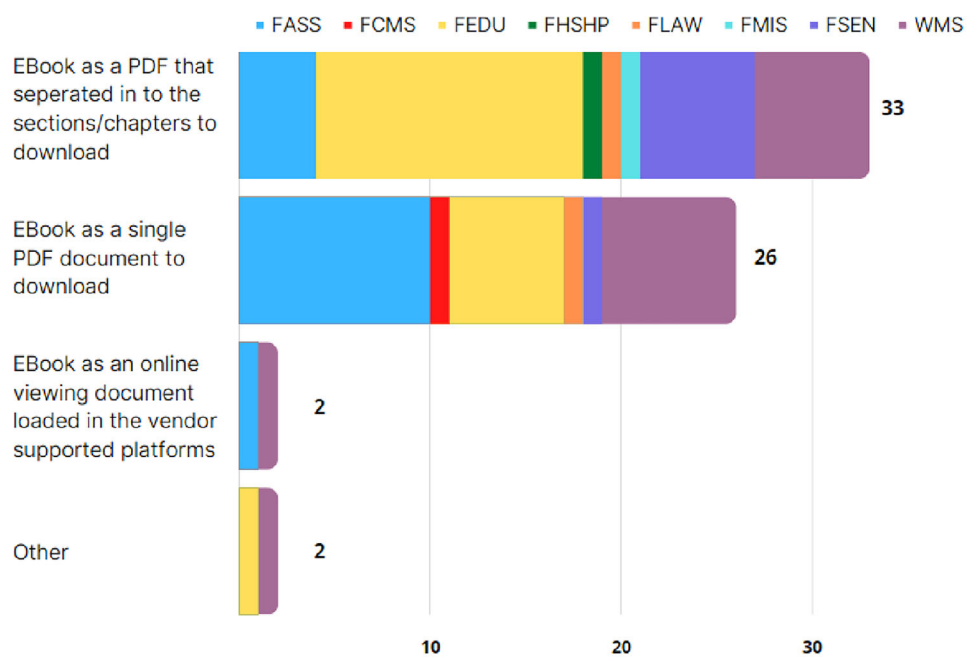


Fig. 9 Preferred mode of accessing an eBook in the WRL (Q 13, n = 63)



makes it easier to pinpoint relevant information. While it may be recommended.

Therefore, we strongly suggest having an option where students can change whether they want to download the whole book PDF or just singular/multiple chapters when accessing an eBook via WRL; these are largely vendor-dependent and not managed by the reading list system.

5.3 Satisfaction with the WRL

Here we present the analysis results for the students' satisfaction with the WRL (Question 15).

When the students were asked about how satisfied they were regarding finding the reading resources that the lecturer directed them to read, the majority (45 of 66, 68%) were positive, 23 (35%) strongly so. Meanwhile, 18 students (27%) remained neutral, and 3 students (5%) expressed disagreement with the statement (see Fig. 10). This is the most positive feedback received in this questionnaire.

Most of the students' feedback on their rating was positive, appreciating how it helped them to find required resources (see Table 9). They described it as "clean and easy", "helpful", "all reading in one place".

Table 8 Accessing an eBook in the WRL is simple and clear—summary of the detailed feedback (Q 14, n = 64) [more than one answer permissible]

Option	Summarized response
eBook as a pdf document that separated into the sections/chapters to download	<p>“...download and print just the section I was required to read...”</p> <p>“...don't get confused with other chapters..”</p> <p>“...it's easy to download and use..”</p> <p>“...small chunks make it easy to flick through...”</p> <p>“... don't need the whole book...”</p> <p>“... aren't reading entire books, only selected chapters ... easy...”</p> <p>“...finding what you need quicker...”</p> <p>“...choose what I want to download or read...have little time...”</p> <p>“...easy when searching for one particular thing...”</p> <p>“... easy to read the selected section later...”</p> <p>“...directing to required page or paragraph is better...”</p> <p>“Single chapters are more approachable than whole books...”</p> <p>“...easier...a single document difficult to pinpoint the information...”</p>
eBook as a single pdf document to download	<p>“...easiest to copy text...easy to use search function formats...”</p> <p>“...easiest to skim through a whole document...”</p> <p>“Easiest to collect and compile...”</p> <p>“Easiest to use Ctrl F and find what you had previously read...”</p> <p>“Easiest to find keywords...”</p> <p>“...don't have to stay logged in...”</p> <p>“Downloading multiple files is an inconvenient act...”</p> <p>“...can access as needed when don't have internet connection... saves time...”</p>
eBook as an online viewing document loaded in the vendor-supported platforms	<p>“...Reading online is the easiest...”</p>

Some phrases in the student feedback that were identified as significant due to their frequency, emphasis, or relevance to the core themes are shown in bold

Fig. 10 WRL satisfies my needs for finding reading resources (Q 15, n = 66)

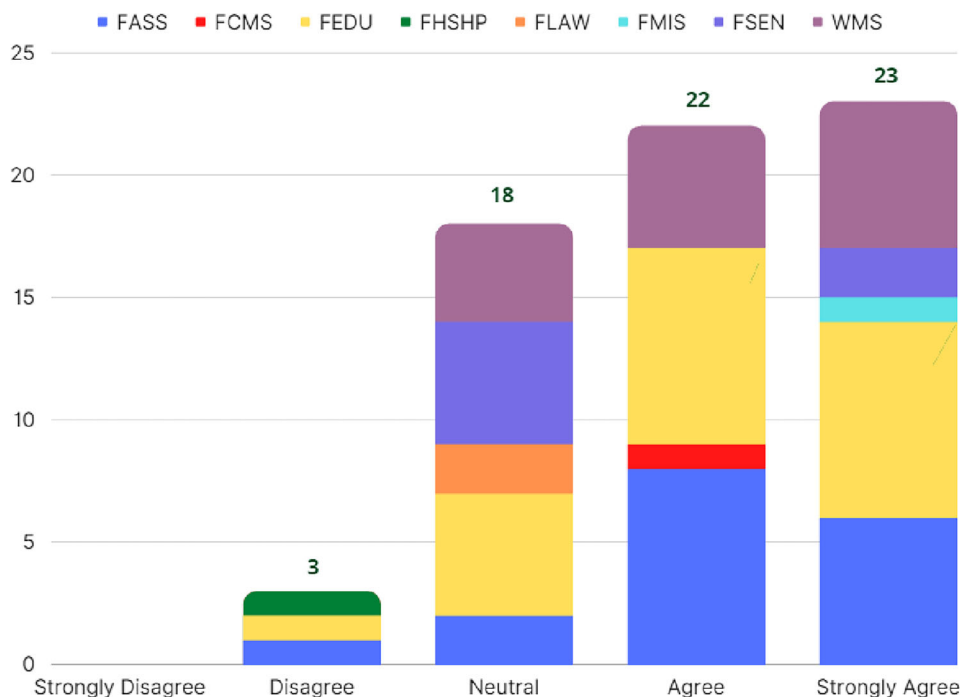


Table 9 WRL satisfies my needs for finding reading resources my lecturer requires me to read—detailed feedback (Q 15, n = 25) [more than one answer permissible]

Rating	Summarized responses
Strongly disagree	<i>No responses</i>
Disagree	<i>“Not easy to find and not good quality”</i>
Neutral	<i>“...Still needing development around using the WRL...”</i> <i>“...Not really. Some books are not available online...”</i> <i>“It is satisfactory”</i>
Agree	<i>“...Majority of what is there is useful for assessments...”</i> <i>“...nice to know which texts belong to which weeks/topics...”</i> <i>“...relatively easy to understand...and is often well organized...”</i> <i>“Good range of readings...”</i> <i>“...not all readings are in the reading list. It’s annoying...Time wasting...”</i> <i>“Sometimes the links don’t work”</i> <i>“It has been fine”</i> <i>“I like the clean and easy to use UI. Moodle is more convenient for me”</i>
Strongly agree	<i>“...say essential and it’s directly links me to what my lecturer want me to read...”</i> <i>“...easier than having to get to the library...”</i> <i>“...readings are listed there online in one place...”</i> <i>“...the reading list is helpful...”</i> <i>“Haven’t had any problems...”</i> <i>“... gives support and further information...”</i> <i>“Yes, it is usually the first place...”</i>

Some phrases in the student feedback that were identified as significant due to their frequency, emphasis, or relevance to the core themes are shown in bold

On the other hand, some students, including two students who rated as “Agree”, commented that it was not easy to use, time-wasting and not of good quality.

We asked students if the WRL made their learning more effective. 40 of 66 (60%) of the respondents gave a positive answer (see Fig. 11). Their reasons included ease of access, helpful readings and having all readings in one place (see Table 10). In contrast, two students who rated as “Agree” mentioned that this mode of learning made them more effective than with the printed reading. However, among the 21 respondents (27%), who remained neutral, some comments indicated preferences for paper versions of readings or access via Moodle.

Next, we explored the students’ views on the usefulness of having the WRL (Question 17). The majority of participants (43 of 65, 66%) reacted positively, out of which 20 (31%) strongly agreed. 17 (26%) remained neutral while only 5 (8%) were negative (see Fig. 12).

This indicates to us that the students understood the usefulness of having the WRL, though some expressed negative impressions of functionalities and the processes.

Similarly, many students (47 of 66, 70%) were satisfied with using the WRL for their learning (see Fig. 13) as it helped them to find good resources for their further learning. Those dissatisfied with the WRL found the interaction to be time-consuming or lacking in user guidance. (see Table 11).

In summary, the participants in the study acknowledged the valuable utility of the WRL, noting its positive impact on

enhancing their learning experience. However, their in-depth feedback consistently reflects a keen interest in usability enhancements, particularly expressing a strong desire for a more streamlined workflow and seamless integration with Moodle, the university’s learning management system. This resonating call for improvements underscores the significance of optimizing the platform’s usability and integrating it with existing educational tools, ultimately contributing to a more effective and satisfying learning environment for both academics and students alike.

6 Discussion

We here discuss insights from our study, particularly in relation to results of previous work and to our research questions from Sect. 1.

6.1 Experiences with RLS (RQ1)

We focus here on the experienced usefulness of WRL and the self-reported impact on learning.

6.1.1 Usefulness and satisfaction

We found that the UOW student participants predominantly found the WRL useful. Negative comments referred to interface functionality and processes (see Fig. 12). In previous

Fig. 11 WRL made my learning more effective (Q 16, n = 66)

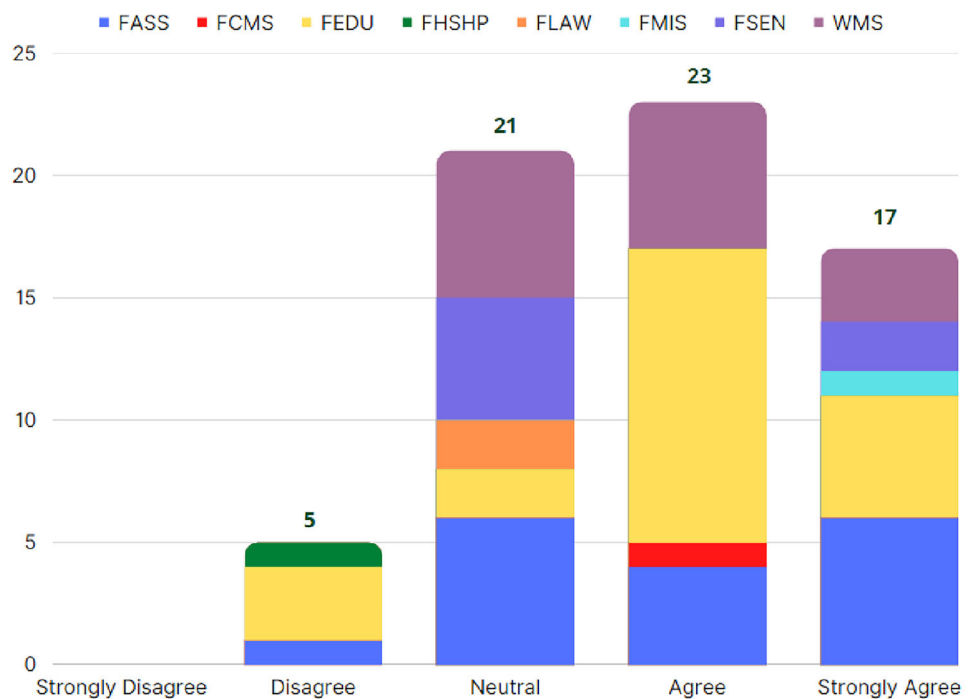


Table 10 WRL has made my learning more effective—detailed feedback (Q 16, n = 29) [more than one answer permissible]

Rating	Summarized responses
Strongly disagree	No responses
Disagree	<p>“...Not easyto find and not good quality...”</p> <p>“...Can enhance my learning if I could understand...accessingsome documents...”</p>
Neutral	<p>“...Unless the lecture requiresme to read... I won’t readthem...”</p> <p>“...I don’t alwaysuse it...”</p> <p>“... My preferenceis for paper versions...”</p> <p>“Hard to know without ever having it”</p> <p>“...Compared to linking the items in Moodle? No”</p> <p>“... readings for a paper in one place for ease of access...”</p>
Agree	<p>“... easy accessto important course-related information...”</p> <p>“... everything is there and easy to find...”</p> <p>“...I can access relevant information...”</p> <p>“...great jumping-off point for further reading...”</p> <p>“...I know where I can access...when I don’t have my book ...”</p> <p>“... preferthe books of readings printed...”</p> <p>“... helpfulreadings in an easy to access way...”</p> <p>“I like the clean and easy to use UI. Moodleis more convenientfor me...”</p> <p>“... actually, have to do the readingsin order to make my readings effective...”</p>
Strongly agree	<p>“...access to many resourcesthrough reference lists...”</p> <p>“...the reading list is helpful...”</p> <p>“Easier to consolidatelecture content”</p> <p>“Easy to useand provides more information...”</p> <p>“... it is easy to accessonline 24/7...”</p>

Some phrases in the student feedback that were identified as significant due to their frequency, emphasis, or relevance to the core themes are shown in bold

Fig. 12 Having the WRL is useful (Q 17, n = 65)

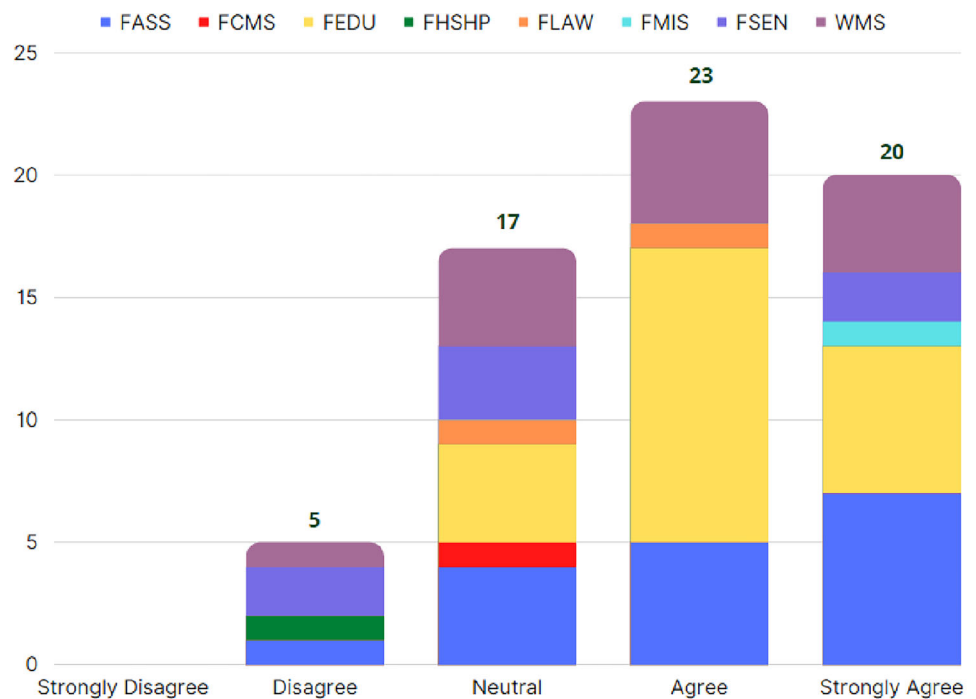
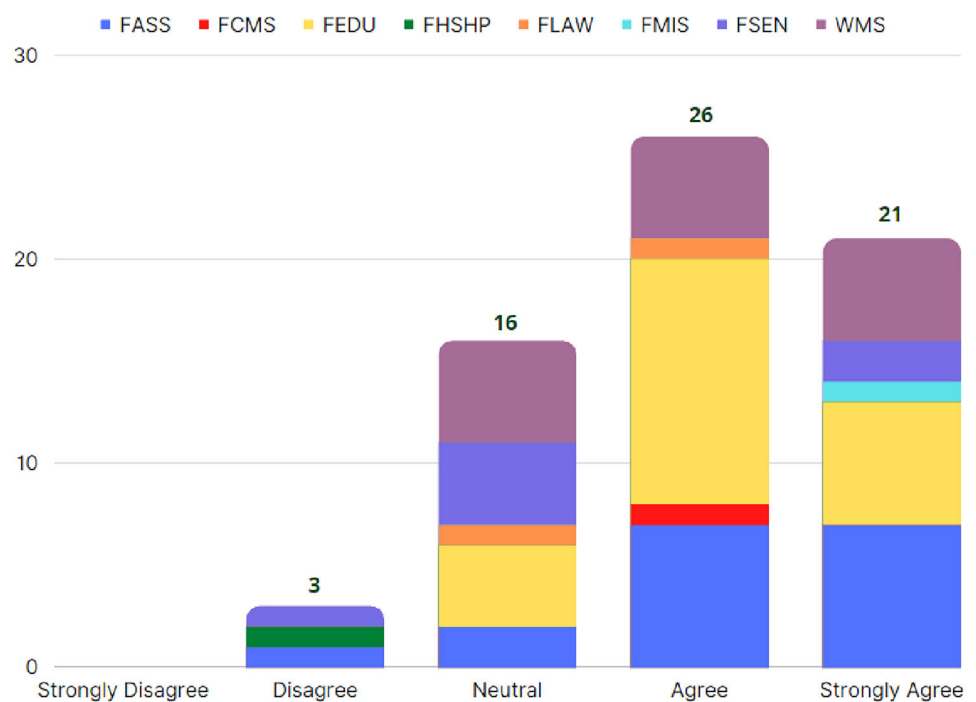


Fig. 13 Satisfied with using the WRL for my learning (Q 18, n = 66)



studies from related work, students preferred RLs used as a pedagogical tool, with scaffolding that encouraged them to read purposefully and critically [17, 23, 32]. Siddall & Rose and McGuinn [16, 32] noted that students valued well-structured and annotated reading lists with features such as download, e-mail and personalization. Previous studies have also indicated that academics do not view RLs as exhaustive and that they want students to become independent

researchers over time [1, 2, 12, 17, 27]. In agreement with this, in our prior study on academics' engagement with the WRL, we identified that most academics had a negative impression of the WRL functionalities [10]. In contrast, this study found that the UOW students were satisfied with using the WRL for their learning (see Fig. 13). A considerable number of students were dissatisfied with the clarity and ease of

Table 11 Satisfied with using the WRL for my learning—detailed feedback (Q 16, n = 29) [more than one answer permissible]

Rating	Summarized response
Strongly disagree	No responses
Disagree	“...Need to be easier found, not sending you out of the Waikato library to open a book that still not PDF form...” “... Moodle is enough no need more to browse...”
Neutral	“...I don't feel this...” “...While I can access relevant information, it can be overly time-consuming , and the interface leaves a bit to be desired ...” “Proper user guidance is needed” “...Nothing to criticize with the reading list to begin with, not even a major part of my learning to be honest...”
Agree	“It served its purpose” “When needed, it's a great resource ” “...Works well, would be nice to not have to go through a hundred clicks to get there , often to be told you can only read sections online too which I didn't benefit from...” “...Improving search words within documents would be much more useful! ...” “...Provides another avenue to access class readings...” “...required and all I've known...” “...I wish it loaded faster , but that's a minor quibble...” “...It's essential to my learning...” “...It's great ...”
Strongly agree	“...It builds the strong base for your paper you are studying...” “...the reading list is helpful in writing my essays...” “...I use Waikato Reading list most weeks to further my learning...” “...Yes, good resource for information and readings as required...”

Some phrases in the student feedback that were identified as significant due to their frequency, emphasis, or relevance to the core themes are shown in bold

interaction with the WRL. The main areas of their dissatisfaction were that the lists were difficult to understand and interact with, poor visibility of the features and when they were poorly structured (see Sect. 5.1). Difference to our findings, related work found that students disliked it when the RLs were infrequently updated and unhelpfully lengthy [2, 17, 32].

6.1.2 Impact on learning

The literature on print versus e-resources finds that reading on screen may have a negative impact on reading comprehension for ‘cognitively challenging’ tasks [34]. At the UOW, students appreciated the way that WRL helped them to find required resources that the lecturer directed them to read (see Fig. 10). However, the main reasons for students’ disappointment were when the RLs were hard to use due to the broken links, poor structuring and quality, and when they were not updated with all the required readings (see Table 9). This echoes the findings of Brewerton, Marks and McGuinn’s [2, 17, 32].

Nevertheless, students believed that the WRL made their learning more effective because of ease of access, helpful readings and having all readings in one place (see Fig. 11 & Table 10). Similarly, McGuinn [32] noted that the students at the University of Huddersfield found RLs to be a valuable resource, which enhanced their learning. However, at

the UOW, some had stated, if they had a choice, they would always prefer printed RLs as their learning makes it more effective with the printed reading (see Table 10). Similarly, students at the London School of Economics have expressed a clear preference for resources linked directly from their RLs, not due to a preference for reading on screen, but due to convenience [17].

6.2 UX features: resource lists interface (RQ2)

While the majority of participants believed that reading resources are presented in an organized manner within the Resource Lists Interface (see Fig. 2), almost 40% indicated in their detailed feedback that there is a need for a more user-friendly display of reading resources (see Table 3). This response may result from how well the Resource Lists Interface was perceived as structuring the reading resources (i.e. week/topic/author) and the specificity of the content information (see Table 3). Further, we find that factors such as inconsistencies in the contents of the Resource Lists Interface and misguidance due to an excessive amount of information significantly impact students’ impressions of the clarity and ease of interaction with the Resource Lists Interface (see Fig. 3 & Table 4).

Though there are many features available in the Resource Lists Interface, we note that students’ preference is almost

entirely limited to a single feature (see Fig. 4). The most commonly used feature was View Online (77%). The difficulty of understanding and use of the Resource Lists Interface was the main limiting factor. Other reasons included students' lack of awareness of the existence of such features and difficulties in finding the available features (see Table 5).

Another open question is the role of reading lists in students' learning activities. If students are predominantly using the RL to access the resources recommended by their lecturer, the additional features may not be of interest to students.

6.3 Reading format and appearance (RQ3)

We observed that a substantial number of Waikato students found access to an eBook in the WRL to be straightforward and clear, as shown in Fig. 7. Nevertheless, a significant portion of students' feedback (39%) indicated that they did not perceive it as organized, as depicted in Fig. 7 and Table 7. There are several reasons for this dissatisfaction, mostly linked to vendor options outside of the WRL (see Table 7). Similarly, prior studies found that students' satisfaction with accessing eBooks depends on their availability, ease of access and ease of format [17, 33, 34]. Though these were the main issues, we found that some students faced difficulties due to the limitation of licensed access to eBooks (see Table 7). The same issue was identified by Marks [17], indicating "Some had come up against concurrent license limits". This author found that though students preferred e-resources which linked to their RLs, they disliked eBooks mainly due to the interface usability. For example, his findings showed that students disliked it when the reading pane did not take up the whole screen, as the text was too small and the surrounding menus distracting.

At the UOW, though many students encountered 'eBook as a single PDF document to download' in the WRL, we note their preference is to access 'eBook as a PDF document that is separated into the sections/chapters to download' (see Figs. 8 and 9). Identified reasons include ease of download, print and search in the selected section rather than going through the whole document and faster access (see Table 8). Similarly, Marks [17] found that students deemed eBooks only acceptable when reading a single chapter that could be downloaded to PDF. Ideally, participants wanted eBooks to be the same format as journal articles.

6.4 Limitations

The primary limitation is the number of respondents. The study population for the survey consisted of all students who had registered for papers in Trimester B 2020 and at least one of those papers having a WRL (estimated 800 students). As students were not contacted directly, academics' assistance was required in the distribution of the

questionnaire. Similarly, Siddall & Rose [16] recognized the sample as a potential limitation on their study at University of Northampton. The response rate of 8.5% (68 responses out of approximately 800) can be attributed, in large part, to the unique challenges posed by the COVID-19 pandemic during the 2020/21 academic year. The sudden transition to online learning placed significant demands on students, leading to increased screen time, digital fatigue, and heightened stress levels. Recent studies have highlighted that prolonged exposure to digital environments during the pandemic resulted in physical and mental health issues, such as eye strain, headaches, and burnout, which significantly reduced students' willingness to engage with additional online activities, including surveys [38, 39]. Furthermore, students were navigating a complex landscape of academic pressures, personal health concerns, and uncertainties about their educational and professional futures. These factors created a challenging environment for survey participation, as students prioritized their immediate well-being and academic responsibilities over non-essential tasks. Research conducted during and after the pandemic has shown that students' engagement with online surveys declined significantly due to these compounded stressors [40, 41]. The pandemic also disrupted traditional communication channels and routines, making it more difficult to reach students effectively. With the absence of in-person interactions and the overwhelming volume of digital communications, students were less likely to notice or respond to survey requests. Studies have confirmed that online survey response rates during the pandemic were consistently lower than pre-pandemic levels, often ranging between 5 and 15% [42, 43]. Despite these challenges, the responses collected offer meaningful and generalizable insights into the experiences of students who actively engaged with the WRL system.

6.5 Implication for digital libraries

The implications for digital libraries are substantial, echoing the essential need for efficient tracking of reading materials and the seamless integration of digital libraries into academic learning environments, as emphasized in earlier research [5–10, 21]. The students' experience within the Resource Lists Interface of the reading lists emerged as pivotal in structuring reading resources based on parameters like week, topic, section, and author, thereby underlining the significance of precise content information. Students highly valued well-structured and annotated lists, recognizing them as tools that fostered confidence in their journey toward independent learning. Moreover, our study delved into students' preferences regarding the format and appearance of linked materials within the reading lists. A consistent inclination was observed toward materials organized into sections or chapters, facilitating easy downloadability in formats like

PDF documents, as detailed in Sect. 6.3. These findings offer nuanced insights into students' learning practices and their perceptions of virtual learning environments, as discussed in Sect. 6.1.

Consequently, our study provides valuable insights to inform the effective integration of digital libraries into the academic learning landscape. For that, several strategies can be employed to enhance the integration of digital libraries into the learning environment, as follows:

Structured organization: Digital libraries should be designed to allow for structured organization of resources. Incorporating features that enable categorization by week, topic, section, and author can mirror the organizational needs expressed by students in the RL interface. This can enhance the clarity and accessibility of materials.

Rich annotations: Integrating annotation features within digital libraries can replicate the benefits seen in well-structured and annotated lists. Providing a platform for educators to add context, explanations, and signposts to resources can contribute to students' understanding and confidence in engaging with the materials.

Downloadable formats: Recognizing students' preference for materials that are separated into sections or chapters and can be downloaded, digital libraries should support easy downloadability, particularly in widely used formats like PDF. This aligns with students' desire for flexibility and offline access to study materials.

User-centric design: Ensuring that the digital library interface is user-friendly is essential. A design that prioritizes the user experience, with intuitive navigation and clear visual cues, can contribute significantly to students' satisfaction and engagement.

Integration with learning platforms: Seamless integration with learning management systems (LMS) or virtual learning environments can bridge the gap between digital libraries and academic learning. This integration can provide a unified experience for students, where they can access resources alongside other course materials.

Responsive to learning practices: Understanding and adapting to students' learning practices involves ongoing assessment and responsiveness. Digital libraries can be designed to evolve based on user feedback, aligning closely with the dynamic needs and preferences of the student community.

7 Summary and conclusion

This article provides insights into the experiences of students with a university's RL system. From our study, we draw the following conclusions and recommendations:

Students appreciate the way that RLs help in their learning, and they perceive the RLs as a useful tool for their learning process. However, the main reasons that prevent students from using the RLs were when they were difficult to interact with or to understand, a lack of visibility of the features (i.e. how well the features of the system are conveyed to students) and when they were not updated with all the required readings. We note these factors act as barriers in the full use of the RL systems' role as a pedagogical tool to develop students' independent learning skills. Hence, we believe that the students' experience with RLs could be improved further by enhancing the above-discussed usability (see Sect. 6.1 & Sect. 6.3) and the pedagogical features (see Sect. 6.2) of RLs.

Students appreciated well-structured and organized reading resources in the Resource Lists Interface. They remained dissatisfied when the reading resources were poorly organized, inconsistent and when the contents were not specific. In terms of the use of features in the Resource Lists Interface, we saw a clear usage gap due to the students' lack of awareness of the availability of existing features. This lack of awareness resulted because of poor visibility of the system's features. Therefore, we believe that the usability of the Resource Lists Interface needs to be improved.

Students commonly encountered eBook as a single PDF document to download in WRL. However, many students prefer an eBook that is separated into sections/chapters that could be downloaded to PDF. Students' deciding factor for this at the UOW is convenience in terms of accessing, downloading, printing and searching. Therefore, it is essential, if students are to get full value from their RLs, to improve eBook accessibility and appearance in RLs with a user-friendly reading platform.

Overall, the identified multifaceted issues present a clear directive for enhancing resource accessibility, feature clarity, and user-friendliness within the Reading Lists system. To address these concerns effectively, we offer specific recommendations for the design of RL interfaces, taking into account the students' perspective.

Intuitiveness: Interfaces need to prioritize ease of use, ensuring simplicity and intuitiveness. The design should enable students to comprehend and navigate without requiring extensive training or guidance. The aim is to streamline students' interaction with the system, making it straightforward and time efficient.

Visually appealing: The visual attractiveness is pivotal for capturing student interest. Utilizing diverse color codes to differentiate reading categories or organizing lists based on themes or sessions contributes to visual clarity. A visually pleasing design not only enhances the interface's attractiveness but also facilitates users in swiftly finding and accessing the required materials.

Feature clarity: It's crucial to guarantee that every feature is distinctly visible and precisely defined in the interface. Students should encounter no challenges in recognizing and comprehending the function of each feature. This transparency fosters a seamless experience for students and optimizes the effectiveness of the system.

Interactivity: Enhancing the student experience involves providing opportunities for active interaction with the system. This could involve functionalities such as live updates, drag-and-drop features, or collaborative tools that stimulate student involvement. Interactivity promotes engagement among students and adds a dynamic aspect to the system.

Ability of personalization: Granting students the capability to customize their lists and individual list items augments the system's adaptability. This empowers users to personalize their experience based on their unique requirements, a valuable feature in an educational setting characterized by diverse individual preferences and teaching approaches.

Our study, centered around the Reading Lists Management System, known as WRL, implemented at the University of Waikato, is a commercially available product widely adopted by multiple educational institutions, including all eight universities in New Zealand, as their preferred solution for managing reading lists. This system is powered by Talis Aspire, which has emerged as the predominant leader in the global market. Given its extensive usage in diverse academic settings, the insights and outcomes derived from our study at the University of Waikato are applicable on a broader scale. The prevalence of Talis Aspire across various universities enhances the generalizability of our findings, making them relevant and valuable beyond our specific institution.

As a future initiative, conducting a study to clarify the overarching role of the WRL system would be valuable. This could involve exploring the impact of WRLs on students' learning development in comparison to traditional tools like textbooks, particularly in contexts where reading lists are not solely dictated by academics. Additionally, critically analyzing the design and implementation of WRLs to ensure they align with their intended purpose would provide further insights. Expanding this research to other New Zealand universities employing the same system could enhance understanding by offering broader perspectives across different institutional contexts. Furthermore, following the suggested design specifications, introducing a novel reading list interface and testing it through a user study to collect students' feedback on usability and perceived ease of use would be a worthwhile endeavor. Addressing these questions in future studies offers an opportunity to develop a holistic understanding of the WRL system's role—not only as a resource delivery tool but also as a dynamic platform that fosters student engagement, critical thinking, and personalized learning.

Appendix A: Particularities of the each of Faculty

Faculty	Available support staff	Adopted teaching support systems
<p>The Faculty of Arts and Social Sciences (FASS) provides a range of programs across various disciplines, including languages and linguistics, music, dance, theater, screen and media studies, anthropology, geography, environmental planning, history, philosophy, political science, social and public policy, sociology, and social work</p> <p>The Faculty of FCMS provides a dynamic and innovative learning environment with high-quality, industry-relevant programs in design, computer science, software engineering, mathematics, and data analytics</p> <p>The Faculty of Education (FEDU) offers programs in teacher education, counseling, human development, educational leadership, and education studies, equipping students with the skills and knowledge to make a meaningful impact in the field of education</p> <p>The Faculty of Health, Sport and Human Performance (FHSHP) provides qualifications for students passionate about health, hauora, and wellbeing, helping them build the knowledge and skills to improve the lives of individuals and communities</p> <p>The Faculty of Law (FLAW) offers a dynamic and student-centered Bachelor of Laws (LLB) program in an engaging and supportive academic environment</p> <p>The Faculty of Māori and Indigenous Studies (FMIS) offers programs in Māori language and linguistics, culture, customs, creative and performing arts, media and communication, the Treaty of Waitangi, and development studies, providing a deep understanding of Māori and Indigenous perspectives</p> <p>Waikato Management School (WMS) provides a comprehensive range of business education programs across all levels of study, preparing students for diverse career opportunities in the business world</p> <p>The Faculty of Science and Engineering (FSEN) offers a variety of innovative programs leading to undergraduate degrees in Bachelor of Science and Bachelor of Engineering, equipping students with the skills and knowledge needed for successful careers in these fields</p>	<p>Each faculty is assigned two academic liaison librarians</p> <p>Academic Liaison Librarians work with academic staff and postgraduate students to provide specialist tutorials and individual assistance for study and research</p> <p>Specialist staff also provide reference services, copyrights, tutorials and individual assistance to help staff and students to access and use Mātangireia and Map resources</p>	<p>Moodle as the Learning Management System</p> <p>The Paper Outlines System is to provide a centralized repository where subject outlines can be created, maintained, reviewed, presented and stored</p> <p>Panopto enables University staff and students to capture and deliver audio and video content</p> <p>The library's information systems and technology include Library Services Platform (Alma), Discovery Layer (Primo) and subscribed databases</p> <p>Waikato Reading Lists for tracking copyrights and course reading management</p> <p>Research Commons-institutional research repository</p> <p>O Neherā includes Digital Collections such as photographs, postcards, maps and posters</p>

Appendix B: Students view of the reading lists interfaces

WRL, established by the University in 2016, serves as a Reading Lists Management System designed to simplify the creation and administration of course reading lists, facilitating copyright compliance [15, 18, 19]. At UOW, academics collaborate with library staff to craft reading lists for courses, incorporating required reading materials and utilizing the note feature to provide guidance for students. By integrating WRL with their Moodle course page, academics can link reading list references, enabling students to access resources through either their WRL or Moodle accounts. Upon login, students can navigate the resource lists interface to access the published materials. Figure 12 depicts the interfaces illustrating the described flow of student interaction, with subsequent sections providing detailed explanations of each interface's functionalities.

In the context of our investigation, our attention was directed specifically towards the interfaces associated with RLs. The key interfaces under scrutiny include the *Resource Lists interface* (Interface 2 in Fig. 14), which encompasses the core features for organizing and presenting reading materials. Additionally, we delved into the *Notes for Students interface* (Interface 3 in Fig. 14), examining how educators employ this tool to communicate essential information or guidance. Furthermore, our exploration extended to the *Moodle Integration interface* (Interface 4 in Fig. 14), investigating the seamless incorporation of RLs into the Moodle platform. These interfaces, elucidated in the following figures, constituted the focal points of our study, allowing us to gain comprehensive insights into the dynamics of student engagement and usability.

Resource lists interface: This serves as the primary interactive hub for students, showcasing all the linked materials vital for their regular engagement. When a student clicks on the three dots situated in the right-hand corner of each section within this interface, it reveals a dropdown listing the available features (refer to the highlighted areas in Fig. 15). Here, students can conveniently access various functionalities, enhancing the overall usability and customization options within this pivotal interface.

Notes for students: This feature exhibits any notes posted by the lecturer for students, providing additional guidance and essential readings. It serves as a crucial element in fostering effective communication between lecturers and students regarding specific linked items. In Fig. 16, within the resource lists interface, you can observe the existing notes displayed for selected linked items, exemplifying how this feature enriches the overall learning experience by offering valuable insights and directions.

Moodle integration interface: This interface acts as the central hub for students to access references to their linked materials within the WRL. Typically, academics connect WRL with their Moodle course page by including reading list references on the Moodle course page. The subsequent interface (Fig. 17) illustrates an RLs link (highlighted area) that an academic posted for a specific week. Clicking on this link directs students to the readings linked in the RLs.

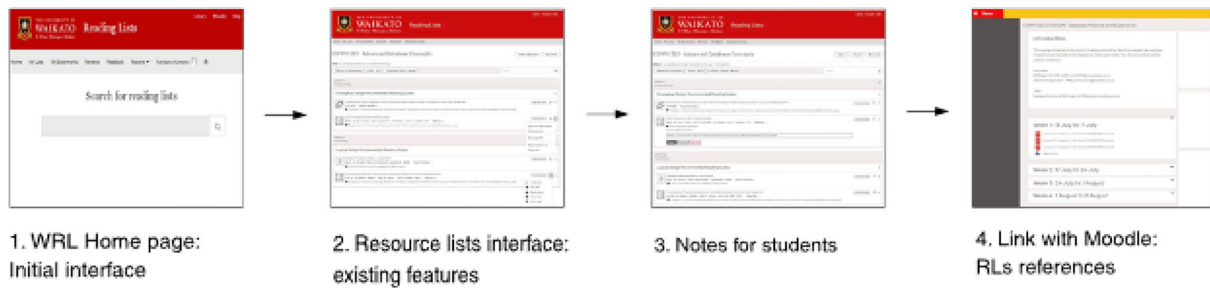


Fig. 14 Basic flow of interaction of students (WRL Interfaces)

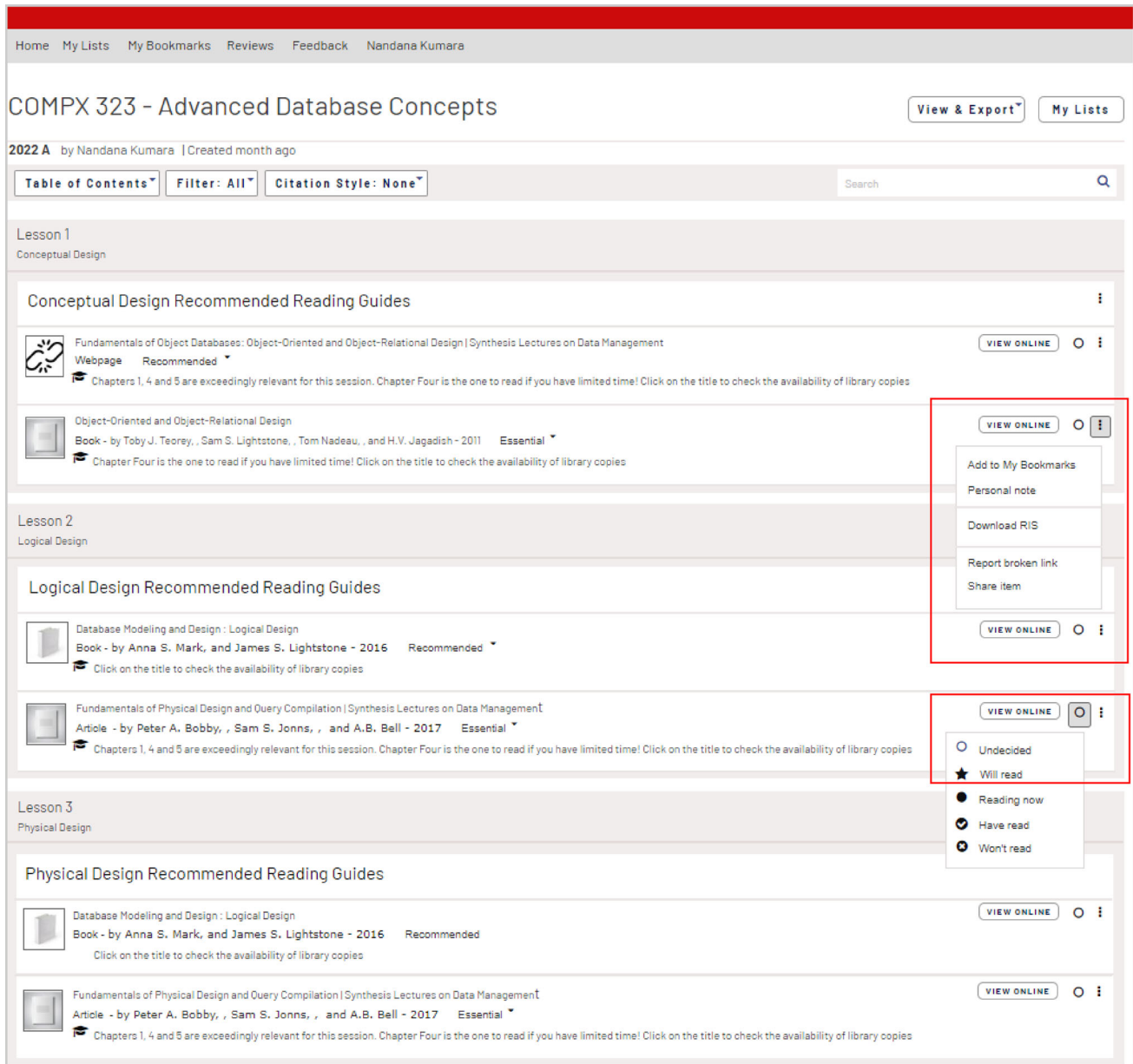


Fig. 15 Students view of the resource lists interface (see Interface 2 in Fig. 12)

Fig. 16 Notes for students' interface (see Interface 3 in Fig. 12)

Fig. 17 Waikato Moodle page with link to the WRL (see Interface 4 in Fig. 12)

Appendix C: Questionnaire for students

No	Question	Type	Options
1	I am	Multiple choice	I. An undergraduate student II. A postgraduate student
2	I study	Checkbox	I. On campus II. Online
3	I am student at	Multiple choice	I. Waikato Management School (WMS) II. Faculty of Computing and Mathematical Sciences (FCMS) III. Faculty of Art and Social Sciences (FASS) IV. Faculty of Māori and Indigenous Studies (FMIS) V. Faculty of Science and Engineering (FSEN) VI. Faculty of Health, Sport and Human Performance (FHSHP) VII. Faculty of Education (FEDU) VIII. Faculty of Law (FLAW)
The following questions are about your experience with the Waikato Reading List (WRL)			
4	I am accessing WRL via the following mode/s	Checkbox	I. Moodle II. UOW's Student Portal Web Page III. UOW's Library Search Web Page IV. UOW's Reading List Home Page V. Other
5	Waikato Reading List displays reading resources in an organized manner	Likert Scale	1-Strongly Disagree 2-Disagree 3-Neutral 4-Agree 5-Strongly Agree
	Please provide more details about your rating on the above question	Open-ended	
6	The interface of the resources list in the WRL is clear and easy to use	Likert Scale	1-Strongly Disagree 2-Disagree 3-Neutral 4-Agree 5-Strongly Agree
	Please provide more details about your rating on the above question	Open-ended	

No	Question	Type	Options
7	Which of the following features have you used in the resources list interface of the WRL?	Checkbox	I. Table of Contents II. Type (Sort based on resource type) III. Filter IV. Citation Style V. View and Export VI. Search VII. View Online VIII. Bookmark IX. Personal Note X. Download RIS XI. Report Broken Link XII. Share Item XIII. Reading Intentions
8	The features in the resources list interface of the WRL are easy to understand and use	Likert Scale	1-Strongly Disagree 2-Disagree 3-Neutral 4-Agree 5-Strongly Agree
	Please provide more details about your rating on the above question	Open-ended	
9	Overall, I found the Waikato Reading List to be clear and easy to interact with	Likert Scale	1-Strongly Disagree 2-Disagree 3-Neutral 4-Agree 5-Strongly Agree
	Please provide more details about your rating on the above question	Open-ended	
10	Any other feedback about your experience with the Waikato Reading List?	Open-ended	
The following Questions are about your experience of accessing eBooks via the Waikato Reading List			
11	I found accessing an eBook in the Waikato Reading List simple and clear	Likert Scale	1-Strongly Disagree 2-Disagree 3-Neutral 4-Agree 5-Strongly Agree
	Please provide more details about your rating on the above question	Open-ended	-
12	When accessing/reading eBooks via the Waikato Reading List have you encountered	Checkbox	I. eBook as a single PDF document to download II. eBook as a PDF that separated in to the sections/chapters to download III. eBook as an online viewing document loaded in the vendor supported platforms IV. Other
13	From each of these which options do you prefer most?	Multiple Choice	I. eBook as a single PDF document to download II. eBook as a PDF that separated into sections/chapters to download III. eBook as an online viewing document loaded in the vendor supported platforms IV. Other
	Please provide more details about your rating on the above question	Open-ended	
14	Any other feedback about accessing an eBook in the Waikato Reading List?	Open-ended	

No	Question	Type	Options
The following Questions are about your experience of usability and satisfaction with the Waikato Reading List			
15	The Waikato Reading List satisfies my needs for finding reading resources my lecturer requires me to read	Likert Scale	1-Strongly Disagree 2-Disagree 3-Neutral 4-Agree 5-Strongly Agree
	Please provide more details about your rating on the above question	Open-ended	
16	The Waikato Reading List has made my learning more effective	Likert Scale	1-Strongly Disagree 2-Disagree 3-Neutral 4-Agree 5-Strongly Agree
	Please provide more details about your rating on the above question	Open-ended	
17	I found having the Waikato Reading List to be useful	Likert Scale	1-Strongly Disagree 2-Disagree 3-Neutral 4-Agree 5-Strongly Agree
	Please provide more details about your rating on the above question	Open-ended	-
18	Overall, I'm satisfied with using the Waikato Reading List for my learning	Likert Scale	1-Strongly Disagree 2-Disagree 3-Neutral 4-Agree 5-Strongly Agree
	Please provide more details about your rating on the above question	Open-ended	
19	Any other feedback about your experience with the Waikato Reading List?	Open-ended	

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Code availability Not applicable.

Declarations

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Consent for publication Not applicable.

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