Reading Lists Systems' Pedagogical Features: A Comparative Analysis

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Abstract*—Reading Lists Systems are a pedagogical tool used in tertiary education to streamline the creation and management of course reading lists and make copyright compliance easier. This paper explores the design of current Reading Lists systems and how their features support the pedagogical needs of academics and students in tertiary education. A feature review combined with a comparative analysis approach was employed in our study. We analysed and compared Reading Lists systems and their features, implemented through Digital Libraries, that provide pedagogical support for academic teaching. As one of our outcomes, we identify the need to assist teachers to effectively use these tools in their daily practice.

CCS CONCEPTS

Information systems → Information systems applications → Digital libraries and archives

***Keywords*—Reading Lists Systems, Pedagogical Features, Tertiary Teaching, Academics & Students Engagement, Comparative Analysis**

I. INTRODUCTION

Recent years have seen an increased focus on learner-centric rather than teacher-centric education [1-2]. This change in teaching practice requires support from next-generation learning management solutions [3-4, 36]. Reading Lists (RLs) are a learning management solution used in tertiary education as a pedagogical tool and for tracking the use of copyrighted materials. RLs consist of collections of materials and resources selected by academics and provide students with links, scans, and references to required readings and other materials for their course work [5-6]. Supported by technological and pedagogical developments, these lists have become an important channel of communication between teachers and students.

Educators have noted the opportunity for managing and tracking reading materials in digital libraries [27-29] and for integrating digital libraries in academic learning environments [12, 27-31]. As a result, Reading List Management Systems have gained wider acceptance in tertiary education and are often integrated into the academic library's offerings [7-8]. RLs have begun to play a significant role in this learner-centric education within the tertiary education sector [3, 7].

We conducted a comparative study to explore the design and implementation of RL systems in order to identify the features that provide pedagogical support for academic teaching in tertiary education. In this paper, we explore how current RL solutions support the pedagogical needs of academics, and seek answers to following two research questions:

RQ1: What RL system features are valued by academics for their pedagogical benefits?

RQ2: What pedagogical features are offered by current Reading List Management Systems?

The remainder of the paper is organised as follows: we begin with an overview of related work in the RLs and digital libraries. In Section III, we present an overview of RL systems and a review of the research exploring these systems. We then present our study method, and the results of our study and the comparative analysis of RL systems features. In the discussion section, we compare our data and insights with those of the related work. The final section summarises our insights and presents conclusions and recommendations drawn from our study.

II. BACKGROUND: RELATED WORK

The selection of eBooks from libraries or course reserves has been studied previously [37-41], however, not in the context of dedicated Reading Lists. The use of Reading Lists in tertiary teaching across individual universities [5, 11, 20] as well as within parts of a university [8, 10, 19, 22, 34] has been well reported. A number of studies focus on academics' experiences of RLs [5, 22, 34] and others on students' experiences when using RLs [4-5, 8, 35]. A common focus across the literature is the identification of significant hurdles for academics and students to usefully engage with RLs.

A. Academics Experience

The academics' willingness to engage with RLs varied across studies. Staff time constraints were cited by Cross [3] as a significant barrier to the adoption of RLs at Nottingham Trent University. Similarly, according to Neill and Musto [19], the primary obstacle preventing academics from using RLs is a lack of time. In addition to the staff time constraints, Beasley [34] found that the academics' working knowledge and the

perceived usefulness of the system were further hindrances at the University of Auckland. Academics' resistance to engaging with a RL system was reported by Krol [8]. The academics' engagement in the setting-up of RLs remained low despite the library staff's assistance in creating RLs for all courses.

The majority of research identified significant obstacles that academics must overcome in order to effectively interact with RLs. While Zhu [11] found that the academics at Auckland University of Technology appreciated the capacity to share copyright content via RLs, 40% of participants were unsatisfied with the general function, stability, and convenience of use of the RL system. In Walsby's [20] study at the University of Manchester, the following requirements were identified by academics: increased system functionality, integration with university's learning management software, greater user support, and education about the system's potentials and capabilities. Similarly, Neill and Musto [19] identified the need for better integration of RLs with learning management systems. However, the way in which RLs and a learning management system should integrate has not been addressed. Other factors highlighted as hindrances to RLs uptake were the discipline and lecturing experience of academics. According to Brewerton's [5] study at Loughborough University, academics were not confident that their efforts to maintain the RLs led to adequate perceived value for the students. One theme that consistently emerged from the student-focused studies is that the academics and librarians believed RLs 'spoon-feed' students as they hinder the students' development of learning skills [4, 8, 22].

Finally, both Taylor [10] and Devine [18] argue that the RLs needs to go beyond being a repository of teaching materials but should become teaching tools in their own right.

B. Students Experience

The literature detailed numerous reasons for students' satisfaction or dissatisfaction with RLs. Krol's study [8] found that some student participants saw RLs as a resource that only helped them with their assessments rather than seeing it as a part of their independent learning journey. On the positive side, students appreciated RLs as a pedagogical tool, with scaffolding that encouraged them to read and explore their subjects [4, 8, 22, 35]. A study conducted by Siddall & Rose [9] 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, well-structured, and annotated RLs with additional explanation and signposting were valued by students as they helped to build their confidence to become independent learners.

McGuinn et al. [15] noted that the majority of students at the University of Huddersfield found RLs to be a valuable resource that enhanced their learning. Cross [3] 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 [5] 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. [15], students expressed dissatisfaction if RLs contents were not regularly updated, organized poorly or were too lengthy. Brewerton [5] highlighted as barriers: poor 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, he noted that some students were confused as to the purpose of their RLs, and the expectations lecturers had of them regarding the listed materials.

III. OVERVIEW OF RL SYSTEMS

The concept of reading lists promises to provide a better learning experience for students and the prospect of time savings for academics and libraries [9]. To make this into reality several commercial and open-source RL solutions have been developed. In this section, we discuss the RL systems' landscape in tertiary education from three perspectives. Those are: the nature of the RL systems (commercial or open source), the RL system currently in use in tertiary education and the available features in those systems. To do this we conducted a review of the literature on the RL systems. This discussion provides a picture of the RL solutions' landscape and their use in tertiary education.

The RL system landscape consists of commercially developed solutions as well as open-source solutions (see Table 1). Commercial RL solutions were first introduced in 2010 by several Virtual Learning Environment (VLE) providers. Parallel to the development of commercial solutions, some universities and independent organisations developed their own RL solutions, often as open-source products [3]. Many of these systems aim for integration with VLE and Library Resource Discovery Tools (RDTs). However, existing solutions support student learning only in a partial and often fractured way [7-10]. Some systems even fail to meet basic pedagogical needs of academics, students, and librarians [5, 9-13].

At many universities, traditional 'course reserve' services (which is a library service that allows academics to set up lists of course materials for students to engaged) have been entirely replaced by more comprehensive RL solutions such as Talis Aspire, Ex Libris Leganto and Kortext Keylinks [14]. Commercial solutions were first introduced between 2010 and 2012 by several commercial VLE providers [3]. Talis Aspire was one of the first market entries and has been adopted by more than 90 universities globally, becoming the most widely used solution (see Table 2). Another popular solution is Ex Libris Leganto, which has been adopted by more than 30 UK universities. In 2012, PTFS Europe launched the Rebus: list Reading Lists solution, which was in 2017 relaunched as Kortext Keylinks [14]. It has now been adopted by several UK-based universities. Parallel to the commercial solutions, universities and independent organisations developed open-source RL solutions [3]. Of these, only a few are still active, and many appear to no longer be developed (see Table 1). Open-source solutions that are still active and in-service at several universities include the Loughborough Online Reading List System (LORS), developed at the University of Loughborough and the MyReading Reading List system developed at the University of Huddersfield [5, 14-15]. An early open-source development was undertaken in 2008 by the Open University of UK in collaboration with RefWorks-COS. They developed the toolkit ReMIT for integrating reference management tools into a virtual learning environment [16]. This system was adopted by several universities, among others the Southampton Solent University. However, this project no

longer appears to be actively maintained. In 2009, the University of Kent started the development of their RL system called List8D. After the initial prototype was released in 2010, they discontinued the further development of the project and adopted Talis Aspire. In addition, the University of York started an in-house development of a RL system (called EARL) in 2013. This was replaced with Ex Libris Leganto in 2017.

TABLE 1. RL SYSTEMS

Code	System and Background	Open Source	Commercial	Originated at university	Active up-to-date
S1	MyReading (2011)	✓	-	✓	✓
S2	LORLS (2002)	✓	-	✓	✓
S3	List 8D (2009/10)	✓	-	✓	-
S4	EARL (2013)	✓	-	✓	-
S5	UNILIBRI (2012/13)	✓	-	-	-
S6	Talis *Aspire* (2009/10)	-	✓	-	✓
S7	Talis *Elevate* (2019/20)	-	✓	-	✓
S8	Ex Libris *Leganto* (2014/15)	-	✓	-	✓
S9	Kortext *KeyLinks* (2012)	-	✓	-	✓
S10	SirsiDynix BLUEcloud *Course Lists* (2015/16)	-	✓	-	✓

For better understanding, we tabulated the list of most common active solutions and some universities that adopted them (see Table 2). Commercial products now seem to dominate course reading list management at universities. Based on our available data, Talis Aspire has effectively become the global market leader. To gain a better understanding of the RL systems, we analysed the features offered by those systems. In Table 3, we categorise and list the commonly available features of the existing RL systems (systems we listed in Table 1) under three main categories; (A) core features of the RL systems, (B) pedagogical supportive features for academics and (C) pedagogical supportive features for students. The core features of the RL systems further categorised into three main perspectives; (a) general features, (b) features that facilitate integrating library work and (c) automatic updating.

In this categorization, general features mean the availability of the basic functionalities in these RL systems. Library work integration refers to how well these RL systems provide an avenue for integration with the other internal library systems. Automatic updating refers to the ability of the RL systems to automatically update the external links to the library's discovery systems. The pedagogical supportive features for academics and pedagogical supportive features for students refer to how well these solutions facilitate interactive engagement to them with respect to an individual item in the list.

While user interactions with RL systems had been studied previously, to the best of our knowledge, no in depth work had been undertaken to explore the features of RL systems and how these features provide pedagogical support for academic teaching in tertiary education. It is worthwhile to study how the available course reading list management systems can support the pedagogical needs of the key stakeholders: academics, students, and librarians.

In Section V we review previous studies which identify features of RL systems and discuss how those pedagogically supportive features are used.

TABLE 2. THE RL SYSTEM CURRENTLY IN USE IN TERTIARY EDUCATION

	Solution	Number of universities (approx.)	Name of some universities
Commercial	Talis *Aspire /Elevate (S6/S7)*	90<	University of Oxford York St John University Leeds Trinity University Bristol, University Anglia Ruskin University University of Bradford Leeds Beckett University Brunel University London Metropolitan University etc...
	Ex Libris *Leganto (S8)*	30<	Cambridge, University Aberdeen, University Abertay, University Bath, University etc...
	Kortext *Keylinks (S9)*	5<	Birmingham City University Bournemouth, Arts University Buckinghamshire New University etc...
Originated at university	MyReading (S1)	1	University of Huddersfield
	LORLS (S2)	1	University of Loughborough

TABLE 3. AVAILABLE FEATURES IN THE RL SYSTEMS

Core features (A)	Pedagogical supportive features for academics (B)	Pedagogical supportive features for students (C)
General (a)	Manage lists (create/edit/delete)	Ratings
Integration options (linking/ embedding) with existing library and teaching platforms		
Support for multimedia content in	Organize lists	Notes
Widgets	Drag and drop	Comments
Reminders	Tags/label	Threaded discussions
Import: work with various reference management software	Hide list/sections	Bookmark
Subheadings and Sub-lists	Digitize book chapters	Export
Copying items in the lists to another	Add notes to library/students	Contents annotation (text and non-text)
Rollover lists	Add web links	Suggestions
Library work integration (b)	Manage collaborators	Highlight
Adding materials from the library catalogs	Bookmark	Filter
Generating reading recommendations	Dashboard/usage stats	Reading Intentions
With library ordering processes	-	-
Automatic update and integration (c)	-	-
Updating of article links	-	-
Updating of links to the OPAC	-	-

IV. METHOD

This section describes our study method, data collection, data preparation and pre-processing of the data for analysis. Our study employs two research approaches including a review of system features and comparative analysis of RL systems.

A. Study Method

The first phase of our study consisted of a review on RL system features that are valued by academics. This review provides an opportunity for us to glean from the existing literature to answers to our first research question (RQ1).

The second phase of our research was a comparative analysis of RL systems to access the availability of pedagogical supportive features in identified Reading Lists systems (see Table 1). This study helped find the answer to our second research question (RQ2).

We here describe the data collection process for the two phases of our study.

Phase 1: Feature Review

The goal of this review was to identify the significant pedagogical supportive features of the RL systems designed for tertiary education. For that, we examined the previous studies, which explored the use of RL systems in tertiary education across universities, in particular, the use of pedagogical supportive features. In addition, we discuss the RL systems' features that were valued by the academics and the students and identified through our own studies with them [12-13].

To ensure that all related research regarding this field of study was reviewed, we used Google Scholar and other databases (which can be accessed via the University's library) as sources. Search terms that were used in order to capture all relevant studies included: "Reading Lists Management Systems", "Online Reading Lists", "use of Reading Lists in Universities", "Reading Lists Systems adopted by universities", "user perceptions and experiences on Reading Lists", "Resource Lists Systems" and "Resource Lists Management in tertiary education". When identifying the studies to review and data extraction, we applied inclusion and exclusion criteria for the study. As inclusion criteria, we first selected the publications that discussed RL systems studies that focused on tertiary education (with availability of the full text), which included, case studies, theoretical papers, empirical and log analysis surveys, articles/ reports available on the internet (including commercial and non-commercial website providers). We excluded the articles which are not relevant to our research questions and do not focus on the use of RL systems, in particular, the use of pedagogical features. We also excluded the published articles on websites that cannot be validated (author, date, sponsoring body).

Phase 2: Comparative Analysis of Systems

In this study, we employed a comparative analysis method. According to Given [17], comparative analysis is the process of analysing the entities of a study (such as individuals, interviews, statements, settings, themes, characteristics, groups, and cases) in order to isolate similarities and differences. In the context of our comparative analysis, the entities we considered were the characteristics of RLs. The goal of this analysis was to compare the RL systems designed for tertiary education on the basis of their pedagogical supportive features together with other core features required for course list management for university academics. For this analysis, we selected ten RL systems, which are designed for tertiary education. When selecting, we considered availability of the information, and access to the contents of those systems. Those systems are: MyReading, LORLS, List 8D, EARL, UNILIBRI, Talis Aspire, Talis Elevate, Ex Libris Leganto, Kortext Keylinks and SirsiDynix (see Table 1). After selecting the RL systems, we defined a set of review criteria to compare these systems together, those are: development, status, availability, category, and applicability. Table 4 explains the review criteria that we used to evaluate the systems.

TABLE 4. REVIEW CRITERIA SUMMARY

Review criteria	Description
Development	Focuses that the system is commercially developed, inhouse developed (by a university) or open-source.
Status	Focuses that the system is active or defunct.
Availability	Focuses the presence of the systems features i.e. Core features, pedagogical features for academics and students
Category	Focuses on presence of core features of the software solutions i.e general features, features that facilitate integrating library work and automatic updating
Applicability	Focuses what type of pedagogical support features are available for academics and students

V. RL SYSTEMS FEATURES

Over the last couple of decades, considerable research interest has focused on the use of RLs in tertiary education. Widespread attention in this field of research was aroused by several reasons such as significant changes in teaching practices and the changes in related technologies, especially the popularity of virtual learning environments and resource discovery tools [3, 7-8]. The research literature on the RL systems in tertiary education is presented in this section under two themes: (1) RL features identified though the user studies, and (2) summary of the significant pedagogical features. This section thus contributes to answering the second research question.

A. RL Features Identified

We here discuss the RL systems' features that have been identified through research studies with academics and students. Most previous studies observed that RL systems' features are not easy to use and not firmly address the requirements of the users. This has become a significant hurdle for academics to overcome in order to usefully engage with RL systems [10-13, 18-20, 24]. We will use this section to outline these hurdles and highlight the remaining issues for academics and students that the literature has reported.

One of the major hurdles for academics was the successful set-up of a list. Adolphus [21] and Kumara et al. [12] highlighted that the initial set-up of a reading list has become highly complex and takes a significant amount of time. A similar issue was identified by Cameron & Siddal [22]: all of

their study participants agreed that setting up multiple lists was extremely time-consuming, taking "forever" to do, and each list involved a "tremendous amount of work," that was "off-putting and daunting". Importantly, they observed that the amount of set-up and maintenance requirements differed significantly depending on the individual academic's discipline. Kumara et al. [12] found that the academics at UOW wished for a more intuitive, simplistic, and user-friendly process for setting up a list (which facilitate academics to personalise their list appearance: includes features such as structuring, editing, formatting, and hiding a section or a list).

Providing 'Notes' is another feature available in the RL systems' that allows academics to guide the students' reading. Secker [23] found that lists which are enriched with commentary, notes and explanations are pedagogically valuable and constitute an important learning resource. Adolphus [21] observed that the note feature could be used to include a variety of texts into the lists that address different student abilities. He further recommended that academics use the note feature to explain why a particular resource is valuable, what it covers, why it is included and what the student will gain from looking at it. Taylor [10] highlighted the use of the note feature to personalise reading lists, to explain how the list works, their expectations of the students in terms of engagement with resources, the importance of texts, or quite simply, which chapter to read in an eBook. Kumara et al. 's [12] study confirmed that the note feature has been under utilised by the academics. They note that lack of awareness of availability and the use as the main reasons for that. Further, from their log analysis study, they identified that the majority of the 'lecturer notes' have not provided any pedagogical supportive guidance to the students.

A third feature in RL systems is 'labelling'. This allows academics to prioritise their list items. Chelin et al. [25] highlighted that the lists could be improved through an explanation of the labels used by academic staff "to clarify the distinction between 'essential' and 'further' reading". Adolphus [21] also highlighted the importance of this prioritisation of the list items (via labelling). He explains that this will help students manage their time, and their money if they need to purchase certain items. Similarly, Siddall [6] noted that lists with labels would act as a communication device between staff and students and help to clarify expectations. However, Chelin et al. [25], Siddall [6] and Stokes & Martin [4] found that a variety of 'annotations explaining terminologies' was in use across the institutions with respect to readings, e.g., 'indicative', 'core', 'essential', 'additional', 'further', 'recommended', 'useful',' indicative', and 'suggested'. According to them, all these vocabularies added to the confusion and miscommunication of expectations to students. Interestingly, Siddall's [6] study at the University of Northampton identified that the ranking and use of these terminologies varied according to the academics' disciplines.

The 'Bookmarks' feature allows academics to capture the available information from online resources and presents it in an easy to edit format, ready to save and add to the lists. Cross [3] identified in his study at the Nottingham Trent University, for a large amount of online material not yet bookmark compatible, only basic information (URL, and page Title tag data) is extracted. He suggests that the bookmarklet feature needs a significant amount of sustained intervention to manually add the missing metadata and to create sustainable authentication-aware links. Bookmarking full-text documents was also seen as an issue by McGuinn et al. [15] and Kumara et al. [12] and they suggest that this feature needs to be further developed. Zhu [11] also highlighted that academics dissatisfaction with the features like Bookmarks largely affects their intention to use the RL system at the Auckland University of Technology. One RL system feature that prompted positive feedback from many academics was the 'content digitization' service, which allows academics to request copyright-cleared articles and chapters be made available online via the RL systems [10]. This has greatly expanded the range of material available to students electronically (including articles outside the library subscriptions). From an academic and library point of view, it is a triumph for both copyright law and online library subscription usage statistics. Thompson et al. 's [26] found in their study at the University of Wolverhampton that students preferred lists, which are structured into key reading/titles for specific weeks, specific topics/subject areas, and a single core text with background/supplementary readings. Brewerton [5] and Siddall [6] also found that students benefited from lists that are well structured, rather than an alphabetical list of references. Similarly, Siddall & Rose [9] noted that well-structured and annotated lists that included course-relevant explanations and signposting were found to be helpful by students and helped build their study confidence. Kumara et al. 's [13] study with the UOW students found that the students appreciated well-structured and organised reading resources in their reading lists. They remained dissatisfied when the reading resources were poorly organised, inconsistent and when the contents were not specific. Further, they identified that the students preferred an eBook that is separated into the sections/chapters that could be downloaded as PDF as it reduces confusion, saves their time, and can be accessed even without the internet connection once it is downloaded. Importantly, they noted the students' lack of awareness of the availability of existing features in their lists due to the poor visibility of the system's features.

Some studies suggest new features for the RL systems. For example, Zhu [11] reported that academics want to have a feature in RLs that allows students to 'submit resources'. Kumara et al. [12] highlighted that the academics showed high interests to features that help them to encourage active engagement and transform their static list to capture the imagination of students and hold their attention includes features such as: automated guidance, widgets (allow users to drop the reading list sections/individual references into blog posts/VLEs), email, preview of linked materials, pooling of materials, usage statistics and better synchronisation into Moodle and other teaching support systems. McGuinn et al. [15] and Kumara et al. [13] suggest a more user-friendly interface to the RLs (mobile-friendly), and features such as download, print, search, personal notes, e-mail and personalization.

B. Summary: Significant Pedagogical Features

Based on the above discussion, we here prioritise the list of features that the RL systems may include or streamline. We were limited in our capacity to assess the importance of all available features, as we did not find sufficient information from other studies. We observe that all of the available publications are reports reflecting on an institute's journey, and none of the studies focused on reviewing the RL systems' features. Our study is the first to review the available features of the RL systems. Therefore, we were able to assess and prioritise only some of those features, which enhance the pedagogical benefits (see Table 5).

As discussed in Section V *A*, we grouped the features into four main categories, in the following table, Category refers to those groups and lists the identified features of the RLs. We prioritised these features based on their significance to enhancing the pedagogical benefits (priority column). The Reference studies column indicates the studies, which highlighted and discussed the importance of the particular feature. The remarks column explains whether RL systems should bring in or streamline those features.

TABLE 5. SIGNIFICANT RL SYSTEM FEATURES FOR ENHANCING THE PEDAGOGICAL BENEFITS

Category & Feature	Priority	Reference studies	Remarks
Lists management			
Setup a list	High	Adolphus [21]; Cameron & Siddal [22]; Kumara et al. [12]	Required to streamline the user workflow
Linking resources (bookmarks, content digitization)	High	Cross [3]; McGuinn et al. [15]; Zhu [11]; Kumara et al. [12]; Taylor [10]; Kumara et al. [13]	"
Lists organization			
Structuring, editing, formatting, hiding a section or a list	High	Brewerton [5]; Siddel [6]; Siddall & Rose [9]; Thompson et al.[25]; Kumara et al. [12]	"
Interactive engagements			
Notes	High	Adolphus [21]; Secker [23]; Taylor [10]; Kumara et al. [12]	"
Labels	High	Adolphus [21]; Chelin et al. [24]; Siddel [6]; Stokes & Martin [4]; Kumara et al. [12]	"
Automated guidance	High	Kumara et al. [12]	Features don't currently exist and need implementation
Widgets	Moderate	Kumara et al. [12]	"
Preview of linked materials	High	Kumara et al. [12]	"
Pooling of materials	High	Kumara et al. [12]	"
Email	Moderate	McGuinn et al. [15] Kumara et al. [12]	"
Submit resources	Moderate	Zhu [11]	"
Usage statistics	Moderate	Kumara et al. [12]	Required to streamline the user workflow
Search, Download and Print	Moderate	McGuinn et al. [15] Kumara et al. [12]	"
Integrations			
Synchronization with teaching and library support systems	Moderate	Kumara et al. [12]	"

VI. COMPARITIVE ANALYSIS

This section presents the comparative analysis of RL systems' features, in particular, availability of pedagogical supportive features.

A. Systems vs Features

This subsection presents the results of the comparative analysis of the RL systems' features under three main themes: core features of the Reading List systems, pedagogical supportive features for academics, and pedagogical supportive features for students.

In this analysis, we used a code to uniquely identify each system and those are: S1 (MyReading), S2 (LORLS), S3 (List 8D), S4 (EARL), S5 (UNILIBRI), S6 (Talis Aspire), S7 (Talis Elevate), S8 (Ex Libris Leganto), S9 (Kortex KeyLinks) and S10 (SirsiDynix BLUEcloud Course Lists). These system identifiers will be used in Table 6.

Core Features of the RL systems

The core features of the RL systems have been reviewed here according to the categorization presented in Table 3.

TABLE 6. CORE FEATURES OF RL SYSTEMS

Category	Features	Open Source / Originated at University					Commercial				
		S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
General	Integration options (linking/ embedding) with existing library and teaching platforms	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Support for multimedia contents in lists	✓	-	-	-	-	✓	✓	✓	✓	✓
	Widgets	✓	-	-	-	-	-	-	-	-	-
	Reminders	-	-	-	-	✓	-	-	-	-	-
	Import: works with various reference management softwares	-	✓	✓	-	✓	-	-	✓	-	✓
	Sub-headings and sub-lists	✓	✓	-	✓	-	✓	✓	✓	✓	✓
	Copying items in the lists to another	✓	✓	-	✓	-	✓	✓	✓	✓	✓
	Rollover lists	✓	✓	-	-	-	✓	✓	✓	✓	✓
Library work integration	Adding materials from the library catalogue	✓	✓	-	✓	-	✓	✓	✓	✓	✓
	Generating reading recommendations	✓	✓	-	-	-	-	-	✓	-	-
	Integration with library ordering processes	✓	✓	✓	-	-	-	-	✓	-	-
Automatic update and integration	Updating article links	✓	-	-	-	-	-	-	-	-	-
	Updating of the links to the OPAC	✓	-	-	-	-	-	-	-	-	-

As detailed in Table 6, when we closely look at the general feature category, only one functionality is commonly available in all the solutions, i.e., 'integration option of the RL systems

with the university LMSs and the library platforms'. Functions such as 'Sub-heading', 'Sub-lists' and 'Copying items' are also implemented in eight solutions except for S3 and S5. There are two unique functionalities i.e., 'Widgets' (S1) and 'Reminders' (only in S5). Widgets allow users to drop the list sections (or individual references) into blog posts or VLEs. Reminders facilitate users to receive notifications via emails, VLEs and 1-to-1 conversations. In the library work integration category, function, 'adding resources from the library catalogues' is implemented in eight solutions except for S3 and S5. 'Generating reading recommendations and suggestions' (based on the academics' usage and the usage of similar lists in other domains) is available only with S1, S2 and S8. This is a very helpful function to the academics in terms of saving their time and knowing what kind of resources are linked in similar lists/fields of study (see interactive engagements in Table 5). The automatic update and integration category itself is unique to the S1 solution which was developed by the University of Huddersfield. The function of 'automatic update of article links' is important for academics and the library. Because, in some instances, the library has to change the subscription. If that happens, some links in existing lists will not work. However, with this functionality, even though subscriptions have changed, links will not break. It will automatically update accordingly. Another function in this category is 'automatic update of links to the library catalogue' (OPAC, Summon etc.). In this instance, when the library purchases/subscribes to an eBook, any lists which use the print version of that eBook will automatically update with the new eBook link.

In summary, the existing RL systems provide a range of core features. The open-source system S1 provides the greatest variety of features. The reason may be its origin at a university (Huddersfield), where the system was developed according to requirements provided by university academics. Commercial systems S6, S7 and S9 provide a smaller number of similar features.

Pedagogical Support Features for Academics

In this subsection, we compare all ten RL solutions in order to identify what type of pedagogical support features are available for academics. Table 7 details the comparison results.

TABLE 7. PEDAGOGICAL SUPPORT FEATURES FOR ACADEMICS

Interactive engagement for academics	Open Source / Originated at University					Commercial				
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
Manage lists (create/edit/delete)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Organize lists	✓	✓	-	✓	-	✓	✓	✓	✓	-
Drag and drop	-	✓	-	✓	-	✓	✓	✓	✓	-
Tags/labels	✓	✓	-	-	-	✓	✓	✓	✓	-
Hide list/section	✓	✓	-	✓	-	-	-	-	-	-
Digitize book chapters	✓	-	✓	✓	-	✓	✓	✓	✓	-
Add notes to library/students	✓	✓	-	✓	-	✓	✓	✓	✓	✓
Add web links	✓	✓	-	✓	-	✓	✓	✓	✓	✓
Manage collaborators	-	-	-	-	-	-	-	✓	✓	-
Bookmarks	✓	✓	-	-	-	✓	✓	✓	✓	✓
Dashboard/usage stats	-	✓	-	✓	✓	-	✓	✓	✓	-

As shown in Table 7, out of the active systems, S8 & S9 support most features for academics. The reason for this lesser number of features may be that both S3 and S5 are open-source developments and no longer appear to be being developed. S10 is a commercial product that caters only to a niche market segment (available to libraries in North America). Some features are common with all the active solutions such as 'managing lists', 'organising lists', 'tags/labels', 'adding notes', 'adding web links' and 'bookmarking' (S5 system i.e., ERAL is also defunct and no longer being developed).

Among all the features, some are unique for open-source solutions and some we can see only in commercial solutions (see Table 7). For example, 'hiding a list, item or a section' is possible with the open-source solutions (S1, S2 & S4). This feature allows academics to hide both individual items and entire sections on a reading list. This feature could be useful if academics wish to start preparing a reading list for students but do not want it to be accessible yet (see lists organization in Table 5). On the other hand, 'managing reading list owners and collaborators' can be seen only in commercial solutions (S8 & S9). This feature facilitates academics (as a reading list owner) to add or remove other users as additional owners or as collaborators (co-lecturers, instructors, demos, coordinators, admins etc). This helps academics to manage their list and the contributions made by others, more effectively (see lists management in Table 5).

In summary, each of the RL systems analysed here includes a variety of features that provide pedagogical benefits for academics and support teaching activities.

Pedagogical Support Features for Students

In this subsection, similar to the above, we compared available features from the student point of view (see Table 8).

TABLE 8. PEDAGOGICAL SUPPORT FEATURES FOR STUDENTS

Interactive engagement for students with an individual item / resource in the list	Open Source / Originated by a University					Commercial				
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10
Ratings	✓	✓	-	-	-	-	-	✓	-	✓
Notes	✓	✓	-	-	-	✓	✓	✓	-	-
Comments	✓	-	-	-	-	-	✓	-	-	-
Threaded discussions	✓	-	-	-	-	-	✓	-	-	-
Bookmarks	✓	-	-	-	-	✓	✓	-	-	-
Export	✓	✓	-	-	-	✓	✓	-	✓	✓
Contents annotations (text and non-texts)	-	-	-	-	-	-	✓	✓	-	-
Suggestions	✓	-	-	-	-	-	-	-	-	-
Highlights	-	✓	-	-	-	-	✓	-	-	-
Filter	-	✓	-	-	-	✓	✓	✓	✓	-
Reading intentions	-	-	-	-	-	✓	✓	-	-	-

As detailed in Table 8, we see all solutions have attempted to facilitate student learning with different types of interactive features.

The 'Rating' feature allows students to rate the items on their reading list. This feature is implemented in all the active solutions except S6 and S7. 'Notes' is another important feature where students can add personal notes to reading list items. Once a note is present on the list, the filter allows you to display those matching your criteria (the presence or lack of a personal note). Going one step further, S1 and S7 solutions allow students to 'annotate' or 'comment' on all resource types within their reading list. This is a great way for them to engage in discussion with their peers on important elements of the content on their course. Further, these two solutions facilitate 'threaded

discussion' with class (available to everyone in particular courses). Here, students are also able to make personal/private notes, which are visible only to them.

Another important feature introduced by S7 and S8 is 'annotating non-text contents'. This feature allows commenting and annotation of images. This can be a useful way for students to engage in discussion on important elements of the content they are learning. 'Filtering' option allows students to refine their list using a number of different factors. This feature is enabled in all the active solutions except S1 and S10. In some systems, academics may define the importance of, such as 'Essential', 'Recommended' or 'Optional'. 'Reading intentions' has been implemented only in commercial solutions (S6 & S7): students can assign classification such as 'Undecided', 'Will read', 'Reading now', 'Have read', 'Won't read'.

In summary, out of all systems, S1 and S7 provide more interactive features to students compared to other RL systems. S2, S6 and S8 have fewer features, the remaining solutions offer very few student- supportive features.

VII. DISCUSSION

We here discuss the insights from our study results reported in this paper with regards to our research questions. Where appropriate, our findings are compared with those from related literature.

A. RQ1: RL Systems' Features Valued by Academics

Lists management and organisation: naturally, the 'set-up' feature is available in all the solutions we compared. Adolphus [21] and Cameron & Siddall [22] identified that successfully setting up a list is one of the major hurdles for academics. They noted, even though the RL systems provided various setting up options, academics experienced this step as a highly complex and time-consuming task. This echoes our own findings [12] in which academics reported a lack of intuitiveness/user friendliness of the process, lack of guidance to the academics on the process and difficulties in linking materials.

We identified that 'structuring' the reading list contents was a feature found in most systems. Many previous studies identified the importance of this feature to students [5-6, 9, 26]. In our previous study with academics [12], we noticed that academic participants wished for more flexibility in structuring and formatting their lists and list items. They preferred lists, which can break down into weeks, topics, and subsections. They wanted to format the texts they entered with respect to the linked items (ex. changing the font, font size, style, and the referencing style).

Pedagogical guidance: another feature that we observed in all the active systems is 'notes'. According to Adolphus [21], Secker [23] and Taylor [10], this feature helps to make RL systems an important learning resource by adding pedagogical value to the lists. 'Labelling' feature is also available in all the active systems except S10 (see Table 7). Previous studies highlighted the significance of having this feature to bridge the gap between academics and the students and helps to clarify expectations [4, 6, 21, 25]. This feature further helps students to manage their time, and their money if they need to purchase certain items [21].

Linking resources: we noted that the 'Bookmark' feature is also implemented in all the active systems (see Table 7). However, previous studies reported that the academics were not fully satisfied with use of this feature [3, 11, 15]. The main reason they identified this was compatibility issues. A large number of online materials and full-text documents are not bookmark compatible. Apart from that 'content digitization' is another resource linking feature that many academics prompted positive feedback as it adhered to the copyright law [10]. However, we identified two active systems, S2 & S10 (S5 defunct), still not implemented this feature (see Table 7).

B. RQ2: Pedagogical Features Offered

Several solutions for managing course reading material have been introduced over time. Some were in-house developments and others were commercial products (see Table 1). We note that out of ten solutions reviewed, currently seven solutions have been active in the market and used by the universities. The remaining three solutions were defunct and no longer appear to be being developed (i.e., S3, S4, & S5). Out of these three, two were in-house developments by the University of Kent (S3) and the University of York (S4). We observed that both universities stopped their in-house system development and replaced it with S6 (Talis Aspire) and S8 (Ex Libris Leganto) respectively. We found that traditional course reading lists have been replaced with online Reading List systems by most of the universities with varying degrees of success.

We note that the success of a particular system seemed highly influenced by the pedagogical features provided by those systems to the academics and students. For example, systems such as S8, S9 (10 features) and S2, S6, S7 (9 features) provide many pedagogical features compared to others (see Table 7) and those systems are currently used in many tertiary institutes except S2 and S9 (see Table 2). Some of such features offered by them are 'setting up a list', 'structure/organise lists', 'rollover lists', 'add/linking resources and web links', 'drag and drop', 'notes', 'labels', 'bookmarks', 'content digitization', 'dashboard', 'comment and annotation', 'export contents and references'. The significance of having some of these features was also highlighted in the previous studies (see Table 5 in Section V *A*). Though the system S9 (Kortext Keylinks) provides the above features (with an additional feature 'manage collaborators'), it is not used as much as the S6, S7 and S8. We could not find the exact reason for that, but its relaunch in 2017 may have affected this.

C. Suggestions for Digital Libraries

There has been a growing body of research that emphasizes the importance of tracking course reading materials [27-29] and integrating digital libraries into academic learning environments [30-33]. From the results of our comparative analysis, we conclude that for a digital library to provide reading lists functionality, linkage to both library catalogues (OPAC, Summon etc.) and other university's teaching support systems are required. Additionally, when the library changes resource subscriptions, existing links in RLs should not be broken and should be updated automatically. A seamless access to the different content types would be of importance. Features that could support pedagogical guidance with signposting and

annotation (such as notes, commentaries, threads) would need to be provided by the digital library systems to go beyond lists of content for each course.

VIII. CONCLUSION AND RECOMMENDATIONS

The main objective of this research was to provide an insight into how RL systems support the pedagogical needs of academics and students in tertiary education. To achieve this objective, a feature review and comparative analysis was performed and from which we draw the following conclusions:

Existing RL systems offer a variety of interactive pedagogical features. Our research found that academics are expecting more intuitive, simple, and user-friendly RL features. They wish for features that support active student engagement and transform their static reading lists. Existing RL systems do not fully meet their expectations.

We recommend that RL systems should address the following requirements:

- RL set-up processes should be simple, easy to understand and as time efficient as possible (see lists management in Table 5).
- RLs should address a broad variety of discipline specific requirements (see Section V *A*).
- RL resources should be broken down into sections to help students to navigate easily (see Section 5.1, lists organization in Table 5 and Table 7).
- RLs should be structured, e.g., by themes or by session (see interactive engagements in Table 5 and Table 7).
- RL labels, notes and comments should not cause confusion about academics' expectations of students (lists organization in Table 5, Table 7 and Table 8).
- RLs should highlight the importance of the list items (see Table 8).
- RLs should synchronise with university's teaching support and library support systems (see integration in Table 5 and Table 6).

Finally, we identify the need for interactive features that better integrate into academic teaching. For example, features such as 'automated guidance', 'preview of linked materials', and 'pooling of materials' (see Section V *A* and Table 5) could improve the pedagogical benefits and usefulness of the RL systems for teaching activities (beyond a listing of resources).

We are currently carrying out two companion studies to understand if and how academics use these features to guide the students in their teaching. The first study explores the academics' perceptions and experience of the RL systems' features, followed by a log analysis that explores the use of the 'note' feature by the academics in their reading lists. Insights from these studies will help guide our future research into pedagogical features needed for RL systems.

REFERENCES

[1] Mascolo, M. F. "Beyond Student-Centred and Teacher-Centred Pedagogy: Teaching and Learning as Guided Participation", Pedagogy and the Human Sciences 1(1), 3-27, 2009

[2] Boyadzhieva, E. "Learner-Centred Teaching and Learner Autonomy", Procedia-Social and Behavioral Sciences, 232, 35-40, 2016, https://doi.org/10.1016/j.sbspro.2016.10.008

[3] Cross, R."Implementing a resource list management system in an academic library. The Electronic Library, 33(2), 210-223, 2015, https://doi.org/10.1108/EL-05-2013-0088

[4] Stokes, P., & Martin, L. "Reading lists: A study of tutor and student perceptions, expectations and realities", Studies in Higher Education, 33(2), 113-125, 2008,
DOI: 10.1080/03075070801915874

[5] Brewerton, G. "Implications of student and lecturer qualitative views on reading lists: A case study at Loughborough University, UK. New Review of Academic Librarianship, 20(1), 78-90, 2014,
DOI: 10.1080/13614533.2013.864688

[6] Siddall, G. "University academics' perceptions of reading list labels". New Library World. 117(7/8), 440-448, 2016, DOI: 10.1108/NLW0220160012

[7] Chad, K. "The rise of library centric reading list systems". HELibTech Briefing, article No (5), 1-13, 2018,
DOI:10.13140/RG.2.2.12337.89445

[8] Krol, E. "Can online reading lists achieve meaningful engagement with the academics and students within a digital landscape? A case study from the University of West London", 5th International Scientific Conference, Warsaw, Poland, 2019,
http://repository.uwl.ac.uk/id/eprint/6091

[9] Siddall, G., & Rose, H. "Reading lists – time for a reality check? An investigation into the use of reading lists as a pedagogical tool to support the development of information skills amongst Foundation Degree students", Library and Information Research, 38(118), 2014,
DOI: https://doi.org/10.29173/lirg605

[10] Taylor, A. "Engaging academic staff with reading lists: The Worcester story", Journal of Information Literacy, 13(2), 222-234, 2019, DOI:10.11645/13.2.2660

[11] Zhu, Y. "Factors influencing lecturers' intention to use Talis Reading List Management System at Auckland University of Technology" [Master's thesis, Auckland University of Technology], Auckland University of Technology Research Archives, 2018,. http://hdl.handle.net/10063/8019

[12] Kumara, P.P.N.V., Hinze, A., Vanderschantz, N., & Timpany, C. "Online Reading Lists: A Mixed Method Analysis of the Academic Perspective", International Journal on Digital Libraries (2023a).
https://doi.org/10.1007/s00799-022-00344-z

[13] Kumara, P.P.N.V., Hinze, A., Vanderschantz, N., & Timpany, C. "Online Reading Lists: Evaluating Students Experience, International Journal on Digital Libraries (2023b) (in press).

[14] Higher Education Library Technology. "Reading List/Resource List solutions, 2020,
https://www.helibtech.com/reading_resource_lists

[15] McGuinn, K., Stone, G., Sharman, A. and Davison, E. "Student reading lists: Evaluating the student experience at the University of Huddersfield", The Electronic Library, 35(2), 322-332, 2017, https://doi.org/10.1108/EL-12-2015-0252

[16] Telstar. "ReMIT: Reference Management Integration Toolkit", 2018,
http://www.open.ac.uk/blogs/telstar/remit-toc/

[17] Given, L. M. "Comparative analysis in the SAGE encyclopaedia of qualitative research methods", 100-101, 2008, https://dx.doi.org/10.4135/9781412963909.n54

[18] Devine, L. "Reading lists: Justifying the benefits for both students and lecturers", Talis Supports Webinar Archives, 2017,
https://support.talis.com/hc/en-us/articles/115004062029-Reading-lists-justifying-the-benefits-for-both-students-and-lecturers-webinar-

[19] Neill, M. O., & Musto, L. "Faculty perceptions of Loughborough's Online Reading List System (LORLS) at Dublin Business School (DBS)", New Review of Academic Librarianship, 23(4), 353-376, 2017, DOI: 10.1080/13614533.2016.1272473

[20] Walsby, O. "Implementing a reading list strategy at The University of Manchester – determination, collaboration and innovation", Insights, 33(3), 1–9, 2020,
DOI: https://doi.org/10.1629/uksg.494

[21] Adolphus, M. "How to compile an effective reading list", Emerald Publishing Archives [Teaching Insights], 2012,

https://www.emeraldgrouppublishing.com/archived/teaching/insights/reading_lists.htm

[22] Cameron, C., & Siddall, G. “Opening lines of communication: Book ordering and Reading Lists, the academics view”, New Review of Academic Librarianship, 23(1), 42-59, 2017,
DOI: 10.1080/13614533.2016.1224769

[23] Secker, J. “DELIVERing library resources to the virtual learning environment, Program”, Electronic library and information systems, 39 (1), 39-49, 2005,
https://doi.org/10.1108/00330330510578796

[24] Kumara, N., Hinze, A., Vanderschantz, N., & Timpany, C. "Resource Types linked in Academic Reading Lists," 2021 ACM/IEEE Joint Conference on Digital Libraries (JCDL), Champaign, IL, USA, 2021, pp. 266-269, 2021.
doi: 10.1109/JCDL52503.2021.00080.

[25] Chelin, J., McEachran, M. and Williams, E. “Five hundred into 4 won’t go - how to solve the problem of reading list expectations”, SCONUL Focus, 36 (Winter), 49-51, 2005,
https://uwe-repository.worktribe.com/output/1054273/five-hundred-into-4-wont-go-how-to-solve-the-problem-of-reading-list-expectations

[26] Thompson, L., Mahon, C., and Thomas, L. “Reading lists - How do you eat yours?”, University of Wolverhampton Centre for Learning and Teaching projects, 2004,
https://wlv.openrepository.com/bitstream/handle/2436/3693/Reading%20lists%20pgs%207-62.pdf?sequence=1&isAllowed=y

[27] Al-Anazi, M., Hinze, A., Vanderschantz, N., Timpany, C., Cunningham, S.J. “Personal Digital Libraries: Keeping Track of Academic Reading Material”, In: Tuamsuk K., Jatowt A., Rasmussen E. (eds) The Emergence of Digital Libraries – Research and Practices. ICADL 2014. Lecture Notes in Computer Science, vol 8839. Springer, Cham, 2014, https://doi.org/10.1007/978-3-319-12823-8_5

[28] Akbar, M. et al. “Digital Library 2.0 for Educational Resources”, In: Gradmann S., Borri F., Meghini C., Schuldt H. (eds) Research and Advanced Technology for Digital Libraries. TPDL 2011. Lecture Notes in Computer Science, vol 6966. Springer, Berlin, Heidelberg, 2011, https://doi.org/10.1007/978-3-642-24469-8_11

[29] Agosti, M., Crivellari, F., Nunzio, G.M., & Gabrielli, S. “Understanding user requirements and preferences for a digital library Web portal”, International Journal on Digital Libraries, 2008(11), 225-238, 2010

[30] Margaret, M. “Technology and People: Some Challenges when Integrating Digital Library Systems into Online Learning Environments”, New Review of Information and Library Research, 9(1), 85-96, 2003, DOI: 10.1080/13614550410001687936

[31] Virkus, S., Agegn, A.G., Asfaw, D.T., Jakup, K.B., Melgar E.L.M., Yadav, D. "Integration of digital libraries and virtual learning environments: a literature review", New Library World, 110 (3/4), 136-150, 2009,
https://doi.org/10.1108/03074800910941338

[32] Rezaei, S. “How digital libraries can support e-learning”, Electron. Libr. 24(3), 389–401, 2006.
https://doi.org/10.1108/02640470610671231

[33] McMartin, F., Iverson, E., Wolf, A., Morrill, J., Morgan, G., Manduca, C. “The use of online digital resources and educational digital libraries in higher education”, International Journal on Digital Libraries, 2008(9), 65–79, 2008

[34] Beasley, R. “An exploration of disciplinary differences in the use of Talis at the University of Auckland” [master’s thesis, Victoria University of Wellington], Victoria University of Wellington Research Archives, 2016
http://hdl.handle.net/10063/5629

[35] Marks, N. “Student engagement in improving access to taught course content at LSE library: Practicalities and pitfalls”, New Review of Academic Librarianship, 26(2-4), 403-418, 2020
DOI: 10.1080/13614533.2020.1803937

[36] Hinze, A., Vanderschantz, N., Timpany, C., Saravani SJ., Cunningham S.J., Wilkinson, C. “Use of Mobile Apps for Teaching and Research – Implications for Digital Literacy”, In: Choemprayong S., Crestani F., Cunningham S. (eds) Digital Libraries: Data, Information, and Knowledge for Digital Lives. ICADL 2017. Lecture Notes in Computer Science, vol 10647. Springer, Cham. 2017
DOI: 10.1007/978-3-319-70232-2_15

[37] McKay, D., Buchanan, G., Vanderschantz, N., Timpany, C., Cunningham, S. J., & Hinze, A. “Judging a book by its cover: interface elements that affect reader selection of ebooks”, In Proceedings of the 24th Australian Computer-Human Interaction Conference (pp. 381-390). New York, USA: ACM, 2012
https://dl.acm.org/doi/10.1145/2414536.2414597

[38] McKay, D., Hinze, A., Heese, R., Vanderschantz, N., Timpany, C. & Cunningham, S.J. “An exploration of ebook selection behavior in academic library collections”, In 2nd International Conference on Theory and Practice of Digital Libraries, TPDL 2012, Paphos, (pp. 13-24). Paphos, Cyprus, 2012
DOI: 10.1007/978-3-642-33290-6_2

[39] Vanderschantz, N., Timpany, C., & Hinze, A. “Design exploration of ebook interfaces for personal ebook libraries on tablet devices”, In A. Hinze, D. M. Nichols, & M. Masoodian (Eds.), Proceeding of 15th New Zealand Conference on Human-Computer Interaction, 3-4 September 2015, Hamilton, New Zealand (pp. 21–30). Hamilton, NZ: ACM, 2015
http://doi.org/10.1145/2808047.2808054

[40] Zhang, U., McKay, D., & Buchanan, G. “Worth 1000 Words? The Influence of Image Versus Text Content on the Book Selection Process”, In Proceedings of the 32nd Australian Conference on Human-Computer Interaction (OzCHI '20). Association for Computing Machinery, New York, NY, USA, 639–648, 2020
https://doi.org/10.1145/3441000.3441002

[41] Potnis, D., Deosthali, K., Zhu, X., McCusker, R. “Factors influencing undergraduate use of e-books: A mixed methods study”, Library & Information Science Research, Volume 40, Issue 2, Pages 106-117, 2018.
https://doi.org/10.1016/j.lisr.2018.06.001