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Usage, engagement and impact: evaluating the usage of and measuring impact and engagement with library resources at Leeds Beckett University Library

In 2017–18 Leeds Beckett University Library undertook a project to assess the feasibility of using OpenAthens and student record data to enable in-depth analysis of learning resources usage and costs, student engagement and library impact. This article describes the different approaches taken to evaluate usage of the Library's e-resources to identify levels of engagement at school and course level. These include evaluating the impact of induction attendance on e-resource usage, reviewing school e-resource usage and return on investment, analysing usage trends at school and year level and examining the correlation between National Student Survey (NSS) results and e-resource usage for specific courses. The project confirmed the feasibility of using OpenAthens and student record data for in-depth analysis of learning resources usage, student engagement and library impact. Successful analysis was performed for schools, courses and levels of study and provided significant insight that informed resource provision and NSS action. Library managers, academic librarians and academics have consequently engaged with and benefited from the project and its outputs. This article builds on a breakout session presented at the 42nd UKSG Annual Conference in April 2019.

Keywords

data analysis; user engagement; e-resource usage; resource provision; library impact; performance indicators

Background

In 2017–18 Leeds Beckett Library undertook a project to assess the feasibility of using OpenAthens and student record data to enable in-depth analysis of learning resources usage and costs, student engagement and library impact. OpenAthens is an access and identity management system used to authenticate users to access subscribed e-resources. Our e-resource usage statistical data, where a user accesses a particular resource, was obtained via the administration site of the OpenAthens system. The student record data was a weekly snapshot report run by our IT Services and Registry departments and saved in a secure folder where permission was needed to access it.

The aim of the project was to evaluate the usage of e-resources by students to identify levels of engagement at school and course level and to inform resource provision.

There were existing monthly e-resource usage reports from OpenAthens, but they only showed the number of users per provider, and it had not been previously possible to analyse the data beyond that level. The creation of the new Electronic and Data Services Librarian role in May 2017, whose remit was to combine OpenAthens data with student record snapshot data at the user ID level, meant we could get a more granular level of usage

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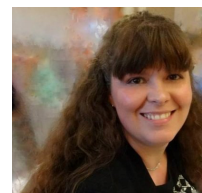
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by course and school level. The role holder had previously worked as an information data analyst in Registry so had experience of combining student record data with other data sets for performance monitoring. This project was a piece of operational analysis to provide evidence and insight to support collections management and decision-making so that our users have appropriate and value-for-money learning resources. We were not aware of anyone else in the sector who had undertaken this type of analysis, so we were not influenced in how we carried out the feasibility study.

Prior to commencement, we ensured that the analysis we were undertaking complied with Leeds Beckett University's Data Protection policy and the Student Privacy Notice[1] which is validated by the Student Contract signed by all Leeds Beckett students as part of registration.[2]

> 'We were not aware of anyone else in the sector who had undertaken this type of analysis'

Proof of concept

In May 2017 the new Electronic and Data Services Librarian developed a proof of concept which combined OpenAthens, stock circulation and reading list data with student record data at the user ID level. This demonstrated that it was possible to provide more granular usage data on book loans, user e-resource accesses through OpenAthens and reading-list accesses for analysis at course and school level.

Data for 338 students on the Childhood Studies course was used. We were able to combine student data with reading-list data to see if students on the course were accessing their reading lists, and with e-resource access data from OpenAthens (Figure 1a) and book loans from the library management system (Figure 1b) to analyse resource usage.

> 'it was possible to provide more granular usage data … for analysis at course and school level'

Student Program Code	Provider	Month	Sum of Accesses	Count of ID	Distinct Count of ID2
CHILD	Atypon SP (transfer)	17/05 May	3	2	2
	Cambridge Journals Online (transfer)	17/06 June	1	1	1
	DawsonEra (transfer)	17/04 April	5	1	1
		17/05 May	3	1	1
	Digital Content Store (transfer)	17/04 April	35	12	12
		17/05 May	129	34	34
		17/06 June	1	1	1
	EBSCO Information Services (transfer)	17/05 May	5	5	5
	Elsevier Products (transfer)	17/04 April	2	1	1
		17/05 May	25	8	8
	HighWire Press (transfer)	17/04 April	5	1	1
	https://journals.sagepub.com/shibboleth (transfer)	17/04 April	13	5	5
		17/05 May	14	5	5
	Ingenta (transfer)	17/05 May	5	2	2
	JSTOR (transfer)	17/04 April	8	2	2
		17/05 May	15	9	9
	Learning on Screen (transfer)	17/04 April	3	2	2
		17/05 May	4	1	1
		17/06 June	3	1	1
	NUS extra Student Discount card (transfer)	17/05 May	4	2	2
		17/06 June	8	4	4
	Oxford University Press Resources (transfer)	17/05 May	1	1	1
	ProQuest & Chadwyck-Healey databases (transfer)	17/04 April	2	1	1
		17/05 May	1	1	1
	Publishing Technology: IngentaConnect (transfer)	17/05 May	2	1	1
	Semantico Limited - OUP Shibboleth 2 SP (transfer)	17/04 April	3	1	1
		17/05 May	12	7	7
	Springer (transfer)	17/04 April	2	1	1
	Student Beans (transfer)	17/05 May	1	1	1
		17/06 June	1	1	1
	Taylor & Francis eBooks (transfer)	17/05 May	1	1	1
	Taylor & Francis Online (transfer)	17/04 April	17	7	7
		17/05 May	45	17	17
	VLebooks.com (transfer)	17/06 June	1	1	1
	Wiley Online Library (transfer)	17/04 April	31	7	7
		17/05 May	37	15	15
		17/06 June	1	1	1
CHILD Total			449	164	85
Grand Total			449	164	85

Figure 1a. E-resource usage for students on Childhood Studies course (April–June 2017)

Student Program Code	Catalog Title	Item Library Desc	Item Collection	Distinct Count of Catalog Title	Count of ID	Distinct Count of ID2
				Values		
CHILD	A good childhood : searching for values in a competitive age /	Headingley Library	SHELVES	1	1	1
	An introduction to early childhood : a multidisciplinary approach /	Headingley Library	SHELVES	1	1	1
	At greatest risk : the children most likely to be poor /	Headingley Library	SHELVES	1	1	1
	Changing childhoods : local and global /	Headingley Library	SHELVES	1	1	1
	Changing the odds for children at risk : seven essential principles of educational programs that break the cycle of poverty /	Headingley Library	SHELVES	1	1	1
	Child development /	Headingley Library	SHELVES	1	3	3
	Child development : a practitioner's guide /	Sheila Silver Library	SHELVES	1	1	1
	Child development : a thematic approach /	Headingley Library	SHELVES	1	4	4
	Child development for child care and protection workers /	Sheila Silver Library	SHELVES	1	1	1
	Childhood & adolescence : voyages in development /	Headingley Library	SHELVES	1	1	1
	Childhood disability in a multicultural society /	Headingley Library	SHELVES	1	1	1
	Childhood poverty : multidisciplinary approaches /	Sheila Silver Library	SHELVES	1	1	1
	Childhood studies : an introduction /	Headingley Library	SHELVES	1	1	1
	Children, welfare and the state /	Headingley Library	SHELVES	1	1	1
	City survivors : bringing up children in disadvantaged neighbourhoods /	Headingley Library	SHELVES	1	1	1
	Coming of age in Samoa : a study of adolescence and sex in primitive societies /	Headingley Library	SHELVES	1	1	1
	Defining women : social institutions and gender divisions /	Headingley Library	SHELVES	1	1	1
	Early childhood studies /	Headingley Library	SHELVES	1	1	1
	Education and poverty in affluent countries /	Headingley Library	SHELVES	1	1	1
	Educational failure and working class white children in Britain /	Headingley Library	SHELVES	1	1	1
	Equal opportunities and social policy : issues of gender, race and disability /	Headingley Library	SHELVES	1	1	1
	Introducing social policy /	Headingley Library	SHELVES	1	2	2
	Introducing social policy.	Sheila Silver Library	SHELVES	1	1	1
	Living on the edge : rethinking poverty, class and schooling /	Headingley Library	SHELVES	1	1	1
	Making sense of social development /	Headingley Library	SHELVES	1	1	1
	Narrowing the gap : the final report of the Fabian Commission on life chances and child poverty /	Sheila Silver Library	SHELVES	1	1	1
	Poverty and social exclusion in Britain : the millennium survey /	Headingley Library	SHELVES	1	1	1
	Promoting equality : challenging discrimination and oppression /	Headingley Library	SHELVES	1	1	1
	Small fortunes : spending on children, childhood poverty and parental sacrifice /	Headingley Library	SHELVES	1	1	1
	Social policy /	Headingley Library	SHELVES	1	1	1
		Sheila Silver Library	SHELVES	1	1	1
	Social policy : an introduction.	Headingley Library	SHELVES	1	2	2
	Social policy : theory and practice /	Sheila Silver Library	SHELVES	1	1	1
	Stand up speak out : a book about children's rights, written by young people around the world/	Headingley Library	SHELVES	1	4	4
	Tell it like it is : how our schools fail black children /	Sheila Silver Library	SHELVES	1	1	1
	The developing child /	Headingley Library	SHELVES	1	3	3
	The Wiley Blackwell handbook of childhood social development /	Headingley Library	SHELVES	1	1	1
	Understanding the policy process : analysing the welfare policy and practice /	Sheila Silver Library	SHELVES	1	1	1
	Unequal childhoods : young children's lives in poor countries /	Headingley Library	SHELVES	1	1	1
	Well-being in the early years /	Headingley Library	SHELVES	1	1	1
CHILD Total				39	52	17
Grand Total				39	52	17

Figure 1b. Book loans for students on Childhood Studies course (April–June 2017)

The initial analysis showed that students were using e-resources more than physical stock and that the most used e-resources had content relevant to the course, for example Wiley Online Library, Taylor & Francis Online and the digitized articles and book chapters that had been uploaded to the Copyright Licencing Agency's Digital Content Store. However, we noticed that the items on the reading lists did not appear in the book loans. This raised the question whether students were reading beyond the items recommended on the reading lists or simply not using the reading lists. This would have required further investigation of reading list usage, but this was out of the scope of the project, which prioritized OpenAthens data, due to the capacity constraints of working in Access and Excel.

The proof of concept also highlighted multiple combinations of titles for the same e-resources in the OpenAthens data, which in some cases also differed from the title of the resource used locally. It was therefore necessary to enhance the OpenAthens data by combining the multiple entries under the local e-resource name, thus making it more meaningful for stakeholders, as shown in Figure 2. The final column shows the final resource name used in reports to Libraries and Learning Innovation (LLI).

OpenAthens E-resources	Combinations	LLI Reporting Name
Oxford Academic (transfer)	Oxford Academic (transfer) Oxford University Press Resources (transfer) Semantico Limited - OUP Shibboleth 2 SP (transfer) University of Oxford: Oxford Text Archive (transfer)	Oxford University Press
Oxford University Press Resources (transfer)	Oxford Academic (transfer) Oxford University Press Resources (transfer) Semantico Limited - OUP Shibboleth 2 SP (transfer) University of Oxford: Oxford Text Archive (transfer)	Oxford University Press
Semantico Limited - OUP Shibboleth 2 SP (transfer)	Oxford Academic (transfer) Oxford University Press Resources (transfer) Semantico Limited - OUP Shibboleth 2 SP (transfer) University of Oxford: Oxford Text Archive (transfer)	Oxford University Press

Figure 2. Example of multiple labels for the same OpenAthens resource and the final LLI description

Prototype

A prototype was then developed to evaluate e-resource usage following library induction, to see if there was a positive impact on usage as a result of attendance.

It combined five months of OpenAthens data from August to December 2017 with a snapshot of student record data from November 2017. The analysis, which included visualizations (Figures 3a, 3b and 3c), focused on e-resource usage by students on Year 1 (Level 4) of the Childhood Studies course, who had their induction in November 2017.

The focused analysis showed that the total number of unique users (students) declined over the period, there had been an in increase in the number of e-resources accessed by those

students, the total number of accesses of e-resources peaked in September and November, and there had been usage in August prior to the start of term and in September prior to the library induction.

The early usage was accesses to the NUS extra Student Discount card and UNiDAYS Perks of Student Life websites, probably due to students having received their University information packs around that time. From September, students were using library e-resources like Cengage Learning, Kanopy, Box of Broadcasts and Wiley. Their course inductions would have taken place by then, which may account for that usage.
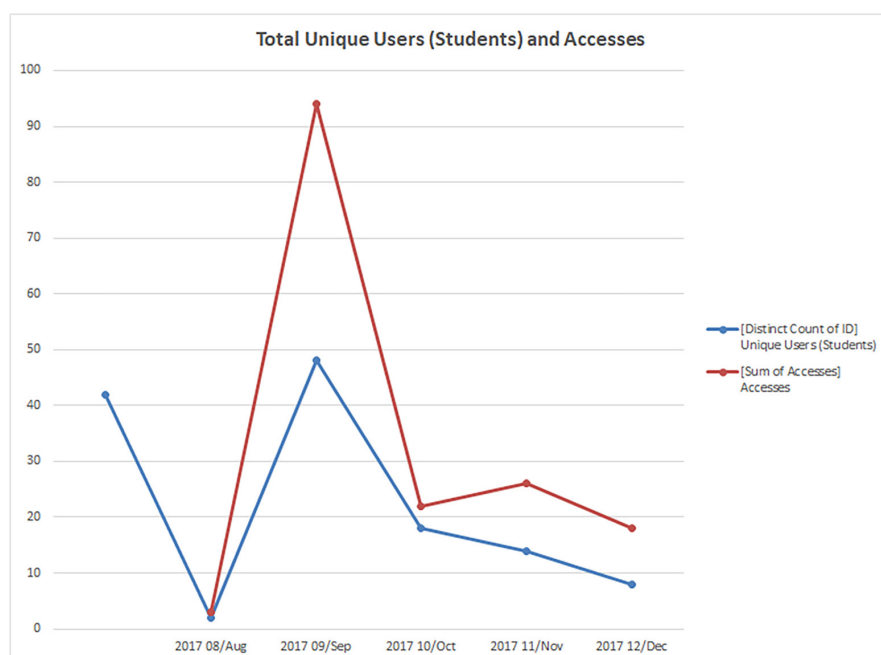
Figure 3a. Total number of unique student users of e-resources and accesses to e-resources (August–December 2017)
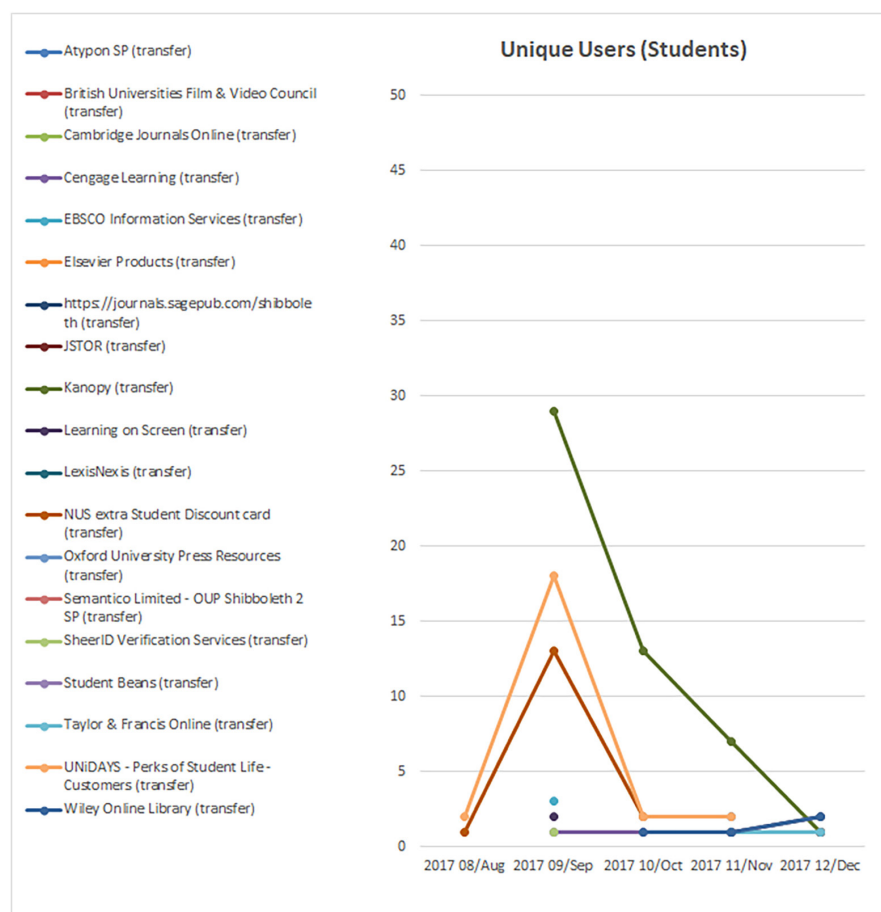

Figure 3b. E-resources by number of unique users (August–December 2017)
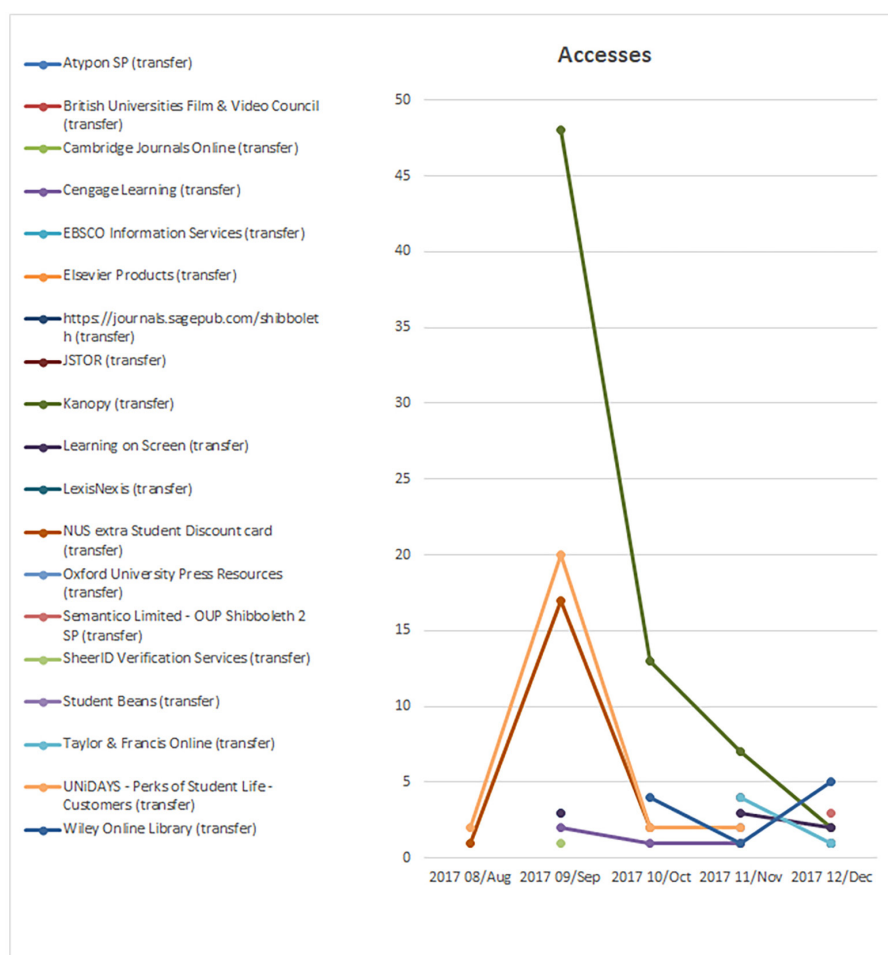
Figure 3c. E-resources by number of accesses (August – December 2017)

The library induction was delivered in November and, following induction, the breadth of e-resources used increased. This may have been due to the promotion of the library's search engine (EBSCO Discovery Service) and the demonstration of searching for online journals. For example, Taylor & Francis Online was only used afterwards and the usage of Wiley increased again after the induction. Kanopy and Box of Broadcasts, also promoted as part of the induction, continued to be used. More e-resources were accessed by those who attended the induction compared to those who did not. For example: Oxford University Press e-resources were only accessed following the induction and only by students who had attended it, and Oxford Reference Online had been promoted.

'More e-resources were accessed by those who attended the induction'

It was too early to see any long-lasting impact and the numbers were too small to conclude a direct relationship, but it may be inferred that the library induction encouraged the students who attended to use the e-resources promoted. However, we did acknowledge that in order to make more tangible conclusions we would have needed to gather further qualitative information through liaison with the academic librarians (who work closely with students), staff and students.

Annual reports

In August 2018 a full academic year of data was analysed and data tables and visualizations were included in the Library's annual reports for each School. The School annual reports are based around the Schools' key performance indicators and provide data on staff and student engagement with Library resources, teaching and support. Some of the data that was provided included e-resource usage, resource list engagement and resource provision for specific Schools. The reports highlight the return on investment (ROI) for resource provision and usage while linking to the National Student Survey (NSS) results for the School.
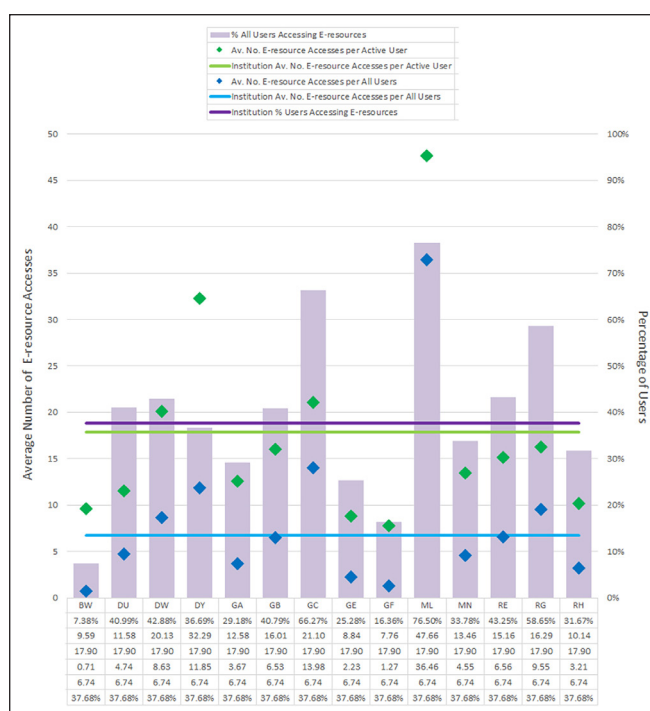
Figure 4. Annual institutional overview of users by school and e-resource accesses (August 2017–July 2018)
Key to Schools: BW: Languages; DU: Education; DW: Sport; DY: Events, Tourism and Hospitality Management; GA: Built Environment; GB: Art, Architecture and Design; GC: Cultural Studies and Humanities; GE: Film, Music and Performing Arts; GF: Computing, Creative Technologies & Engineering; ML: Law; MN: Business; RE: Clinical and Applied Sciences; RG: Social Sciences; RH: Health and Community Studies

An institutional overview of e-resource accesses by School from August 2017 to July 2018 (Figure 4) was provided. The purple line is the institutional percentage of all student users accessing e-resources through OpenAthens. This can be compared with the lilac bars which are the Schools' percentage of all student users accessing e-resources through OpenAthens. The green line is the institutional average number of accesses per active user and is for comparison with the green diamonds which are the Schools' average numbers of accesses per active user; active users being those students who have used e-resources through OpenAthens, as opposed to those who have not. The blue line is the institutional average number of accesses per all users and is for comparison with the blue diamonds which are the Schools' average numbers of accesses per all users; all users being all student users including those students who have not used e-resources through OpenAthens, as opposed to only those who have.
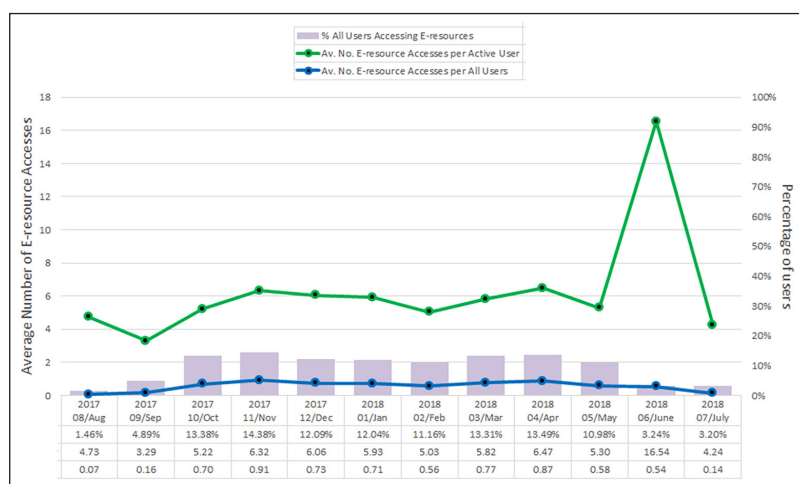

Figure 5. Annual institutional trend of users and e-resource accesses

Charts visualizing the annual trend of usage at an institutional level showed a large spike in e-resource usage in June (Figure 5), which prompted further investigation. The annual trends in each School were therefore examined and this highlighted the fact that four of the Schools had the same spike in usage: Events, Tourism and Hospitality Management, Computing and Creative Technology, Education, and Cultural Studies and Humanities.

Further analysis showed that the spike referred to a particular e-resource, and usage mainly came from nine students across four Schools and seven courses (Table 1).

School	Course title	Anonymized student	Number of accesses
DU Education	EDUCATION STUDIES	A	244
DY Events, Tourism and Hospitality Management	TRAVEL BUSINESS MANGT (TU)	B	275
DY Events, Tourism and Hospitality Management	INT TOUR & HOSP MAN	C	6,939
DY Events, Tourism and Hospitality Management	RESPONSIBLE TOURISM MGT	D	220
DY Events, Tourism and Hospitality Management	LEISURE RETAIL MANAGT WSPOONS	E	208
GC Cultural Studies and Humanities	SOCIAL HISTORY	F	1,780
GC Cultural Studies and Humanities	SOCIAL HISTORY	G	658
GC Cultural Studies and Humanities	SOCIAL HISTORY	H	219
GF Computing, Creative Technologies and Engineering	DIGITAL & TECH SOLUTIONS (DA)	I	245

Table 1. E-resource usage spike investigation

With academic librarian insight, the consensus was that the e-resource usage was legitimate. For example: some Events Tourism and Hospitality Management courses run on a three-semester year, continuing teaching through the summer, so it was possible that their deadlines fell then; also the Digital and Technical Solutions course has students working on unusual topics in quite distinctive ways, so one of them producing an unusual access pattern would not be that unexpected.

Tables showing the top ten e-resources by School were also provided.

Pos	School of Sport Top ten e-resources	Total e-resources accesses	No. e-resources accesses	No. active users
	School Total	100.00%	31,195	1,550
1	EBSCO Information Services	50.95%	15,895	780
2	Taylor & Francis Online	13.62%	4,248	430
3	Elsevier Products	6.38%	1,991	424
4	Wiley Online Library	5.28%	1,647	351
5	SAGE Journals	2.35%	734	209
6	Learning on Screen (Box of Broadcasts)	2.35%	734	119
7	ProQuest and Chadwyck-Healey databases	2.29%	714	225
8	Wolters Kluwer Health – Ovid	1.95%	609	83
9	Atypon SP	1.67%	520	209
10	Ovid Technologies, Inc.	0.97%	302	61
Total	T10 Total	87.82%	27,394	2,891
Total	Rest Total	12.18%	3,801	1,618

Table 2. School top 10 e-resources (August 2017–July 2018)

Table 2 shows usage for the School of Sport and indicates that students were accessing a range of e-resources. Their top ten accounted for 88 per cent of total e-resources accessed and the top three made up 71 per cent. The high usage of Taylor & Francis Online was a positive outcome for the library as an example of an ROI, because it was licensed following requests from academic staff in that School.

'high usage of Taylor & Francis Online was a positive outcome … because it was licensed following requests from academic staff'

Bespoke reports

The annual reports were presented to a University Teaching and Learning Steering Group; consequently, a bespoke report was created for the School of Sport, which provided a deeper level of analysis.
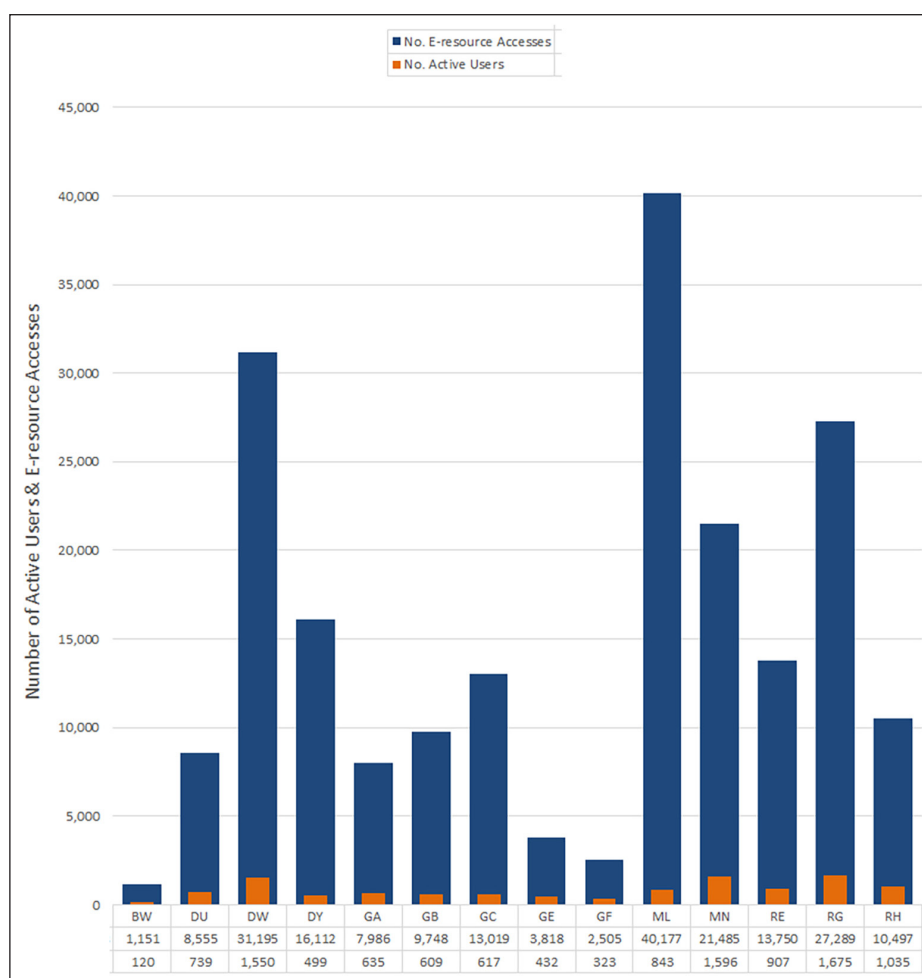
Figure 6. Schools users and e-resource accesses (August 2017–July 2018)
Key to Schools: BW: Languages; DU: Education; DW: Sport; DY: Events, Tourism and Hospitality Management; GA: Built Environment; GB: Art, Architecture and Design; GC: Cultural Studies and Humanities; GE: Film, Music and Performing Arts; GF: Computing, Creative Technologies & Engineering; ML: Law; MN: Business; RE: Clinical and Applied Sciences; RG: Social Sciences; RH: Health and Community Studies

Figure 6 shows e-resource usage in the Schools, with DW representing the School of Sport. The blue bars show the number of active users in the Schools and the orange bars show the total number of e-resources accesses through OpenAthens made by those active student users for the year.
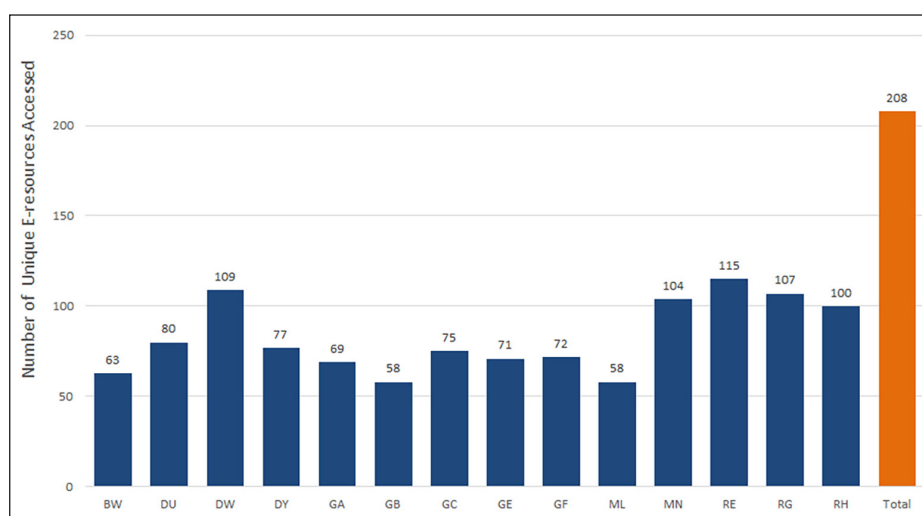

Figure 7. Schools e-resources accesses (August 2017–July 2018)
Key to Schools: BW: Languages; DU: Education; DW: Sport; DY: Events, Tourism and Hospitality Management; GA: Built Environment; GB: Art, Architecture and Design; GC: Cultural Studies and Humanities; GE: Film, Music and Performing Arts; GF: Computing, Creative Technologies & Engineering; ML: Law; MN: Business; RE: Clinical and Applied Sciences; RG: Social Sciences; RH: Health and Community Studies
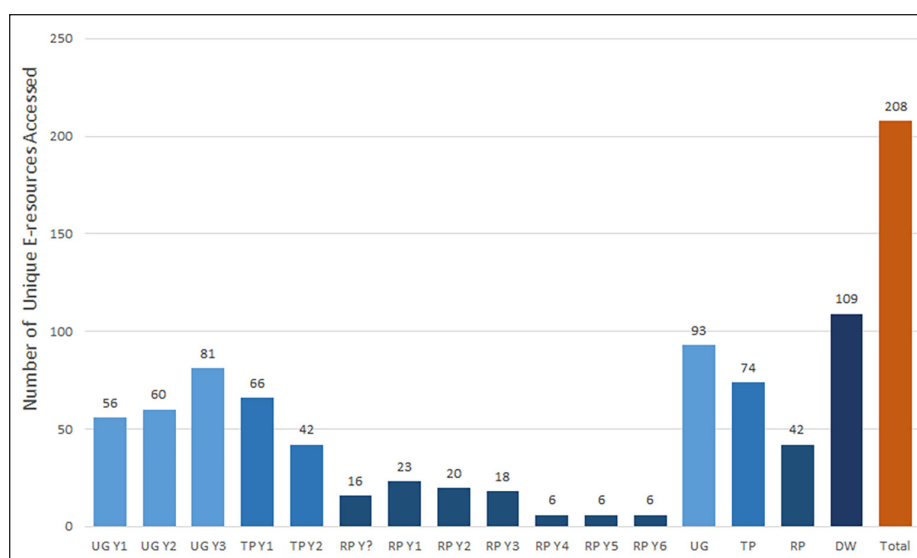
Figure 8. School of Sport unique e-resources accessed by year
Key: UGY1: Undergraduate Year 1; UGY2: Undergraduate Year 2; UGY3: Undergraduate Year 3; TPY1: Taught Postgraduate Year 1; TPY2: Taught Postgraduate Year 2; RPY?: Research Postgraduate undefined year; RPY1: Research Postgraduate Year 1; RPY2: Research Postgraduate Year 2; RPY3: Research Postgraduate Year 3; RPY4: Research Postgraduate Year 4; RPY5: Research Postgraduate Year 5; RPY6: Research Postgraduate Year 6

Figure 7 shows the number of unique e-resources accessed. Sport students accessed 109 out of a possible 208 (the orange bar in the figure), showing use of a broad range of e-resources.

Academic staff were particularly interested in students' e-resource usage at different levels of study, i.e. undergraduate (UG), taught postgraduate (PG) and research postgraduate (RP).

'Academic staff were particularly interested in students' e-resource usage at different levels of study'

Figure 8 shows undergraduates used a greater range of e-resources, which declines at taught-postgraduate level and again at research level. It was noted that this pattern of usage would be expected as students move from undergraduate to postgraduate courses and focus their area of study.
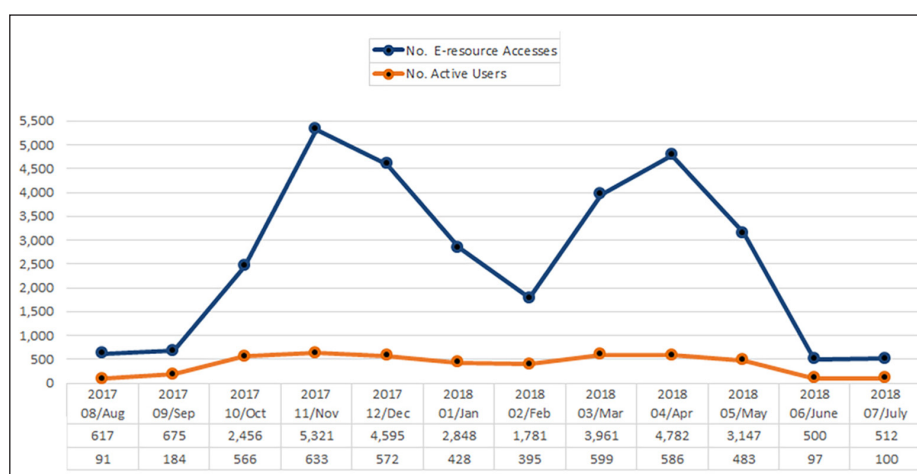

Figure 9. School of Sport's annual trend for active users and e-resource accesses

Academics were also interested in annual trends. Figure 9 shows school e-resource usage was higher in October and November following library inductions and for submission deadlines in March and April.

The annual trend was broken down by level (Figures 10a, 10b, 10c and 10d), which highlighted different patterns of usage, for example less usage in vacation periods for undergraduate years 1 and 2, and in January and February for undergraduate year 3 and taught-postgraduates following dissertation work or exam revision over Christmas.

These patterns supported findings from discussions with undergraduate students which suggested high engagement in year 1, particularly after inductions and at submission deadlines, coasting in year 2 and re-engagement in year 3, especially at dissertation time. For postgraduate students, there was similar engagement to year 1 undergraduates. The spikes in March and May were potentially attributed to dissertation reference checking.
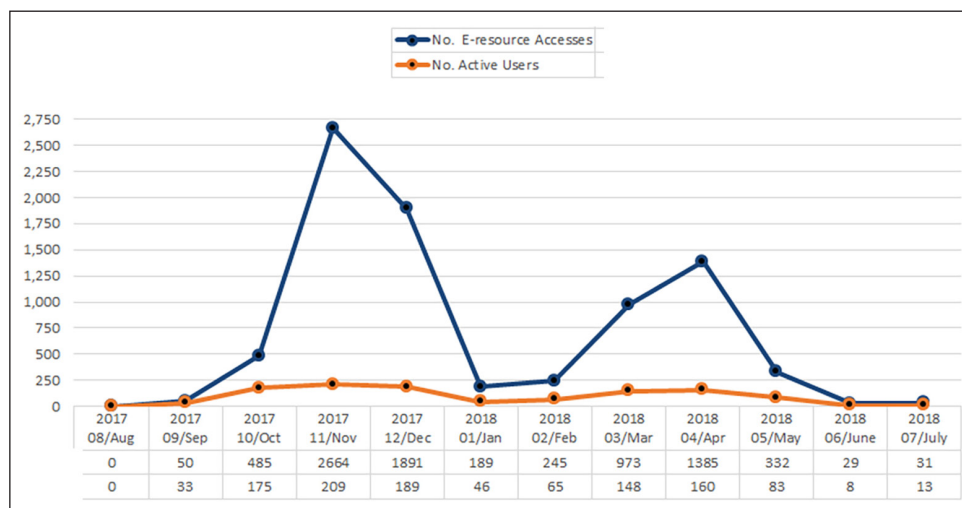

	2017 08/Aug	2017 09/Sep	2017 10/Oct	2017 11/Nov	2017 12/Dec	2018 01/Jan	2018 02/Feb	2018 03/Mar	2018 04/Apr	2018 05/May	2018 06/June	2018 07/July
No. E-resource Accesses	0	50	485	2664	1891	189	245	973	1385	332	29	31
No. Active Users	0	33	175	209	189	46	65	148	160	83	8	13

Figure 10a. School of Sport undergraduate first-year trend for active users and e-resource accesses

	2017 08/Aug	2017 09/Sep	2017 10/Oct	2017 11/Nov	2017 12/Dec	2018 01/Jan	2018 02/Feb	2018 03/Mar	2018 04/Apr	2018 05/May	2018 06/June	2018 07/July
No. E-resource Accesses	0	12	159	783	703	561	241	426	615	659	60	40
No. Active Users	0	7	70	147	103	94	81	116	106	118	18	18

Figure 10b. School of Sport undergraduate second-year trend for active users and e-resource accesses

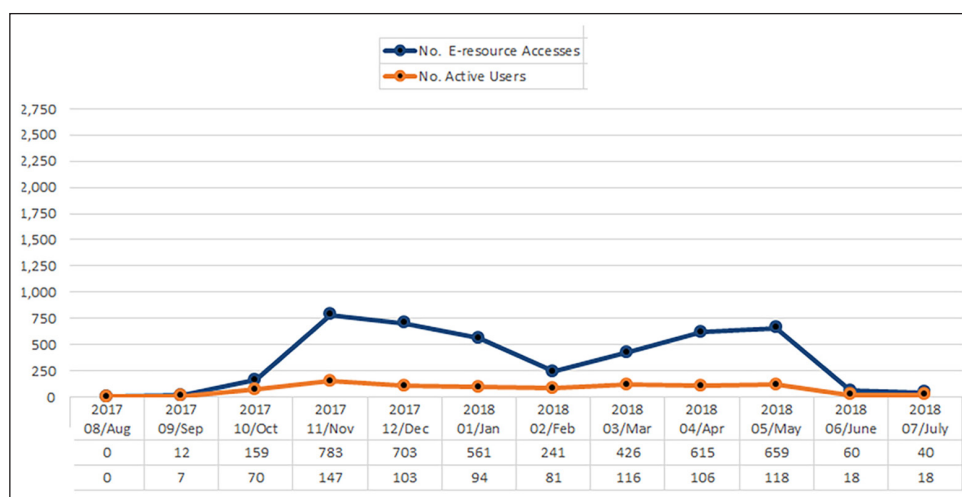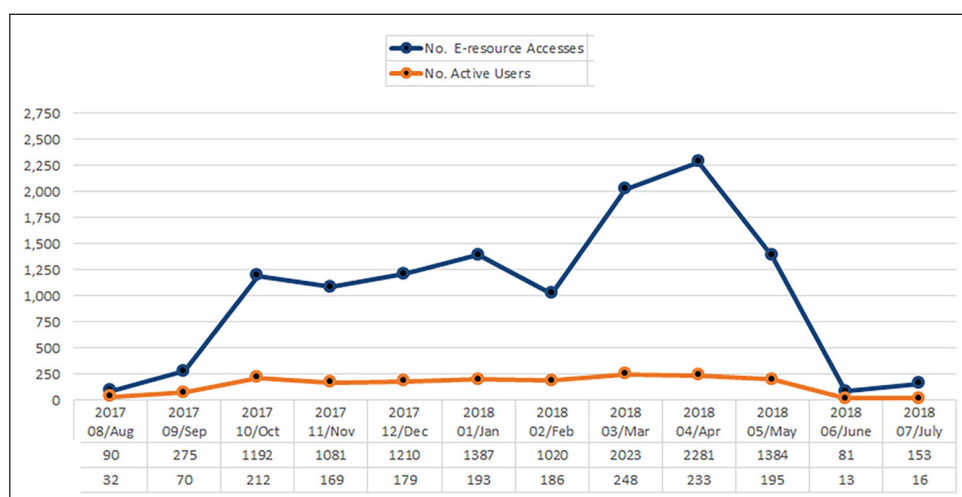|	2017 08/Aug	2017 09/Sep	2017 10/Oct	2017 11/Nov	2017 12/Dec	2018 01/Jan	2018 02/Feb	2018 03/Mar	2018 04/Apr	2018 05/May	2018 06/June	2018 07/July
No. E-resource Accesses	90	275	1192	1081	1210	1387	1020	2023	2281	1384	81	153
No. Active Users	32	70	212	169	179	193	186	248	233	195	13	16

Figure 10c. School of Sport undergraduate third-year trend for active users and e-resource accesses
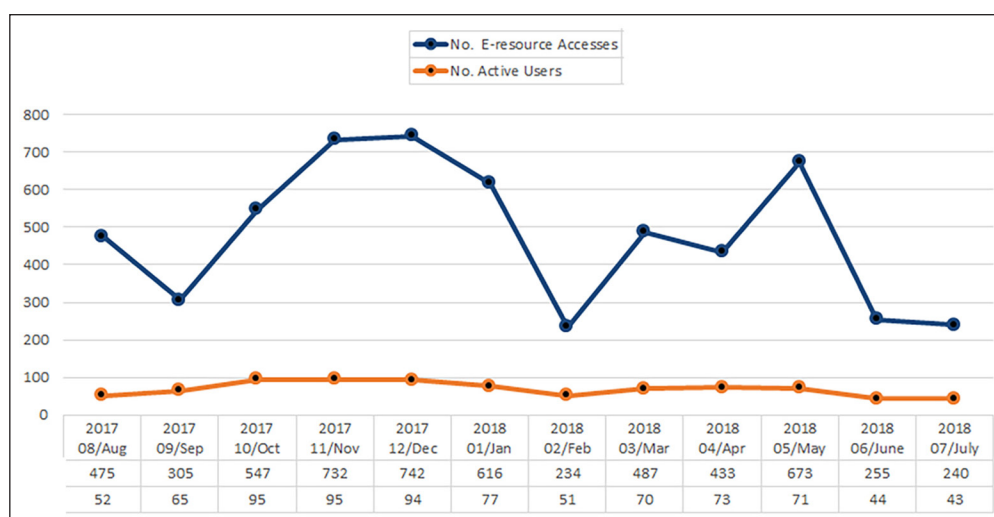
Figure 10d. School of Sport undergraduate taught postgraduate trend for active users and e-resource accesses

National Student Survey analysis

A correlation analysis was performed on NSS results and e-resource usage. The NSS is an independent questionnaire sent to all final-year undergraduates asking for feedback on all aspects of the student experience including the course and university services.[3] Our analysis focused on the 2018 scores for question 19: 'The library resources have supported my learning well' and looked at the e-resource usage of the survey population during their final year (2017–18, level 6), which is when they completed the NSS. It also concentrated on courses that had the lowest scores, significant decreases or increases in score and the highest scores. The intention of the analysis was to identify if the levels of engagement with e-resources directly correlated with the scoring of question 19 in the NSS.
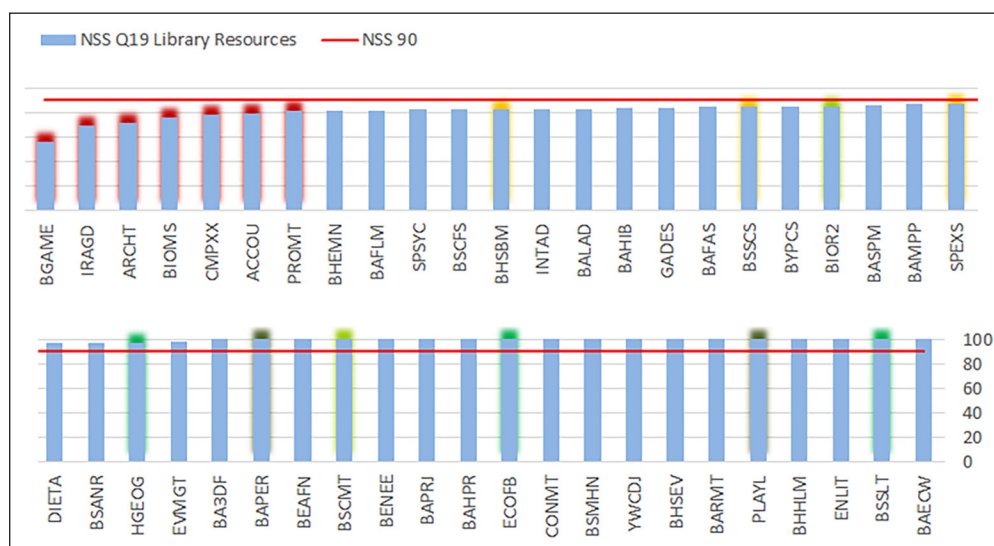

Figure 11. NSS question 19 – course performance against the NSS average of 90% (shown by red line)

Figure 11 shows courses that scored question 19 at the lower and upper end of the NSS analysis. The courses codes, for example BGAME for BSc (Hons) Games Design Course and BSSLT for BSc (Hons) Speech and Language Therapy Course, were used as course identifiers. The red line reflects the institutional average score (90 per cent). The red highlights are the low-scoring courses. The orange highlights are falling courses with drops of more than two percentage points in the NSS. The green highlights are the improving and high-scoring courses.
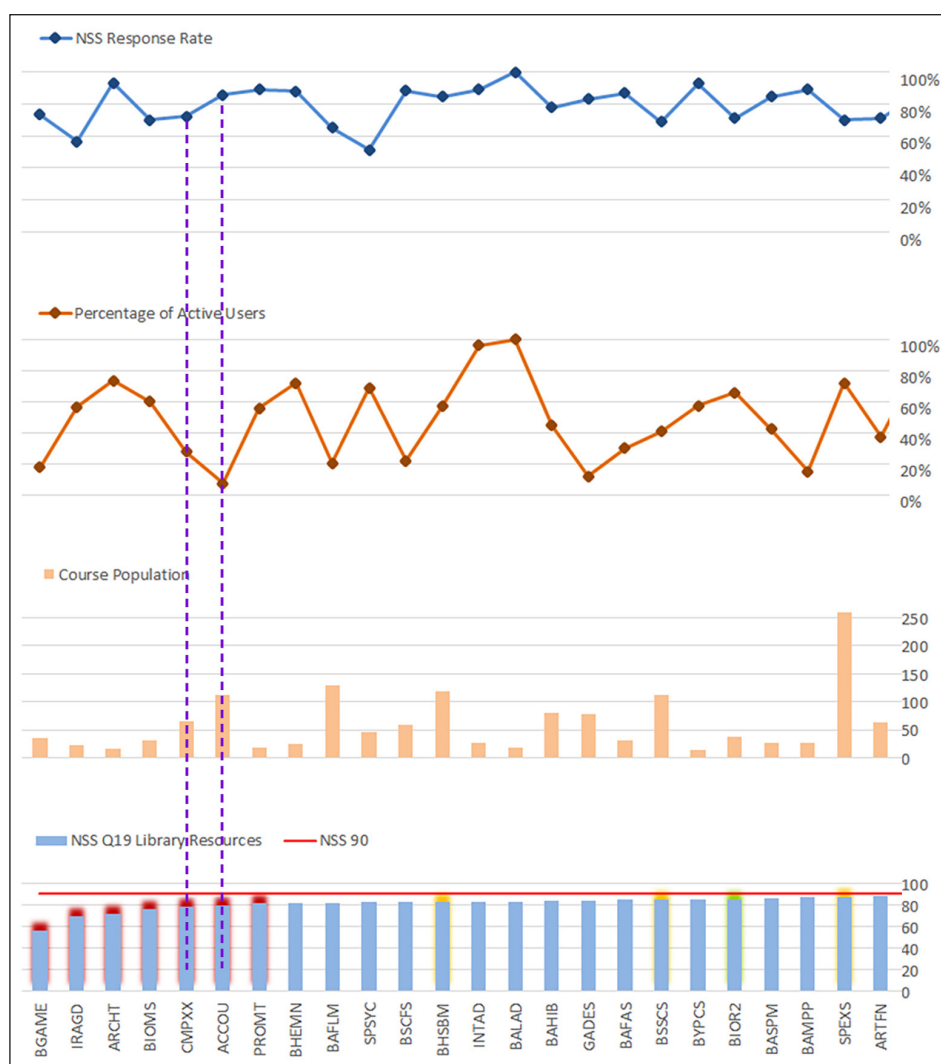
Figure 12. Low-scoring NSS courses, focusing on Computing (CMPXX) and Accounting and Finance (ACCOU), compared across NSS response rate, percentage of active users and course population

Figure 12 shows the low-scoring NSS courses compared with the NSS response rate, the percentage of active users of e-resources and the course population. Figure 12 indicates that some low-scoring courses (below the NSS average shown by the red line) had low percentages of active users but a good NSS response rate as well as a larger course population. Two of these courses, picked out by the purple dashed line in Figure 12, were examined in more detail: BSc (Hons) Computing (CMPXX) and BA (Hons) Accounting and Finance (ACCOU), and the resource usage for students on these courses was investigated. (See Tables 3 and 4.)

Computing students		
Resources accessed	E-resource accesses	Percentage of overall e-resource usage
Box of Broadcasts	23	10%
Elsevier	21	9%
ProQuest and Chadwyck-Healey databases	12	5%

Table 3. E-resource accesses for students on the Computing course (August 2017–July 2018)

Accounting and Finance students		
Resources accessed	E-resource accesses	Percentage of overall e-resource usage
Marketline	62	13%
Lexis Nexis	59	12%
Taylor & Francis	30	6%

Table 4. E-resource accesses for students on the Accounting and Finance course (August 2017–July 2018)

It was determined that the resources used by students on these courses were relevant to their subject areas but had low levels of usage – see Figure 12 – which raised the questions: Are they the right resources? Do they need more promotion? Would improving engagement with e-resources increase NSS scores?
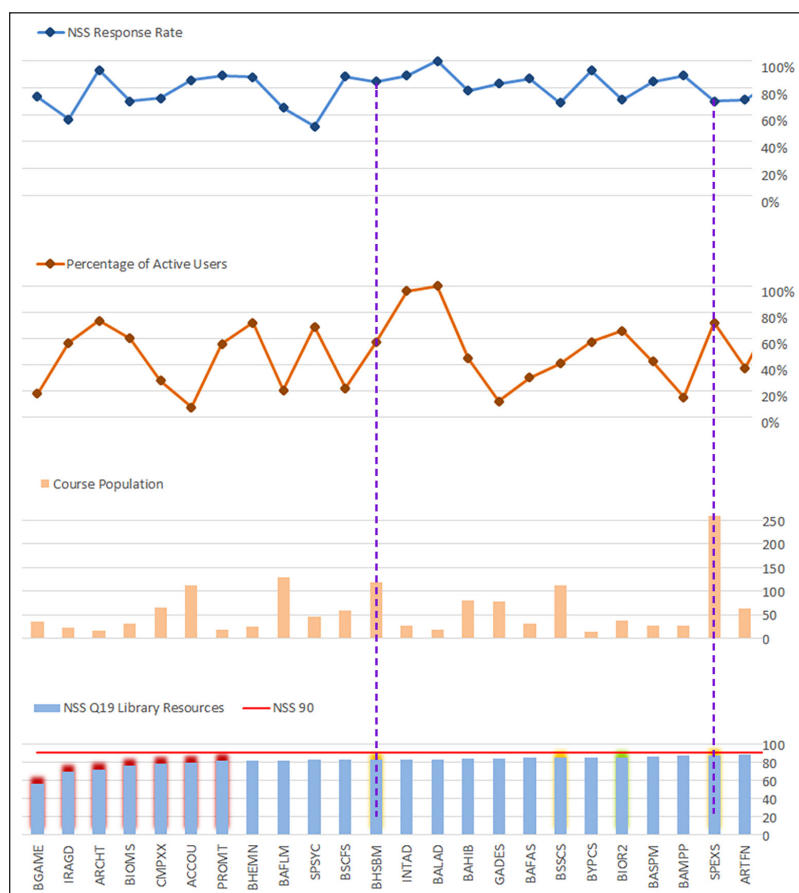

Figure 13. Falling NSS courses: Sport Business Management (BHSBM) and Sport and Exercise Science (SPEXS) compared across NSS response rate, percentage of active users and course population

Figure 13 shows some falling courses also had a good NSS response rate and a larger course population but a higher percentage of active users. These were BA (Hons) Sport Business Management (BHSBM) and BSc (Hons) Sport and Exercise Science (SPEXS), picked out by the purple dashed line. The resource usage for students on these courses was investigated (Tables 5 and 6).

Sport Business Management students

Resources accessed	E-resource accesses	Percentage of overall e-resource usage
Taylor & Francis	378	18%
Wiley	344	16%
Elsevier	184	9%

Table 5. E-resource accesses for students on the Sport Business Management course (August 2017–July 2018)

Sport and Exercise Science students

Resources accessed	E-resource accesses	Percentage of overall e-resource usage
EBSCO	11,066	73%
Taylor & Francis	750	5%
Elsevier	644	4%

Table 6. E-resource accesses for students on the Sport and Exercise Science course (August 2017–July 2018)

The e-resource usage of these courses showed a reasonable number of accesses. Again, this raised questions: were the students dissatisfied with existing e-resource provision? Were they unaware the library provided them? Insight from the academic librarians suggested

that students do not necessarily associate the Library with e-resources, due to using Google Scholar, reading lists or online module handbooks that link through to Library e-resources, and score accordingly.
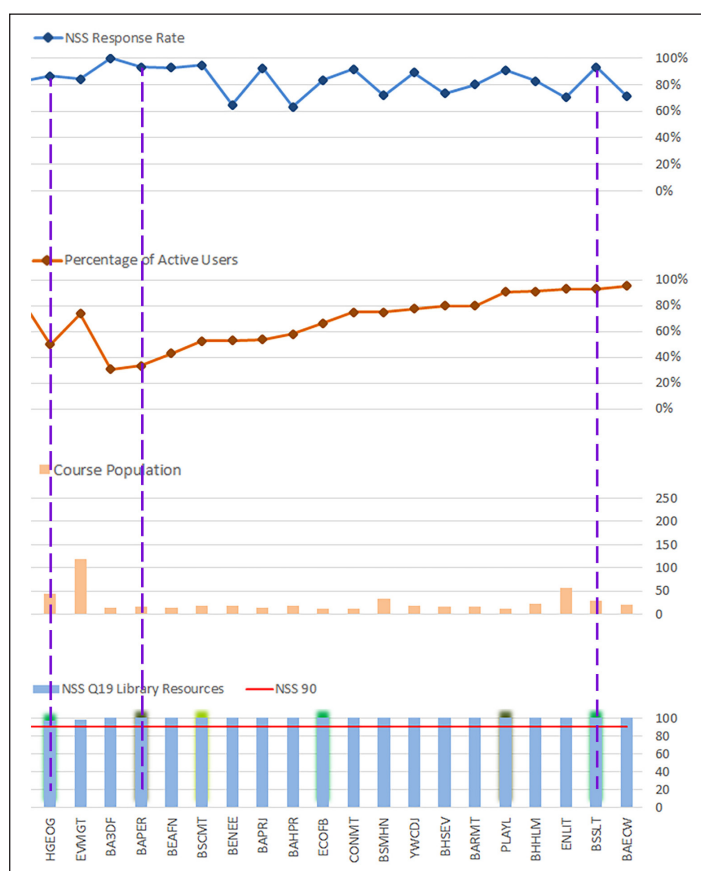

Figure 14. High-scoring NSS courses, focusing on Human Geography (HGEOG) and Speech and Language Therapy (BSSLT), compared across NSS response rate, percentage of active users and course population

'students do not necessarily associate the Library with e-resources'

Figure 14 shows the high-scoring courses. They had different NSS response rates and different percentages of active users, but most had a smaller course population. A flatter line would have been expected for the percentage of active users if there was any correlation because as the NSS score was 100 percent for the last 15 courses, the percentage of active users should have followed the same trend. The courses concentrated on were: BA (Hons) Human Geography (HGEOG) and BSc (Hons) Speech and Language Therapy (BSSLT), picked out by the purple dashed line and the resource usage for students on these courses was again investigated (See Tables 7 and 8).

Human Geography students		
Resources accessed	**E-resource accesses**	**Percentage of overall e-resource usage**
Digimap	228	26%
Taylor & Francis	122	14%
SAGE	72	8%

Table 7. E-resource accesses for students on the Human Geography course (August 2017–July 2018)

Speech and Language students		
Resources accessed	**E-resource accesses**	**Percentage of overall e-resource usage**
Digital Content Store	539	30%
EBSCO	277	16%
Lexis Nexis	59	3%

Table 8. E-resource accesses for students on the Speech and Language course (August 2017–July 2018)

E-resource usage was lower than for the falling courses, but that may be due to smaller cohorts. It was noted that the Speech and Language accesses to the Digital Content Store accounted for 30 per cent of all e-resource accesses. These are digitized articles or book

chapters linked directly from the reading lists or the virtual learning environment (VLE). One explanation for the high NSS score could be that students value the more tailored, personalized experience of linking directly to the specific chapters and articles they needed for their course rather than expecting them to access a book or journal and search for the specific chapter or article.

Overall, there was no clear correlation between e-resource usage and high NSS scores. Some low-scoring NSS courses had relatively high e-resource usage, while some high-scoring courses had relatively low usage. However, the courses with high NSS scores did appear to make more use of e-resources and over 90 per cent of students on those courses were active users.

> 'the courses with high NSS scores did appear to make more use of e-resources'

Challenges

Analysis and visualization were restricted by the software available, because Access and Excel are limited in terms of the amount of data that can be processed and the lack of charts and dashboard functionality. That meant complex time-consuming workarounds were necessary and therefore technical and analytical expertise was needed, which only the Electronic and Data Services Librarian had. So there was also limited resource and a potential single point of failure.

Also, OpenAthens e-resource usage is only part of the picture, as only 75 per cent of the e-resources use OpenAthens authentication; another 23 per cent are authenticated through EZproxy. To achieve a more holistic view of e-resource usage, the EZproxy logs would also need to be analysed, but the files were so large that only very focused analyses could be performed.

Some risks identified also become issues, due to loss of access and changes to OpenAthens and student record data while they were being enhanced.

Conclusions and beyond

The project confirmed the feasibility of using OpenAthens and student record data for in-depth analysis of learning resources usage, student engagement and library impact. Successful analysis was performed for Schools, courses and levels of study and provided significant insight that informed resource provision and NSS action. These included renewal and retention decisions and an insight into user resource retrieval behaviour to inform our future resource provision projects to see if we can influence user engagement and satisfaction. Library managers, academic librarians and academics have consequently engaged with and benefited from the project and its outputs.

While providing some interesting insights, the project highlighted that further investigation and data analysis is required to deliver more tangible conclusions. There is great potential in this area and future analyses may include widening the scope to cover book loans, EZproxy, reading lists, the Digital Content Store and VLE usage to obtain a more holistic view, as well as the inclusion of impact, longitudinal and predictive analysis. We will be looking to build on work already done to compare data year on year, to take particular actions like working with a particular School or promotion of specific resources to make projections on whether that might increase engagement with resources and improve NSS scores.

It also needs to be considered whether there is dissatisfaction with current provision and if so, why, and whether more promotion of the Library and its resources or a more personalized, tailored approach to resource provision is needed. Quantitative data tells only part of the story and continuing to work closely with academic librarians who engage with academic and student stakeholders is imperative to gather qualitative information to complete the picture.

References

1. "Data Protection: Partners – Compliance and Legal," *Leeds Beckett University*:
    https://www.leedsbeckett.ac.uk/partners/compliance-legal/data-protection/ (accessed 22 July 2019).

2. "Student Regulations," *Leeds Beckett University*:
    https://www.leedsbeckett.ac.uk/public-information/student-regulations/ (accessed 22 July 2019).

3. "About the NSS," *The National Student Survey*:
    https://www.thestudentsurvey.com/about.php (accessed 22 July 2019).

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