Northumbria Research Link

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Academic library non/low use and undergraduate student achievement: a preliminary report of research in progress.

Autobiographical Note

Dr Deborah Goodall

Academic Librarian

Huddersfield University

Queensgate

Huddersfield

West Yorkshire

HD1 3DH

Email: d.l.goodall@hud.ac.uk

Tel: + 44 (0) 01484 472700

Since graduating from Loughborough University in 1987 with a first class degree Deborah has held academic and public library posts and research and teaching roles in the library and information profession. Deborah joined Huddersfield University as Academic Librarian for Human & Health Sciences in September 2009 after working in the NHS as an Outreach Librarian. Deborah's PhD examined public library research methods and was inspired by her first job with Dr Peter Mann at Loughborough's Library and Information Statistics Unit (LISU). This article is dedicated to his memory.

David Pattern

Library Systems Officer

Huddersfield University

Queensgate

Huddersfield

West Yorkshire

HD1 3DH

Email: d.c.pattern@hud.ac.uk

Tel: + 44 (0) 01484 472043

David Pattern was responsible for producing the figures in this article.

Academic library non/low use and undergraduate student achievement: a preliminary report of research in progress.

Abstract

Purpose: Reports an ongoing investigation of library use at Huddersfield University that has identified a historical correlation between Library usage and degree classification.

Approach: Three sets of data - use of electronic resources, book loans, and visits to the library – when represented graphically show consistent amounts of no and low use at campus, academic school, degree-type and course level. Combining these findings with data showing academic achievement raises the question: is there a positive correlation between library use and attainment?

Findings: Understandably Library usage varies between academic schools and there are often pedagogic reasons for low usage, but it would appear that, in some subjects, students who 'read' more, measured in terms of borrowing books and accessing electronic resources, achieve better grades.

Limitations: Further work will focus on undergraduate, fulltime students at the main University campus.

Implications: The research intends to discover the reasons behind non/low use so as to develop then trial effective interventions for improving the grades of all students, from the bottom up, rather than just supporting those that are already high flyers. The results will inform both Library service delivery and University goals concerning the quality of the student learning experience, improving retention and improving the level of final degree award.

Originality: There are implications for all subjects and all levels of achievement at the University.

Keywords: use, low use, non-use, academic libraries, undergraduate students, achievement.

Case study

1. Introduction

Huddersfield University, situated in West Yorkshire in the North of England, has over 24,000 students and 1,900 staff across three campuses and seven academic Schools: Applied Sciences, Art, Design and Architecture, Business, Computing and Engineering, Education and Professional Development, Human and Health Sciences and Music, Humanities and Media.   The University is among the UK's top 10 universities for library facilities according to the Times Higher Education Student Experience Survey 2008. Student satisfaction with library and computing provision is consistently above the average for all universities, as measured by National Student Satisfaction surveys. Library Services have achieved the Government's Customer Services Excellence standard and this requires analysis of distinct customer groups. The Library had very little data on non/low users and identified this group as requiring investigation.

Huddersfield University Library staff have found an apparently unequivocal historical correlation between library usage and degree classification. Put simply, it would appear that students who 'read' more, measured in terms of borrowing books and accessing electronic resources, achieve better grades.

This finding arose within an ongoing investigation of library use: preliminary research shows that some student groups do not use library facilities and resources as much as could be expected. Three sets of data - use of electronic resources, book loans, and visits to the library – when represented graphically show consistent amounts of no and low use at campus, academic school, degree-type and course level.

These findings immediately raised concerns such as what prevents students from using the Library? What happens to those students that do not use the Library? Graphically combining these findings with data showing academic achievement highlighted the key issue: is there a positive correlation between library use and attainment?   What could have been an afterthought has become the driving focus of the current research and now a research team is exploring the causality of the relationship between the use/non-use of library facilities and resources and class of final degree.

Library usage varies from School to School, and is to be expected according to the nature of the course. The distinction between "'doing' subjects and 'reading'

subjects" is well documented (Mann, 1974, 193-4) and there are often pedagogic reasons for low usage, for example, practice-based subjects in Art, Design & Architecture are less likely to borrow books and use electronic resources than Humanities. Even so, there are implications for all subjects and all levels of achievement. This work will be of particular value within the School of Human and Health Sciences for major programmes such as the DipHE in Nursing since all pre-registration training, from 2013, will attain degree level. The research team hope that the findings will suggest strategies for improving the grades of all students, from the bottom up, rather than just continuing to support those that are already high flyers.

2. Does library use contribute to academic success?

Students and Books (Mann, 1974) synthesised the UK evidence for low and non use of academic libraries by undergraduate students and questioned the use of books by students in a wider perspective than was customary. Mann assesses subject differences in book use and establishes baselines for non-use: for example, a 1961 study at Leeds University found an average of 23% of students had not borrowed from the university library during their student career (Mann, 1974, 39). Mann's own research, derived from his theoretical model of a communication network between university lecturers, students, librarians and booksellers, sampled 20% of all undergraduates at Sheffield University in 1972, and achieved a response rate of 77%, 763 students. The detailed statistical analysis, supported by a wealth of comments from the questionnaires, describes topics such as guidance from lecturers, use of university libraries, and students and bookshops. The link to failure rates in the university, whilst briefly broached, is not pursued even though the results showed "considerable differences between students in their use of university library facilities, and that a fair-sized minority seems to be able to pursue its studies quite happily with little help from libraries" (Mann, 1974, 151).

A useful summary of the literature attempting to show that library use contributes to academic success forms the basis of subsequent research conducted at the University of Cape Town (de Jager, 2002). This study found that humanities students who did well in their exams tended to borrow more books from the library than those that did not. The statistical analysis showed "the circulation of library materials indeed correlates significantly with academic achievement in certain

subjects" leading to the deduction that "undergraduate students who use their libraries a lot, also do well in their exams." (de Jager, 2002, 295-296).

If this correlation is statistically significant or spurious remains to be seen. What are required are more studies using two groups of students of the same ability, with the same time and resources and experiences to examine whether or not there is significant improvement in grades with increased use of the library. Such an examination of the effect of library instruction on the quality of students' term papers found "empirical evidence of the effectiveness of librarian-led instruction sessions, particularly when they are tied to specific assignments" but concluded that "the idea that using more library resources would automatically improve a student's grade . . . was not borne out." (Hurst and Leonard, 2007, 11). Interestingly the authors imply that their research was hampered as it was not wholly necessary for the students to use scholarly material for their work and they suggest that students and academic staff would benefit if assignments were designed to draw on library resources.

An alternative method to explore the link between attainment and library services is by using a citation analysis to look for connections between library use/user education and student grades/quality of work. Again, the success of such studies in quantifying the quality of student bibliographies relies on students finding it necessary to use scholarly library resources to compete the assignment (Middleton, 2005). Not surprisingly, librarians are keen to show that the use of expensive, scholarly materials positively correlates with higher grades, although they cannot prove that this is so. When the Primary Research Group surveyed over 400 American college students in 2009 and revealed a correlation between the students' grades and online research - the higher the grade point average the less information for research papers was obtained from search engines such as Google or Yahoo - this was quickly picked up by Alloway Library in Trinity Western University as an opportunity to promote its scholarly resources.

Whilst statistical significance may be challenged in some of these studies the findings are certainly too interesting in their own right not to be explored further. If we accept that students who use the library do well, what about the fate of the students who do not use the library? The link between retention, or 'student persistence', and library use is comprehensively documented in a literature review drawing on sources dating back to the 1960. This study found a statistically

significant correlation between library use and persistence: almost 75% of first year students that used the library returned to their second year; just over half that never used the library persisted into their second year (Mezick 2007, 562).

3.Un-chartered territory: using non-use data for planning

The broad scope of the literature indicates that library use may be viewed as something of a panacea. There is evidence linking 'good grades' with book borrowing, the use of scholarly materials, and to exposure to information skills; library use is also positively linked to student retention. It is curious then that the impact of the library on the academic achievement and engagement of non-users is relatively un-chartered territory.

A recent review, specifically examining reasons for non-use of academic libraries, discovered a dearth of material that could be used for strategic planning and prompted the examination of non-use of library services by students in St Martin's College, a UK academic library (Toner, 2008). An analysis of data from the library's management information system identified 21% of total student numbers as low or non users. A postal survey was sent to these students. The analysis of the survey returns showed that students in part-time and distance learning courses were the largest group of non-users and concluded that these groups needed to be targeted with innovative induction techniques. A lack of time and funding prevented further vital work, however there were some positive practical outcomes for those concerned and the study sets a benchmark for further work.

Non/low use of the academic library is not simply an issue that can be resolved by a better marketing mix. It is a central issue for individual students concerned about their grades, for academic staff concerned about attainment, and for institutions concerned about retention. Non/low use raises questions about studying in higher education and about the nature of reading and 'reading for a degree'. As far back as the 1970s there was concern that "for quite appreciable numbers of university students books certainly do not seem to play as large a role as some academics would like them to play."(Mann, 1974,1) More recently, a 'resistance to reading', identified through anecdotal evidence, suggested that a significant number of students were reading less (fewer texts, shorter texts, less demanding texts) than might be expected, and less than they may need to participate fully and to succeed, in the broadest sense, in higher education (Gill and Brown, 2002). At Anglia Ruskin University, a Reading Strategy has been

developed in response to a series of projects that identified and tackled concerns with student reading such as the lack of effective reading skills and a lack of critical reading skills (Garfield and Wakeham, 2008). Interestingly, the initiatives developing out of the research, such as Book Groups, are more usually seen in the public library sector.

Given the context as described above it is imperative to find out why our students are not using the academic library and then to rectify the situation.

4. Current research at Huddersfield University

The themes of the brief literature review resonate with the goals set by the University's Teaching & Learning Strategy 2008-2013, specifically those concerning enhancing and supporting the quality of the student learning experience and, in particular, the goals of improving levels of retention, completion and progression, and for two-thirds of students to achieve first and upper second degrees by 2012/13.

For Library staff an understanding of the motivation behind non/low use will inform service delivery. For example, subject specialists will be able to make better use of time by targeting information skills teaching and embedding evidence-based practice at points of need. Rather than taking a 'just in case' approach to the delivery of information skills professional staff will be able to adopt a 'just in time' approach, making best use of scarce human resources and reaching out to students at the most relevant times in their University courses.

5. Aims

The research into non/low use of library resources and services at Huddersfield University aims to find out the reasons behind non/low use and to develop and trial effective interventions. It will quantify what is meant by 'more' use and 'less' use and acknowledge subject variation.

6. Method

Low use, during the academic year, is defined as less than five visits to the Library or borrowing less than five books, or logging in to the University's electronic resources collection less than five times. These are staggeringly low levels of use when one considers what is required to write a single essay and raise concerns

about how far students are sharing materials with one another and how acceptable this is, the reliance on internet sources, and even whether students are citing materials that they are not accessing.

Anonymised statistical datasets, collected from the Library's management information systems for

- book loans, using statistics from the Horizon library management system
- access to electronic resources, using logins to MetaLib as a measure
- access to the Library, using gate entry statistics from Sentry

for over 700 courses spanning four academic years (2005-6, 2006-7, 2008-9, 2009-10), were analysed as follows:

- By campus, using data derived from an average of 22,563 students over the four year period.
- By course level, using data derived from, for example, an average of 20,056 students studying at undergraduate level.
- By year group, using data derived from an average of 12,524 first year students, 6,709 second year students, 3,332 third year students and 1,486 fourth year students over the four year period.
- By School, using, for example, data derived from 6492 students in the School of Human and Health Sciences, 2679 students in the School of Art, Design and Architecture and so on.

Before going on to produce course level data criteria, the research team produced criteria to reduce the potential number of courses under consideration to a manageable sub-set.

- It was apparent that for courses with low student numbers the behaviour of one or two students could skew the data. Plotting a graph showing courses and student numbers allowed a median number of students to be calculated: 34.5. The first refinement was to select medium-large size courses where the total number of students per year group is around 105 for a three year course. This reduced the sample of over 700 courses to approximately 200 courses across the seven Schools in the University.
- Continuing research will focus on undergraduate courses so that library use can be correlated against class of degree as recorded in the ASIS student records system.

- Courses delivered at Oldham and Barnsley campuses are currently excluded because data sets are incomplete, although there is no reason why data collection cannot be extended to those campuses in time.
- Collaborative, part-time, distance-learning, and franchise courses are also excluded as there are too many external factors to control and in many cases subject staff already have relevant knowledge about the situation.

Course level charts were produced for each School showing non/low use for all students per year group over a four year period. Academic and library staff are currently exploring 'hotspots' of apparently low or no use for further in-depth work with a purposively selected sample of around 12-16 courses. All of this further work will take place at course level for full-time undergraduate courses delivered on campus at the University's main site. The research team are interested in courses demonstrating not readily explicable patterns or non/low use such as courses where the amount of use appears to deteriorate over time, or where there is a solid core on non-users over the duration of the whole course. Some courses have been chosen to reflect an individual School's concerns with, for example, student performance during/after placement. Library staff will work closely with academic staff to explore assumptions about library use. Whilst subject demands vary and students do not necessarily have to use electronic and print resources in the same way, there is an implicit expectation, in terms of provision, that they are all expected to use library resources in some way.

7. Findings: Use of electronic and print resources

When use of print and electronic library resources is presented graphically, the charts show consistently large amounts of no/low use across all Schools: there are substantial numbers of students that have never taken out a book, logged on to electronic resources or even crossed the threshold at all. Analysis of the same types of data at course level confirms these findings. The examples below illustrate to the Business School for the academic years (top to bottom) 2005/6, 2006/7, 2007/8, 2008/9, with the average number of 4,416 students.

Take in Figure 1a
Take in Figure 1b
Take in Figure 1c

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No statistical tests have been carried out on the data yet. However, whichever way it is partitioned, even down to course level, the correlation with print and electronic resource usage is present, and appears to repeat over time. The next stage of the research will focus on the complex issues of interpretation, causality, and context at course level.

8. Findings: Use of electronic and print resources and degree classification

Take in Figure 2

Graphs plotting logins to electronic resources and books borrowed with data from the student record system (ASIS) recording attainment, consistently illustrate across individual Schools and often in individual courses, a positive correlation between library usage and classification of final degree award. Although the actual library usage varies, the graphs nearly all show that students attaining lower grades made less use of the library than students reaching higher grades.

9. Findings: Use of electronic and print resources, degree classification, library visits

Take in Figure 3

Incorporating data showing visits to the library changes the picture. Charts presenting library usage and classification of final award across all Schools show an inverse correlation, often with a narrow range, that one can not help questioning what some students are actually doing when they are visiting the building. At this point it should be noted that the entry point to the Library also serves as the entry point to student support services based within the Library and Computing Centre. Even so, a breakdown by individual Schools shows that students in three out of seven Schools gaining third class degrees are visiting the library just as much, if not more, than students gaining first or upper second class degrees in those Schools. What will be really interesting is to find out if there are any high achievers that rarely visit the library, and if there are, to examine why they do not go there.

Take in Figure 4

The radar chart above dramatically illustrates the findings to date using the last two years of Honours level graduates and their entire usage data. The classes of degree neatly nest within each other: those students achieving a third class degree make less use of library resources than those student that achieve a lower second,

who themselves make less use of library resources than those students who achieve an upper second class degree. Those students achieving a first class degree are the heaviest users of print and electronic library resources. All students however, regardless of their degree classification, tend to be visiting the library regularly.

10. Findings: Exploring the behaviour of individual students

When the data is presented as a bar chart it tends to show a correlation between usage and attainment for the whole cohort. Scatter charts capture the behaviour of individual students on a course and were compiled for a sample of courses. When the data is presented in this form one can see that some students are doing extremely well whilst hardly ever, apparently, engaging with library services and resources whilst others are borrowing books, or accessing electronic resources, hundreds of times a year.

Take in Figure 5a

Take in Figure 5b

The scatter chart shows usage by individual BA Business Studies students. The circles show those students who gained a first class degree; the squares represent those students who gained a third class degree. There are clearly large differences in behaviour by individual students, and whilst this may have an impact on statistical validity per se, the findings cannot be ignored.

11. Planned future work

Future work will delve deeper into the story behind non-use unravelling the student learning experience and the expectations within courses, seeking out findings to improve levels of retention, completion and progression. Given the complex nature of non/low use, and the impact of any interventions, the research team will take a longitudinal, 'mile-deep' approach to collecting evidence. This will involve working closely with students and also considering the inputs and expectations of academic staff and library staff. Research by Pickard (2005) confirms that such long and rich studies can demonstrate the impact of library resources, specifically electronic information services, on individuals. Studies such as the JUBILEE project demonstrate the importance of using robust theory and methods as the basis for reputable user studies during a longitudinal evaluation (Banwell and Coulson, 2004).

There will also be the opportunity to develop some innovative methodology making more use of qualitative approaches and complimentary data to 'tell the story' behind use at all levels. (Brophy, 2008; Koch,1998). This may include talking to those students who are outliers in terms of use to gain insights into the idea that excellence or expertise at a complex task requires a minimum level of practice (Gladwell, 2008,); considering the impact of 'computer anxiety' (Jerabek et al, 2001) or 'library anxiety' (Mellon, 1986), or simply 'self-consciousness' (Mann, 1974, 17) on the interpersonal element of the library experience; identifying cases of 'voluntary non-use' of electronic resources and considering if the perceived attributes of resources, rather than issues of access or provision, are determinants in understanding use and non-use (Orton-Johnson, 2009).

Incorporating qualitative non-library data about student experience is possible within the School of Human and Health Sciences by working alongside the School's in-house researcher for student engagement and student retention. Successful library use has not yet been identified as a factor for the retention of nursing students (Bowden, 2008) but given the shift to an all graduate nursing profession by 2013 there is increasing interest in attrition rates and the student learning experience. As it stands attrition in the School is significantly below the national average and the School is keen to maintain that performance.

12. Conclusion

The graphs and charts in this article simply present the data, they do not claim to offer a full analysis. The statistical significance may be challenged but the findings are certainly too interesting in their own right to be ignored. The methodology employed so far does not reflect the multi-faceted nature of the topic. More work needs to be done in developing a methodological framework, both in this library, and in others through benchmarking, for a general, robust, theory to emerge supported by a knowledge base of practice-based examples. The research team are planning to lead the accumulation of scholarly evidence over the next few years to support or deny the thesis that more use of library resources by undergraduates means better achievements in final degree classifications.

At Huddersfield, this preliminary work has implications for all subjects and all levels of achievement at the University. Further research into non/low use of library resources and services will quantify what is meant by 'more' use and 'less' use. By engaging with students we will explore the true nature of 'a library visit',

'a book loan', and 'use of an electronic resource'; acknowledge subject variation; and find out the reasons behind levels of use in order to develop and trial effective interventions. The opportunity is too good to miss to improve the grades of all students, particularly those at the bottom and in the middle range. Certainly from now on, students entering higher education at Huddersfield University will find that it is not called 'reading for a degree' for nothing!

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Figure 1a
Huddersfield University Business School Book borrowing 0-35+ items
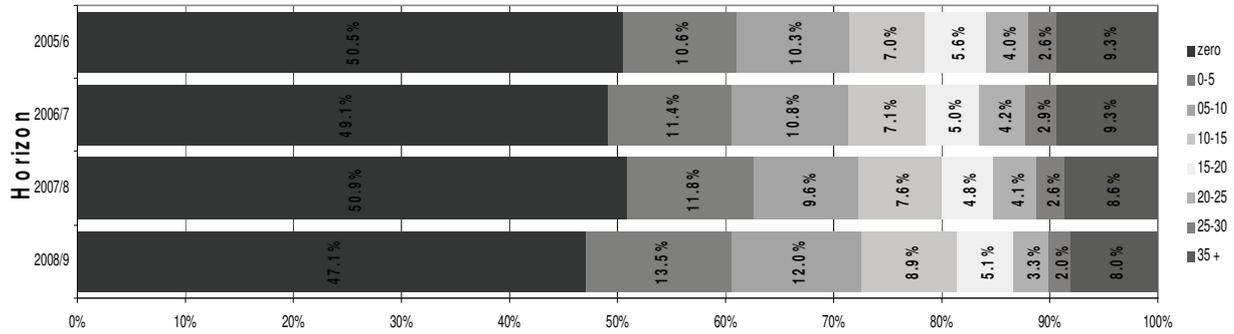average # of students = 4,416

Horizon

Year	zero	0-5	05-10	10-15	15-20	20-25	25-30	35 +
2005/6	50.5%	10.6%	10.3%	7.0%	5.6%	4.0%	2.6%	9.3%
2006/7	49.1%	11.4%	10.8%	7.1%	5.0%	4.2%	2.9%	9.3%
2007/8	50.9%	11.8%	9.6%	7.6%	4.8%	4.1%	2.6%	8.6%
2008/9	47.1%	13.5%	12.0%	8.9%	5.1%	3.3%	2.0%	8.0%

Figure 1b
Huddersfield University Business School: electronic resources use 0-35+ logins
average # of students = 4,416

Metalib

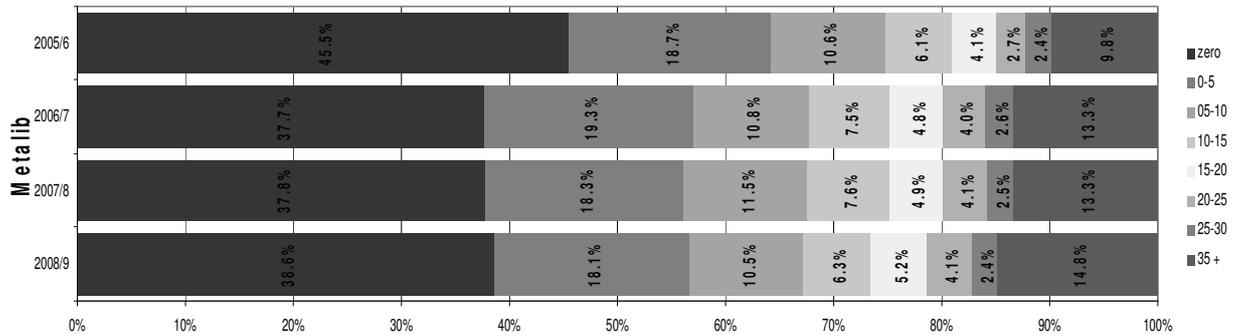| Year	zero	0-5	05-10	10-15	15-20	20-25	25-30	35 +
2005/6	45.5%	18.7%	10.6%	6.1%	4.1%	2.7%	2.4%	9.8%
2006/7	37.7%	19.3%	10.8%	7.5%	4.8%	4.0%	2.6%	13.3%
2007/8	37.8%	18.3%	11.5%	7.6%	4.9%	4.1%	2.5%	13.3%
2008/9	38.6%	18.1%	10.5%	6.3%	5.2%	4.1%	2.4%	14.8%

Figure 1c
Huddersfield University Business School: library visits 0-35+ visits
average # of students = 4,416

Sentry

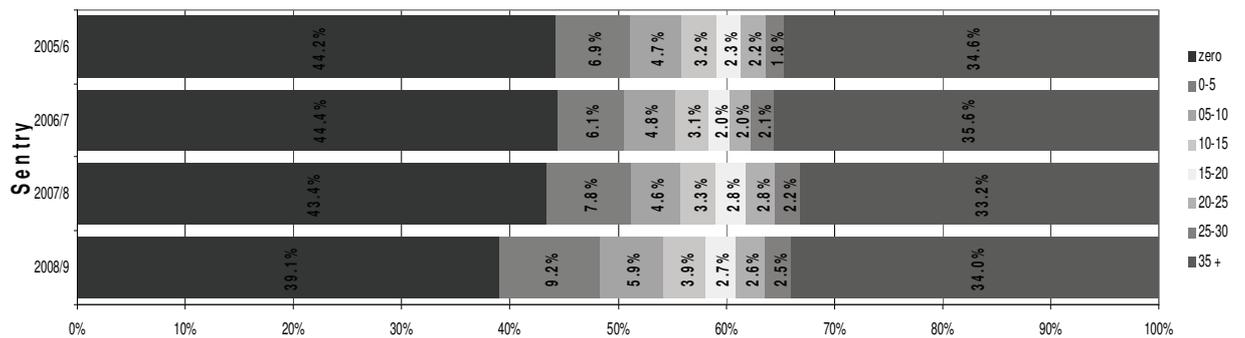| Year	zero	0-5	05-10	10-15	15-20	20-25	25-30	35 +
2005/6	44.2%	6.9%	4.7%	3.2%	2.3%	2.2%	1.8%	34.6%
2006/7	44.4%	6.1%	4.8%	3.1%	2.0%	2.0%	2.1%	35.6%
2007/8	43.4%	7.8%	4.6%	3.3%	2.8%	2.8%	2.2%	33.2%
2008/9	39.1%	9.2%	5.9%	3.9%	2.7%	2.6%	2.5%	34.0%

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Figure 2
All Schools: Average total book and electronic resources usage and final degree
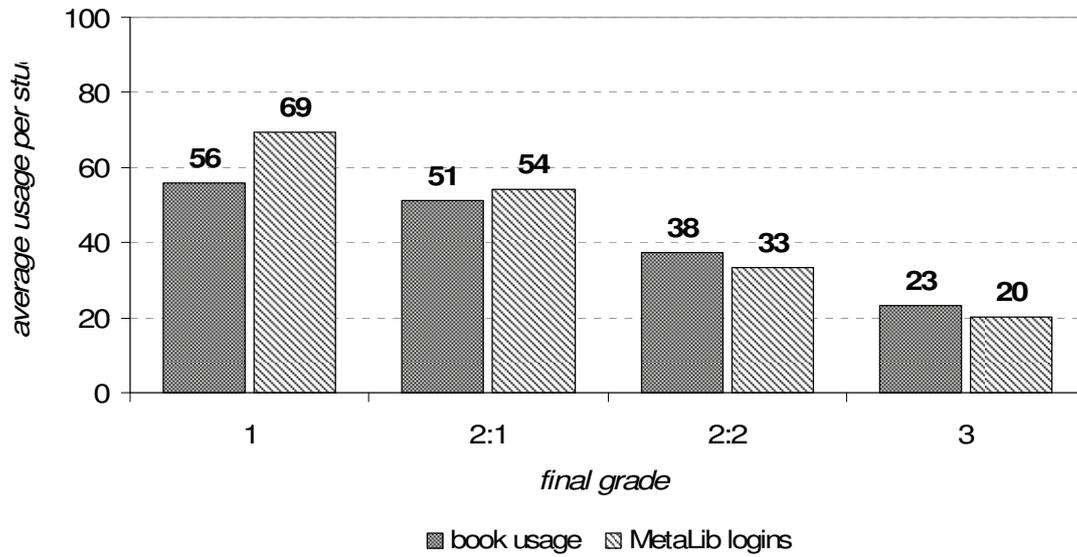grade (all 2007/8 & 2008/9 graduates)

Figure 3
Average total usage (book borrowing, access to electronic resources, visits) by School of Human and Health Sciences (all 2007/8 & 2008/9 graduates) with final degree grade
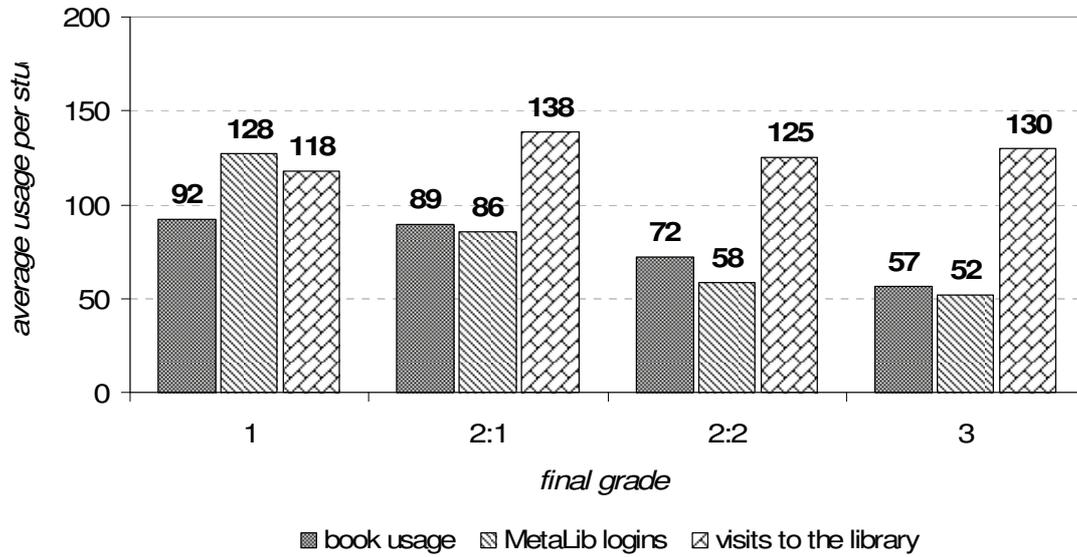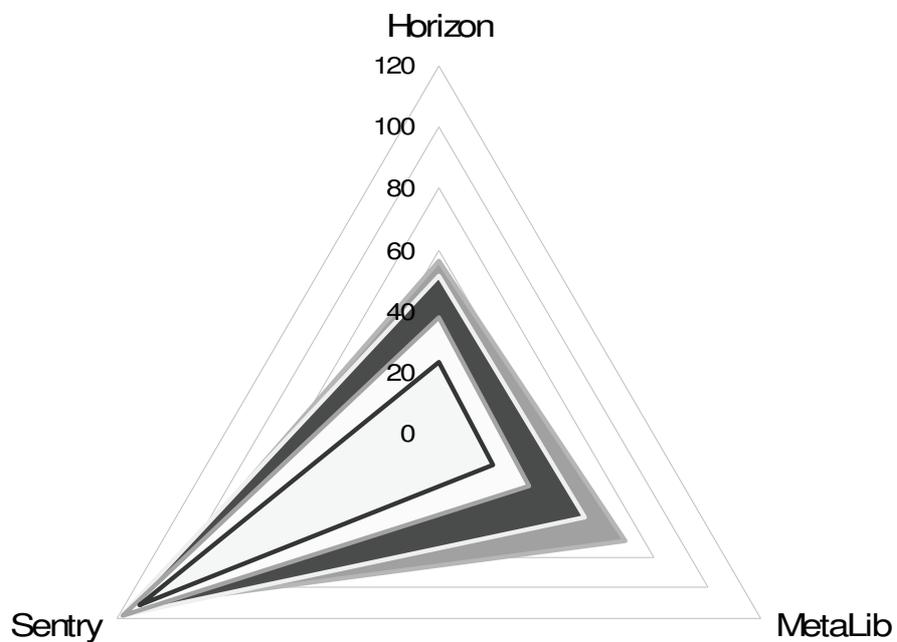
Figure 4
Radar chart: all 2007/8 & 2008/9 Honours level graduates and their entire usage
data

The outer triangle represents usage by students who gained a first class degree.

The first inner triangle represents usage by students who gained an upper second
class degree. The second inner triangle represents usage by students who gained a
lower second class degree.

The central inner triangle represents usage by students who gained a third class
degree.

Figure 5a
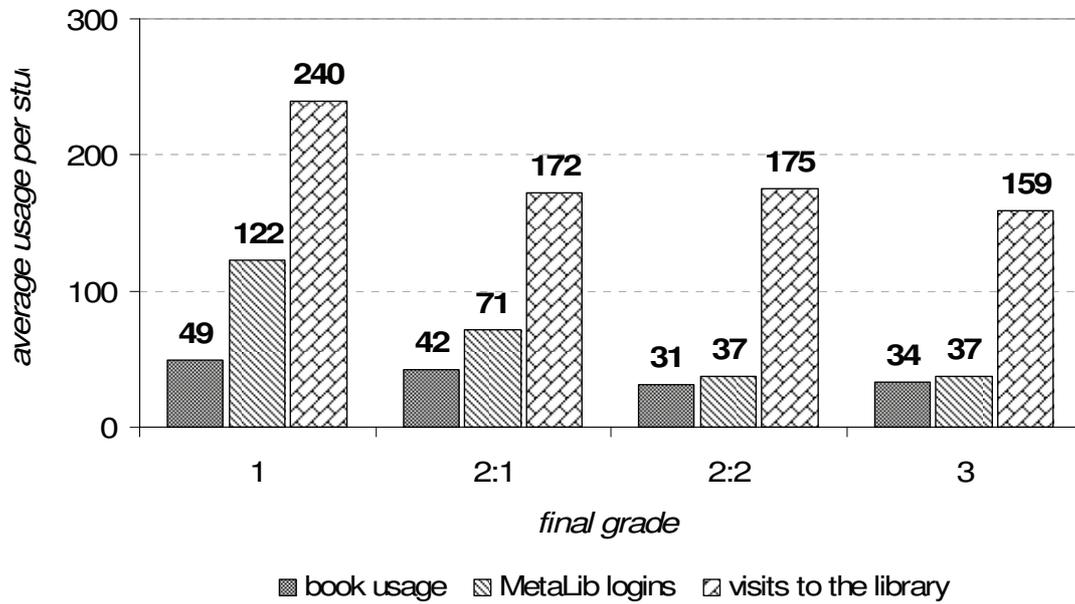
BA Business students, 2007/08 + 2008/09

Figure 5b
The scatter chart shows usage by individual BA Business students.