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Use of book borrowing statistics as a means to establish library use by pre-registration nursing students: a case study at the University of Northumbria

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Abstract
This paper examines the book borrowing by pre-registration students at the University of Northumbria over a three-year period. Nursing education was transferred into higher education in the early 1990s resulting in large numbers of extra students in many higher education institutions. Little work has been done to establish the impact this move has had in library and information services. This work analyses book borrowing by two nursing pre-registration courses from three perspectives: quantity of books borrowed, book borrowing dispersed over an academic year and the subject material borrowed. Analysis of borrowing is completed using the TALIS Library software. The findings of this study are related to some of the major issues facing those providing library and information services to health students

Introduction

In 1992 the Government decided to transfer nursing education from within the National Health Service to the higher education sector. This was a significant development for library services for health professionals and students as it raised many issues of ownership and rights between the NHS and education sectors. In terms of student numbers alone, university libraries had to deliver services to a larger numbers of health students than previously. The close relationship between the two sectors has been developed in a recent overview in the 'Times Higher Education Supplement' (Sanders, 2001). Both sectors are heavily dependent on each other. Students on university courses in health related subjects totalled some 200,00 in 1998-1999 out of a total student population of 1.8 million. The higher education sector, in partnership with the NHS, provides virtually all pre-registration training for all the nation's clinicians. The NHS contributes £2 billion to the costs of educating these students and their clinical professional development. The government plans to increase the number of medical students by 1000, the number of nursing students by 5500 and the number of therapists by 4450.

Pre-registration nursing currently takes place at two different academic levels: diploma in higher education and degree. The entry levels are correspondingly different: 5 GCSEs equivalent and 'A' level. The curriculum for nursing students is also continually evolving and integrates information from other disciplines such as psychology, sociology and social policy as well as clinical and nursing aspects. The 'Making a difference' curriculum has just been introduced across the country which increases time spent in the clinical environment, has more emphasis on research appreciation and increases the ease of access onto the courses. Many courses have introduced enquiry based learning/ problem based learning to underpin the student experience.

In parallel to these academic developments, university libraries have developed hybrid services to meet the needs of these students. Access is given to major bibliographic databases such as 'CINAHL', 'Medline' and 'British Nursing Index' via the web. Collections of e-journals have been developed that complement or replace paper health journals. Access is also given to relevant health web sites. Nursing students need access to a mixture of printed and electronic resources for effective learning.

At the University of Northumbria at Newcastle (UNN), Bede, Newcastle and Northumberland College of Health Studies transferred into the University in 1992. The College operated on 22 NHS sites spread across 200 square miles with library services on some but not all sites. This number of sites was reduced until provision was consolidated at a single site in 1999. In this year, a new Library was opened at the site to support health, social work and education students. The Library contains books and current periodical titles along with access to networked computers for students. UNN jointly managed the Hybrid Library of the Future project (HyLife) which developed web interfaces to different users across five other partner universities. At Northumbria, this resulted in the provision of the 'HyLife for Health' service which gives access to electronic information along with a postal document delivery service for students. UNN is a major providor of education for nursing professionals with the range going from diploma in higher education to taught doctorate. Both the diploma in higher education and degree pre-registration nursing courses are three-year full time. There is one intake of around 60 students on the B.Sc. Nursing course but the Diploma in Nursing Studies has two annual intakes each with approximately 250 students.

Pressures to measure use of library provision for health students are varied and forceful. LIS professionals are facing many challenges in deciding between a complex mix of electronic and paper information. Management information is needed for decision making. In 2001 the NHS established Workforce Development Confederations who will be responsible for leading on 'integrated workforce planning for healthcare communities based on assessment of future requirements for skills and competence' (Department of Health; 2001). They commission education and training from the higher education sector. They will need to ask for evidence on how the funding they have allocated to Universities is being used to support library provision. The higher education Quality Assurance Agency also has procedures which necessitates university libraries having to illustrate the quality of services. Library management systems have the flexibility and capability to undertake sophisticated

analyses of patterns of book borrowing. At UNN the Library uses the TALIS library management system (LMS).

The purpose of this study was to use TALIS management data to compare nursing student borrowing patterns in respect of books with other students in terms of both quantity and timing of loans. It was also the intention to establish differences of borrowing patterns between the two pre-registration nursing student levels.

Sample & Methodology
The present study was confined to two cohorts of nursing students representing the two different types of delivery of pre-registration nursing education:

- 1998 BSc Nursing intake (54 students);
- 1998 Diploma Nursing Studies (September intake 224 students);

The investigation was based on an analysis of the loan patterns for each of the two cohorts from September 1998 to August 2001. It focused on the following aspects:

- loan data by year of study and month;
- use of stock by broad subject categories (see table below);
- student loan profiles;
- identification of frequently used stock;
- comparison with the average student use at Northumbria;
- variations in loan patterns between the two cohorts.

TALIS runs on a Unix platform utilising Sybase as its relational database. The system provides all the basic functionality of a LMS including circulation, cataloguing, OPAC and acquisitions in addition to MIS tools for extracting data & querying the database. At Northumbria all loan transactions and borrower data are retained for a minimum of five years making it possible to undertake retrospective analysis of loan patterns as described here. For this investigation the required analysis was performed by extracting stock, borrower and loan transaction data from the Talis database using SQL that was then downloaded into an Access database. It was then relatively straightforward to add the subject code (based on class range) to the stock data and produce the tables and graphs as described in the next section by running appropriate queries. Table 1 show the range of classification numbers analysed in the study.

Table 1 Range of classification numbers included in TALIS analysis

Subject	Class Range	Note
A	150 - 159.9999	
B	300 - 309.9999	
C	360 - 369.9999	
D	610.73 - 610.7399	
E	610 - 619.9999	Excluding D
F	Other	

Findings

Table 2 places both courses in the top third of book borrowers across Northumbria University , with BSc Nursing Studies the third highest borrowers and the Diploma in Nursing Studies/RN course in 46th place out of a total of 163 courses. It illustrates that students from both courses borrow considerably more books than the average 31 books per student and that BSc Nursing Studies students actually borrow twice as many books per student as the Diploma students. It is also interesting to note that four other courses within the Faculty of Health, Social Work and Education also borrow heavily from the library.

Table 2 Average levels of borrowing by course

Name of course	Rank in order of number of average book loans per student on specific courses	Average number of loans per student 1999-2000
BA Logistics	1	109.95
BSc Nursing Studies	**3**	**88.56**
BA Social Work	8	78.40
BSc Occupational Therapy	10	77.17
BSc Physiotherapy	18	66.35
BSc Midwifery	31	53.52
Diploma Nursing Studies/Registered Nurse	**46**	**44.70**
BA Architectural Design	89	29.98
BA Business Studies	108	24.59
BSc Biomedical Sciences	114	21.51
BSc Computing	163	11.09
Average number of books borrowed by students 1999-2000		31.02
Average number of books borrowed by staff 1999-2000		**28.79**

The actual number of books borrowed in the academic year 1999-2000 across the University by course is illustrated by Table 3. The size of the cohorts of Diploma students (approx 1260 students altogether across six cohorts) means that they borrow two and a half times more books - 56633 - than any other course in the UNN, with the B.Sc. Nursing Studies course featuring in eighth place. Book loans to Diploma students account for 32.5% of all loans at the campus where they are taught.

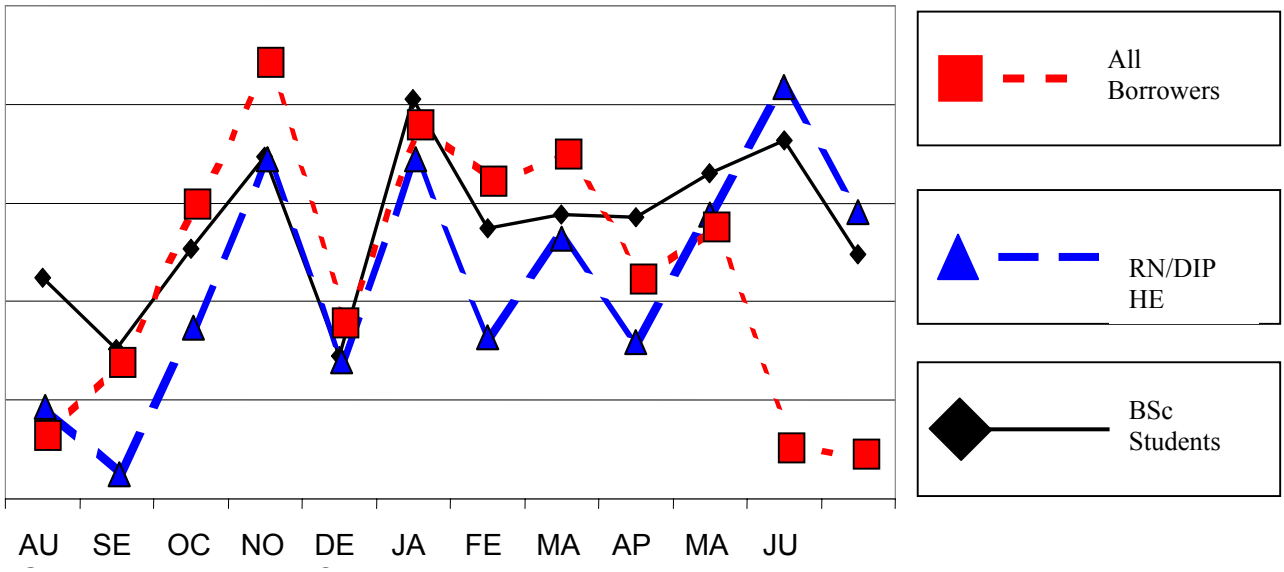
Table 3 Total number of loans (including renewals) by course

Name of course	Rank in order of number of book loans	Number of loans 1999-2000
Diploma Nursing Studies/Registered Nurse	**1**	**56633**
BA Business Studies	2	22750
BSc Nursing Studies	**8**	**14612**
BSc Physiotherapy	10	11478
BSc Midwifery	12	10919
BSc Occupational Therapy	24	8797
BSc Computing	28	7832
BSc Biomedical Sciences	41	5141
BA Logistics	49	4508
BA Social Work	84	2352
BA Architectural Design	98	1769

Number of items issued to students 1999-2000	723768
Number of items issued to staff 1999-2000	40512

Table 4 shows the difference in borrowing patterns between students who follow the traditional academic year with a reduction in loans during the Christmas and summer vacation periods and nursing students who are taught all year round. BSc Nursing Studies students have numerous rise and falls over the year corresponding to assignment deadlines with June being the highest peak. Diploma in Nursing students have a more even pattern of borrowing with a dip over the Christmas period.

Table 4 Loan Pattern for all students over one year



Both courses are very dependent on core subject areas illustrated by tables 5 and 6. Both courses borrow from the same subject areas and in very similar proportions. Nursing and clinical texts (from Dewey class range 610.73-610.7399) account for 63.5% of books issued across the two courses with lesser borrowing (23%) from social health (360-369) . Little use is made of sociology and psychology (300-309 and 150-159) by either course, accounting for only 4.5% of total loans.

TABLE 5 LOANS TO BSc NURSING STUDENTS 1998 - 2001

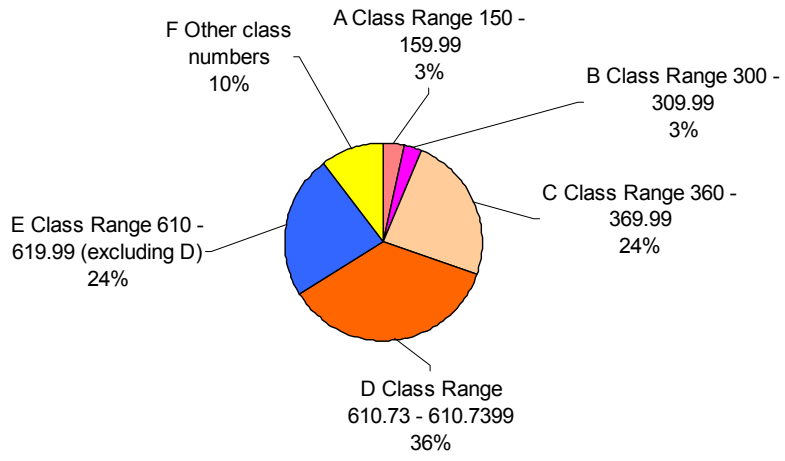
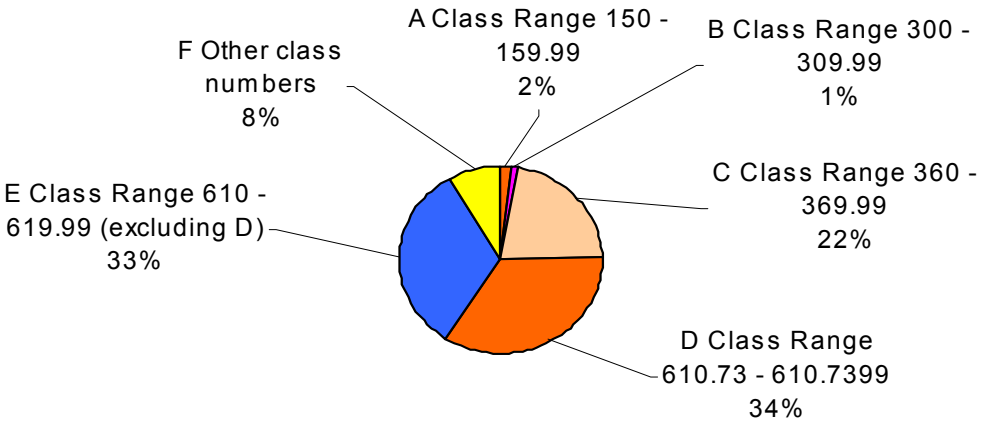


Table 6 LOANS TO RN/DIP HE STUDENTS 1998-2001



The final tables (7,8) illustrate that these students much prefer books issued to them for the standard loan period of four weeks. Whilst the library contains fewer copies of books issued for seven days rather than the standard four-week loan period, these constitute a very small proportion of the total loans. Academic staff may assign a copy of a title to the short loan collection (reference use only apart from overnight loan) but tables 7 and 8 show that little use is made of this collection by these students.

TABLE 7 LOANS TO BSc NURSING STUDENTS 1998 - 2001 BY ITEM TYPE

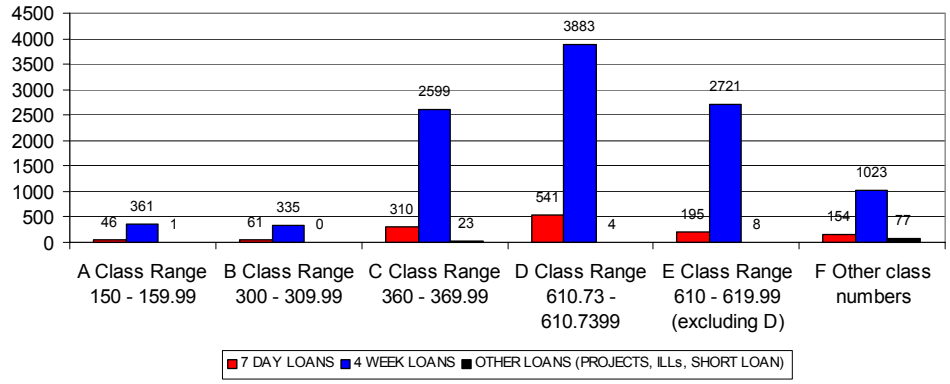
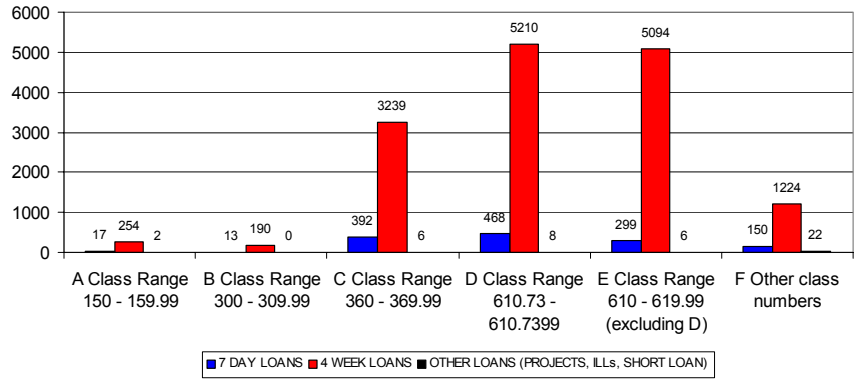


TABLE 8 LOANS TO RN/DIP HE STUDENTS 1998 - 2001 BY ITEM TYPE



Discussion

The analysis indicates that pre-registration nursing students borrow a larger number of books on average than other students at the University of Northumbria. There are limitations on using this data to identify wider implications. Book borrowing statistics only indicate the physical borrowing of a book. They do not give any indication on the contribution that book makes to a students' learning or academic performance. Other book loan studies have highlighted other deficiencies in using loan numbers to make strategic decisions (Loynes, 2000). In this study it would have been useful to establish whether nursing students are borrowing a wider subject range of books than other students. It would have been useful also to compare the Diploma students in terms of size with student numbers on other courses.

The indisputable implication of these high levels of book borrowing is the workload attached to the issuing, discharging and shelving of this quantity of books. Another trend that has implications for the planning of library services is the borrowing patterns of the two courses. Library services that are structured around the two semester or three term academic year will not meet the needs of these students. They need to be able to borrow books in the evening and at weekends at the time that many university libraries reduce their opening hours. At Northumbria this demand has resulted in opening hours being extended during the traditional vacation periods to cover evenings and weekend use.

It has proved difficult to establish the reasons why students on the two different levels(BSc Nursing and Diploma Nursing Studies) display such different average levels of use. It could be because the BSc Nursing Students have to reach level three in their academic outcomes, including the submission of an evidence based dissertation. Another reason could be the curriculum is different for the degree students with a greater reliance on the student centred learning. This study does illustrate some issues that may emerge through the introduction of the 'Making a

Difference'. This Government strategy introduces various developments for nursing, midwifery and health visiting (Department of Health, 1999).The curriculum for the two levels of entry will be unified. There are major implications for Northumbria if the diploma students make the same level of use of resources as the degree students.

It should also be emphasised that book-borrowing analysis does not produce a complete picture of nursing students' learning resources use. E-books are starting to make an impression as a resource for health students. At UNN, initial consideration is being given to this development. When e-books are introduced for these students the borrowing patterns of printed books must change. information analyses of health professionals and students have established that they make extensive use of journals (Forrest and Robb, 2000; Blackburn, 2000). Increasingly students need access to a hybrid library service where print and electronic information is made available. Knight (Knight: URL) provides a useful definition of the Hybrid Library:

'...a library which can provide a 'one stop shop' for both hardcopy and electronic resources. Its information systems should provide the end user with a seamless interface that will allow them to locate paper books and journals held locally and at neighbouring sites at the same time as being able to find relevant online resources, electronic publications and digitised material. To do this, the user needs to be provided with a front end that can access information in a variety of databases which are widely distributed and can contain a variety of information in different formats.'

At UNN, the Hybrid :Library of the Future (HyLife) project was funded as one of the Phase 3 eLib (1998-2000) projects. The aim was to implement Hybrid Library interfaces speedily so that any impacts on users and service providers would be made clear early on. As part of the project the University of Northumbria produced and evaluated a hybrid interface for health students (http://www.unn.ac.uk/central/isd/hylife/).A study was undertaken exploring how health students used this interface (Walton, Edwards and Hutton, 2000) through analysing transactions. The Hylife for Health interface was very highly used but the majority of students consulted it to access print and e-journals and health web sites rather than books. The outcomes of the Hylife study and this book borrowing analysis indicate that Northumbria health and nursing students are major users of library services.

Another issue that this book borrowing analysis highlights is the relationship between higher education libraries and NHS Workforce Development Confederation. As Confederation develop working practices with higher education institutions, clear communication channels need to be developed. The high cost of education and training becomes more transparent if libraries can show the level of uptake of their services by Confederation funded courses. The NHS Regional Librarians Group produce and annual statistical review detailing the use of NHS libraries (Maynard, 2000). There is no corresponding overview that provides matching data to show health students use of university libraries. Only through the amalgamation of data from both sectors will a true picture emerge of NHS clinician and student library use.

A national survey commissioned by the University Health Sciences Librarians group has recently been completed which assesses the role higher education libraries have played in the 'Making a Difference's strategy (Walton, Wakeham, Gannon-Leary, 2002). Similar high levels of use are highlighted at a national level.

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