



Students' attitudes towards e-books in a Scottish higher education institute: part 1

Students'
attitudes
towards e-books

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Abstract

Purpose – The purpose of this paper is to present the first part of three inter-related studies investigating the use and usability of e-books in higher education based on experiments conducted at the University of Strathclyde.

Design/methodology/approach – A self-selected sampling method was employed from undergraduate and postgraduate instructional students registered with the University of Strathclyde for academic year 2005/2006. An announcement email was posted to the student web portal for a period of three weeks inviting them to participate in the survey.

Findings – This survey found that e-book awareness and the level of e-book usage amongst students was lower than anticipated: 57 per cent of students were not aware of the availability of e-books from the library and 60 per cent of them had not used an e-book. Non-users commented that e-books were not widely advertised or promoted. Despite the low levels of e-book awareness and usage non-e-book users indicated their desire to learn more about e-books.

Research limitations/implications – This survey was dependent on self-selection and, therefore, there was no central control over the sample profile (e.g. gender, level of studies, academic discipline); hence, generalisation of the results should be treated with caution.

Practical implications – This survey is beneficial in terms of obtaining a better understanding of e-book usage among students and the reasons why students do, and do not, use e-books. The findings should be of value to academic libraries in terms of emphasising the need to increase e-book awareness and usage amongst students.

Originality/value – The findings should be of value to academic libraries in terms of emphasising the need to increase e-book awareness and usage amongst students.

Keywords Electronic books, Students, Customer surveys, Scotland

Paper type Research paper

Introduction

There is considerable variance in the ways in which an e-book may be defined or scoped, and in the literature, the term may be used to refer to hardware, software and/or document content. According to van Damm[1], who coined the word e-book, the concept refers to both the electronic content and the computerised device used to store and retrieve the content as "... the ability to store text in electronic form and subsequently retrieve it through the use of a computerised device – can trace its lineage back to the early methods of automated textual storage and retrieval developed as long as a century ago, as well as to the development of electronic document creation, storage, retrieval and output mechanisms in the 1950s and 1960s". This is in line with a number of other researchers who do not separate the two concepts in their definition of e-books, e.g. Lynch (2001), Rao (2001) and Armstrong *et al.* (2002). However, from the user perspective, an e-book is frequently viewed as a dedicated reading device and not as the associated content (Henke, 2002).



Wilson and Landoni (2001) define an e-book in three different ways:

- (1) hardware devices used to read e-books, such as a personal digital assistant (PDA), an e-book reader (e.g. Gemstar's REBs[2] and Rocket[3]), and a Pocket PC;
- (2) e-book reader software used to read a variety of proprietary formats of e-book, such as the Microsoft Reader[4] and Adobe's Acrobat Ebook reader[5] which can run on any laptop, desktop PC, PDA and Pocket PC; and
- (3) web books which are accessible via the web either for free or for a price, or which can be borrowed within certain time limits.

Chen (2003) on the other hand defines an e-book in terms of four perspectives:

- (1) the media used to preserve the books;
- (2) the content;
- (3) the device used to read the content; and
- (4) the delivery channel.

There have also been numerous attempts to classify the types of e-book. For example, Hawkins (2000) categorised e-books into four different types according to their accessibility whereas Crawford (2000) identified nine types of e-books based on various facets including their formats, standard and length of content. E-books can also be characterised in terms of how the e-book can be displayed or read: on a computer, through a network; a standalone desktop PC, notebook or PDA (Rao, 2001; Long, 2003); using e-book reader software (e.g. Adobe's Acrobat Ebook reader); on a dedicated hardware device (e.g. eBookman); or via the web (Wilson and Landoni, 2001). For the purpose of this survey, an e-book was defined as "an electronic form of a book that can be viewed and read on a computer or portable device, e.g. Palm Pilot".

E-books in academic libraries

The integration of e-books with other formats in academic libraries has not only created opportunities (e.g. e-books are remotely accessible and available around the clock, can potentially lead to savings in physical space in the library, can prevent or reduce the loss of, and damage to, books and are more readily integrated with virtual learning environments (VLEs)), but has also created some challenges (e.g. acquisition and collection development, standards and technology management and access and circulation). Access and circulation have also raised issues with respect to purchasing models, cataloguing and metadata standards, preservation and archiving, user and staff training and also e-book promotion.

There have been a number of studies on e-book usage which have tried to address these issues. In the UK, the first national investigation into e-book provision within British academic libraries was undertaken by Armstrong and Lonsdale (1998) with funding from the Joint Information System Committee. The work was then continued through IMPACT (investigation into the impact of e-book publishing on higher education libraries in the UK) in order to explore e-book acceptance in library and information services (LISs). The findings indicated that the take up of e-books was low and that no significant change had occurred in the level of e-book provision in British university libraries from 1999 to 2002 (Armstrong *et al.*, 2002).

Further research, in the form of the e-book Mapping Exercise (Armstrong and Lonsdale, 2003), was conducted to investigate the uptake of e-books in British further

education (FE) and higher education (HE) through exploring institutions' attitudes towards e-books, and examined collection management issues. The findings demonstrated that e-book holdings in both the FE and HE sectors were quite small but identified positive attitudes towards e-books from LIS staff, students and academic staff across all disciplines. However, extensive promotion was seen as essential to ensure widespread awareness and use of e-books. Therefore, a study to promote the uptake of e-books in UK academic libraries was conducted by the Gold Leaf consultancy. The study suggested that academics need to include e-books on their reading list and that LIS staff should include e-books in their catalogues to encourage e-book usage amongst users (Bennett, 2003; Bennett and Landoni, 2005).

In addition, staff from the Arts and Humanities Data Service for Literature, Language and Linguistics based at the Oxford text archive in Oxford, undertook a study and investigated the use of free e-books in UK academic libraries (Berglund *et al.*, 2004). The study found there were a number of barriers to their uptake such as: the limited range of available e-titles; user doubts about the quality assurance of free e-books and poor design of free e-books. Conversely free e-books created opportunities, especially for VLEs, as they generally come in open formats that can be more easily repurposed, integrated into institutional systems and preserved.

More recently the SuperBook Project was the first large scale national user study of e-book use by academic staff and students in HE or FE institutions in the UK. The main objectives were two-fold: to evaluate user attitudes towards e-books, and to investigate e-book collection management by exploring issues on bibliographic control, selection and acquisition, licensing, modes of access and promotion. This study used deep-log analysis, a new method for studying users that has been used in the field of electronic journals, and which was invented by Nicholas and his colleagues at the School of Library, Archive and Information Studies at University College London (Armstrong *et al.*, 2006).

In the USA, Dillon (2001a, b) reported on e-book experiences at the University of Texas. The studies found that e-books in certain subject fields received heavy usage (e.g. computer science, economics and business) whereas e-books in other fields did not. Additionally, the usage of e-books increased after adding machine readable cataloguing records of e-books to the library catalogue. McLuckie (2005) also reported a case study of implementation of e-books at the Swiss Federal Institute of Technology in Zurich and investigated some important issues associated with integrating e-books with the library collection, such as format differences, usage statistics and pricing models. There is also a growing body of literature describing e-books circulation and collection development through log analysis (Connaway and Snyder, 2005) and by comparing both print and electronic version of books (Littman and Connaway, 2004; Christianson and Aucoin, 2005; Bailey, 2006). These types of studies have been important in providing a better understanding of e-book usage patterns and helping librarians to create e-book collection strategies and policies to meet user needs more effectively.

Finally, there have also been studies exploring users' experiences with e-books in academic libraries such as Appleton (2004) who reported on e-book usage for midwifery education at the Faculty of Health within Edge Hill College of Higher Education, Liverpool, UK. The findings indicated that students found e-books were not an effective learning material compared to printed books or e-journals due to factors such as a lack of user friendliness, cost, the relative quality of content and lack of promotion and encouragement of use, but also recognised their advantages with respect to remote access and use within a VLE environment if appropriate promotion was undertaken. Appleton

(2005) also explored the experiences of both academic and support staff in the use of e-books within a VLE environment in a HE setting; the main finding was that e-books need to be customised and targeted at a particular user group. Ismail and Awang Ngah (2005) described an exploratory study into e-book usage patterns amongst undergraduate students at the Faculty of Computer Science and Information Technology at the University of Malaya, Kuala Lumpur. The study found low usage levels mainly because students preferred to use printed books and lacked knowledge on how to use e-books. Anuradha and Usha (2006) investigated the use and usability of e-books from users' perspectives in an academic and research environment at the Indian Institute of Science. The study found that e-book usage was very low although students tended to use e-books more than other faculty members and staff. Levine-Clark (2006) reported on a user study of e-book usage at the University of Denver which showed that although half of the campus community used e-books most of them used them only occasionally.

Objectives

This paper presents the first part of three inter-related studies investigating the use and usability of e-books in HE. The studies involved were:

- a web survey into e-book usage patterns in a university library (part 1);
- a follow-up study to investigate in more depth user impressions of e-books (part 2); and
- an in-depth investigation of user interactions with e-books with a particular focus on searching and browsing tools in an electronic environment (part 3).

The main objectives of this paper are to present the results of a survey designed to:

- assess Students awareness of the availability of e-books in their university library;
- measure the level of e-book usage among the students;
- investigate how e-books were being used; and
- identify the reasons why students did or did not use e-books.

This study hypothesised that e-book usage might be influenced by respondents' familiarity with the term e-book before the survey and by their awareness of e-book availability in the library and therefore looked at the relationship between these variables.

Methodology

The online questionnaire was designed using HTML coding and a common gateway interface program as a front end to import the survey data. This was placed on a server in the Department of Computer and Information Sciences at the University of Strathclyde which also acted as the repository for all collected data. The online survey was divided into two sections: the first section was targeted at respondents that had used e-books before, whereas the second section was for respondents that had never used an e-book. The reasons for splitting the questionnaire were to ensure that both types of respondents were directed to the appropriate questions and to facilitate data analysis. The online survey consisted of questions that required respondents to provide information on their demographic characteristics, with the remaining questions being designed to measure the respondents' awareness of e-books and their usage levels.

At the end of the online survey respondents were also given the opportunity to supply any comments regarding e-books. In addition the respondents were asked if they would be willing to participate in a follow-up survey.

Results and discussion

Demographics

A total of 1,372 responses were returned in the full survey out of a target population of 13,568, representing a 10 per cent response rate. The target population consisted of all undergraduate (10,831) and postgraduate (2,737) instructional students registered in academic year 2005/2006. The survey showed that 54 per cent of the respondents were female and 45 per cent of them were male, with the remainder declining not to answer the question. The majority of the respondents (90 per cent) were undergraduate students, with only 10 per cent of them being postgraduate students. This was in line with the composition of the target respondents: 80 per cent were undergraduates and only 20 per cent of them were postgraduates. The students were categorised by their disciplines: law, arts and social sciences, business, science, engineering and education. The responses were spread quite evenly across these disciplines with the highest number (29 per cent) coming from the law, arts and social sciences and the lowest (6 per cent) from the education.

Students' awareness of the availability of e-books in an academic library

Table I shows that 72 per cent of the respondents indicated that they were familiar with the term e-book before the survey. However a majority of them (57 per cent) pointed out that they were not aware of the availability of e-books from the library. This contrasts with Bennett and Landoni's (2005) findings where 46 per cent of their respondents were not aware that there were e-book holdings in the library and Levine-Clark (2006) who reported a figure of 41 per cent.

Table II shows how students found out that the library held e-books, with 421 valid cases[6] and 128 missing cases[7]. In total, there were 510 responses (ticks) spanning the four main ways that students could find out that the library has holdings of e-books. A majority (54 per cent) of these responses indicated that it was from the library website, 24 per cent from a lecturer, 14 per cent from other sources and 8 per cent from a librarian. Of the 421 valid cases, the most commonly used option was the library website (54 per cent) and the lowest was the librarian (8 per cent). It is interesting to note that respondents who answered "other" to this question indicated that they found out that the library held e-books from participating in the survey, from friends or the library catalogue.

	Responses	Per cent
<i>Were you familiar with the term e-book before this survey? (n = 1,372)</i>		
Yes	985	71.8
No	382	27.8
No answer	5	0.4
Total	1,372	100.0
<i>Were you aware that e-books are available from the library? (n = 1,372)</i>		
Yes	584	42.6
No	781	56.9
No answer	7	0.5
Total	1,372	100.0

Table I.
Students' awareness of the availability of e-books in the library

Total level of e-book usage

The findings revealed that a majority of students (60 per cent, 823 out of 1,372) had not used an e-book before the survey. This is in line with the findings of previous studies: Ismail and Awang Ngah (2005) reported that 61 per cent of their respondents had not used e-books before their survey; Chu (2003) found that 67 per cent of respondents had not used e-books; Bennett and Landoni (2005) found that 61 per cent of their student respondents were not e-book users and Anuradha and Usha (2006) also found that 66 per cent of their respondents had not used e-books on a trial basis. However, this contrasts with Levine-Clark (2006) who found that only 49 per cent of his respondents had not used e-books.

When compared to similar surveys from 2003 to 2006 across Asia, the UK and the USA, as shown in Figure 1, the percentage of non-e-book usage increased marginally but not significantly in Asia from 61 per cent (Ismail and Awang Ngah, 2005) to 66 per cent (Anuradha and Usha, 2006), while fairly similar percentages were recorded in the UK: 61 per cent (Bennett and Landoni, 2005) and 60 per cent (this study). In the USA, on the other hand, there was a considerable change from Chu's (2003) study of 67 per cent of non-usage (Chu, 2003) to Levine-Clark's (2006) figure of 49 per cent. These findings, however, should be interpreted with care as the studies were different in terms of the types of respondents that were involved (i.e. students or staff) and the disciplines in which they worked (i.e. single or various disciplines).

E-book usage vs familiarity with the term e-book and awareness of e-book availability in the library

It was anticipated that the level of e-book usage might be influenced by respondents' familiarity with the term e-book before the survey and by their awareness of e-book

How did you find out this library has e-books? (n = 549)	Count of responses	Responses (%)
Library website	273	53.6
Lecturer	122	23.9
Other	73	14.3
Librarian	42	8.2
Total	510	100.0

Table II.
How students found out that the library has holdings of e-books

Notes: 128 missing cases; 421 valid cases. A respondent could select more than one reason

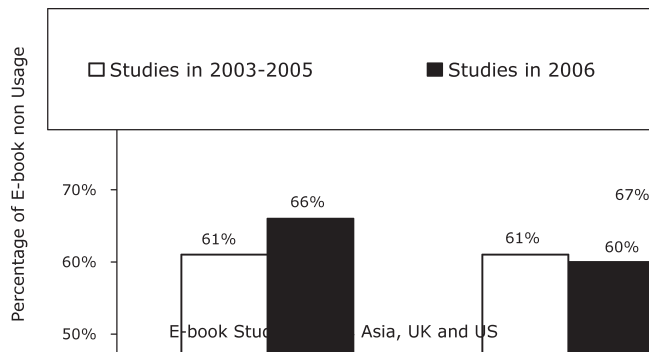


Figure 1.
E-book non-usage levels from 2003 to 2006

availability in the library. Therefore, a χ^2 test was performed to determine whether any association existed between e-book usage and respondents' familiarity with the term e-book before the survey and by their awareness of e-book availability in the library. The test revealed that there were associations between the variables (as shown in Table III).

An association between e-book usage and familiarity with the term e-book before the survey was found $X^2(2, N = 1,372) = 174.57, p < 0.001$. From Figure 2 it can be seen that more respondents that had used an e-book before the survey were familiar with the term e-book compared to respondents that had not used an e-book. Oddly, a number of respondents who had used an e-book before said they were not familiar with the term e-book before the survey (although this is only involved a very small number).

An association between e-book usage and awareness of e-book availability in the library before the survey was found $X^2(2, N = 1,372) = 195.34, p < 0.001$. Examination of Figure 3 shows that more respondents that had not used an e-book before the survey were not aware of e-book availability in the library.

Details of e-book usage

Of the 549 students who had used an e-book, 57 per cent had read or used three or fewer e-books before the survey, with the most popular format being a computer-based e-book (92 per cent). This was probably because e-books were freely available from the library and from the internet, whereas device-based e-books (e.g. those for a Palm Pilot) represented an additional cost in terms of essential hardware. Based on three categories of e-books defined for this survey (textbook, reference book and manuals or instructional books) the textbook was the most commonly used (42 per cent). This was probably because the majority of respondents were undergraduate students and this type of book was the dominant source of content for their studies. Amongst the students, the most popular reading method was on screen (67 per cent) although students also liked to print them out (25 per cent).

	No. of valid cases	Value (Pearson χ^2)	df
Have you used an e-book before? Were you familiar with the term e-book before this survey?	1,372	174.566	1
Have you used an e-book before? Were you aware that e-books are available from the library?	1,372	195.339	1

Table III.
 χ^2 test result

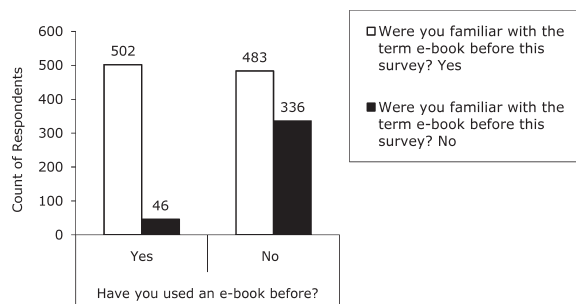


Figure 2.
Respondents' familiarity with the term e-book

Purposes for using e-books

Table IV ranks six purposes for which students used e-books in multiple response questions. The survey revealed that students selected “to find material for a project or essay” as the main purpose for using an e-book, with “to support research work” being the second most popular choice. The least selected option was “other” which, from comments, was primarily reading for pleasure and leisure. Based on the six purposes, this study has categorised e-book use into four types:

- (1) *Fact finding*: This involves the use of e-books to find a very specific piece of information or a fact (e.g. using a dictionary or an encyclopaedia).
- (2) *Finding relevant content*: This involves the browsing and searching of e-books for relevant chunks of information which may be integrated with other information chunks to form a summary of a topic (i.e. to find material for a project or essay). For example, browsing and searching textbooks, manuals or instructional books.
- (3) *Selective reading*: This is similar to type (2) but involves more extensive reading and is often used to support research or to get deeper knowledge on a very specific topic. For example, reading journal articles, conference papers and reports.
- (4) *Extended reading*: This involves reading e-books in their entirety or large sections such as chapters to get a broad view or summary of a discipline or school of thought; e.g. reading a textbook or recommended course book.

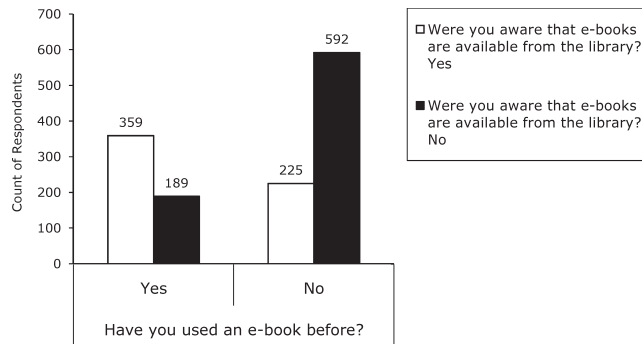


Figure 3. Respondents' awareness of e-book availability in the library

For what purpose did you use these e-books? (<i>n</i> = 549)	Count of responses	Responses (%)
<i>Fact finding</i>		
(i) To look up the answer to a specific question	190	16.2
<i>Finding relevant content</i>		
(ii) To find material for a project or essay	435	37.1
<i>Selective reading</i>		
(iii) To support research work	251	21.4
<i>Extended reading</i>		
(iv) To read as a textbook for a course	136	11.6
(v) To read as a recommended course book	108	9.2
Other	53	4.5
Total	1,173	100.0

Table IV. Purposes for which e-books are used

Notes: Four missing cases; 545 valid cases. A respondent could select more than one reason

Table V summarises how respondents used e-books for the four main purposes described above:

- fact finding (option (i) in Table IV);
- finding relevant content (option (ii) in Table IV);
- selective reading (options (iii) in Table IV); and
- extended reading (options (iv) and (v) in Table IV).

The findings indicated that 79 per cent of the students used e-books for finding relevant content and 46 per cent for selective reading which involved extensive browsing and searching activities.

Reasons why students do or do not use e-books

As shown in Table VI, the most common reason for using e-books were “they are freely available in the library”. This is in agreement with Chu’s (2003) findings where his respondents tended to use freely available e-books (from the library or internet) which did not require students to incur any additional expenses. The next most popular reason was “no equivalent printed book was available”. Some students commented they had to use e-books through early English book online simply because there was no equivalent printed book available. Students who selected the “other” option provided the following additional reasons for using e-books: they can be remotely accessed; they do not have to go to the library; they are available from the internet and e-books are easy to use and carry. Table VII summarises the reasons why participants had not used e-books.

“Not aware of their availability” and “prefer printed books” were the top two reasons, although students also pointed out that “they dislike reading on screen” which

Four types of e-book use (<i>n</i> = 549)	Count of responses	Responses (%)
1. Fact finding	190	16.2
2. Finding relevant content	435	37.1
3. Selective reading	251	21.4
4. Extended reading	244	20.8

Table V.
Four main purposes for using e-books

Note: Respondents could select more than one option

Why did you use these e-books? (<i>n</i> = 549)	Count of responses	Responses (%)
They are freely available in the library	263	29.3
No equivalent printed book was available	197	22.0
They have features that are not available in printed books (e.g. search function, link to dictionaries or a thesaurus)	190	21.2
They have features which are in a printed book but are easier to use in a digital one (e.g. hyperlinked table of contents, or index to the text, bookmarks and annotations)	168	18.8
Other	78	8.7
Total	896	100.00

Table VI.
Reasons for using e-books

Notes: Nine missing cases; 540 valid cases. A respondent could select more than one reason

Table VII.
Reasons for not using
e-books

Why have you not used e-books? (<i>n</i> = 823)	Count of responses	Responses (%)
Not aware of their availability	518	34.4
Prefer printed book	326	21.7
Dislike reading on screen	249	16.5
E-books are not as portable as printed books	145	9.6
It takes time to get familiar with the new technology	103	6.8
No relevant e-book titles were available	70	4.7
E-books need special equipment	59	3.9
Other	36	2.4
Total	1,506	100.0

Notes: Six missing cases; 817 valid cases. A respondent could select more than one reason

was often described as causing eyestrain over extended periods. In the main, students who answered “other” stated that they had “no need to use e-books” and that they “do not know how to access e-books”.

Conclusions

This survey is unusual in terms of the number of responses which were obtained. Other surveys have yielded similar results but have been based on much smaller samples. The survey has proved useful not only in providing data on the levels of usage and awareness but has also raised these levels, as can be judged from comments that some respondents only became aware of e-book provision through the survey itself. The gateway into the survey was also shown to be important. The pilot testing was carried out using another HE library’s web-site and produced significantly lower returns (52 vs 1,372) and the vast majority of respondents were postgraduate students. This can probably be explained by the more intense use made of library resources by postgraduate students and the higher visibility of the student portal which was used to access a wide variety of essential information regarding classes, timetables, examinations, etc.

The survey found that e-book awareness amongst students at the University of Strathclyde was not particularly high, as was the level of e-book usage, though this is in line with other surveys. This is demonstrated through a lack of awareness regarding e-book availability being the main reason for not using e-books. Additionally, comments from non-users highlighted that e-books were not felt to be widely advertised throughout the university which most probably contributed to the lack of awareness and non-usage. Bennett and Landoni (2005) have also reported that the majority of their respondents were not aware of e-books even when their libraries had significant holdings of e-books. In order to improve e-book awareness and usage level, Summerfield and Mandel (1999) reported that encouraging academic staff to include e-book titles in their reading lists helped to increase e-book usage. Including e-books in a library catalogue is also reported to have increased e-book usage Dillon (2001b). It is recommended, therefore, that libraries should actively and attractively promote e-books through their library websites, brochures, posters, training sessions or workshops.

This web survey revealed that e-book use differs according to the following four purposes:

- (1) fact finding;
- (2) finding relevant content;

-
- (3) selective reading; and
 - (4) extended reading.

The most popular reason for using e-books was for “finding relevant content” which is in line with Gunter (2005) who stated that early e-book usage was primarily for reference work rather than reading for leisure and entertainment. The second most popular reason was for “selective reading”. This would indicate that e-books are not read in their entirety but instead are consulted or used for reference purposes (i.e. finding relevant information and selective reading).

A variety of positive and negative comments were provided by e-book users which revealed some important and interesting findings. On the positive side, students valued e-books as important and convenient sources of books in high demand or of works that are out of print. In addition, e-books could be accessed around the clock were remotely accessible and easy to search for specific information. Students with special needs found these characteristics of particular importance. However, on the negative side, apart from the much repeated comment that reading on screen for extended periods was uncomfortable and hence printed books were preferred, students commented that e-book provision in their library was limited in terms of viewing times and print quotas. Therefore, copy and print policies for portions of e-books should be reviewed by e-book providers or vendors to promote more usage of e-books within copyright and fair use guidelines. This survey also has discovered that even amongst e-book users, there were still misconceptions regarding e-books that some students mistook e-books for e-journals, and that some of them were not aware of what e-books could offer. In addition, some students commented that they were unaware of the availability of e-books in the library, while some of those who were aware of e-books thought that title holdings were very limited.

Comments from non-users, on the other hand, indicated that they had not used e-books because: they were unaware of their availability in the library or elsewhere (again underlining the fact that e-books need to be promoted to increase awareness); they did not know how to access e-books; they had limited knowledge about e-books and were not well informed about the features that are available in e-books (such as underlining, making notes or highlighting the e-book as they could in printed versions) and students preferred printed books and disliked reading on screen. Even though non-users gave reasons for not using e-books, many had positive reactions to e-books and indicated their interest to use and learn about e-books in the future.

To summarise, the response rate for this survey was high in terms of volume and trends can be viewed with some confidence. It is also the second largest survey of this type to have been conducted. However, for generalisability, the results should be compared with those from other libraries, using a stratified sampling method to generate an equal proportion of respondents in terms of their level of studies and academic disciplines. It is important to note that this online survey was dependent on respondent self-selection. This meant that there was no central control over the return of sample profile (e.g. gender, level of studies, academic discipline). Part 2 in this series of three papers discusses the findings from the second study which looked more deeply into how users interact with e-books based on the four types of use elaborated above.

Notes

1. Available at: www.rosettabooks.com/casedocs/RH_Van_Dam.pdf (accessed 4 April 2008).
2. Available at: www.ebookmall.com/gemstar/ (accessed 4 April 2008).

3. Available at: www.rocket-ebook.com/Products/Tour/index.html (accessed 4 April 2008).
4. Available at: www.microsoft.com/reader/downloads/pc.msp# (accessed 4 April 2008).
5. Available at: www.adobe.com/products/ebookreader/ (accessed 4 April 2008).
6. Valid cases are the number of respondents who selected one or more options in the question.
7. Missing cases are the number of respondents who did not select any of the options in the question.

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