



Graduate students' usage of and attitudes towards e-books: experiences from Taiwan

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Abstract

Purpose – University libraries are increasing their e-book collections. The purpose of this study is to investigate graduate students' usage of and attitudes towards e-books at National Taiwan University.

Design/methodology/approach – A total of 20 graduate students from the fields of humanities, social sciences, science and technology, and medicine were interviewed.

Findings – The results indicated that graduate students used e-books mainly for the purposes of study and research. Monographs were the type of e-book that students used most often, followed by textbooks and reference tools. While they appreciated the convenience of using e-books, students mentioned several limitations. They liked the keyword search function of e-books. Most of the time, graduate students browsed a few paragraphs or pages online and then printed out copies for further reading. They also borrowed the corresponding paper versions of the e-books from the library. Students preferred that university libraries supply both the electronic and paper versions. In certain aspects, students' use behaviour was found to vary among disciplines.

Originality/value – This study highlights multiple aspects of graduate students' use behaviour with respect to e-books. The findings could be used to enhance e-book collection development in university libraries.

Keywords E-books, E-book usage, Graduate students, University libraries, Library users, User satisfaction, Taiwan

Paper type Research paper

1. Introduction

Libraries have been increasing their number of electronic collections over the past decade. Most university libraries are gradually cancelling their print journal subscriptions while building electronic journal collections. In comparison with their acceptance of the e-journal format, librarians' acceptance of the e-book has been slower and more conservative. Nevertheless, e-books are becoming essential components of university library collections.

Ever since their inception in the late 1990s, e-books have remained controversial. While Bell *et al.* (2002) indicated that some authors predicted that e-books would replace printed books and alter reading habits, other authors predicted that the market for printed books would remain stable and that many e-book publishing companies would become bankrupt. To the contrary, publishers continue to publish books in print even as the e-book market grows. Many publishers, including renowned academic publishing companies, are in fact entering the e-book market. Many university libraries have expanded their budgets to include e-books.



Rao (2004) listed several advantages of the e-book from the user's perspective, including the convenience of accessing a book without time and distance limitations. Another advantage is the ease of locating a word or sentence in a book from a full-text keyword search. Adjustable brightness and size of font provide comfort in reading. The author also mentioned other advantages for library staff, publishers as well as authors. Velde and Ernest (2009) noted that an e-book could be read on a computer monitor, e-book reader, PDA, mobile phone, and so on and that it could be printed out for further reading. These features rendered the content more versatile and flexible than the traditional print book. Other advantages of the e-book were also mentioned.

Do patrons use e-books? What are their perspectives on e-books? Do they like e-books more than print books? These are questions asked in many e-book related studies. Snowhill (2001) explained that e-book usage was not as popular as database and e-journal usage at the start of the millennium because of digital rights management and technical limitations in reading. Also, overall there were less e-books available. However, the number of e-book users has increased significantly in recent years. Velde and Ernest (2009) reported that the number of downloads of Springer's e-books grew from 25 million in 2007 to 41 million in 2008. It seems that patrons' attitudes toward e-books are becoming more positive as the technology of e-books improves and more e-books become available in the library (Safley, 2006).

Sutton and Jacoby (2008) found that graduate students "depend heavily on library collections and generally prefer to access materials online" and Rowlands *et al.* (2007) found that graduate students use e-books on campus more than undergraduates and university staff. Szajna (1996) indicated that users' characteristics might affect their perceptions and behaviour towards new technology. While there are several studies that investigate graduate students' usage of e-books, few focus on the variation among different disciplines. This study intends to compare graduate students from four disciplines and their usage and attitudes towards e-books. The following questions will be answered:

- How often do graduate students use e-books?
- What type of e-books do they use?
- What do they like and dislike about e-books?
- What are their use behaviours of e-books?
- What are their opinions concerning library acquisitions of e-books and printed books?

2. Review of the literature

Although there is still debate over whether e-books will replace printed books, libraries have been expanding their acquisitions of e-books over the past few years. For example, the total expenditure of the Association for Research Libraries (ARL) on e-books increased from US\$26,387,282 in 2006-2007 to US\$30,563,758 in 2007-2008. The number of acquisitions of e-books increased from 25,006,756 titles to 32,329,187 titles (Bland and Kyrillidou, 2009a, b). In Taiwan, university libraries owned 56,847 e-book titles on average in 2007, and the number rose to 89,668 in 2008 (Chen, 2009).

Ramires and Gyeszly (2001) suggested that libraries should analyse usage statistics to understand users' preferences on subjects and types of e-books. Abdullah and Gibb (2008a) indicated that 57 per cent of students were not aware of the availability of

library e-books. The study by Rowlands *et al.* (2007) indicated that students who used e-books were more likely to also use Google or other search engines. A global student e-book survey made by Ebrary (2008) reported that 57 per cent of students knew that their libraries had e-books, but almost half of them never used them. Nicholas *et al.* (2008) mentioned 60 per cent of students had used e-books and that e-books were already embedded as a central part of their information experience. The JISC e-book survey (JISC, 2009) indicated that 64.6 per cent of university students and teachers combined used e-books. Ismail and Zainab (2005) found that students who were heavy users of the internet had more positive attitudes towards e-books, but their level of usage was still low. While university libraries owned large and expensive e-book collections, including the best and most in-demand academic titles, D'Agostino (2010) pointed out that many of the titles remained unread.

Abdullah and Gibb (2008a) categorised e-book use into three types:

- (1) fact finding;
- (2) finding relevant content; and
- (3) extended reading.

Meanwhile, several documents pointed out that the purposes of students' use of e-books were mainly associated with studying and scholarly activities rather than leisure. Ismail and Zainab (2005) reported that students used e-books primarily for writing assignments and research projects (54.3 per cent), reference (30.9 per cent), leisure reading (6.2 per cent), and browsing (3.7 per cent). Anuradha and Usha (2006) reported that science and technology students primarily used e-books for academic purposes (58.33 per cent) and rarely for leisure purposes (1.66 per cent). The authors mentioned that the types of e-books which students preferred to read were:

- reference materials (83.33 per cent);
- technical books (80 per cent);
- recreational books (41.67 per cent);
- maps/travel guides (36 per cent); and
- trade magazines (33.33 per cent).

Rowlands *et al.* (2007) found that textbooks (59.9 per cent) were the most popular e-book type used by students, followed by reference books (52.4 per cent), and research monographs (46 per cent). Hernon *et al.* (2007) reported that there were usage variations on types of e-books among students of different disciplines. Current monographs, literary dictionaries and criticisms, and reference sources were the major type used by students of economics, literature, and nursing, respectively. The study of Levine-Clark (2006) indicated that in contrast with graduate students in other disciplines, humanities graduate students were more aware of that their library provided e-books, and they used e-books more often.

The advantages of e-books were found in many references. Users liked the convenience of e-books because of their availability online without time and space limitations (Ismail and Zainab, 2005; Hernon *et al.*, 2007; Rowlands *et al.*, 2007; Ebrary, 2007). E-books are easy to download or copy and paste for further reading (Hernon *et al.*, 2007; Rowlands *et al.*, 2007; Ebrary, 2007). E-books are portable because no

printed copy needs to be carried (Hernon *et al.*, 2007). When the printed version of a book is checked out, e-books provide an alternative copy (Hernon *et al.*, 2007). The advantages of currency, search ability, and being environmentally friendly were also mentioned (Ismail and Zainab, 2005; Hernon *et al.*, 2007; Rowlands *et al.*, 2007; Ebrary, 2007). However, users also noted the disadvantages of e-books. Anuradha and Usha (2006) indicated that the reasons why students are not happy using e-books include:

- incompatibility of e-books from different sources;
- lack of awareness or demand for e-books;
- unfamiliarity with e-book technology; and
- unfriendly interfaces.

Ismail and Zainab (2005) investigated students who do not use e-books. Reasons for non-use included:

- preference for printed books;
- lack of knowledge on how to use e-books;
- difficulty in browsing and reading; and
- the need for special software.

Similar reasons were also found in ebrary's survey (Ebrary, 2008). In addition, librarians regarded digital rights management as the most important factor hindering e-book usage (Highwire Press, 2009).

Although more e-books are now available, students' preference for printed books still dominates. Walton (2007) reported that students preferred to use hard copies, for research, in reading textbooks, or for leisure reading. The survey of Woody *et al.* (2010) indicated that students who had experience using e-books still preferred print textbooks over electronic textbooks. Levine-Clark (2006) mentioned that when both print and electronic versions were available, humanities graduate students reported that they always used the print version. However, Liu (2006) reported that reading preferences and use of print or electronic resources varied among different disciplines. Similar results were also found in the study of Slater (2009), which showed that university students in computer science, technology, and related fields strongly preferred e-books, but that students in history, language, and linguistics had a preference for printed books. Abdullah and Gibb (2008b) indicated that students' preferences for book formats varied depending on the context of their information needs. For example, all students preferred printed books for extended reading and e-books for fact finding.

Students who use e-books prefer to read them online. Rowlands *et al.* (2007) indicated that 48 per cent of users read e-books from the screen. Only 13 per cent printed and read e-books on paper, and another 39 per cent did both. Nicholas *et al.* (2008) reported that 62.6 per cent of students read e-book content from the screen, 6.4 per cent printed and read from paper, and 30.6 per cent used both means. The authors also found that very few users read entire books online. Instead, users "dipped in and out of several chapters". Most users spent less than 20 minutes reading from the screen. Although most e-books allow for downloading, some students found it cumbersome and also were concerned about the expense of printing. The JISC survey (JISC, 2009) indicated that only 5 per cent of students read the entire e-book online; the

majority (85 per cent) spent less than one minute on each page. In addition to keyword search and hierarchical navigation, annotating is an e-book feature; however, students seldom use this function and prefer to mark up a paper copy (Hernon *et al.*, 2007).

3. Methodology

This study conducted interviews with graduate students of National Taiwan University, a research-oriented university in Taipei. Five graduate students each were solicited from four disciplines (humanities, social science, science and technology, and medicine), totalling 20 participants. Solicitations for participation were distributed on the University's Bulletin Board System and dormitory bulletin boards. Because most questions in this study related to e-book usage, only those who had e-book experiences were qualified to participate.

Interview questions were mailed to participants in advance in order to give them an opportunity to first review their experiences with e-books. During the actual interview, a laptop equipped with internet access to the library's web site was shown to the participant in case he or she needed further explanation. Each interview was audio-recorded and lasted an hour on average.

The National Taiwan University Library started to build an e-book collection in July 2006. The collection (including e-theses) now includes over 900,000 titles and encompasses broad subject areas in Chinese and Western languages, as shown in Figure 1. The library purchases its e-books directly from vendors as well as from consortia. Acquisition of e-books is also made via free internet resources. A major portion of the e-book catalogue is available online through the library's web site (National Taiwan University Library, 2010).



Figure 1.
Some of the sources of
e-books at National
Taiwan University
Library

4. Results and discussion

4.1 Frequency of e-book usage

Table I shows that 11 students reported that they used e-books frequently, five occasionally, and four rarely. Among the students of different disciplines, all humanities students were frequent e-book users. Three of the five medical students were also frequent users. Those frequent users reported that they used e-books daily or two to four times per week. Three social sciences students used e-books rarely.

Many references in the literature reported that printed books were the main format of documents used by humanities scholars and students (e.g. Stone, 1982; Reynolds, 1995; Smith, 2003). Despite the availability of an e-book version, humanities graduate students still appear to prefer the printed book format. Aside from those in the humanities field, students referenced e-books less frequently than e-journals.

4.2 Type of e-books used

All students had experiences in using different types of e-books. Academic monographs, textbooks, and reference tools were the types of e-books students used most often. In total, 14 students reported that they used monographs, 12 used reference tools (e.g. dictionaries, encyclopedias, laboratory manuals, and laws and regulations), and six used textbooks as shown in Table II. All students read e-books for the purposes of study and research. Only one social sciences student reported that she read e-books occasionally for leisure.

More e-textbooks were used by students in the fields of science and technology and medicine. The reason is that the majority of textbooks used in these two fields in the University are in English, and more English e-textbooks are available in the Library. In contrast, students generally used Chinese textbooks in the fields of humanities and social sciences. The Library owns fewer Chinese e-textbooks in those fields.

4.3 Advantages and disadvantages of e-books

When comparing e-books to printed books, students mentioned the following advantages and disadvantages:

| Discipline | Frequently | Occasionally | Rarely | Subtotal |
|------------------------|------------|--------------|--------|----------|
| Humanities | 5 | 0 | 0 | 5 |
| Social sciences | 1 | 1 | 3 | 5 |
| Science and technology | 2 | 3 | 0 | 5 |
| Medicine | 3 | 1 | 1 | 5 |
| Total | 11 | 5 | 4 | 20 |

Table I.
Frequency of e-book
usage

| Discipline | Monographs | Text books | Reference tools | Leisure books |
|------------------------|------------|------------|-----------------|---------------|
| Humanities | 5 | 0 | 4 | 0 |
| Social sciences | 4 | 1 | 4 | 0 |
| Science and technology | 2 | 2 | 1 | 0 |
| Medicine | 3 | 3 | 3 | 1 |
| Total | 14 | 6 | 12 | 1 |

Table II.
Type of e-book used

- (1) Advantages of e-books:
 - easy to search;
 - convenient to access;
 - easy to save, duplicate, and print;
 - accessed simultaneously by many users;
 - environmentally friendly; and
 - convenient for bibliographic management.
- (2) Disadvantages of e-books:
 - discomfort when reading from the screen;
 - distractions in reading;
 - cannot be annotated and highlighted; and
 - need to install software before reading.

Almost all students reported that it was easy to make a keyword search in an e-book. “I can easily find the sentences or paragraphs which contain the terms I was looking for”, explained one student. Another student noted that a keyword search helped to identify whether a book was related to her interests. Students liked the fact that they could access e-books anytime and anywhere without visiting the physical libraries in person. Students reported that printed books needed to be returned to libraries upon their due date, but with e-books, they could save and print for further reading without a time limitation. Several students complained that some popular printed books were always checked out. “I don’t need to worry about the circulation status for e-books, because they can be accessed simultaneously by many users” noted one student. Two students of medicine commented that e-books were more environmentally friendly than printed books. A student of social sciences mentioned that e-books were easily manageable in personal bibliographic files.

The predominant disadvantage of the e-book is the discomfort of reading online. Several students pointed out that their eyes became tired after reading e-books for longer periods of time. Scrolling up and down and clicking from page to page in e-books were inconvenient when compared with simply reading printed books. Three students reported that they could not concentrate when reading e-books. “Because it is so easy to search keywords in an e-book, I usually browse and flip among pages. But when I read a printed book, I mostly read page-by-page. Although it takes more time, I can concentrate more easily that way”, explained a student of humanities. Another student mentioned that icons, buttons, and hyperlinks on the screen pages were distracting. The action of continually clicking for the next page during reading was also found to be an annoyance. One student noted that while he read a printed book from cover to cover, he only focused on highlighted parts in an e-book. Three students reported that e-books could not be annotated and highlighted like printed books. Two students of humanities and one student of social sciences noted the inconvenience of using certain e-book databases due to software installation requirements. These are the cases for some Chinese databases that require users to install prescribed software of Chinese characters or image readers.

4.4 Problems encountered when using e-books

No students encountered major difficulties in using e-books. All of them reported that searching an e-book was easier and faster than searching a printed book. However, a few inconveniences were mentioned, including the library's organisation of e-books.

On the Library's homepage, links to "E-books" and "free E-books" are displayed close to one another. "I was confused over which one should I click, because I didn't know whether the book I was searching for was free or not", explained one student. Most, but not all e-books have been catalogued and can be searched on the OPAC. One student worried that she might miss some e-books if she searched OPAC only. To find an e-book, quite a few students will browse and navigate instead of searching e-books on the library's web site. "The Library's subject category of e-books is too broad, and I would have to browse through several hundred titles to find the item I am interested in", explained one student. A student of humanities also reported on the problem of subject categorisation. "I have to click through several layers to find out what is covered in a category", she said. The databases covered e-books in several disciplines; two science and technology students mentioned that a detailed description would help them to better identify a database's scope and coverage, because they usually wanted to use e-books in specific disciplines.

Some students found the databases' interfaces to be poorly designed. Because students in the field of humanities usually spent more time reading e-books, they had more complaints about the reading and print designs. For example, most PDF e-books could be read page-by-page as long as patrons scrolled down the pages on the screen. A student of humanities said it was troublesome to continuously click "next page" because the e-book he used could only be read one page at a time on the screen. Another student noted, "It bothers me a lot, because the database I used permits downloading only 200 words at a time". A student of medicine reported a similar situation with a database, in which texts could be downloaded only section-by-section. Another student mentioned that an e-book database allowed 40-page downloads at a time and that for further downloading, the user needed to log in again. It is obvious that the restraints on printing and download need to be solved.

4.5 Reading behaviour with respect to e-books

The study found that students' reading behaviour of e-books differs from printed books. No students reported that they read an e-book online from start to finish. All students mentioned that they only read certain sections or chapters of an e-book. Most of the time, they flipped among pages. In contrast, most students, especially those in the fields of humanities and social sciences, said they usually read printed books from cover to cover.

A total of nine students reported that they usually searched keywords first, located the sentences or paragraphs which contained the keyword, then read or browsed relevant pages online. In addition to conducting keyword searches, 11 students reported that they usually looked at the table of contents first, then read or browsed the related chapter or section online. More humanities students preferred to use table of contents, and more science and technology students preferred to use keyword search as shown in Table III. When necessary, students would copy and paste, print, or download an e-book (partially or as an entire document).

Traditionally, books are written and organised in a logical structure to be read page-by-page, section-by-section, and chapter-by-chapter. A book may also be

designed for readers to read from cover to cover, in a functional manner. However, based on findings of this study (as well as earlier studies), the function of a book may need to be redefined because when students read e-books they are not actually reading “books” in the traditional sense.

4.6 Features of e-books used by students

Students mentioned the functions of keyword search, copy and paste, print, and downloading. Overall, 13 students reported that they usually printed out only the paragraphs or pages needed; four students said they sometimes printed whole books if permitted; and nine students reported that they usually saved the file for further reading. Only four students used the “mark-up and highlighting” function on PDF e-books, while two students reported using EndNote or RefWork for bibliography management.

A few variations were found among students in different disciplines. The students who reported that they used the “mark-up and highlighting” function belonged to the fields of humanities and medicine. Students were also concerned about printing costs. “I need a lot of reading, and it is expensive to make printed copies all the time. I usually highlight on the file for further reading”, said a student of humanities. A student of medicine also mentioned that she had to read a lot of e-books, explaining: “I only print out those parts that I need.” Although the Library offered instructional courses and an online manual on bibliography management tools, it seems that graduate students either did not understand the advantages of the tools or lacked the motivation to take advantage of the tools. “MLA style is required by my advisor, and EndNote helps me to follow the style”, reported a student of humanities who used EndNote.

4.7 Choosing between electronic and printed versions

Students were asked which version they would use in the case that a book had both electronic and printed versions. Almost all students reported that they would use both versions. Typically, they would browse e-books first to find out whether the item was relevant to his or her interests. In comparison with other disciplines, humanities students chose printed versions. Reading habits were one of the reasons. “I search keywords on the electronic version, but I like to read printed versions page-by-page because I can concentrate better”, explained a student of foreign literature. A student of history also reported that he read printed books more effectively and efficiently. A student of Japanese literature noted that he chose printed versions because most books he read were lengthy. “It would be too uncomfortable to read a 500-page book online”, said the student. A student of Chinese literature explained that he cared about the quality of e-books and noted: “it is my advisor’s request that we should check up with the printed version.”

| Discipline | Keyword search | Table of contents | Subtotal |
|------------------------|----------------|-------------------|----------|
| Humanities | 1 | 4 | 5 |
| Social sciences | 3 | 2 | 5 |
| Science and technology | 4 | 1 | 5 |
| Medicine | 1 | 4 | 5 |
| Total | 9 | 11 | 20 |

Table III.
Reading behaviour

However, students in the field of medicine preferred to use electronic versions instead of printed ones. Understandably, the e-book used most often is a step-by-step laboratory manual, which is easily read from the screen. All five medical students also reported that they would use the printed version only if the book was worthy of more in-depth reading. Three explained that they usually downloaded the electronic files because printed medical books were too heavy to carry.

4.8 Viewpoints on the library's e-book acquisitions

All students expected that the library would increase acquisitions of e-books in the future. However, students in the humanities opposed the trend if it meant a decrease in acquisitions of printed books. Personal reading habits were the main factor that affected their attitudes. Humanities students mentioned that they depended heavily on monographs during their studies and research. Three humanities students indicated that they liked to read printed books because they were more suitable for in-depth reading than e-books. Since fewer Chinese e-books than English e-books are published, a student of humanities worried about the decreasing availability of Chinese printed books. A student of social sciences liked to browse the new arrival book shelves in the library. "The Library should not decrease printed book acquisitions because the joy of serendipity will be lost if only e-books are available", noted the student.

Some students, especially those of social sciences and science and technology, explained why they preferred e-book acquisitions even if at the expense of printed books. They noted that they could download and save e-books for further reading and access e-books anytime without visiting the physical library. They noted that it was also easier and more convenient to print a copy of an e-book than a printed book. Students reported that some popular printed monographs or textbooks were always checked out but that there was no waiting list for corresponding e-books. Most students encountered the dilemma of whether the Library should build an e-book based collection. They did not expect that the Library would diminish its printed book collections. Students had no clear ideas about what kinds of books should be purchased in electronic versions or in printed versions. However, in light of the library's shrinking budget, many students anticipated that the library would at least acquire core and popular books in both versions.

4.9 Type of e-books expected

Were the Library to decide to expand its e-book collections, 15 students reported that they would expect more academic monographs to be acquired. A total of 12 students reported textbooks, seven reference tools, and seven leisure books as shown in Table IV.

| Discipline | Monographs | Textbooks | Reference tools | Leisure books |
|------------------------|------------|-----------|-----------------|---------------|
| Humanities | 4 | 2 | 2 | 1 |
| Social sciences | 3 | 3 | 1 | 2 |
| Science and technology | 2 | 5 | 1 | 3 |
| Medicine | 3 | 2 | 4 | 1 |
| Total | 15 | 12 | 7 | 7 |

Table IV.
Types of e-books
expected

More humanities students preferred monographs than students in the other fields. The attitudes may reflect that students in the humanities depend much heavier on monographs in their studies and research. On the other hand, more students in the fields of social sciences, science and technology, and medicine reported that the textbook was their first choice. Textbooks in those disciplines are usually in English, and they are considered to be expensive by most students. It is library policy to purchase single copies of books in Western languages. "I need not to worry about whether the textbooks are checked out or not. Electronic textbooks are always accessible", said a student of social sciences. However, students may not understand that some e-books acquired by the library only allow one user at a time (i.e. no simultaneous users).

4.10 Use of Google Books

A total of 14 students reported that they had used Google Books, but they had used it only occasionally. The Library remained the primary source for looking for books. Most of the time, students searched Google Books only when the Library did not own the books. "My research topic is very specific. I usually search books in the libraries or try other sources, such as my advisor's personal collection or local bookstores. Google Books is my last resort", explained a student of humanities, who nevertheless praised Google Books for providing old Western books. However, the majority of students valued the Library's e-books over those found on Google Books. The availability of full text on Google Books did not meet students' expectations. Several students reported that many books did not allow previews or that only limited page browsing was allowed. "I don't know why some pages were skipped", noted one student. Students of humanities expressed concern about the quality of books found on Google Books. "I can find relevant books on Google Books, but I somewhat worry about their quality. I still regard the Library as holding more authoritative books", explained a student of humanities.

Of the 14 students who used Google Books, seven reported that they would browse a book on the internet and borrow the item from the Library if it were available. Most of those students belong to the field of humanities and social sciences.

5. Conclusions

Many publishers, including those prestigious academic publishers, are enlarging their e-book markets. Meanwhile, in past years, university libraries have been continuing to increase their e-book acquisitions. An earlier study found that students do not oppose the library's subscription to e-journals in replacement of printed journals (Wu and Chen, 2010). This study indicated that students' attitudes towards e-books are more conservative than towards e-journals. Their hope for the library to build hybrid and duplicate book collections is a challenging task. Students expect that library collections consist of printed and electronic books, and they anticipate that libraries should provide duplicate printed and electronic versions of the same titles.

With the utmost degree of care, libraries have in the past avoided duplicates when building collections. A survey made by Ebrary (2007) showed that the majority of librarians (74 per cent) prefer not to purchase duplicate titles of printed and electronic books. However, nowadays duplicates are unavoidable, whether in the same or different mediums. It is common for libraries to own two or more copies of a journal

title because they are covered by different subscription packages. Many printed versions of e-books, especially those of classics, are already held by the libraries. It is very possible that while libraries spend money in building digital collections, the collection's scope and coverage will not expand as expected. In the era of budget shrinkage, it is suggested that librarians make more cautious approaches in building collections. Therefore, knowledge of users' usage on e-books is necessary.

For graduate students, types of e-books used may differ among disciplines. Their reading habits may vary, too. For example, this study found that humanities students, in contrast with other disciplines, used more electronic monographs than textbooks and preferred to read the printed version if both printed and electronic versions were available. Librarians need to take consideration of users' preferences in selecting books, either electronic or printed ones. The visibility of e-books is also very important. Libraries are recommended to organise e-books in an appropriate ways to help readers locate and find e-books easier. Negotiations with publishers or vendors to decrease the constraints in downloading and printing can provide students better e-book services. User-friendly interfaces would encourage students to take advantage of e-books.

Finally, studies show that users do not read e-books in the same manner as they read printed books. Very few read an e-book from front to end, especially scholarly e-books. Searching keywords, browsing paragraphs or sentences, and reading a chapter or two are the most common habits of e-book users. What is the definition and function of an e-book? How should an e-book be structured? This study suggests that authors and publishers of e-books rethink the answers to these questions.

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