

January 2012

Is it time for wider acceptance of e-textbooks? An examination of student reactions to e-textbooks

Ziming Liu

San Jose State University, ziming.liu@sjsu.edu

Follow this and additional works at: https://scholarworks.sjsu.edu/slis_pub



Part of the [Library and Information Science Commons](#)

Recommended Citation

Ziming Liu. "Is it time for wider acceptance of e-textbooks? An examination of student reactions to e-textbooks" *Chinese Journal of Library and Information Science (English edition)* (2012): 76-87.

This Article is brought to you for free and open access by the School of Information at SJSU ScholarWorks. It has been accepted for inclusion in Faculty Publications by an authorized administrator of SJSU ScholarWorks. For more information, please contact scholarworks@sjsu.edu.

Is it time for wider acceptance of e-textbooks? An examination of student reactions to e-textbooks

Ziming LIU[†]

School of Library and Information Science, San Jose State University,
San Jose, CA 95192-0029, USA

Received Jan. 4, 2012
Revised Aug. 6, 2012
Accepted Aug. 12, 2012

Abstract

Purpose: This paper attempts to examine perceived benefits, barriers, and students' reactions towards e-textbooks.

Design/methodology/approach: This study is based on a survey of 105 undergraduate students in California. Undergraduate students were selected as the subjects of this study, because they are heavy users of textbooks for their course work.

Findings: E-textbooks will complement our existing choices rather than substitute printed textbooks. While e-textbooks offer a number of benefits, they also produce many unanticipated challenges. A number of critical hurdles need to be solved before wider acceptance.

Research limitations: This study attempts to explore students' reactions to e-textbooks by targeting undergraduate students in California. Future studies can focus on the long-term effects on learning.

Practical implications: Considerable attention should be paid to designing features to ensure e-textbooks augment learning rather than detract from it.

Originality/value: This paper also looks at the extent to which e-reader users and none e-reader users differ in their preferences for traditional textbooks and e-textbooks.

Keywords Electronic textbooks; User studies; Perception; Online reading; Learning

1 Introduction

The prevalence of information technology is introducing a new trend in electronic publishing. Electronic publications are rapidly replacing printed materials. Many books are now available in electronic formats. According to a report published in

[†] Correspondence: Ziming Liu (E-mail: Ziming.Liu@sjsu.edu).



USA Today, the Obama Administration is advocating the goal of an e-textbook in every student's hand by 2017. Administration officials claim that "Web-connected instructional materials help students learn more efficiently and give teachers real-time information on how well kids understand material"^[1]. However, numerous studies of students reading and learning from e-readers suggest caution about the use of e-textbooks^[2].

This paper attempts to examine perceived benefits and barriers of e-textbooks. It also looks at the extent to which e-reader users and none e-reader users differ in their preferences for traditional textbooks and e-textbooks. Students' attitudes towards e-textbooks are also discussed.

2 Review of related literature

Improvements in computer technology have led many people to predict the demise of traditional textbooks. Despite the rapid pace of technological advancement, it is somewhat surprising that e-textbooks have not been embraced as whole-heartedly anticipated.

Based on a survey of 137 undergraduate students at Clayton College & State University in Atlanta, Nakos and Deis^[3] find that 72% of the students are very unwilling or somewhat unwilling to use an e-textbook ever again. The study also reveals no significant divergence of opinions between female and male students.

A survey of 504 students from Oregon and Illinois in the U.S. indicates that 75% of the students would prefer a hard-copy textbook to an e-textbook, and 60% said they would buy a low-cost print copy even if a digital version is free^[4].

A study by McGowan et al.^[5] finds that "students of all ages and experience levels overwhelmingly prefer paper textbooks to electronic textbooks." 81% of students in the survey indicate that they would choose a paper textbook over an e-textbook. The study also finds that even though both male and female students prefer printed textbooks, male students are more likely to prefer an e-textbook.

Based on a survey of dental students at the Louisiana State University, Strother et al.^[6] find that students are overwhelmingly dissatisfied with reading extensive amount of text online and indicate a strong preference for printed textbooks. In a recent study about dental students' attitudes and study habits, Ditmyer et al.^[7] find 25% students purchased a traditional textbook even when an e-textbook was provided. More than 33% of students printed out information from the e-textbooks for reading.

A report published in *New York Times* (October 20, 2010)^[8] also reveals that students still cling to traditional paper textbooks in the digital age.



Despite less than encouraging results, publishers and educational institutions continue to look for proper solutions that will not only appeal to students, but also help them to improve their learning.

E-textbooks do offer a number of substantial advantages over traditional printed texts such as ease in updating, integration with audios and video, and cost savings. In a recent study of e-book usage and reading behavior of students in business and management in the UK, Nicholas et al.^[9] note that e-textbooks can prove to be extremely popular, mainly for obtaining snipes of information and for fact finding.

Lai and Ulhas^[10] examine factors affecting university students to use dedicated e-textbook applications for learning. Their findings suggest that perceived usefulness, convenience, compatibility, and perceived enjoyment all significantly contribute to the acceptance of dedicated e-textbook applications.

While previous studies consistently show that students prefer traditional textbooks over e-textbooks, our understanding of the factors for and against e-textbooks remains limited. On the other hand, with the increasing popularity of devices such as Kindle, iPad, and Nook, one research question must be asked: How will such new devices change students' perceptions and attitudes when previous e-textbook tests have already failed?

In addition to explore perceived advantages and barriers of e-textbooks, the present study attempts to look at the extent to which e-reader users (i.e., people who have a Kindle, iPad, or Nook) and none e-reader users (people who do not have a Kindle, iPad, or Nook) differ in their preferences for traditional textbooks and e-textbooks. Moreover, it examines their attitudes towards e-textbooks.

3 Methodology

A cluster of the following five questions was used to measure students' reactions to e-textbooks:

- Which reading devices you have used for e-textbooks?
- What features and functionality of e-textbooks are appealing?
- What are your major concerns in using e-textbooks?
- As a student, what types of textbooks do you prefer? Please explain the reasons why.
- Do you think e-textbooks support your learning better than traditional printed textbooks?

The questionnaire was designed to collect both quantitative and qualitative data by using both closed and open-ended questions. Undergraduate students were



selected as the subjects of this study, because they are heavy users of textbooks for their course work. One hundred and eighty copies of the questionnaire were distributed to undergraduate students in California during April-June 2011. Participants were informed that the purpose of the study was to identify factors affecting students' perceptions and use of e-textbooks. They were asked to fill out the questionnaires based on their own experiences and insights. One hundred and five completed copies were returned. Fifty-six (53.3%) of the participants are male students, and 49 (46.7%) are females. Forty-Four (41.9%) of the participants have an e-reader such as a Kindle, iPad, or Nook, while 61 (58.1%) report they do not own an e-reader.

Participants in this study are undergraduate students from diverse disciplines such as business administration, computer science, economics, engineering, journalism, literature, mathematics, and sociology. Seven questionnaires are incomplete, which were not subject to analysis.

Lists of perceived benefits and barriers were developed based on Refs. [3–6]. Survey participants were asked to check all that apply from each list based on their experience and insights. If their choices were not within the lists, they could specify their answers in the “other” category.

4 Findings and discussion

4.1 Benefits of e-textbooks

E-textbooks offer a number of useful features and functions that are absent with their printed counterparts. According to Table 1, 74.3% of all participants cite cost savings and 71.4% choose useful features as the potential benefits, followed by availability (67.6%) and ease in carrying (51.4%).

Table 1 Six most frequently cited benefits of e-textbooks

Perceived benefits	Undergraduate students (<i>N</i> =105)	
	Number	Proportion (%)
Cost savings	78	74.3
Useful features	75	71.4
Availability	71	67.6
Ease in carrying	54	51.4
Ease in storage	47	44.8
Ease in updating	33	31.4



Research Paper

- **Cost savings.** Paper textbooks are expensive. Since college students in the U.S. typically spend \$700–900 a year on printed textbooks, they are particularly sensitive to cost savings. E-textbooks seem like an attractive option to any students who want to save money and time in getting assigned textbooks from bookstores. One participant in the survey notes: “I sometimes purchase 6–8 books for one course, some of which are minimally used. It is not only very costly, but also time-consuming in getting them.”
- **Useful features.** E-textbooks offer a number of features and functions that are not available with printed textbooks such as searchability, built-in dictionary, crossing referencing, and ease in copying and pasting. Searchability makes e-textbooks valuable from an educational standpoint. On the other hand, the built-in dictionary feature of reading devices (e.g., Kindle) is particularly useful for students in foreign language classes where students can get the word meaning immediately by moving the cursor next to the word. The audio function could enable pronunciation of difficult words. One respondent indicates: “One powerful benefit of e-textbooks is the ability to copy the most important portions of the text, and then paste it into a separate document. This enables students to create a study guide for tests as well as eliminate problems associated with inaccurate quoting.”
- **Availability.** E-textbooks are always available on the virtual shelf. Students can download an e-textbook instantaneously. They do not need to worry about whether the textbooks are out of print. Sometimes delay could happen if instructors miscalculate the number of textbooks to order, or turn in book orders late.
- **Ease in carrying.** Keeping all printed textbooks requires storage space. E-textbooks could end the problem of students having to lug around stacks of bulky hardcopies. Many students in this survey report that carrying numerous books in digital form versus heavy hardcopies is a valid reason to embrace e-textbooks, especially for people who travel all the time. They think an e-reader is small, light, and portable. It can contain many textbooks, and is much easier than carrying even one printed textbook. One student comments: “I must say I love my Kindle. I have freedom to move from place to place. I can also carry many electronic textbooks without additional weight.”
- **Other benefits.** E-textbooks also provide numerous benefits such as ease in updating, correcting, carrying, and storage. Printed textbooks become out of date when publishers launch new editions. Unlike hard-copy textbooks where small corrections sometimes cause the whole textbook to be trashed and reissued, there is minimum cost to fix incorrect information on e-textbooks^[11].



You can also adjust the font size for easier reading. One respondent further points out: “With e-textbooks, learning is enhanced with the ability to click links for additional discoveries.”

4.2 Barriers of adopting e-textbooks

When participants were asked to identify the barriers of using e-textbooks, screen reading and licensing restrictions were cited by about 82% and 78% of the respondents, respectively (Table 2). Table 2 also indicates that an overwhelming majority of students also express concerns about issues such as navigation, annotation, and hidden cost.

Table 2 Six most frequently cited barriers of e-textbooks

Perceived barriers	Undergraduate students (N=105)	
	Number	Proportion (%)
Screen reading	87	81.9
Licensing restrictions	82	78.1
Navigation	77	73.3
Annotation	74	70.5
Hidden cost	68	64.8
Access	29	27.6

- **Screen reading.** Previous research demonstrates that people prefer reading on paper over reading online when they read lengthy documents (e.g., textbooks), when they need serious/in-depth reading, when they read something that is difficult to understand, when they read scholarly/research papers, or when they need to take notes^[12]. Online reading behavior tends to direct toward quick access rather than sustained concentration. Multi-facet evidence suggests that “there was very little extended reading of e-books online. The preference was to print out material, something not made easy by the e-book platforms”^[9]. Many students report that reading on glowing screen to absorb serious concepts is very challenging. It is ever more problematic to maneuver between windows and still engage in deep thinking. Reading lengthy digital texts on e-textbooks becomes an unpleasant experience (e.g., eyestrain and loss of concentration). Some students report that for many people who spend hours on a computer screen, the last thing they want is to go home and read text on another screen. One student stresses: “Nothing beats grabbing a book and walk to a nearby coffee shop for study without having to worry about how long the battery will last.”



Research Paper

- **Licensing restrictions.** Many college students sell their textbooks at the end of the semester and get about half of the money back anyway. Charles Schmidt, a spokesman for the National Association of College Stores, notes that if a campus bookstore sells a new textbook for \$100, it would typically buy it back for about \$50 at the end of the semester^[8]. There are no such arrangements for e-textbooks. E-textbooks cannot be resold. Students do not “own” e-textbooks; instead, they are just renting them. The digital files vanish after a set period of time (e.g., 180 days for CourseSmart books)^[13]. In addition to expiration dates, there are a number of other issues that make e-textbooks less attractive to students. If a student decides to drop a class, he/she can return a paper textbook within a few weeks of the beginning of the semester. What happens to e-textbooks if you drop a class, or if you fail the class and have to re-take it next term? “I like to have a library of textbooks that I can refer to even after 180 days.” “After reading the terms and conditions of digital textbooks, I will stick with the hardcopy.” These responses clearly indicate that many students still prefer paper textbooks because they can keep them for reference well into the future. Some students further point out that even though they would never look at those textbooks again, they still like the old-fashioned textbooks because a pile of hardcopy textbooks would represent something they have accomplished, and that is something that e-textbooks can never do.
- **Navigation.** Fixity is an inherent feature of paper documents, while fluidity comes with digital documents. Fixity is instrumental to maintaining communicative stability and repeatability. There are no page numbers for books on the Kindle. What would happen when an instructor asks students to turn to a certain page of the e-textbook? Many students are still accustomed to the long-established navigation habit such as locating information by page numbers and flipping between chapters. Young^[13] stresses that “The trickiest part of teaching with electronic textbooks is getting everyone on the same page – or to the same part of the digital text.”
- **Annotation.** Students usually highlight texts and write in the margin of their paper textbooks as a way to improve retention and comprehension. While devices have improved overtime, adequate note-taking and note management mechanism remain problematic for many college students^[14]. MacFadyen^[14] (2011) further points out that “Readers of print books expect that the evidence of their interactions with their books will remain part of their private realms as long as they own the book.” However, in the case of e-textbooks, the connection between the text and reader’s notes will no longer exist after the expiration dates, since students do not “own” e-textbooks; they are just renting



them. One student notes: “I don’t like taking notes on digital margins. I cannot tell how many times my notes disappeared.”

- **Hidden cost.** While publishers can dramatically reduce the cost of e-textbooks, the costs to students of using e-textbooks are not necessarily lower. First, students need to have an e-reader which might be complicated. A survey of 504 students from Oregon and Illinois and 50 commonly assigned textbook titles reveals that e-textbooks do not give students any relief from costs. In fact, they cost “on average exactly the same as a new hard copy of the same title bought and sold back to the bookstore” and “on average 39% more than a used hard copy of the same title bought and sold back online”^[4]. In addition, restrictions such as “textbooks can be printed out only 10 pages at a time” also make e-textbooks impractical for many students.
- **Access.** A hardcopy textbook allows you to read anywhere there is light. Access to digital textbooks depends on the functionality of a hardware and software. Access to e-textbooks can be problematic in case of a virus, a computer crash, or depleted battery. It is not unusual that you drop a paper textbook on the ground. What would happen to an iPod or Kindle if you drop them? Some students mention if they need to make a choice, they still prefer paper textbooks, because these books are always physically accessible.

4.3 Is it time for wider acceptance of e-textbooks?

D-Lib Magazine (September/October, 2009) published an editorial stressing that “the time has come for greater use of e-textbooks for educational purposes” because most e-textbook devices have been improved, and most of today’s college students are already tech-savvy^[15]. Table 3 shows that the majority (68.6%) of participants still prefer traditional printed textbooks. The result is consistent with the findings of a number of previous studies^[3-8]. One participant states: “I am willing to embrace the inevitability of electronic textbooks. My big concern will be the ease of dealing with any technical issues that I come across.” Another student notes that: “I still prefer printed textbooks. I like the way they feel and the way pages are turned. Seeing the reading materials stack up can be very satisfying.”

Table 3 Preferences for textbooks

Preferences	E-reader users (n=44)		None e-reader users (n=61)		Total (N=105)	
	Number	Proportion (%)	Number	Proportion (%)	Number	Proportion (%)
Printed textbooks only	29	65.9	43	70.5	72	68.6
E-textbooks only	5	11.4	6	9.8	11	10.5
Both (Printed and electronic versions)	10	22.7	12	19.7	22	21.0



National Science Library,
Chinese Academy of
Sciences

<http://www.chinalibraries.net>

Research Paper

It is somewhat surprising that only 11.4% of holders of e-readers (e.g., Kindle, iPad, or Nook) prefer e-textbooks only. This is likely to be caused by their unpleasant experience in using e-readers for e-textbooks. Several iPad users note that switching between the display and keyboard is even more distracting and time-consuming than reading an e-textbook from a laptop. Nearly 66% of e-reader owners in this survey still prefer old-fashioned paper textbooks over e-textbooks. A recent survey by USC Dornsife/Los Angel Times^[16] also finds that 86% of e-reader owners in California still read books in print, indicating “that the written word is vibrant and enduring, and paper and digital media work together in enriching the life of the mind.”

It is interesting to note that 21% of participants still prefer to embrace both printed and electronic versions in order to take full advantages of each format. For example, student may want to keep a printed textbook for future referencing and carrying an electronic one when traveling. One student points out: “I definitely believe that more choice is a good thing. It would be nice to have both options, printed and digital, so that students can choose what they like for themselves.”

Not a single type of format has ever proven adequate for all needs and ideal in all situations. Students have to weigh values versus limitations of e-textbooks. E-textbooks may have their places, but they appear to have a number of unanticipated challenges that hinder them from widespread acceptance. As indicated in Table 2, there are a number of reasons why many students are still sticking with hardcopy textbooks in the digital age.

Table 4 shows that e-textbooks are still less popular compared to their printed counterparts. Only 16.2% of participants believe that e-textbooks support their learning better than traditional printed textbooks. It seems that there is still a long way to go to transit from printed textbooks completely to digital ones. Reading on a screen is not the same as reading from a paper. Jeong^[17] states that “most students grew tired of reading on the screen; this tiredness could have an adverse effect on both reading comprehension and the perception of e-books.” According to the National Association of College Stores, digital versions make up no more than 3% of recent textbook sales^[8]. E-book sales in the U.S. rose 117% in 2011, but sales of e-textbooks have not followed this upward trend^[2].

Table 4 E-textbooks support your learning better than traditional printed textbooks

Support learning	Undergraduate students (N=105)	
	Number	Proportion (%)
Agree	17	16.2
Disagree	62	59.0
Not sure	26	24.8



National Science Library,
Chinese Academy of
Sciences

While recent sales of e-books and e-readers is booming, we should keep in mind that e-textbooks differ from many other types of e-books (e.g., novels). Textbooks have different content and serve for different purposes. Daniel and Willingham^[2] (2012) stress that: “Electronic textbooks typically present more information, much of it unfamiliar. Many e-books have a narrative structure, whereas electronic textbooks are more often structured hierarchically. Furthermore, e-books are typically read for pleasure, whereas electronic textbooks are read for learning and retention.”

5 Conclusions

In 1922, Thomas Edison predicted the replacement of printed textbooks by motion pictures. He said: “I believe that the motion picture is destined to revolutionize our educational system and that in a few years it will supplant largely, if not entirely, the use of textbooks”^[18]. Edison’s version of educational revolution is merely one of many unfulfilled promises of technological change. We have seen that many predictions about the impact of new information technologies fail to materialize, primarily because people have a high expectation of technologies while underestimating the “social-material complex,” of which technologies are only a part^[19]. Meanwhile, there appear a number of unanticipated problems associated with the new technologies, most of which involve social, cultural, organizational, and human factors. An examination of reactions of students to e-textbooks offers a glimpse into the social, cultural, and legal complexities associated with digital textbooks. E-textbooks will add our choices rather than substitute printed ones. While e-textbooks offer a number of benefits, they also produce many unanticipated challenges. Many experts predict that e-textbooks “will probably turn out to be one option rather than widespread replacement for printed textbooks”^[8]. A number of critical hurdles need to be solved before wider acceptance.

New technology generates new expectations, shapes new behaviors, and also raises new challenges. We should embrace new technology, but we should do so with prudence. We need to absorb the new ways of doing things that digital technology makes possible, but we must do so in such a way that technology serves the purposes of learning^[20]. Considerable attention should be paid to designing features to ensure e-textbooks augment learning rather than detract from it^[2].

This study attempts to explore students’ reactions to e-textbooks by targeting undergraduate students in California. This is a sample of convenience rather than a random sample of students. It is still likely that students in various disciplines are not equally represented. We acknowledge that the generalizability of our results may be affected by our reliance on a convenience sample of students.



Research Paper

The inherent limitations of self-reported measures and small sample size of this study mean that the results cannot be generalized across different age groups and cultures.

Future studies should focus on the long-term effects on learning (e.g., distraction and memory retention). Today's kids who were "born digitally" may have different reactions to e-textbooks, because they may not have the same need to physically highlight and annotate on hard-copy textbooks. Further studies are needed to continually monitor the changes in reading behavior in the digital landscape.

References

- 1 Toppo, G. Obama wants schools to speed digital transition. USA Today, 2012-01-31. Retrieved on July 10, 2012, from <http://www.usatoday.com/news/education/story/2012-01-31/schools-e-textbooks/52907492/1>.
- 2 Daniel, D., & Willingham, D. Electronic textbooks: Why the rush? *Science*, 2012, 355(6076): 1569–1571.
- 3 Nakos, G., & Deis, M. Student perceptions of digital textbooks: An exploratory study, 2003. Retrieved on July 15, 2012, from <http://www.westga.edu/~bquest/2003/digital.htm>.
- 4 Allen, N. Course correction: How digital textbooks are off track and how to set them straight, 2008. Retrieved on July 10, 2012, from: <http://www.studentpirgs.org/textbooks-reports/course-correction-how-digital-textbooks-are-off-track-and-how-to-set-them-straight>.
- 5 McGowan, M., Stephens, P., & West, C. Student perceptions of electronic textbooks. *Issues in Information Systems*, 2009, 10(2): 459–465.
- 6 Strother, E., Brunet, D., & Bates, M., et al. Dental students' attitudes towards digital textbooks. *Journal of Dental Education*, 2009, 73(12): 1361–1365.
- 7 Ditmyer, M., Dye, J., & Guirguis, N., et al. Electronic vs. traditional textbook use: Dental students' perceptions and study habits. *Journal of Dental Education*, 2012, 76(6): 728–738.
- 8 Foderato, L. In a digital age, students still cling to paper textbook. *New York Times*, 2010-10-19. Retrieved on July 10, 2012, from: <http://www.nytimes.com/2010/10/20/nyregion/20textbooks.html>
- 9 Nicholas, D., Rowlands, I. & Jamali, H. E-textbook use, information seeking behaviour and its impact: Case study business and management. *Journal of Information Science*, 2010, 36(2): 263–280.
- 10 Lai, J., & Ulhas, K. Understanding acceptance of dedicated e-textbook applications for learning. *The Electronic Library*, 2012, 30(3): 321–338.
- 11 Baumann, M. Bring digital textbooks to the masses. *EContent*, 2010, 33(1): 12–13.
- 12 Liu, Z. & Huang, X. Gender differences in the online reading environment. *Journal of Documentation*, 2008, 64(4): 616–626.
- 13 Young, J. This could be the year of e-textbooks, if students accept them. *Chronicle of Higher Education*. 2009-09-07. Retrieved on July 10, 2012, from <http://chronicle.com/article/The-Year-of-E-Textbooks-/48305/>



- 14 MacFadyen, H. The reader's devices: The affordances of ebook readers. *Dalhousie Journal of Interdisciplinary Management*, 2011, 7(1). Retrieved on July 10, 2012, from: <http://ocs.library.dal.ca/ojs/index.php/djim/article/view/2011vol7MacFadyen>
- 15 Wilson, B. It's time for wider acceptance of e-textbooks. *D-Lib Magazine*, 2009, 15: 9/10. Retrieved on July 20, 2012, from: <http://www.dlib.org/dlib/september09/09editorial.html>
- 16 USC Dornsife/Los Angeles Times Press Release. 2012-04-14. Retrieved on July 20, 2012, from: <http://dornsife.usc.edu/usc-lat-poll-books-march-2012/>
- 17 Jeong, H. A comparison of the influence of electronic books and paper books on reading comprehension, eye fatigue, and perception. *The Electronic Library*, 2012, 30(3): 390–408.
- 18 Cuban, L. *Teachers and machines: The classroom use of technology since 1920*. New York, NY: Teachers College Press, 1986: 9.
- 19 Williams, R. *Television*. New York, NY: Schoen Books, 1974.
- 20 Gorman, M. *The enduring library: Technology, tradition, and the quest for balance*. Chicago, IL: American Library Association, 2003.



Reference Citation Format

The format for citations in text and for bibliographic references follows GB/T 7714—2005. The citation should be ordered in number as it appears in the text of the submitted article.

- **For journal article**

Sun, Y., Li, B., & Qu, J.F. Design and implementation of library intelligent IM reference robot. *New Technology of Library and Information Service* (in Chinese), 2011, 205: 88–92.

Fernández, M., Kadiyska, Y., & Suciú, D., et al. SilkRoute: A framework for publishing relational data in XML. *ACM Transactions on Database Systems*, 2002, 27(4): 438–493.

- **For book**

Cox, T.F., & Cox, M.A.A. *Multidimensional scaling*. 2nd ed. Boca Raton, FL: Chapman & Hall/CRC, 2000.

Campbell, N. (Ed.) *Usability assessment of library-related websites: Methods and case studies*. Chicago: Library & Information Technical Association, American Library Association, 2001.

Hearst, M.A. *User interfaces and visualization*. In Ricardo, B.-Y., & Berthier, R.-N. (Eds.), *Modern Information Retrieval*. New York: ACM Press, 1999:257–323.

- **For proceedings**

Åström, F. Visualizing library and information science concept spaces through keyword and citation based maps and clusters. In Bruce, H., Fidel, R., & Ingwersen, P., et al. (Eds.) *Proceedings of 4th International Conference on Conceptions of Library and Information Science*. Greenwood Village, CO: Libraries Unlimited, 2002:185–197.

- **For electronic journal article**

Kurtz, M.J., Eichhorn, G., & Accomazzi, A., et al. The bibliometric properties of article readership information. *Journal of the American Society for Information Science*, 2004, 56(2): 111–128. Retrieved on May 3, 2005, from <http://cfa-www.harvard.edu/~kurtz/jasist2.pdf>.

Järvelin, K., & Ingwersen, P. Information seeking research needs extension towards tasks and technology. *Information Research*, 2004, 10(1): Paper No. 212. Retrieved on May 3, 2005 from <http://informationR.net/ir/10-1/paper212.html>.

- **For electronic book**

Crystal, A., & Ellington, B. Task analysis and human-computer interaction: Approaches, techniques, and levels of analysis. *Proceedings of 10th American Conference on Information Systems*, 2004: 1–9. New York. Retrieved on May 3, 2005 from http://www.ils.unc.edu/Nacrystal/AMC1504_crystal_ellington_final.pdf.

Velterop, J. *Open access publishing and scholarly societies: A guide*. Retrieved on January 25, 2006, from http://www.soros.org/openaccess/pdf/open_access_publishing_and_scholarly_societies.pdf.

- **For thesis or dissertation**

Zhang, X.L. *Information-seeking patterns and behaviors of selected undergraduate students in a Chinese university*. Doctor Dissertation. New York: Columbia University, 1992.



CJLIS

Vol. 5 No. 3, 2012

pp 88–88

National Science Library,
Chinese Academy of
Sciences

<http://www.chinalibraries.net>