Influence of new reading behavior for academic libraries：
A survey of electronic materials and print materials for library user

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University libraries have taken big steps towards becoming e-learning resource centers. They have acquired substantial e-learning materials, created electronic format bibliographical records, and have made tremendous efforts to integrate digital libraries with e-learning systems. The shift in the production of books to include electronic versions has made it necessary for librarians to carefully consider the economics of e-book models and the preferences of users to appropriately balance the acquisition of print and electronic formats. In order for collection development and information organization for librarians to justify the adoption for electronic materials, universities libraries need to determine in electronic materials satisfy the information needs of patrons. One method to determine this is to measure electronic materials usage.

Introduction

There has been much discussion of electronic materials in the literature since the late 1990s and although different stakeholders have various expectations of how they could fit into both academic and everyday life, there is lot of confusion about them, even with regard to the basic definition of what an e-book is. In order for collection development librarians to justify the adoption of electronic books, they need to determine if e-books satisfy the information needs of patrons. One method to determine this is to measure e-book usage. The California State University Libraries did an internal survey for usage comparison of titles that were available in both print and e-book format. What types of the format patrons preferred to use. Although the results of this study cannot be generalized, it does provide information on the use of e-books in one academic research library and implications for e-book collection development.

Survey and interview

This research project will investigate the new efficacy of usage strategy for e-materials in an academic library setting. The purpose of the survey is to examine in more detail issues surrounding the supply and demand for the library collection and patron's needs. This study is to more fully identify and understand the e-materials' usage in academic libraries, and to provide measures for developing and improving library's information organization. The questions will pertain to "reading behavior, "view of the electronic resources" and some other current issues. Questionnaires have been sent to students and librarians in different academic libraries in Canada and China, such as the University of Waterloo, Library of Chinese Academy of Sciences, as well as Brandon University. After the results of the surveys were analyzed and key questions were identifies. In order to do those in-person interviews, I have been Toronto Ontario and Beijing China.

Previous research

Over the past several years, a large number of libraries have begun to offer electronic books to their patrons. Brandon University Library has started to do so in 2005. Faced with e-books, academic libraries have to rewrite existing collection development policies to better reflect the trend towards e-book usage. Traditionally librarians have used circulation analysis to determine library use. Some libraries have recently started to collect these types of data to help in their discussion making about electronic books as well. While this is a starting point a more in depth analysis is necessary. "Circulation analysis is one of the traditional approaches taken to use studies and collection evaluation in library" (Mosher, 1984). After the survey, the results of e-book usage have been found. "The results of circulation analyses have been applied to a number of important issues, including evaluation collection acquisition policies, guiding such management decisions as allocating physical space of materials, identifying materials for off site storage, allocation funding for materials, and suggesting approaches to reselection" (Troachim, 1980). Does the e-book impact patron's reading habit? Questions related to these issues are also in the questionnaire for the library survey. Circulation analysis assumes that the circulation of materials in a collection is an indicator of a library's effectiveness. "High usage indicates that a collection is good since circulation is taken as evidence that a patron's need is being met" (Wiemers, 1984). In addition, "practical applications of the results of circulation analyses assume that usage can be used to predict future usage" (Lancaster, 1982).

Methodology

I conducted a survey of student and librarian in February and April of 2007 in China and Canada. The objective of the survey was to assess how well the library met student needs and to understand where the library might improve services and resources. The survey questions covered three broad areas: What type of materials do you mainly visit the university libraries to obtain? What type of resources do you prefer to sue for your study or research? How satisfied are you with the services provided for electronic database? How often do you visit the university library to use a computer to access the Internet? The survey contained 10 questions, many of which required an "often" or "never" response. In-person interview covered 6 questions: attitude for e-books and e-journals, idea, experiences, and the advantages for using the electronic databases and Google. The study focused on the material format using such as e-book and e-

journal, database and Google, and the purpose of library use. Based on the feedback, the survey instrument was revised the data from prior studies of some libraries was used to make comparisons. For process the survey, I set up the table in universities public area and sent emails with the interviewee's permission so that students and librarian could fill the survey questionnaire. In order to the data analysis, I designed two kinds of questions: "Survey Questions" and "Interview Questions" for in-person interview. After interview, I used Access to create the database so that I could analyze the data. I thought I have reached my goal for this survey.

Results

Responses came from all three regions such as Brandon University, Brandon, Manitoba, University of Waterloo, Waterloo, Ontario, and Library of Chinese Academy of Sciences (LCAS), Beijing, China. Surveys were sent to undergraduate students, graduate students, and librarians.

- 48 surveys were filled out and returned to the LCAS for a response rate of 96%. The 48 surveys returned included 7 surveys filled out by members of the librarians who work in LCAS, 41 surveys were filled by members of graduate students in LCAS as well, the interviewees' background is Arts, and Library Science.

- 49 surveys were filled out and returned to Brandon University for a response rate of 98%. The 49 surveys returned include international students such Chinese, Korean, and Nigerian and native students.

- 38 surveys were filled out and returned to University of Waterloo for a response rate of 76%. Since the survey period was in final term, students were busy to prepare exams, so the most of students did this survey in Science Departments such as Mathematical Science and Computer Science.

Question 1 to 6, is the personal information, 126 surveys were filled and returned including 112 students for a response rate of 88.9%, and 59.8% from Science major, 33% from Art major; 4.5% from Health study major. 7 surveys were filled and returned by librarians for a response rate of 5.6%. 7 responses age are around 50-59, the rate of 5.6%; 9 responses age are around 30-49, and the rate of 7.1%, 108 responses age are around 18-29, the rate of 85.7%.

The survey had design by "Survey Questions" and "Interview Questions". The first step is using the Survey Questions to gather the answers back, after the results of the survey's analysis; some of the participants have been selected for an in-person interview using the Interview Questions.

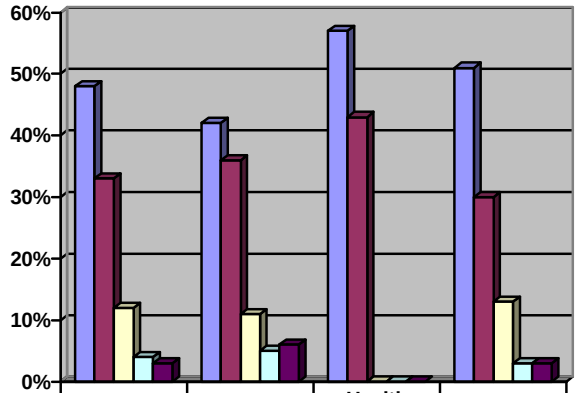
Survey results

Frequency of library use

Chart 1 summarizes the responses to the question 5 on the Survey Question: "*How often do you visit university libraries*?" Only 3% respondent out of 48% replied that they never use the library, while 51% Science student used libraries on a daily basis; 42% Arts students used

libraries on a daily basis. Only 5 students came from Health Study, with respondents from Health Study frequency rate is 57% on a daily. Only 1 respondent from Music, I put it to Arts. There was some variation in library use across departments, with respondents from Arts indicating less library use than the average and respondents from Science. In addition, Arts respondents for "occasionally and never" indicated by 5% and 6%, which is more than Science.

Chart 1: Frequency of Library Use

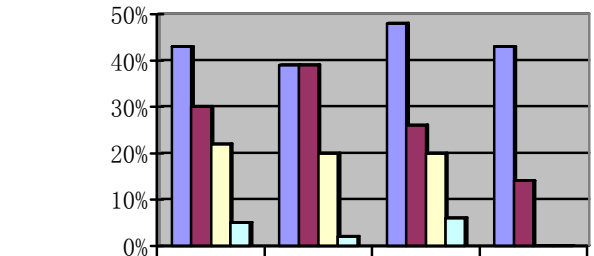


	All	Arts	Health Study	Science
Daily	48%	42%	57%	51%
Weekly	33%	36%	43%	30%
Monthly	12%	11%	0%	13%
Occasionally	4%	5%	0%	3%
Never	3%	6%	0%	3%

Purpose of library use (Internet)

Chart 2 summarizes the responses to the questions 6 on the Survey Questions: "*How often do you visit the university library to use a computer to assess the Internet?*" The respondents replied that the library's computer to access the Internet was used for a response rate of 43%. Science students were used more often than Arts students. An interesting result was the library's computer to access the Internet by Science and Arts were used as "sometime" for a response rate of 20%. It is warning us that do you need to provide more technique training for our students?

Chart 2 : Purpose of library use (Internet)

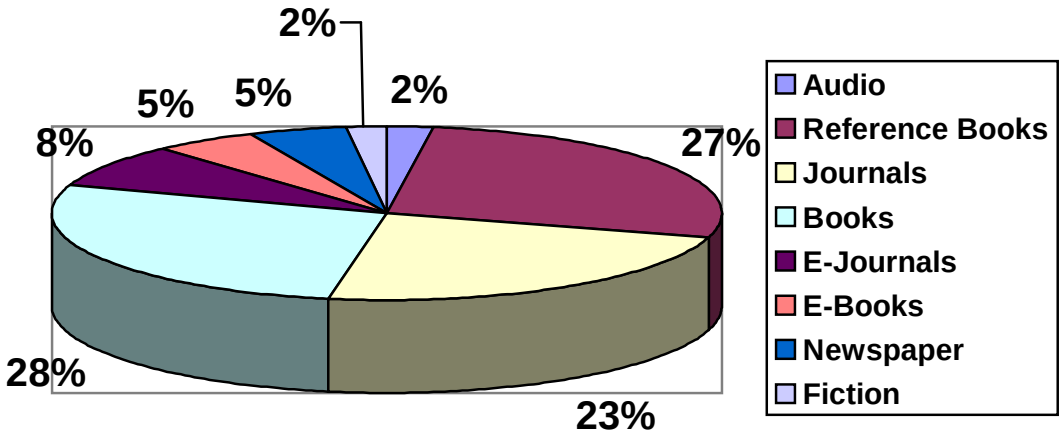


	All	Arts	Science	Health Study
Often	43%	39%	48%	43%
Sometimes	30%	39%	26%	14%
Rarely	22%	20%	20%	0%
Never	5%	2%	6%	0%

Use of library materials

Chart 3 summarizes the responses to the questions 7 on the Survey Questions: "*What type of materials do you mainly visit the university libraries to obtain?*" The books, reference books, and journal are the most used resources, with the 28%, 27%, and 23%. Only 8% and 5% of the respondents indicated that they used e-journals and e-books. Audio/Video, fiction, and newspapers are the least used resources with 2%, 2%, and 5%. E-books and Newspaper got tie.

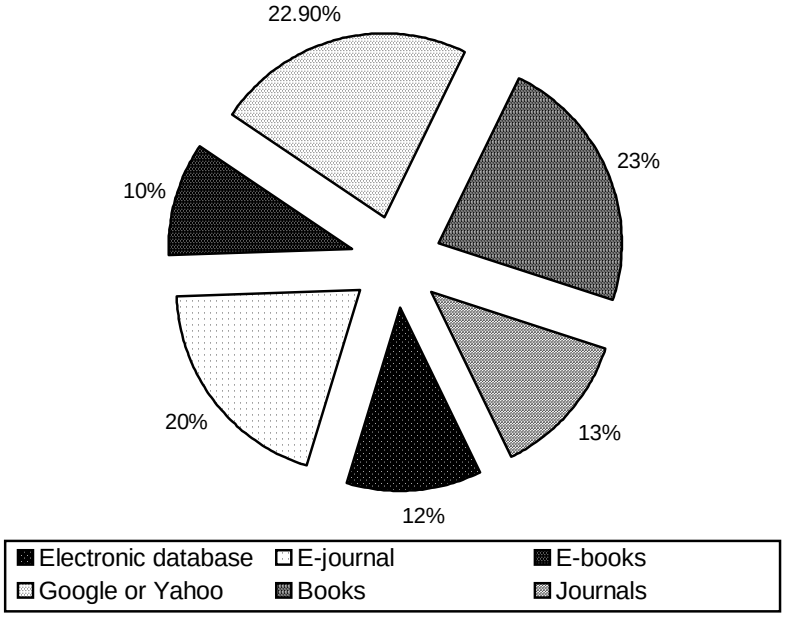
Chart 3: Library Material Use



Prefer library materials use

Chart 4 summarizes the responses to the question 8 on the Survey Question: "*What type of resources of you prefers to use for your study or research?*" Google and Yahoo is the most used resources search engine, which is 22.9% of the respondents indicating that they preferred to use for information retrievals. The respondents replied that the Print books and Print journals were preferred more often for research than e-journals and e-books. An interesting result was that the electronic database was used only 12 %. It really need us thinking about "why".

Chart 4: Prefer Library Materials Use



Access to library resources and students' needs satisfying

Chart 5 summarizes the responses to the question 9 and 10 on the Survey Question: "*How easy do you feel it is to use the library's computer catalog to find library resources?*" and "*How satisfied are you with the services provided for electronic database?*" Respondents were more likely to have accessed the resources from the library such as 55% for very easy and somewhat easy; 70% for very satisfied and satisfied. Even the respondents said difficult and dissatisfied only less 6%, but there were 30% and 18% for undecided in our survey analysis database.

Chart 5: Access to library resources and students' needs satisfying

Access to Library Resources:	Students' needs satisfying:
Very Easy……...17%	Very Satisfied……..22%
Somewhat Easy.…….38%	Satisfied……48%
Undecided……...30%	Undecided…….18%
Somewhat Difficult……14%	Dissatisfied…….6%
Very Difficult……...1%	Very Dissatisfied……3%
	Not Applicable……3%

- **In-person interview**

After the survey question answered, some of the participants have been selected for an in-person interview as follow-up. It took approximately 15 minutes for each person. 25 people answered the questions according to the Interview Questions. The interviewees were included 7 librarians in LCAS, 12 students in Brandon University, and 6 students in University of Waterloo.

The questions about "how is your attitude to the concept of using e-books and e-journals" and "do you have any ideas about the e-books and e-journals", there were difference explanations among three libraries. LCAS is the biggest academic library in China, plus the interviewees are librarians and the age around 30-49. They have more theoretic knowledge about the electronic resources and lack working experience. In addition, using electronic resources, there are some current issues such as cost, language difference, time difference, and function's exploitation for Chinese libraries. They said Google Scholar is better than some electronic databases, no cost and easy to access. Since Brandon University is a mini university, students came from Manitoba region and some of international students from Africa, China, Korea, and Middle East. University library offer the information literacy training for first year students, but most of them only knew the name of the database such as EbscoHost, they have short using them for study and research. On other hand, they really like Google for information searching. They don't even know what the academic journal is. Only 2 students who is third year in university, they said they like electronic databases for study purpose. In-person interview in University of Waterloo, the interview time was closed to final term; I only got 6 students with sciences background such computer, mathematical, and statistic. They strongly recommended Google for their study, the mathematical formula and definition; they can easy to be found from Google such as Wikipedia, the free encyclopedia. "We don't need to know how to use the electronic databases which is very complicated; Google is good enough for us".

Discussion

The number of librarians and students prefer to use the Google for their research rather then electronic materials. Why Google is the first choose for first year student? How do academic libraries organize their electronic resources? There is no clear answer to these questions at the moment. However, an examination of current practice will help librarians improve how better to deal with electronic resources.

- **What types of electronic resources did academic libraries typically provide access to?**

It is in connection with student's reading behavior. Academic libraries would be more likely to provide access to many different types of electronic resources and therefore it is very important that they organize these resources in an efficient and easy to use manner.

1. Home Pages

The home page is a particularly important tool as it provides a look at what a library considers important enough or in high enough demand to provide convenient, almost instant, access. Links to electronic resources can be either present or absent on the library's home page.

2. The catalogue

All the libraries had a catalogue in their web site. May libraries not only provided links on their home page, but also made it possible to search the catalogue directly on the home page.

3. Database

Libraries had separate access to databases somewhere in their web site, such as a separate database page or link that provided a search engine to databases. E.g. Web of science, JSTOR

4. Electronic journals

Journals published in electronic format, libraries had separate access to e-journals somewhere in their web site. E.g. Brandon University Library uses software called "Serials solutions", BU did not download e-journals' MARC records to our cataloguing, but this software allows patrons searching by title. The result will give patrons both print and electronic if we have those in our collection.

5. Electronic books

Electronic versions of printed books, libraries had separate access to e-books in their web site. E.g. Oxford Reference online, Xreferplus. BU downloaded the e-books' MARC records from Oxford University Press and Xrefer to our cataloguing. It make patron easy to check them, but the problem is we got the duplicate records from different e-books database.

We are living in an "information age" and the different information resources that are available to users are becoming almost overwhelming. Libraries need to have same common

practices of arranging these electronic resources. How should this be done? Currently we are using MARC and AACR2. These tools are evolving and will receive a major update with the emergence of Metadata and RDA.

- **Does MARC meet the challenge for describing electronic resources?**

I am a cataloguing librarian in a mini university, according to my experience; I think that libraries face challenges in integrating descriptive metadata for electronic resources with traditional cataloging data. MARC meets the challenge for describing electronic resources.

MARC was developed in an age when memory, storage, and processing power were all rare and expensive commodities. Now they are in everywhere and cheap. MARC cannot put a book cover in to records. By using XML as a bibliographic record standard, the vendors will likely find it both easier and cheaper to produce the products academic libraries require. We can use MARC in our environment, does not mean it will make sense to our patrons.

- **Does Google can handle everything for researcher needs?**

I guess the short answer is “no”. “Internet keyword searching does not provide scholars with the structured menus of research options, such as those in OPAC browse displays that they need for overview perspectives on the book literature of their topics. Keyword searching fails to map the taxonomies that alert researchers to unanticipated aspects of their subjects. It fails to retrieve literature that uses keywords other than those the researcher can specify; it misses not only synonyms and variant phrases but also all relevant works in foreign languages. Searching by keywords is not the same as searching by conceptual categories” (Mann, 2005). About Google Print, he also said “Google Print does not "change everything" regarding the need for professional cataloging and classification of books; its limitations make cataloging and classification even more important to researchers. Google’s keyword search mechanism, backed by the display of results in "relevance ranked" order, is expressly designed and optimized for quick information seeking rather than scholarship. As a consequence of the design limitations of the Google search interface, researchers cannot use Google to systematically recognize relevant books whose exact terminology they cannot specify in advance Cataloging and classification, in contrast, do provide the recognition mechanisms that scholarship requires for systematic literature retrieval in book collections. Of course, Google is the largest search engine on the web. Its mission statement is to "organize the world's information and make it universally accessible and useful" (Wikipedia. 2007). Google receives several hundred million queries each day through its various services. Google says its system will work as: “Users searching with Goolgle will see links in their search results page when there are books relevant to their query. Clicking on a title delivers a Google Print page where users can browse that full text of public domain works and brief excerpts and/or bibliographic data of copyright materials” (Marcum, 2006). The enthusiastic media reporter calls “Google’s Goal” to “have everything at your fingertips, all the world’s information digitized and instantly available” (Stone & Levy, 2005). I hope Google can reach this goal. But the new development is still a long way to go. Face on student’s reading behavior, libraries and related companies are collaborating to overcome both side weakness so that they can bring their own strongpoint to develop the searching strategy such as “OCLC has announced to its library members that it will begin testing the opening of WorldCat records to Google access. The project will extract a 2 million record subset from the more than 53 million

records in the WorldCat database. The subset will target the most popular and widely available books by only selecting records with a minimum of 100 libraries holding each item. Searches on Google will retrieve the records and link through OCLC to library holdings" (Quint, 2003).

Libraries exist to serve the present and future needs of users. To do this well, we need to use the very best technology. With the advent of the Web, XML, portable computing, and other technological advances, libraries can become flexible, responsive organizations that serve our users in exciting new ways.

- **Electronic database**

Today's electronic environment as library environment is providing access to an enormous array of commercially produced electronic collection and is beginning to extend electronic access to pivotal unique library collections. Collection development is considering how to balance the percentage of electronic version and paper. Electronic materials have a great idea for those of you who want to be more independent in your search for reference materials. Plus, by using electronic materials, your search can be much quicker than with traditional materials. In addition, electronic materials require no shelf space or reshelving, and never lost, damaged, stolen, or overdue. Since electronic materials' advantages, libraries increase the electronic materials collection, and decrease the paper's vision as much as they can. Some of important subjects, libraries keep both formats. However, most of electronic databases have their own searching strategy, using rules, and identification, plus server issue, as a librarian, we need to learn how to use the each of single database which is new buying. In patron side, libraries are not open 24 hours per day, and 365 days per year, patron requests to use database can be anytime. If they cannot find the materials which is they needs, nobody can help them to do this at that moment, patron will give up to use electronic databases instead of the Google, even they may get the broad results, and take longer time. In order to solve these problems, in my opinion, electronic databases need a standard for information retrieve like AACR and ISBD, reference librarians can easies handle the databases' searching policy and patrons can easies find the materials without the helper. But I don't know how harder to reach this function; do the electronic database owner wants to plan to do this? Therefore, I thought the new development is still a long way to go too.

Conclusion

This is the first time of survey has been done for me. Despite the mistakes made in the survey design, but this survey is important because it established a base line which future surveys could use as a basis of comparison. More importantly, the library would like to reduce the percentage of student who disagrees using the electronic materials since library put the money and time to organize them. Electronic resources can support the academic mission effectively, saving time and adding value as a collective online reference resources rather than a set of individual title. Academic libraries require considerable staffing input but open possibilities for dynamic and cost-effective collection management. For "new products, technologies and opportunities continue to emerge, the future for e-books looks bright, especially of easier on-screen reading and more flexible, customer-oriented, licensing can be realized" (Cox, 2004). But "it is not clear that academic libraries can replace print with e-books as a 'long-term goal'

continues to hold true" (Snowhill. 2001). So we still need to deal with both formats for our collection, and training our patron to adapt the new technologies and electronic environment.

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