The Impact of Implementing
Electronic Reserves on Staffing and Service

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ABSTRACT. Electronic Reserves provides new opportunities for collaboration between libraries, new staffing challenges, and new methods for assessing library services. This article examines the impact on staffing and services of implementing Electronic Reserves in several libraries on the campus of a major midwestern research institution. Results of a staff survey and use studies are incorporated. The benefits and difficulties of centralizing the management and workflow between libraries of Electronic Reserves are analyzed, as well as other related staffing issues such as processing time, space, training, etc. *[Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <docdelivery@haworthpress.com> Website: <http://www.HaworthPress.com> © 2003 by The Haworth Press, Inc. All rights reserved.]*

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INTRODUCTION

The ease of retrieving, displaying, and printing electronic reserve materials for patrons (in comparison with traditional print reserves) has made conver-

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sion to this service a priority with many academic libraries. Along with the assumption that changing over to an electronic reserves system saves patrons' time also often comes the assumption that "staff time will be freed for other tasks."[1] But is this the reality of the situation?

There are many assumptions and hopes about the potential staffing benefits from implementing electronic reserves. While a savings of staff time is chief among them, there are also questions about the impacts of implementing an electronic course reserves system on staff training, scheduling, space, and daily duties. At the University of Illinois, Urbana-Champaign, a survey was conducted with the staff of seven separate departmental libraries that had converted to electronic reserves, in part to assess the validity of these assumptions. There was an additional desire to know what impact centralizing document storage and elements of processing workflow would have on groups of libraries working collaboratively.

This paper examines the results of the survey, and seeks to establish those areas of staffing where libraries can make educated assumptions about the outcomes of establishing an electronic reserves system on their own staff. Lastly, the article combines the staff survey results with the results of a course reserves use study, to paint the full picture of the influences of electronic conversion on academic library staffing.

LITERATURE REVIEW

There are many factors involved in assessing the impact on staff of implementing an electronic reserve system. Reichart (1999) is an example of a general case study that effectively summarizes the types of software skills staff require for electronic reserves processing (e.g., cataloging, HTML, FTP, etc.), and stresses that "complete documentation is crucial to successful staff training."[2] While there have been many other electronic reserves case studies of this nature, most address general implementation issues (technology, cost, etc.) in a descriptive manner, and only make general comments about the types of staffing impacts, as opposed to the type of quantitative analysis of these impacts this paper attempts.

The time-intensive nature of processing course materials for library reserves has received a lot of attention. Schmidt perhaps states the case best, noting that:

> There is an enduring myth that modern technology will save us both time and money. This is rarely the case. Electronic reserves are very expensive operations in terms of both technology and labor, and once the die is cast, there is no going back.[3]

McGinnis (1999) brings up another important time sensitive issue–namely that the rush period most libraries experience at the beginning of each semester "created a larger than usual backlog."[4] McGinnis goes on to recommend bringing in additional temporary staff to accommodate high-demand periods.

However, the overall impact on staff time is not so bleak, once the initial period of scanning in original copies is passed. Hiller and Hiller (1999) state that "E-reserves can save staff time in a multitude of ways, but the most prominent is that when an item has been processed and is available, staff never have to deal with it again."[5] They go on to give a very effective quantitative comparison of the amount of staff time used for a typical class with paper reserves versus electronic reserves.

There is also concern about how to organize library staff to meet perceived or actual time demands. Whitson (2000) describes one operation where existing staff members were reorganized into an "Electronic Reserves Team," which incorporated existing reserves, circulation, and document delivery technicians.[6] Plans such as this reflect the concerns of maximizing staff time in the face of the time intensive nature of electronic reserves processing.

Other libraries have also experimented with the possibilities of centralizing elements of electronic reserves processing, to enable multiple libraries in a decentralized system to work together. Brigham et al. (2001) describe Temple University's experiences, where the Paley and Biology libraries work together with the same scanning equipment, and the Access Services Librarian creates documentation to be used by both of these libraries as well as additional departmental units in the future.[7] This is similar to the plan developed at the University of Illinois, Urbana-Champaign.

Lastly, one of the hopeful results of conversion to an electronic system is that the time spent will improve morale and empower staff through hi-tech training. Smith (1997) provides an excellent analysis of the many personal benefits staff derive from the switch to electronic reserves, from increased skills and understanding of computer terminology, to an increased sense of control over their work.[8] Heenan (2000) also summarizes many of the benefits for Reserves staff, stating that they "learn new skills, gain confidence, and contribute to a project that adds value to library services with a campus-wide focus.[9]

BACKGROUND INFORMATION

Seven of the forty-two departmental libraries on the University of Illinois, Urbana-Champaign campus have implemented electronic reserves. The Chemistry Library and the Library and Information Science Library began their programs a number of years ago, and continue to use separate, locally developed

processes for access. In the Fall 2000 semester, the Undergraduate Library, which houses the largest reserve collection on campus with over 3,200 items per semester, began a pilot project to implement electronic reserves. With the help of the Library Systems Office a new, home-grown electronic reserve database was created, two new staff were hired (one full-time Library Technical Assistant and one half-time graduate assistant) in addition to the existing 2.5 FTE, and two computer workstations complete with scanners and Adobe Acrobat software were purchased and housed in the Undergraduate Library Reserve Unit. By Spring 2001, all appropriate reserve materials such as lecture notes, journal articles, book chapters, and exams were accessible online.

After the successful conversion to electronic reserves at the Undergraduate Library, four other libraries (History and Philosophy Library, Agriculture, Consumer and Environmental Sciences Library, Education and Social Science Library, Natural History Survey) adopted the use of the same homegrown database and web access solution. By sharing a common database of scanned files, duplicative effort is avoided, and much of the time and effort expended by the Undergraduate Library staff in the beginning benefits the reserve staff in the other departmental libraries. In an effort to streamline the process and make the best use of available resources, the four new libraries implementing electronic reserves are not scanning their own materials, but rather their scanning is being done centrally at the library's Information Resource Retrieval Center (IRRC). The departmental libraries work with the faculty/instructors to identify and collect the reserve material, send it to the IRRC for scanning, and then once the files are scanned and saved, create records for the material in the electronic reserve database and do the necessary processing for material to be accessed through the library's online catalog.

SURVEY AND USE STUDY METHODOLOGY

In an effort to better understand how the implementation of electronic reserves affected the staff at the seven libraries on campus offering the service, staff was surveyed as to their views regarding electronic reserves before implementation, and the reality of what happened after implementation. The survey was divided into two sections: one dealing with pre-implementation practices and perceptions, and one dealing with post-implementation changes and reactions. A variety of issues such as processing and collection maintenance time, difficulty and amount of work, patron use of electronic reserves versus print reserves, and appropriate levels of staffing were addressed. The survey was distributed Spring 2002 to the nine staff across the seven libraries offering electronic reserves who were most intimately involved in the imple-

mentation process. The survey was distributed in print and sent back to the investigators anonymously through campus mail. All nine staff chose to respond to the survey, though one could only comment on post-implementation questions, as that was when their employment started, and one could only respond to pre-implementation questions, as their library had not yet started processing electronic reserves.

In addition to the staff survey, in Spring 2002 a use study in the Undergraduate Library was conducted to determine the level of continued use of print reserves versus the online version of the same material. One print copy of each electronic reserve item was kept at the Undergraduate Library (for both Undergraduate Library and History Library reserves) both for access for visually impaired patrons and in case of server problems. Patrons were free to use the print version of reserve items if they wished, and the print and electronic versions were equally visible in the online catalog. There were 1833 records in the electronic reserve database created by the Undergraduate Library Reserve Unit for Spring 2002. Of those 1833, 229 records were for permanent reserves, leaving 1604 records specifically in use that semester. A random sample of roughly ten percent of the records (159 records) was identified by selecting every tenth folder of the print versions of reserve material from the shelf, starting with the 2nd, 12th, etc. The use of each print version was then compared with the corresponding electronic version of the same material. Results of the use study are included in the section on patron use of electronic reserves.

ANALYSIS AND FINDINGS

Processing and Collection Maintenance Time and Difficulty

A major challenge in implementing electronic reserves is the changes in processing for staff. One of the principle goals of the staff survey conducted was to assess staffing needs based on the amount and difficulty of work completed. Prior to the implementation of electronic reserves, the majority of the reserve staff surveyed (6 of 8 respondents to this portion of the survey) believed that processing electronic reserves would create a little more work for them compared to print reserves. Two (25%) believed that the implementation of electronic reserves would create a lot more work for them.

Staff were also asked how difficult they thought learning the electronic reserve process would be. Five staff (62.5%) thought that processing electronic reserves would be somewhat difficult to learn, two (25%) thought electronic reserve processing would be about as difficult as processing print reserves, and only one (12.5%) thought electronic reserves processing would be very difficult to learn.

Staff was then asked how the reality of processing electronic reserves lived up to their expectations. It was interesting to learn that, though more of the staff (3 or 37.5%) thought that processing electronic reserves ended up taking a lot more time than print reserves, there was also one staff member (12.5%) who thought that it ended up taking a lot less time. Four (50%) of the staff, after implementation of electronic reserves, indicated that processing electronic reserves took a little more time than processing print reserves. Several commented that the major reason for the additional time was the need to do copyright clearance. In terms of difficulty of processing electronic reserves after implementation, the majority of the staff (6 of 9 responding to this question, or 67%) felt that it was somewhat difficult to learn the technical skills to process electronic reserves, while three (33%) thought it was no different than learning to process print reserves (see Figure 1).

The discrepancies in opinion on how hard electronic reserve processing is to learn can be explained by the varying levels of technical expertise the different staff had before electronic reserve implementation. One (11%) of the staff was familiar with none of the technology involved, one (11%) was familiar with little of the technology, three (33%) were familiar with some, three (33%) were familiar with most, and one (11%) was familiar with all of the necessary technology to process electronic reserves.

Closely related to the amount of time necessary to process electronic reserves, staff were asked to comment on whether or not the amount of time necessary to maintain the reserve collection throughout the semester increased or decreased due to electronic reserves. Maintenance post-implementation was defined as checking links to web pages, working with publishers regarding

FIGURE 1. Pre- and Post-Electronic Reserve Time and Difficulty
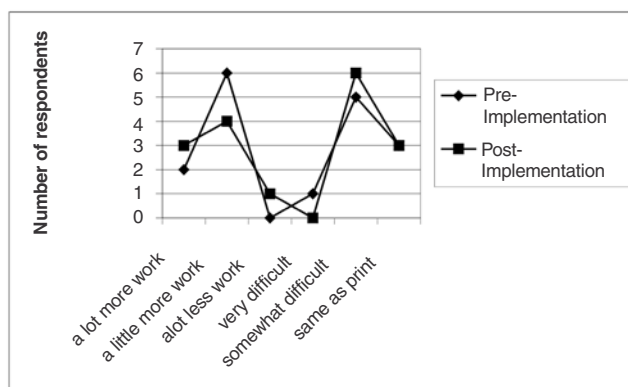
copyright clearance, etc., while maintenance previously would have included replacing missing or damaged copies, pages, etc. The majority of staff (5 of 8 respondents, or 62.5%) indicated that the amount of time necessary to maintain their reserve collection had greatly increased. Two (25%) of staff indicated that the maintenance time had somewhat increased, while only one (12.5%) indicated that the amount of time necessary to maintain their reserve collection had been greatly reduced due to the implementation of electronic reserves. The discrepancies in the answers to this question were explained in notes, which specified that those staff who indicated increased maintenance time were including copyright clearance work with publishers, while those staff who indicated reduced maintenance time were only assessing physical wear and tear on the collection.

This is a significant finding, as one of the original assumptions in implementing electronic reserves was that once the system was in place and staff were accustomed to it that there would be decreased need for reserve maintenance throughout the rest of the semester. The fact that so much more time is spent working with publishers makes the work load more even throughout the course of each semester than it was in the past where once the initial batch of reserves was processed there was often little to occupy the reserve staff other than infrequent mid-semester additions and physical maintenance.

Changes in Reserves Work Flow and Procedures

The changes in the amount of time necessary to process and maintain reserve collections throughout the semester relates specifically to changes in work flow and procedures in order to offer electronic reserves. The most striking example is the change in copyright clearance practices. In the traditional print only reserve environment, none of the libraries now offering electronic reserves did copyright clearance. Now all of the libraries involved with electronic reserves do copyright clearance. The library has a clearly stated electronic reserve copyright policy found at <http://www.library.uiuc.edu/geninfo/electronic_reserves.htm>, and as already mentioned, staff have indicated that copyright clearance work now occupies a great deal of their time and effort. The fact that there is not the demand to do physical repairs and replacements throughout the semester, and that there is no need to process multiple copies anymore, has not been enough to completely offset the increased copyright responsibilities.

Another procedural change that has greatly affected staff workload has been the necessity of processing all reserve material for access through the library's online catalog. Before the implementation of electronic reserves, only one library was processing all reserve material for circulation through the online cata-

log. One library was doing manual charges only, and the rest were doing a combination of manual and online circulation and processing based on the type of material. In many cases, photocopies of articles were not entered into the online catalog in any fashion. In an effort to standardize the process, and give patrons one access point to all the electronic reserves, all reserve material in each of the libraries must now be processed for access through the online catalog. This involves creating a short bibliographic record for each course/instructor combination that is then edited to include the Web address of the electronic reserves available. Creating and editing the bibliographic records is a cumbersome process, which requires a high level of system security clearance. Not all staff in each library has the necessary clearance to perform these processes.

In addition to procedural changes, the implementation of electronic reserves has started to change the way faculty utilize library reserves, thereby changing staff workflow as well. Since implementing electronic reserves, six (66%) of the staff indicated an increase in the number of faculty who use the library for course reserves. The remaining three (33%) of staff indicated no change in the number of faculty using the library reserve services. The average increase for those who did note a change was fourteen percent more faculty from the departments served. It is particularly interesting to note that this increase occurred even though three of the libraries offered the faculty the option of not using electronic reserves, indicating that there were enough faculty interested in utilizing the service to compensate for those who were leery of the new technology. In the three libraries that gave an option, roughly ten percent of the faculty chose to use the traditional print service rather than electronic reserves. Staff indicated that this was uniformly because these were faculty who had been teaching for many years who did not feel comfortable with their students using the electronic reserve system.

Not only are more faculty using library course reserves, but they are also placing more material on reserve and at increasing frequency throughout the semester. The average increase in amount of material placed on reserve has been fifteen percent across all the libraries offering electronic reserves. Staff also note that though the majority of reserve material still comes in and needs to be processed for the start of each semester, there is also a great deal more material coming in throughout the semester to be added to electronic reserves. Based on staff feedback as well as communications from faculty, as the faculty become more familiar and comfortable with the service, they are more willing to trust that their lecture notes and exams will be accessible to their students in a timely fashion. This is in direct contrast to traditional print reserves, where reserves were identified and processed almost exclusively at the start of each semester.

TYPE OF NECESSARY STAFFING

As mentioned in the background information, there have been several significant changes to the staffing of library reserve units. A major change necessitated by electronic reserves has been the partial centralization of the scanning process in the Information Resource Retrieval Center. Three of the seven libraries implementing electronic reserves continue to process reserves from beginning to end, including scanning their own material, but the other four libraries' material is scanned at IRRC. The Information Resource Retrieval Center added one scanning station for this process, but had the majority of the staff and equipment necessary to add electronic reserve scanning to their responsibilities. As more libraries across campus implement electronic reserves, the plan is to have several electronic reserve scanning units spread geographically to logically cover the smaller reserve units in some of the departmental libraries. This type of plan may help alleviate equipment problems encountered at other institutions with departmental libraries that have or will implement electronic reserves.[8]

As mentioned earlier, not all staff has the security level necessary to create and edit the short bibliographic records for accessing electronic reserves through the online catalog. This, in conjunction with the increased need for technological skills, has changed the type of appropriate staffing for processing reserves. Before the implementation of electronic reserves, four (57%) of the libraries did not have students help process reserves. Of the three libraries (43%) who did have students help process reserves, one library had undergraduate students process fifteen percent of reserves but not from start to finish, one library had graduate students process five percent and undergraduate students process twenty percent of reserves but not from start to finish, and one library had graduate students process fifty percent of reserves including the whole process.

After implementing electronic reserves, the majority of the libraries (5 or 71%) had students helping to process reserves. Only one library had undergraduate students help process electronic reserves, and then only for small pieces of the process. Five libraries had graduate students processing thirty to one hundred percent of their electronic reserves, with an average of fifty percent. The graduate students in four out of five of those libraries were able to process electronic reserve material from start to finish (see Figure 2).

Though more libraries are using students to help process reserves after the implementation of electronic reserves, they are using graduate students rather than undergraduate students almost exclusively. Staff indicated that the most common reason for using graduate students to help process electronic reserves is that the graduate students were at least as familiar with the necessary tech-

FIGURE 2. Student Staffing
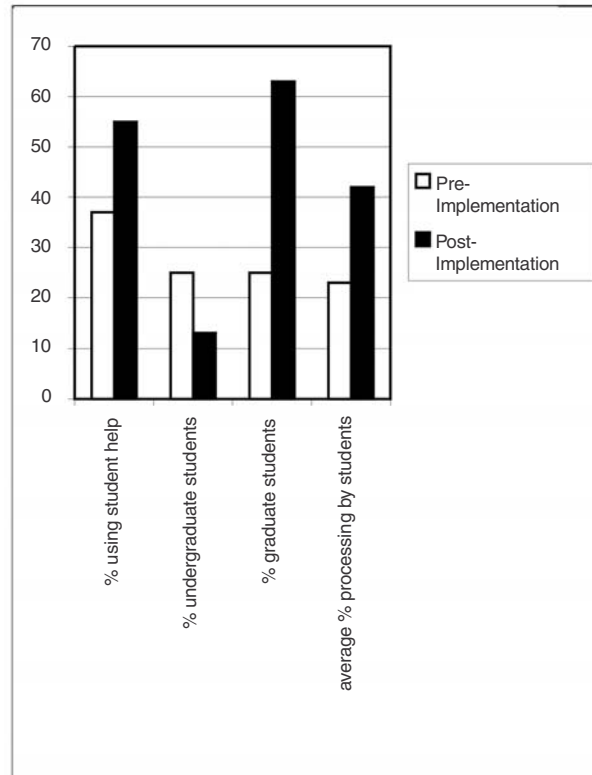
nology as the full-time staff. A secondary reason was that the graduate students were interested in the service due to its increased popularity and visibility.

USE OF ELECTRONIC RESERVES

Use of electronic reserves was measured both through the staff survey and the use study conducted at the Undergraduate Library. To begin with, staff was asked how much use they thought electronic reserves would get before actually starting the process. The majority (5 or 62.5%) thought that electronic reserves would get a lot more use than traditional print reserves, while two (25%) thought they would get a little more use, and only one (12.5%) thought they would be used about the same as print reserves. The perceptions that staff members had

before implementation were exactly matched by their perceptions after implementation for electronic reserves use versus traditional print reserves.

The library had made the decision to keep one copy of each item placed on electronic reserve, both for visually impaired patrons and in case of system down time. Staff members were also asked to comment on the frequency of use of the print copy after the material was offered through electronic reserve. Four (50%) of staff reported that students checked out the print copy of material also available electronically occasionally, meaning a couple of times per week. Three (37.5%) of the staff surveyed indicated that students only checked out the print copy rarely (less than once a week), while the remaining staff member (12.5%) indicated that students checked out the print versions daily. The use study conducted at the Undergraduate Library (with the overwhelming majority of electronic reserves offered) indicated even less use of the print copies than might be assumed from staff perceptions.

Of the 159 print copies analyzed for the study, 106 (67%) had never been circulated. The fifty-three (33%) print copies, which had circulated, had only been checked out an average of 0.8 times per semester. In contrast, the corresponding online files had been accessed an average of 38 times per semester, and only 6 of the online files had not been used. In summary, ninety-six percent of the online files were used, while only thirty-three percent of the print copies had ever been used, and the online files were much more heavily used than the print (see Figure 3).

Staff members were also asked to comment on their perceptions of why students were making use of the print copy, based on feedback from the reserve

FIGURE 3. Print Copy Transaction Summary
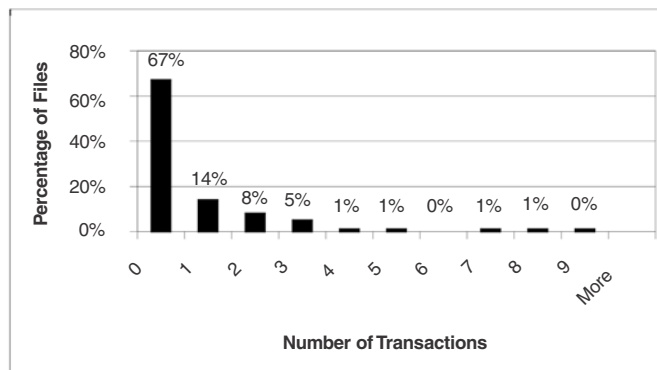
desks. The reasons for utilizing the print copy, averaged from the staff survey and listed in order of prevalence were as follows:

- Technical difficulties accessing electronic reserves from home
- Technical difficulties printing material at the library
- Technical difficulties printing material from home or non-library computers
- Preference for traditional print reserves
- Technical difficulties accessing the material at the library
- Visual impairment
- Discomfort at trying something new
- Expense of printing out the electronic reserve material

FURTHER IMPLICATIONS OF THE SURVEY AND STUDY

Staff members had a number of preconceived notions regarding electronic reserves, many of which were proven valid after the implementation was complete. Before the conversion to electronic reserves, staff believed the greatest advantage would be the ease of access for students. Specifically, 24 hour access seven days a week, and the ability to access reserves from any Internet connected computer were mentioned. The only staff specific benefit mentioned was the hope to have less reserve circulation traffic at the desk. As noted in Figure 3, this proved to be the case, with circulation figures for print reserves drastically reduced, as the majority of items available electronically never circulated in print.

Possible drawbacks of the conversion to electronic access were listed in order of importance as: possible computer failures; failure to meet faculty/student expectations; and additional processing time. The advantages and disadvantages of electronic reserves, as assessed after the conversion to electronic access was complete, were exactly as staff predicted they would be. The greatest advantage was improved access to reserve material, and the greatest disadvantages were technical difficulties, increased expectations from faculty and students, and an unwillingness on some faculty and students to make use of the online access due to a preference for print and/or difficulty reading off a computer screen.

There have been a couple of additional benefits of converting to Electronic Reserves that are unrelated to patron access. One is that five (71%) of the libraries implementing electronic reserves have had a decrease for space required to house their reserve material. The decreased amount of space ranged from one file drawer to forty linear feet of shelving space. Also, several of the libraries were able to change the physical location of where their reserves are

processed, based partly on who is doing the processing, but also on the fact that with the reduction in physical space required for the collection, staff members have been able to improve the size and configuration of their work spaces.

CONCLUSIONS

One of the overarching questions this study sought to answer was whether the implementation of electronic reserves does in fact reduce the amount of staff processing time for reserve collections. Results of the staff survey indicate that though the specific tasks involved in processing reserves have changed dramatically, the amount of time has not been reduced overall. Rather than spending a great deal of time physically processing reserve material and repairing or replacing photocopies and lost or damaged books, staff now spend a great deal of time performing tasks that require a much higher level of technological expertise such as scanning and editing material online and verifying web links. In addition, though there is still a heavy processing workload just before and at the beginning of each semester, working on copyright clearance is a largely new task requiring a large time commitment throughout the course of each semester.

Centralizing some of the electronic reserve processing, in this case scanning material for the smaller departmental libraries in the central Information Resource Retrieval Center, yielded benefits in terms of greater flexibility in reserve staffing. Libraries increased the percentage and type of processing able to be done by graduate students, drawing on graduate students' technological strengths. Permanent staff were therefore able to concentrate on more of the public relations issues of working directly with faculty and students and working with publishers regarding copyright clearance.

In conclusion, though staff was pleased with the opportunity to learn new skills, and in many ways perform more interesting complex duties, clearly the major benefits of implementing electronic reserves lie in its public service aspects. As seen by the results of the use study, as well as the feedback from staff interactions at the Reserve Desk, patrons (both faculty and students) have been enormously pleased with online access to course reserve material. Correspondingly, the use of electronic reserves is much higher than the use of traditional print reserves (see Figure 4).

Further study remains to be done into the various possibilities for staff collaboration between libraries and the impact of increasingly large digital collections on Reserves use.

FIGURE 4. Use of Print vs. Electronic Reserves
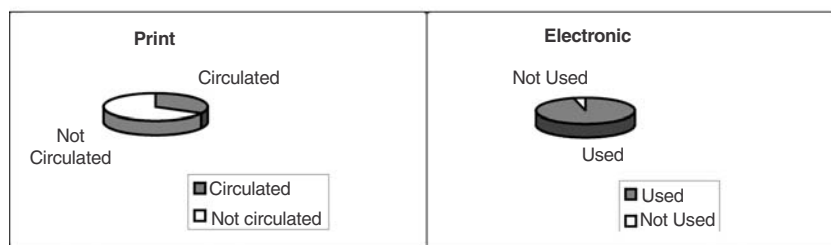
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