

Digital Library Federation DLF Spring Forum 2003

**The University of California
Collections Management
Initiative (UC/CMI)**

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President

CMI is a two-and-one-half year study, launched in January 2001, as a collaborative undertaking of the UC Libraries, with generous support from the Andrew W. Mellon Foundation. Cecily Johns (Project Director) spoke at the DLF Spring 2001 Forum, at the launch of the project (<http://www.diglib.org/forums/spr2001/sp01long.htm>). This presentation will focus on the project's findings.

What Does the Project Involve?

- Removing from campus libraries selected print journals for which electronic access is available, and relocating these journals to storage
- Gathering objective data, including cost and usage data, for both print and electronic versions of 300 journals
- Surveying user attitudes and preferences about acceptability of digital journals vs. Print journals

Three principle components of the project are:

- i. Study of use of journals in their print and digital formats
- ii. Survey of faculty, students and staff regarding their attitudes and preferences
- iii. Comprehensive cost model allowing analysis of the cost trade-offs of various ways of treating print and digital

Cost modeling work is being done by Professor Michael Cooper of UC Berkeley's School of Information Management and Systems; his report is nearing completion, and won't be discussed here.

The CMI Journal Use Study

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The study tracked about 300 journal titles, selected by campuses from a universe of about 3,000 titles that met the following requirements:

- a Universitywide digital subscription,
- held in print by at least two campuses, and
- suitable use data available from the publisher.

For each title, one campus sent to storage the issues of the title that were available in digital form, the other retained these issues on the shelves and closely monitored use. The study ran for one year, October 2001-September 2002. During that period, data on digital use was collected from vendors for both campuses. For print use, at campus that retained print (we called these “control” campuses), all reshelvings by library staff were recorded; at campuses that stored print (we called these “experimental” campuses), all requests for recall from storage were recorded.

Publishers in the CMI Journal Use Study

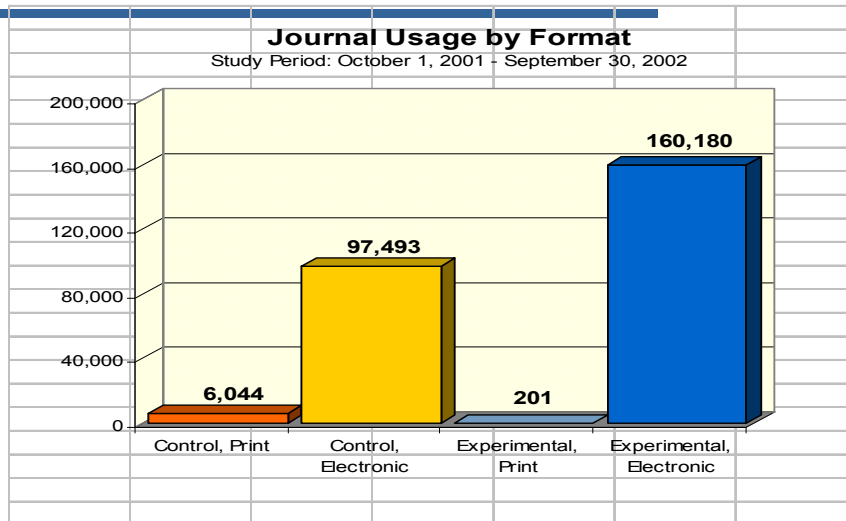
Provider	Total Titles
ACS Web Editions	11
American Physical Society	3
BlackwellScience	18
Company of Biologists	1
Elsevier	130
IDEAL	15
Institute of Physics	11
JSTOR	44
Project Muse	17
Royal Society of Chemistry	1
SIAM	5
Wiley InterScience	24
TOTAL	280

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We had good representation across twelve publishers, and as we'll see later, reasonable representation across disciplines, although dominated by the sciences, as you might expect.

Summary of Print and Digital Use



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Recalls from storage (201 items) were negligible: about 3% of the use of the same titles at campuses that retained the material on the shelf. Digital use was greater at campuses that stored their journals (experimental) than at campuses that retained print on shelf (control). At first glance, this appeared to be a result of the experiment – removal from the shelf drove the increase in digital use.

Year-to-year Change in Digital Use

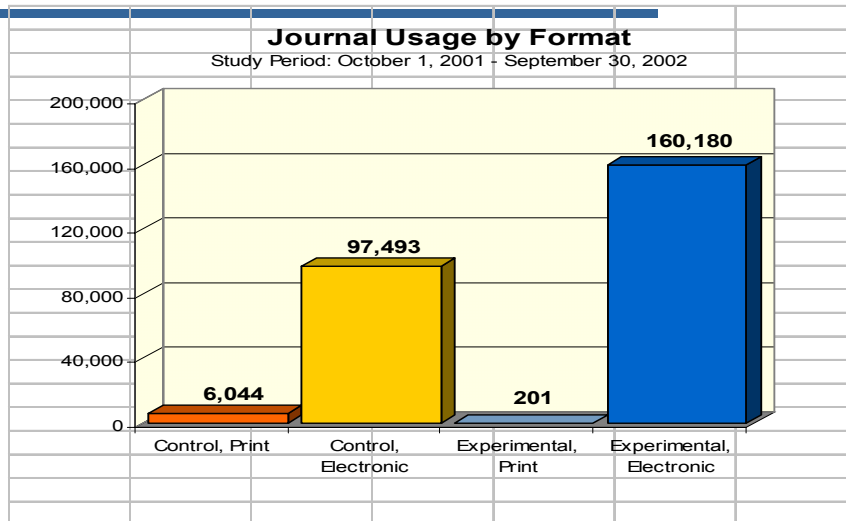
Subject Category	Control Campus Electronic Use			Experimental Campus Electronic Use		
	Prior Year Uses	Study Year Uses	Change from Prior Year to Study Year	Prior Year Uses	Study Year Uses	Change from Prior Year to Study Year
Arts & Humanities	4,763	4,256	-10.6%	5,278	7,733	46.5%
Life & Health Sciences	20,333	27,407	34.8%	50,665	65,183	28.7%
Physical Sciences & Engineering	32,466	44,607	37.4%	33,194	46,937	41.4%
Social Sciences	1,885	2,132	13.1%	3,398	4,546	33.8%
Grand Total	59,447	78,402	31.9%	92,535	124,399	34.4%

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However, it turns out that digital use was greater at experimental campuses both during the study and in the year before the study; these titles were simply more frequently used at experimental campuses.

Summary of Print and Digital Use



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Digital (electronic) use is substantially greater than print use for the same titles.

Relationship Between Print and Digital Use

Subject Category	Number of Titles	Control Campus Usage		
		Print	Electronic	Ratio of Print to Electronic
Arts & Humanities	22	528	5,475	0.096
Life & Health Sciences	130	3,601	34,449	0.105
Physical Sciences & Engineering	102	1,635	54,757	0.030
Social Sciences	26	280	2,812	0.100
Grand Total	280	6,044	97,493	0.062

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On average, electronic use is more than ten times the rate of print use for the same titles and issues at campuses that retained print on the shelf; for physical sciences and engineering, that ratio is over 33 to 1. Some of this difference arises from different ways of counting print and digital use; however, this cause seems unlikely to explain all the difference.

The CMI User Preference Survey

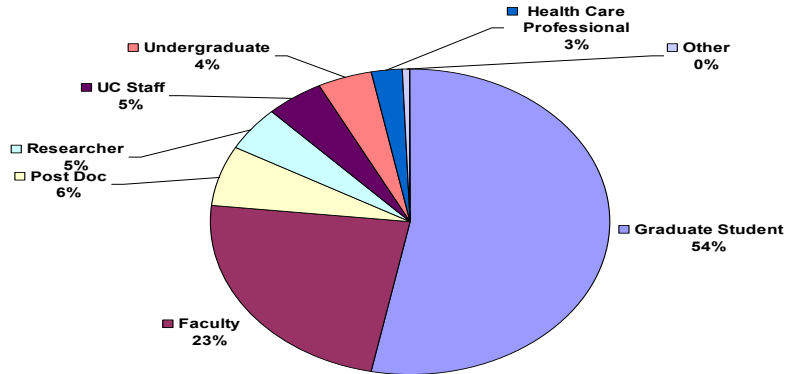
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NOTE: Data were only recently delivered by our contractor, and there has only been time to do rudimentary analysis. This presentation should be considered as preliminary.

20,000 invitations to participate in the survey were issued, stratified by demographic group, with oversampling for faculty and graduate students. The survey was conducted in February and March 2003. Faculty and graduate students were contacted by mail, with a printed questionnaire and instructions for responding on the Web. Staff and students were contacted by email with a URL for the Web survey and instructions for requesting a printed questionnaire. All groups received 3 email reminders.

Survey Responses by User Category

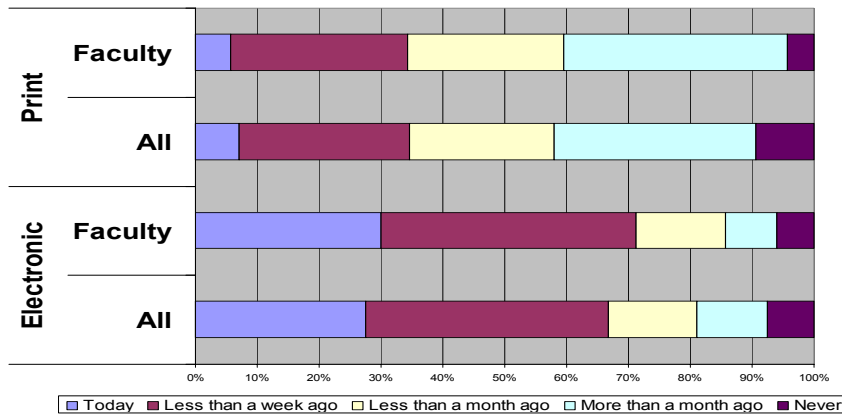


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We received about 7,000 responses, heavily weighted to graduate students and faculty. Because of the over-representation of faculty and graduate students in the sample, owing to the stratification methods used in the sampling plan, aggregate statistics can be a bit misleading. In many of the displays that follow, we show results side-by-side for all respondents and for the faculty alone.

Most Recent Use of Journals



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The data shows ejournals are popular: while about a third of respondents had used a print journal within the last week, around two-thirds had used a digital journal during the same period.

Question Text:

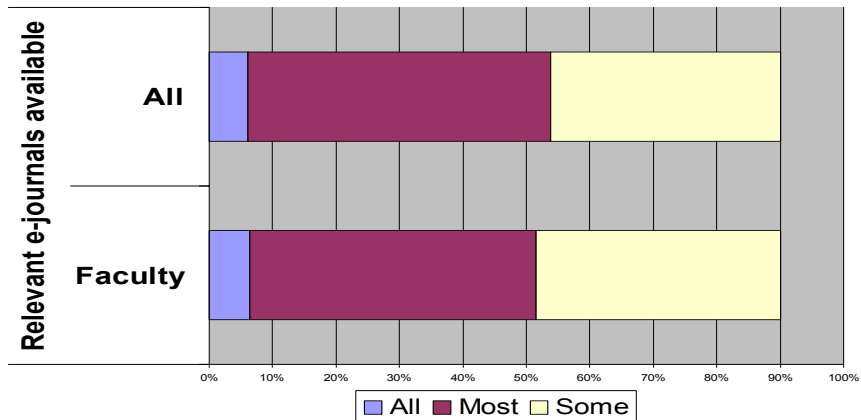
Q1_a_1. When was the last time you: Read, checked out, or copied a print journal or article from the University Library?

1. Today
2. Less than a week ago
3. Less than a month ago
4. More than a month ago
5. Never

Q1_a_2. When was the last time you: Retrieved, read, or downloaded an electronic journal article or abstract?

1. Today
2. Less than a week ago
3. Less than a month ago
4. More than a month ago
5. Never

How Many Relevant Journals Are Available in Electronic Format?



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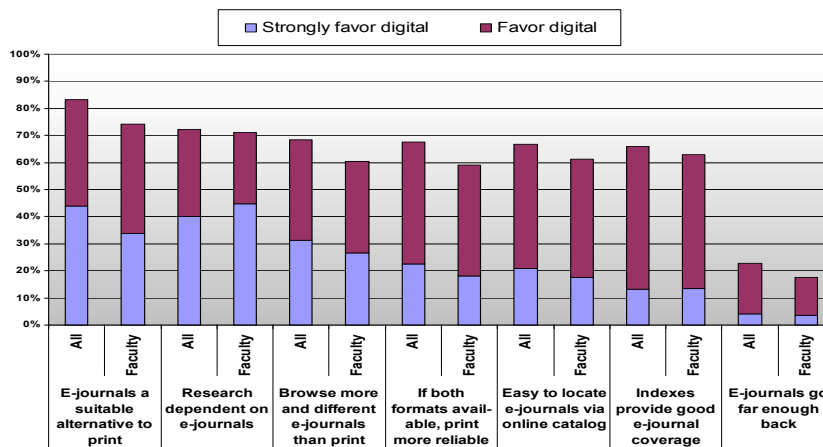
A majority of respondents feels that most of the journals they use regularly are available digitally, and 90% report that at least some digital journals are available in their fields. This response undoubtedly differs by discipline, and we will be looking at that.

Question Text:

Q4. How many of the most relevant journals in your (field, area, discipline, specialty) are available in **electronic** format:

1. All
2. Most
3. Some
4. None
5. I don't know

Attitudes Toward Electronic Journals



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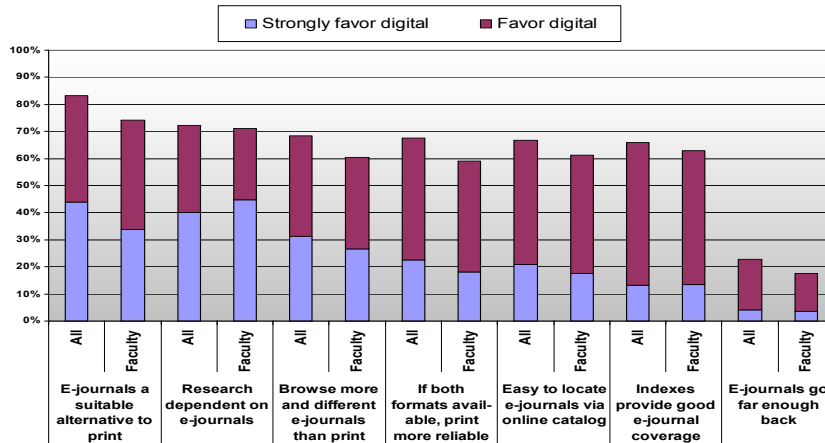
Faculty are slightly more conservative than other groups in embracing the advantages of e-journals, but this is a difference of degree, not kind; the acceptance of e-journals is generally quite remarkable.

We asked seven questions related to general attitudes about e-journals. Note the slightly lower rate of faculty responding in a way that Strongly Favors or Favors digital.

Of most importance, 80 percent of respondents overall and over 70 percent of faculty told us that digital journals were a suitable alternative to print, and over 70 percent felt that their research depended on e-journals. Knowing that concerns are often expressed about the reliability of e-journals, we were interested to learn that nearly 70% of our respondents, and 60% of the faculty, did **not** feel that the reliability of e-journals was inferior to print. As you'll note on the far right, there was one area the consensus was not running in favor of the electronic; only about 20% of respondents felt that back files of e-journals went back far enough to meet their needs.

Attitudes Toward Electronic Journals

(Continuation of Notes)



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Question Text:

Q5_a_1. Research in my (field, area, discipline, specialty) is dependent on the library's electronic journals.

1. Strongly Agree
2. Agree
3. No Opinion
4. Disagree
5. Strongly Disagree
6. N/A

Q5_a_2. Even if both are available, I think print journals are more reliable than electronic journals.

Q5_a_3. Electronic journals are a suitable alternative to print journals.

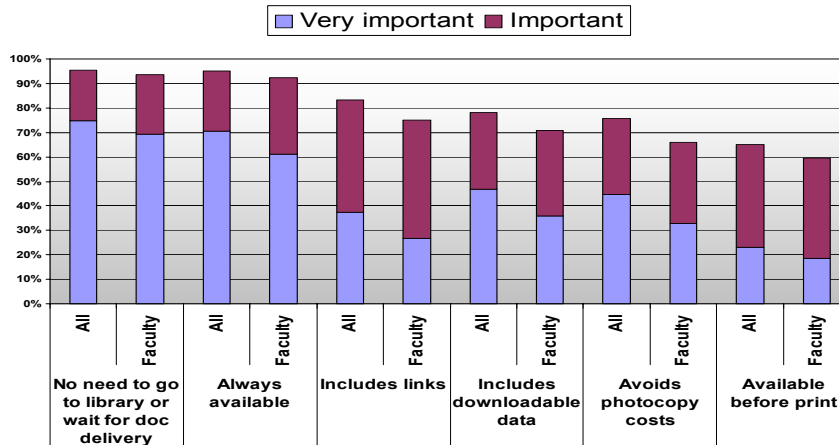
Q5_a_4. In my (field, area, discipline, specialty) electronic journal back issues go far enough back to meet my needs.

Q5_a_5. Using the online library catalog makes it easy to locate electronic journals.

Q5_a_6. The indexes and databases I use to find articles provide good coverage of electronic journal articles.

Q5_a_7. Using electronic journals has increased the number of different journal titles I browse when compared to the number of titles I browse in print.

Advantages of Electronic Journals



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We asked six questions about the advantages of e-journals. Note that the leading advantages are related to convenience – no need to go to the library, and available at any time of day or night.

Question Text:

Q7A. Electronic versions of journals may have **advantages** for some users. Please tell us how important for you are the following characteristics of **electronic journals**:

Q7_a_1. Articles are available in electronic form before they are published in print.

1. Very Important
2. Important
3. Not Important
4. No Opinion

Q7_a_2. Electronic journals contain hyperlinks to other articles and related information.

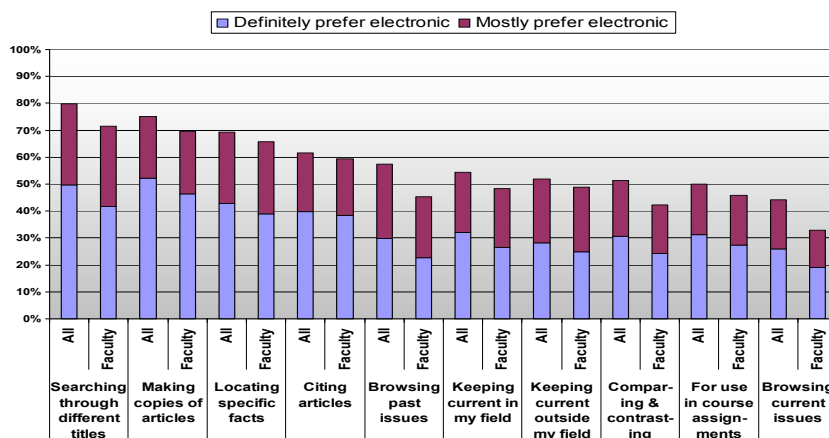
Q7_a_3. Electronic journals are always available - 24 hours a day, every day

Q7_a_4. In using electronic journals I don't have to go to the library or wait for document delivery.

Q7_a_5. Electronic journals include data which can be downloaded for use.

Q7_a_6. Using electronic journals avoids photocopy costs for print articles.

Format Preferences for Various Tasks



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We asked ten questions about whether respondents preferred print or electronic to perform some common tasks. It is interesting that digital is least preferred for browsing current issues; there are undoubtedly implications here regarding the desirability of canceling current subscriptions to some popular titles.

Question Text:

Q6. Print and electronic journals may be used in different ways. **If both versions were equally available**, would you prefer to use print or electronic for the uses described below? Please mark the option that best describes your preference.

Q6_a_1. When browsing current issues of a journal.

1. Definitely Prefer Print
2. Mostly Prefer Print
3. Either Print or Electronic
4. Mostly Prefer Electronic
5. Definitely Prefer Electronic
6. N/A

Q6_a_2. When browsing past issues of a journal.

Q6_a_3. When searching through several different journal titles for articles.

Q6_a_4. To keep current in my (field, area, discipline, specialty).

Q6_a_5. To keep current outside of my (field, area, discipline, specialty).

Q6_a_6. When making copies of journal articles for my personal use.

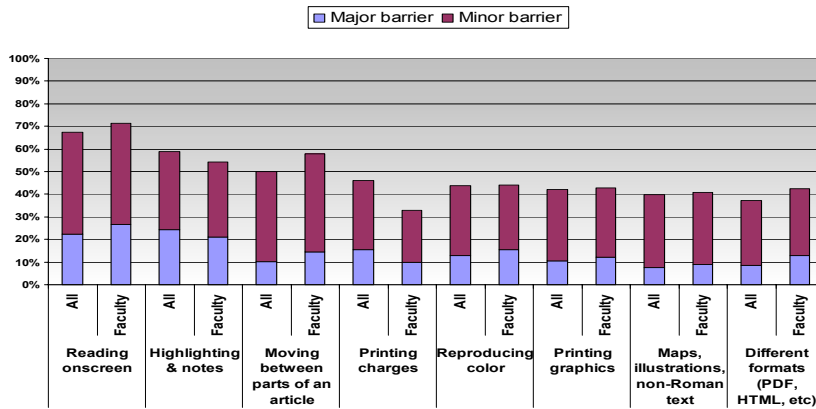
Q6_a_7. When comparing and contrasting several articles at once.

Q6_a_8. When I need to locate and access specific facts.

Q6_a_9. When I need to cite articles.

Q6_a_10. For use in course assignments.

Usability Barriers



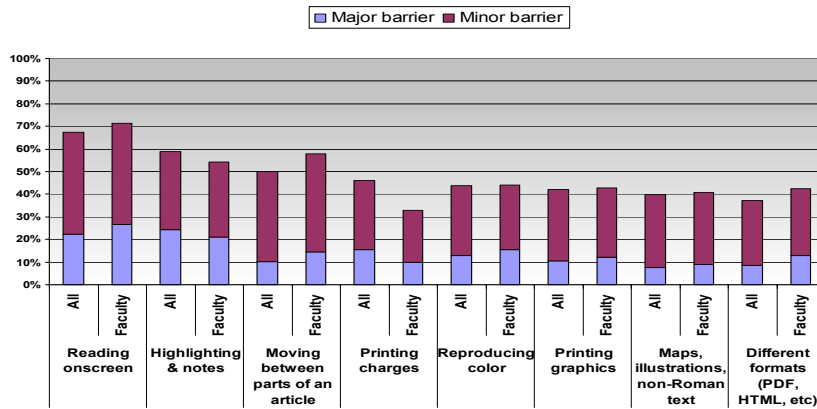
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We asked several questions about perceived barriers to the effective use of digital journals, grouped in three general areas: usability, content, and computing. Of interest here, faculty responses did not diverge significantly from the responses of the whole group in most cases – there seems to be remarkable agreement on what factors make digital journals hard to use.

The clear winner (or loser, really) in the usability category is the difficulty of reading on the screen, followed by problems with highlighting and making notes, and with navigating among the parts of an article.

Usability Barriers *(Continuation of Notes)*



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Question Text:

In using electronic versions of journals you may have encountered barriers that discouraged their use. We would like to ask you about three types of possible problems: ease of use, availability of content, and computing equipment. We also would like to learn of other barriers that may not be noted here.

Q8A. Please indicate to what extent you have found the following to be **barriers** to your use of **electronic journals**.

Q8_a_1. **Printing charges** for electronic articles when using campus computer labs, libraries or departmental services.

1. Major Barrier
2. Minor Barrier
3. Not a Barrier
4. No Opinion N/A

Q8_a_2. Dealing with several **different formats** (PDF, HTML etc.) with different access and use modes.

Q8_a_3. **Reading** electronic journals on the computer screen.

Q8_a_4. **Moving** between parts of an electronic article (for instance from text to graphics, to references).

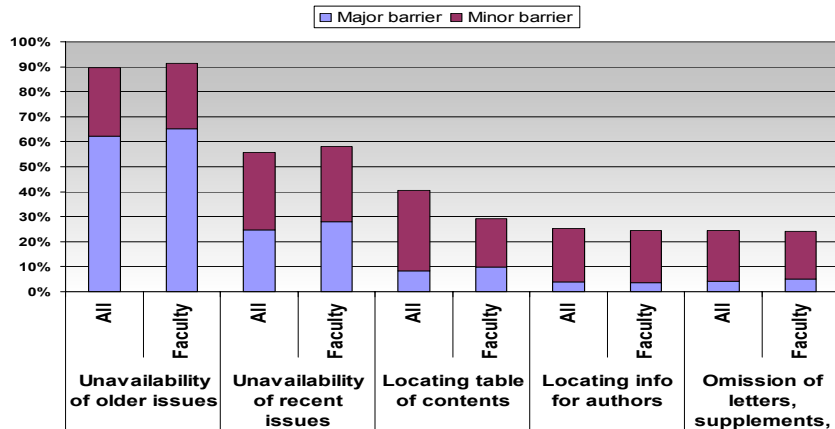
Q8_a_5. **Highlighting** sections or making marginal notes in electronic articles.

Q8a_a_6. **Printing** graphics from electronic articles at a quality suitable for research.

Q8_a_7. Accurately **reproducing color** illustrations from electronic articles.

Q8_a_8. Working with **distinctive features** of articles such as maps, illustrations or non-roman characters included in the electronic version.

Content and Coverage Barriers



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In the area of content and coverage, 80% of respondents identified the unavailability of older issues as a problem – this is entirely consistent with the finding reported earlier, that about 80% of respondents report that backfiles don't go back far enough. The fact that a majority of respondents claimed that access to the most current issues was also a problem remains a bit puzzling to us, as some internal studies at UC showed that the publishers included in the study were generally very prompt about posting their most recent issues. Further investigation of this finding seems warranted.

Question Text:

In using electronic versions of journals you may have encountered barriers that discouraged their use. We would like to ask you about three types of possible problems: ease of use, availability of content, and computing equipment. We also would like to learn of other barriers that may not be noted here.

Q8B. Please indicate to what extent you have found the **availability of content** to be a **barrier** to using electronic journals.

Q8_b_1. Unavailability of most **recent issues** of journals in electronic form.

1. Major Barrier
2. Minor Barrier
3. Not a Barrier
4. No Opinion N/A

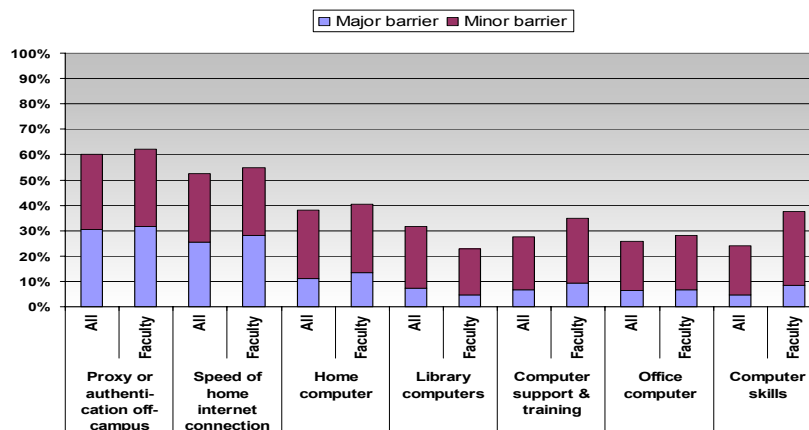
Q8_b_2. Unavailability of **older issues** of journals in electronic form.

Q8_b_3. Locating and accessing **the table of contents** in electronic journals.

Q8_b_4. Omission of **letters, advertisements**, editorial information or supplements from the electronic version.

Q8_b_5. Locating publication **information for authors** in electronic journals.

Computing Barriers



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In the Computing area, the two major problems reported were difficulties with authentication and authorization from off-campus locations, and the speed of home internet connections. I'll note here that about half the respondents claimed to have DSL or cable modem connections at home, and half dial-up, but there were some problems with the way this question was asked that we're still sorting through, so I haven't presented those data here. One point on which the faculty do systematically diverge from the rest of the respondents is that faculty seem more willing to acknowledge that deficiencies in their own computer skills present a barrier to effective use of digital collections.

Question Text:

In using electronic versions of journals you may have encountered barriers that discouraged their use. We would like to ask you about three types of possible problems: ease of use, availability of content, and computing equipment. We also would like to learn of other barriers that may not be noted here.

Q8C. Please indicate to what extent you have found these **computing issues** to be a **barrier** to your use of electronic journals.

Q8_c_1. The **quality**, performance or availability of library computer equipment.

1. Major Barrier
2. Minor Barrier
3. Not a Barrier
4. No Opinion N/A

Q8_c_2. The **quality** or performance of my home computer equipment.

Q8_c_3. Getting **access** to the library's online journals from off-campus locations (Proxy Server/Authentication problems).

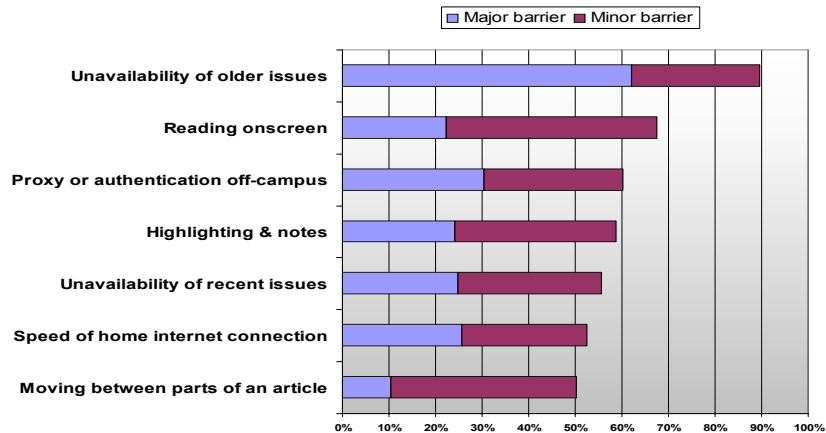
Q8_c_4. The **speed** and reliability of my home Internet connection.

Q8_c_5. The quality or **performance** of my office computer equipment.

Q8_c_6. Quality of computer **support** and training available to me.

Q8_c_7. My own computer **skills**.

Barriers - Summary



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To summarize these findings about barriers, it is evident here that the lack of backfiles is perceived as the major impediment to effective use of digital journal collections, followed by difficulty with reading on screen. The other barriers listed here, however, are reported as problems by 50-60% of our respondents, and all warrant attention.

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We plan to complete our report to the Mellon Foundation by end of June. This will be posted, along with publishable data, on the project Web site, www.ucop.edu/cmi. Publications will follow over the next six months or so.

It is important to note that this study does not necessarily support a wholesale and thoughtless transition from print to digital. The data show that in many cases, a significant minority still prefers print, and most likely for good reasons. Recall that there were 201 items recalled from storage. We asked requestors to complete a questionnaire in these cases, and respondents provided sound reasons for wanting to use the print – in most cases, because the content they wanted wasn't present in the digital version. There were other reasons as well; for example, one professor has a class assignment that requires students to investigate the advertisements in a complete run of a particular journal.

In light of these findings, and their limitations, the UC libraries are actively considering reasonable principles for transition from print to digital. Foremost among these should be a) close consultation with faculty, and b) provision for reasonably rapid access to an original print copy.

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DLF Spring Forum 2003 *(Continuation of Notes)*

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As it happens, UC is uniquely positioned to act on these findings and principles:

- i. Nine research universities under a single legal and corporate entity
- ii. Long history of collaboration and deep resource sharing
- iii. Two regional storage facilities

These characteristics allow us to seriously consider implementation of programs that allow campuses to rely on the digital, and still guarantee access to a shared copy of the print, deliverable within 48 hours.

In fact, such a program is in the advanced planning stages now. In this program, a shared print copy will be acquired of all Elsevier and ACM journals to which we currently have a Universitywide subscription in digital form. These print issues will be processed by one campus on behalf of the whole UC system, and deposited in our Southern Regional Library Facility for shared use by all our campuses. The journals from other publishers with whom we have licenses will be added as conditions permit.