

How Scientists and Engineers Find Information and Use Libraries

Steve Hiller

University of Washington Libraries

ACRL-STS Program “Partners in Science: An Exploration of a Scientist-Librarian Relationship”,

ALA/CLA Annual Conference, Toronto, June 23, 2003

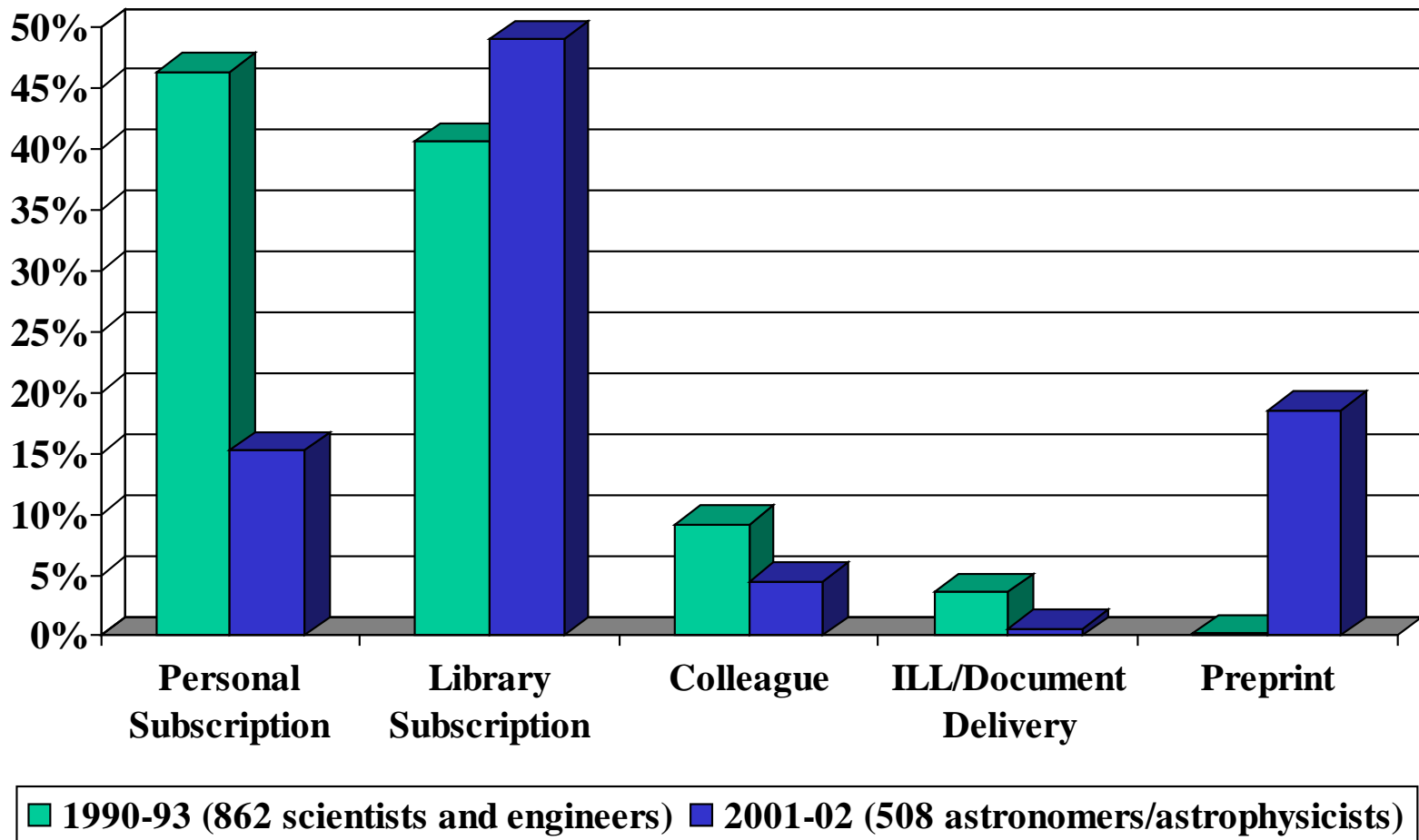
Information Seeking/Using Behavior of Scientists

The Research and Work of Don King, Carol Tenopir et al

- Longitudinal studies of scientists reading and communication habits (1977-)
- Uses critical incident technique (last article read)
- Study objectives:
 - Use, usefulness and value of articles read
 - Where scientists obtain articles they read
 - Article format
 - How scientists learn about these articles
 - Age of articles read
- “Communication Patterns of Engineers” to be published by IEEE in fall 2003.

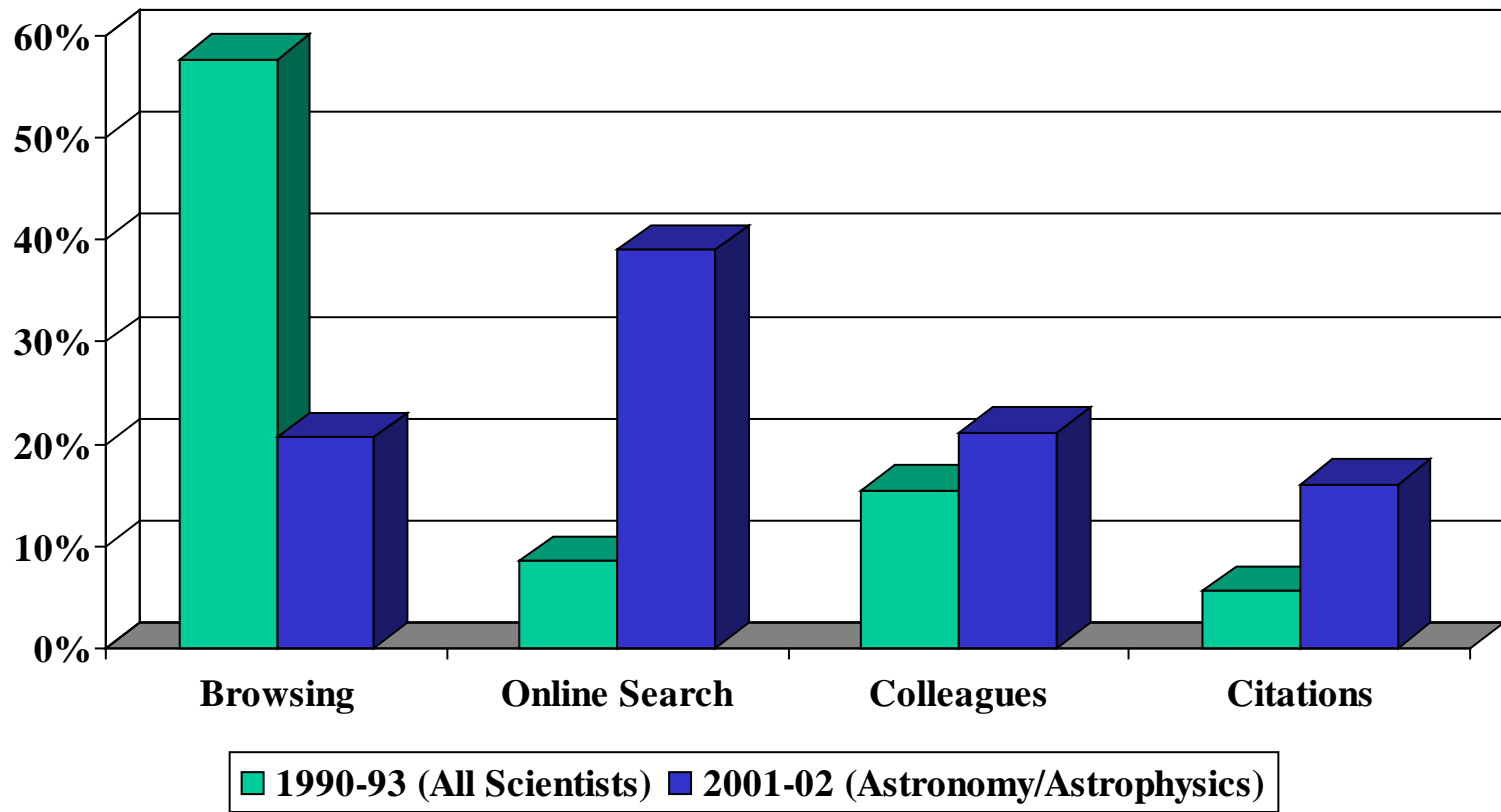
Article Sources: Change Over Time

(From King, Tenopir et al 2003, "Patterns of Journal Use through Three Evolutionary Phases")



How Learned about Article: Change over Time

(King, Tenopir et al 2003)



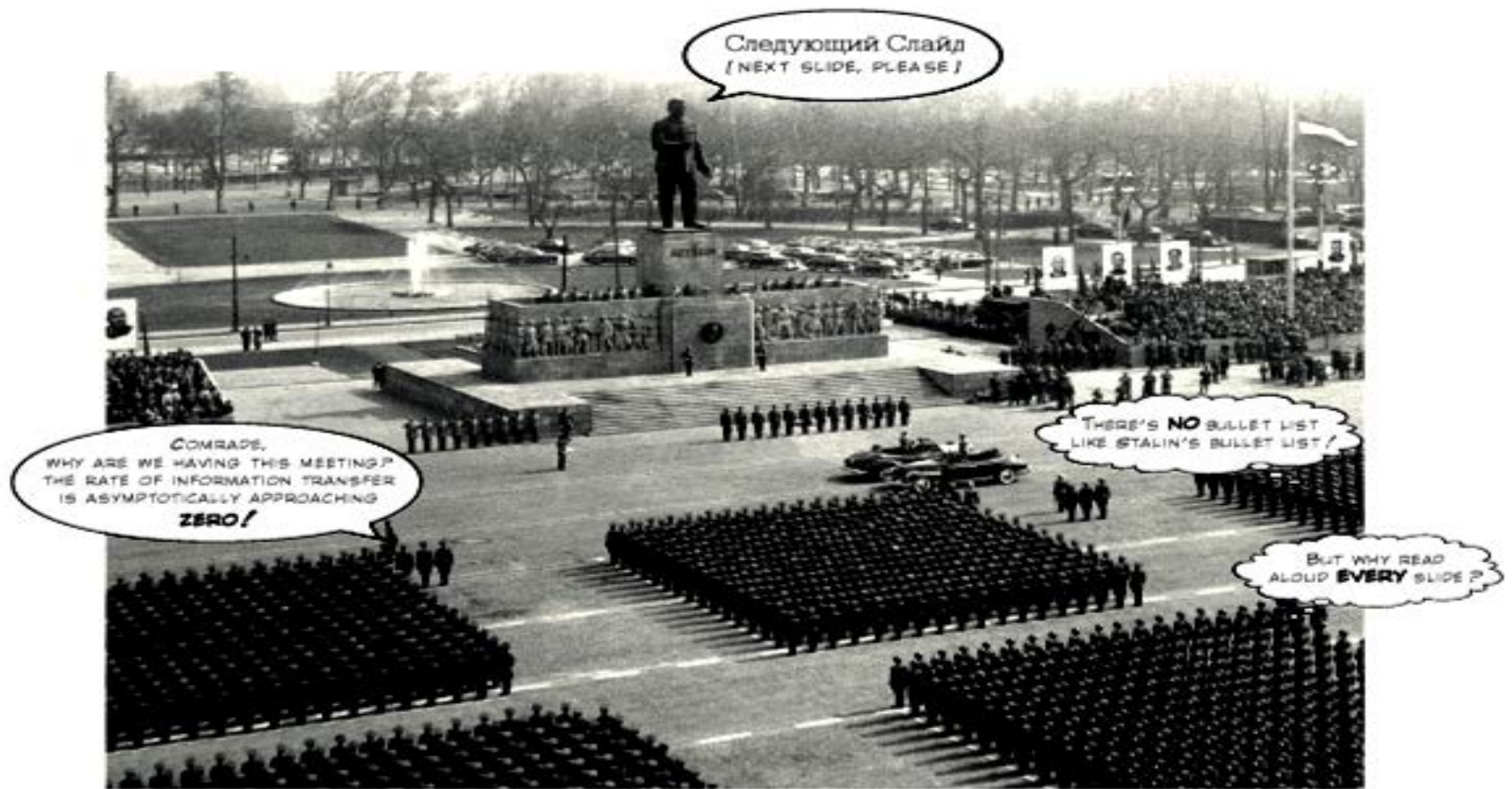
Changes in Reading Habits

(King, Tenopir et al 2003)

- 79.5% of articles read were electronic in 2001-02 compared to 0.3% in 1990-93
- Personal subscriptions declined sharply (5.8 in 1977 to 2.2 per scientist now); more articles come from library subscriptions than any other source
- Readings focus more on individual articles than on journal titles (browsing down)
- Online searches are not necessarily of library databases
- Linking important
- **Many recent studies confirm strong preference for remote access to electronic information**

Edward R. Tufte

The Cognitive Style of PowerPoint



Military parade, Stalin Square, Budapest, April 4, 1956.

Community Assessment: Understanding Your Users

- Who are your users
- What are their teaching, learning and research interests
- What are their library and information needs
- **How do they use library and information services**
- **How would they like to use library and information services**
- **How do they differ from each other**

University of Washington Libraries

Assessment Methods

- Large scale user surveys every 3 years (“triennial survey”) since 1992
 - Surveys mailed to all faculty
 - Surveys mailed to student sample
- In-library use surveys every 3 years since 1993
- LibQUAL+ since 2000 (Web-based survey)
- Focus groups (annually since 1998)
- Observation (guided and non-obtrusive)
- Usability
- <http://www.lib.washington.edu/assessment/>

University of Washington

- Located in beautiful Seattle, Washington
 - just 2 hours south of just as beautiful Vancouver, B.C.
- Comprehensive doctoral university with strong research focus especially in science and medicine.
 - 3700 faculty, 10,000 graduate students, 25,000 undergrads
- Science and engineering faculty and students comprise 25%-30% of university population
- UW ranks 1st among U.S. public institutions (2nd overall) in amount of federal research funding
 - \$600 million plus annually

What We've Learned about our Community

- Libraries remain very important to teaching, learning and research
- Library needs/use patterns vary by and within academic areas and groups (e.g. faculty and undergrads)
- Faculty and students use libraries differently than librarians think (or prefer them too)
- Library/information environment is perceived as too complex; process of finding and using information is simplified by users
- Remote access to electronic information is preferred and has changed the way faculty and students do work and use libraries

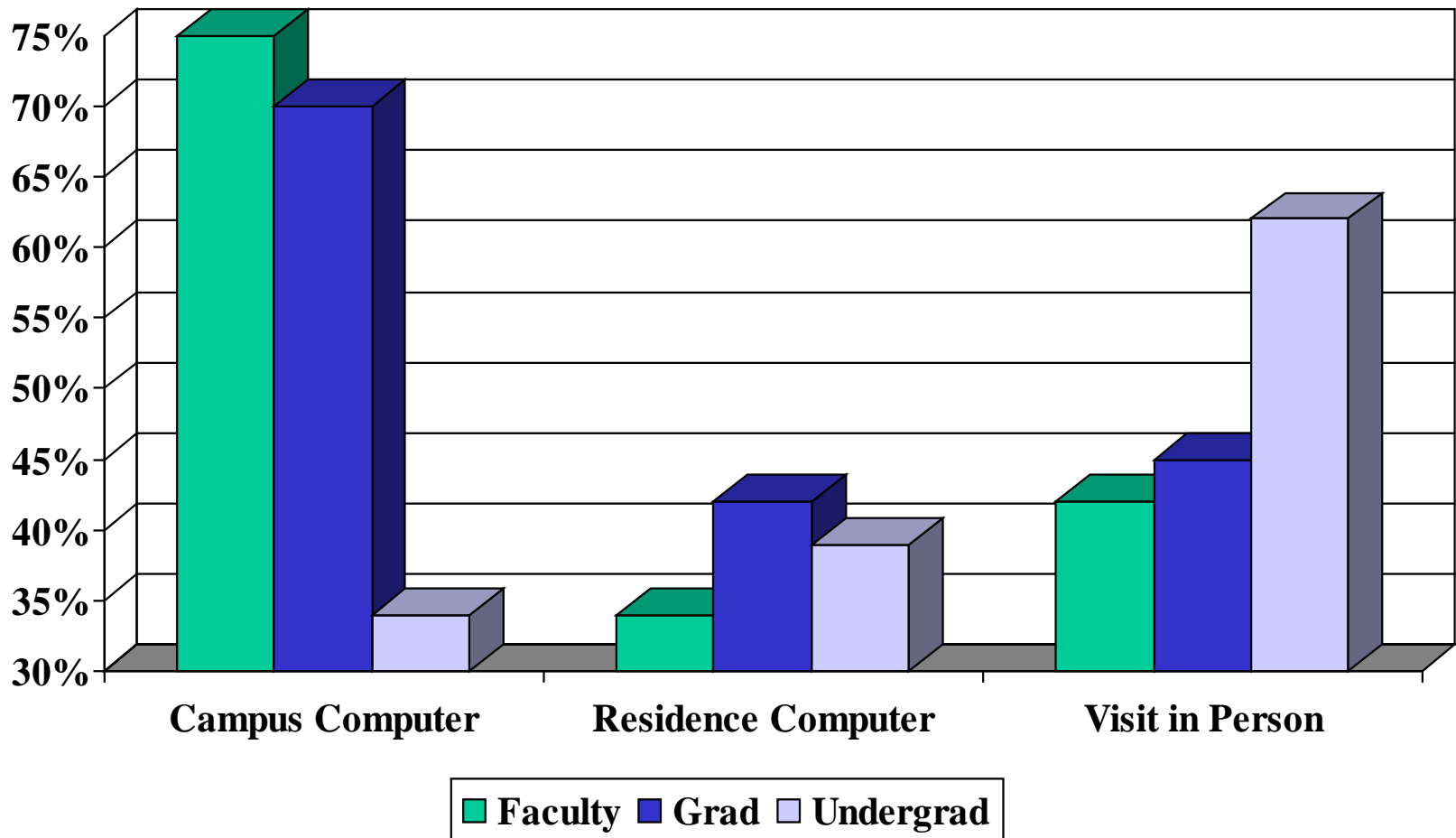
Surveys: 2001 UW Triennial Survey

| | All responses | Response rate | Sci-Eng responses | Sci-Eng as % of total |
|----------------|---------------|---------------|-------------------|-----------------------|
| Faculty | 1345 | 36% | 354 | 26% |
| Grad Student | 597 | 40% | 174 | 29% |
| Undergrad | 497 | 25% | 132 | 27% |

Triennial Survey: Science Respondents by College and Department

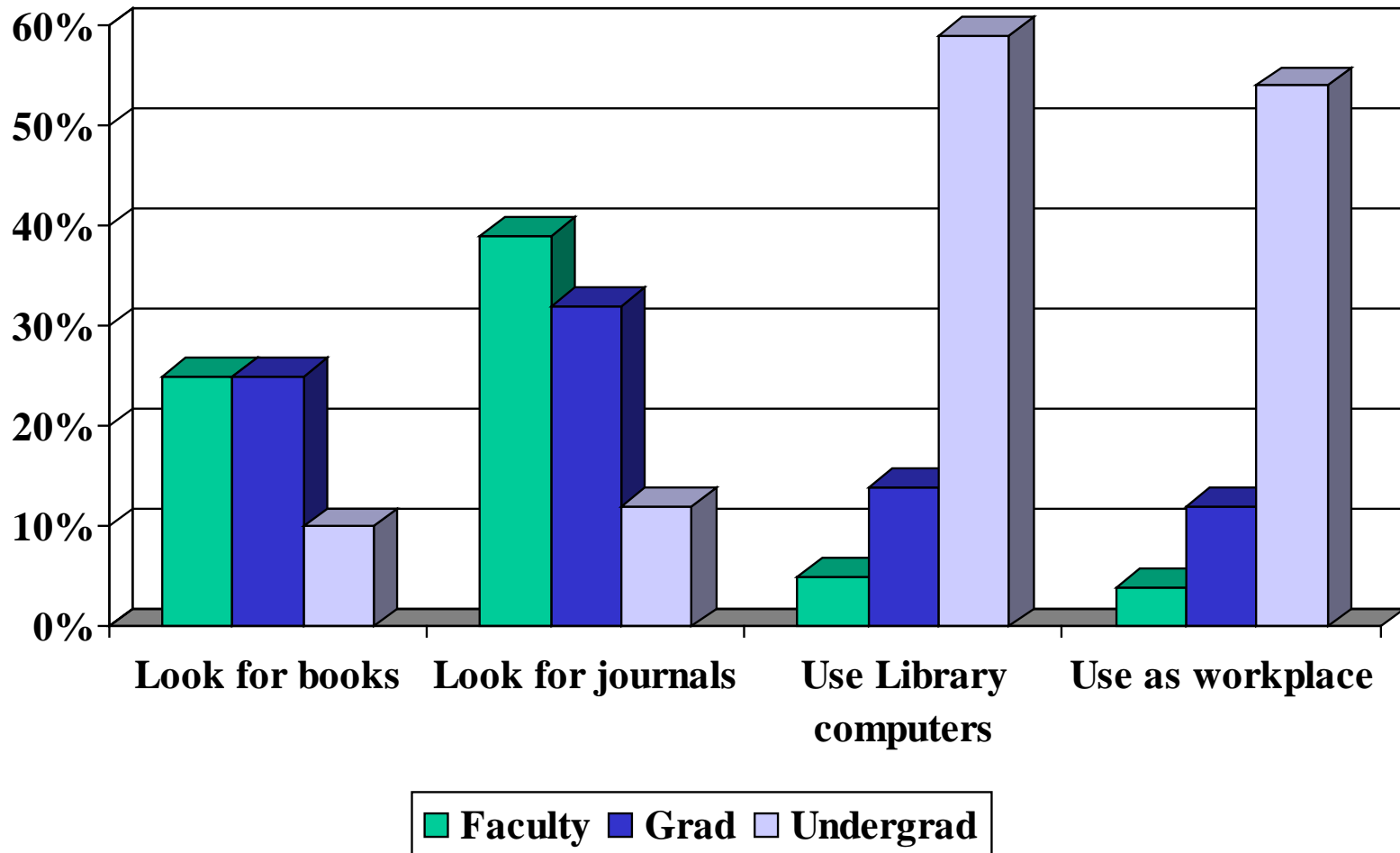
| College | Faculty | Grad | Undergrad |
|------------------------|----------------|-------------|------------------|
| Engineering | 76 | 49 | 33 |
| Forestry | 28 | 17 | 2 |
| Ocean Fish | 42 | 19 | 1 |
| A&S Science | 198 | 80 | 96 |
| Chemistry | 20 | | |
| Earth and Space | 24 | | |
| Math | 26 | | |
| Physics | 30 | | |
| Psychology | 25 | | |
| Zoology | 23 | | |

Triennial Survey: How UW Science Faculty and Students Use the Library (% who do so at least weekly)



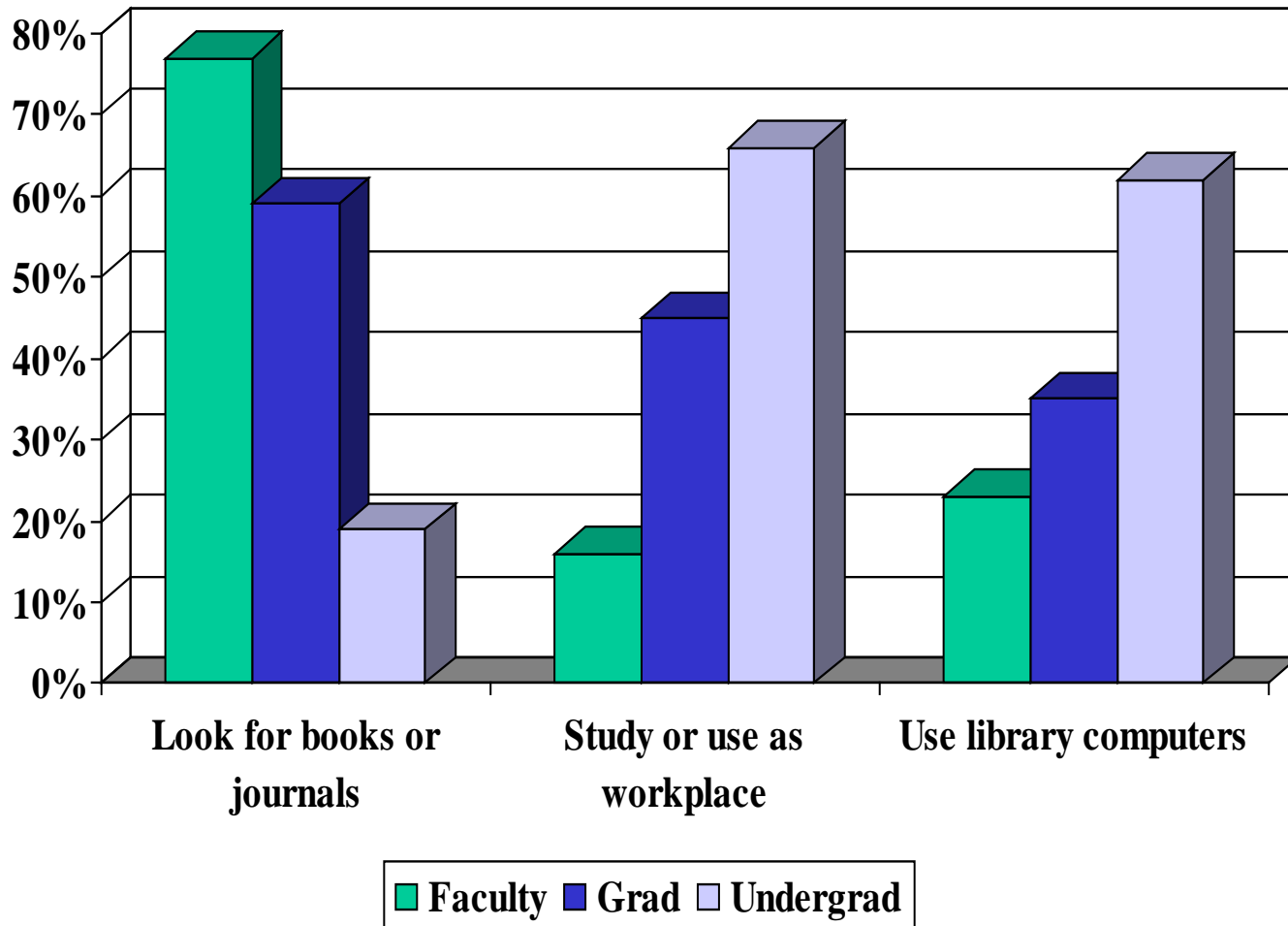
Triennial Survey: What Science Students and Faculty Do When They Visit the Library in Person

(% who do so at least weekly)

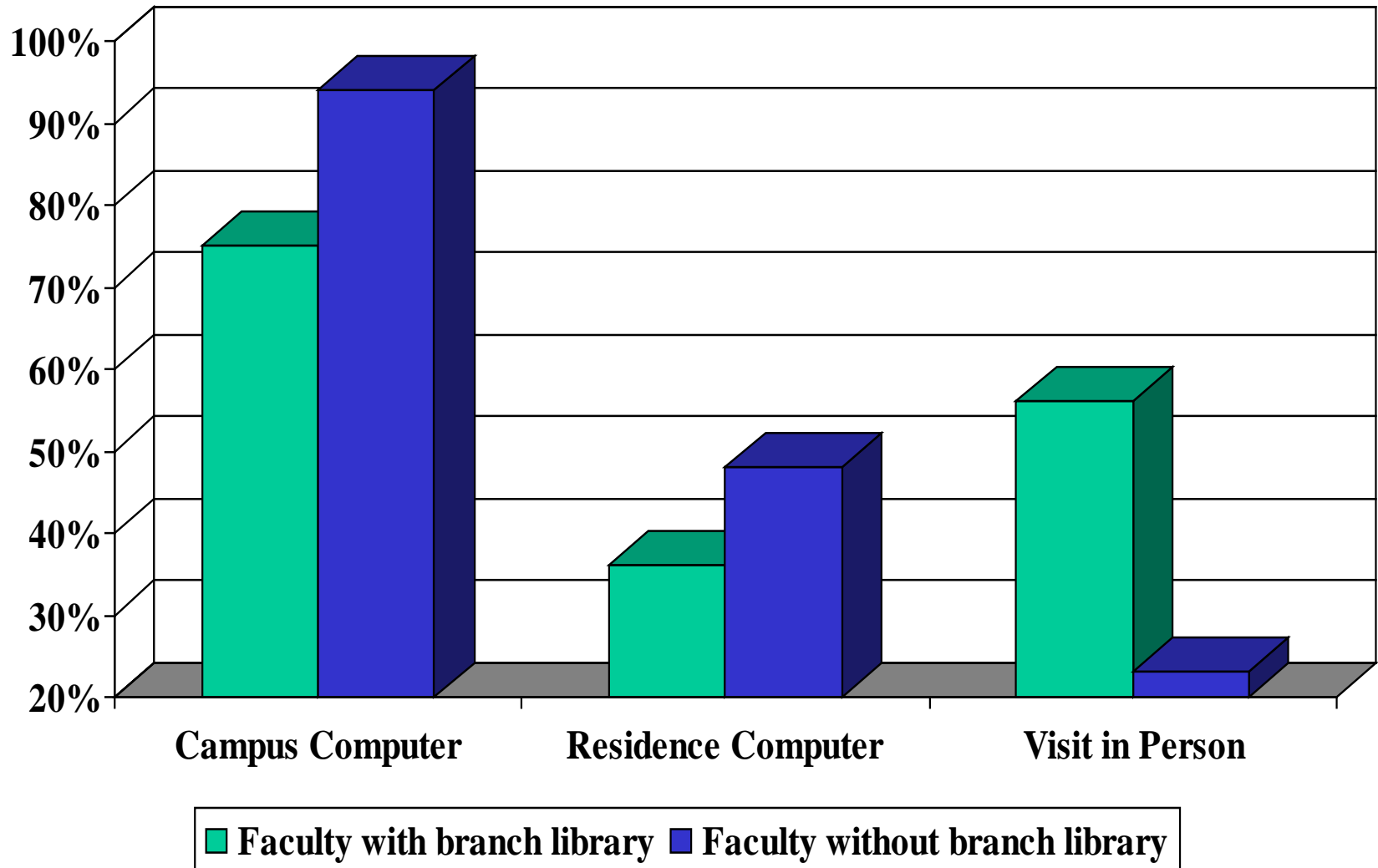


2002 In-Library Use Survey:

What Science Students and Faculty Did in the Library

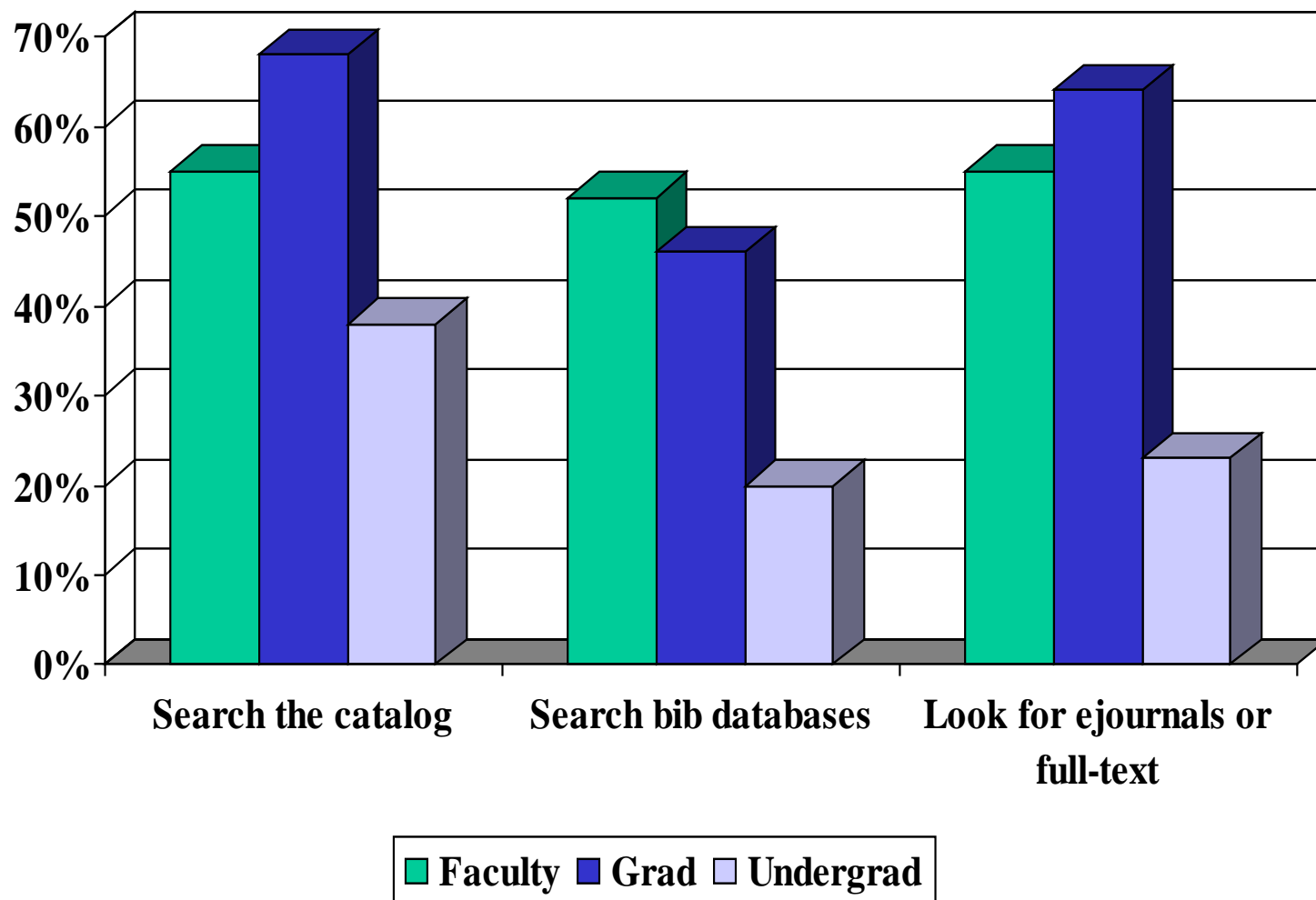


Triennial Survey: Does a Branch Library Make a Difference in How Library is Used? (% who do so at least weekly)

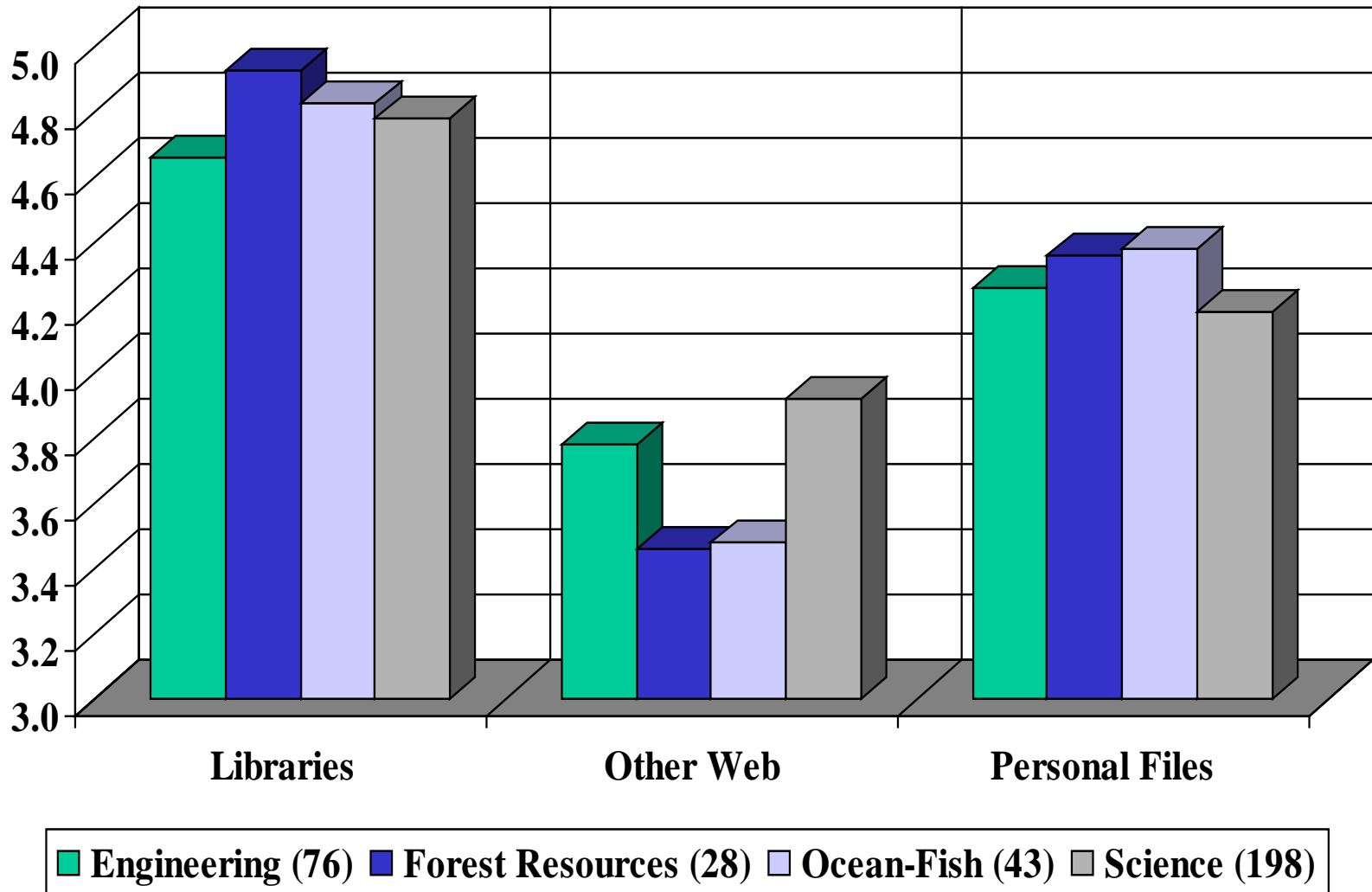


Triennial Survey: What Science Faculty and Students Do When They Use the Library Remotely

(% who do so at least weekly)

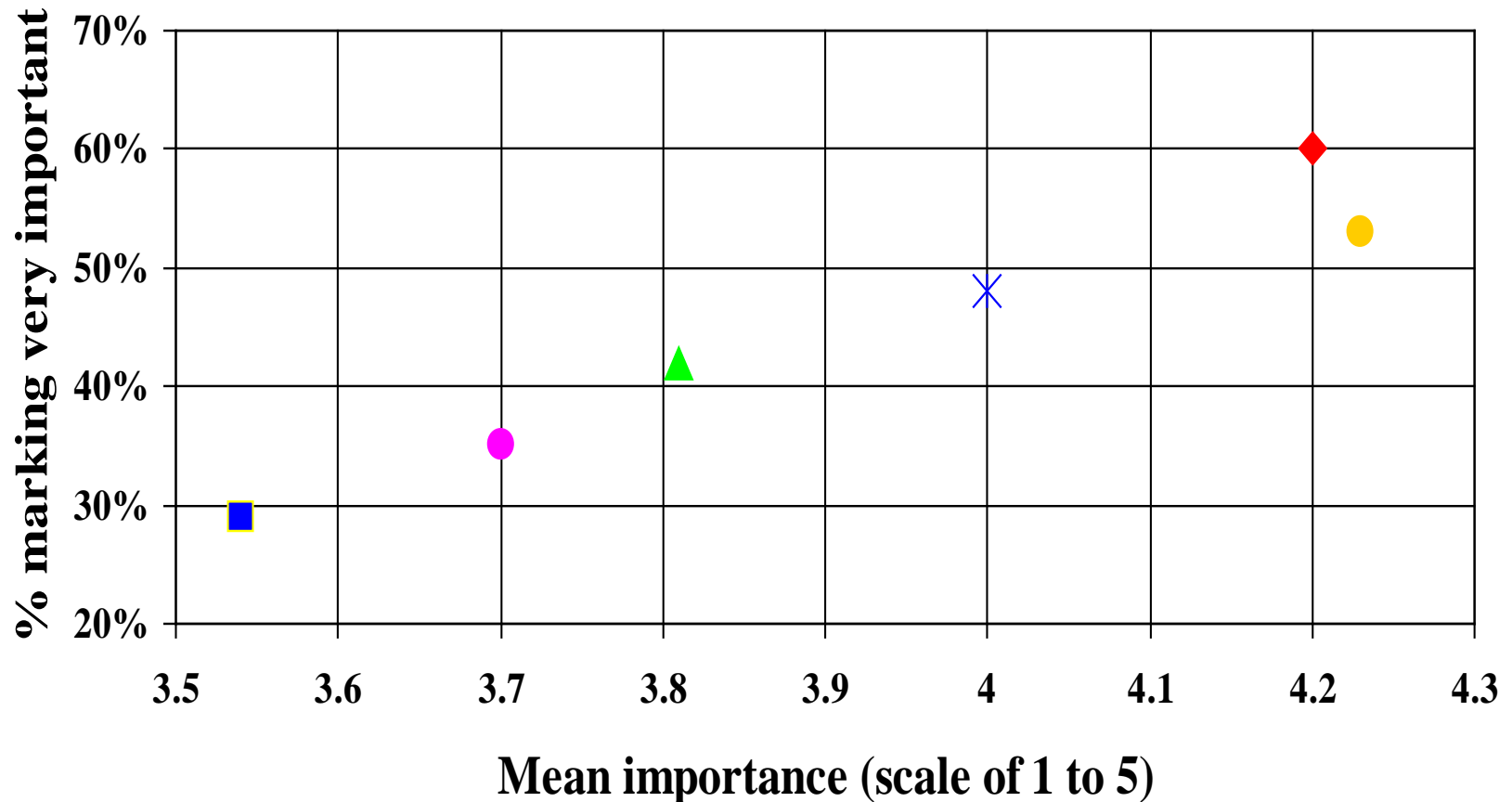


Triennial Survey: Faculty Information Source Importance by College

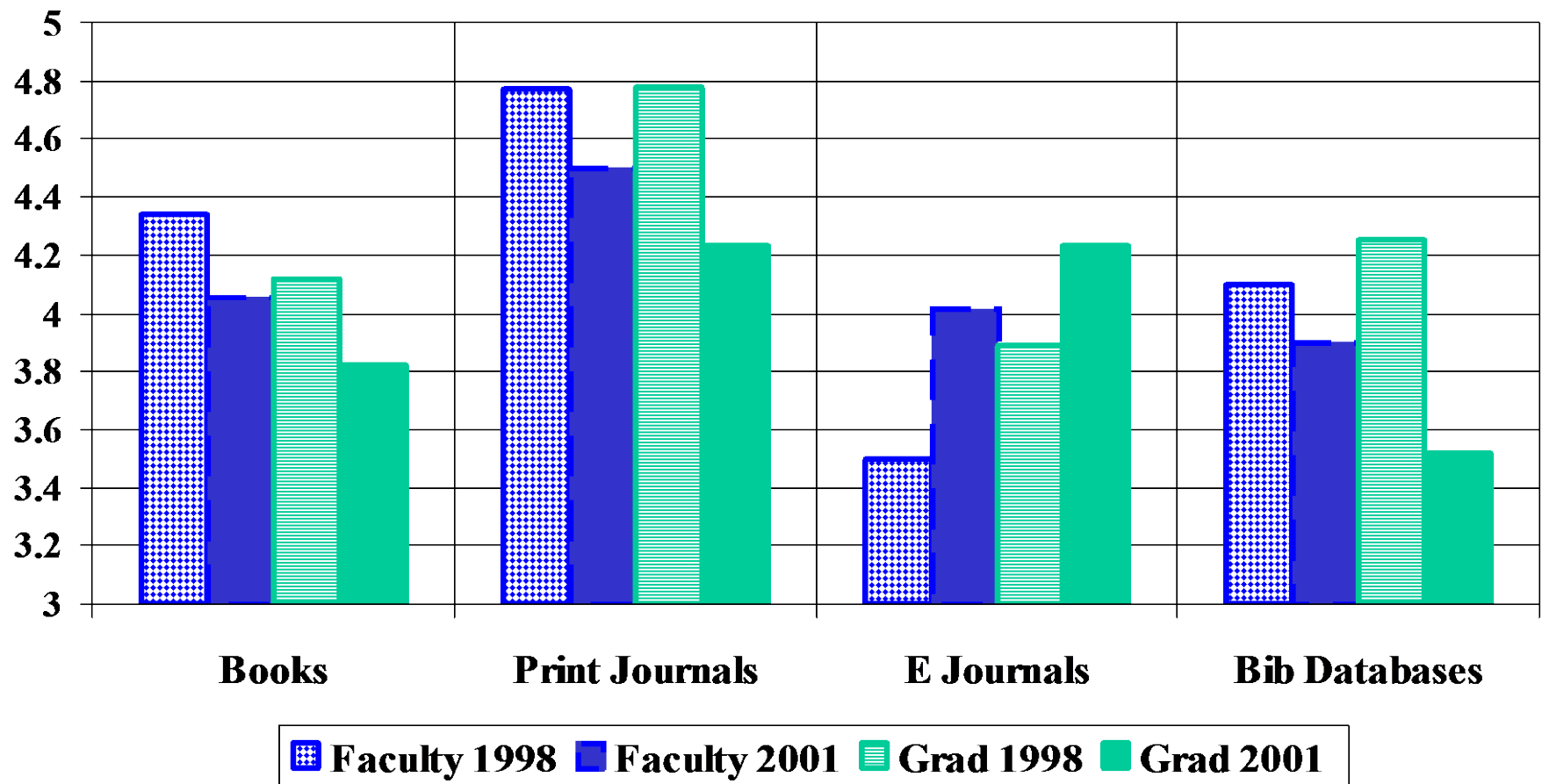


Triennial Survey: Faculty Importance of Non-Library Provided Web Sources by Science Dept.

(minimum of 20 responses per department)

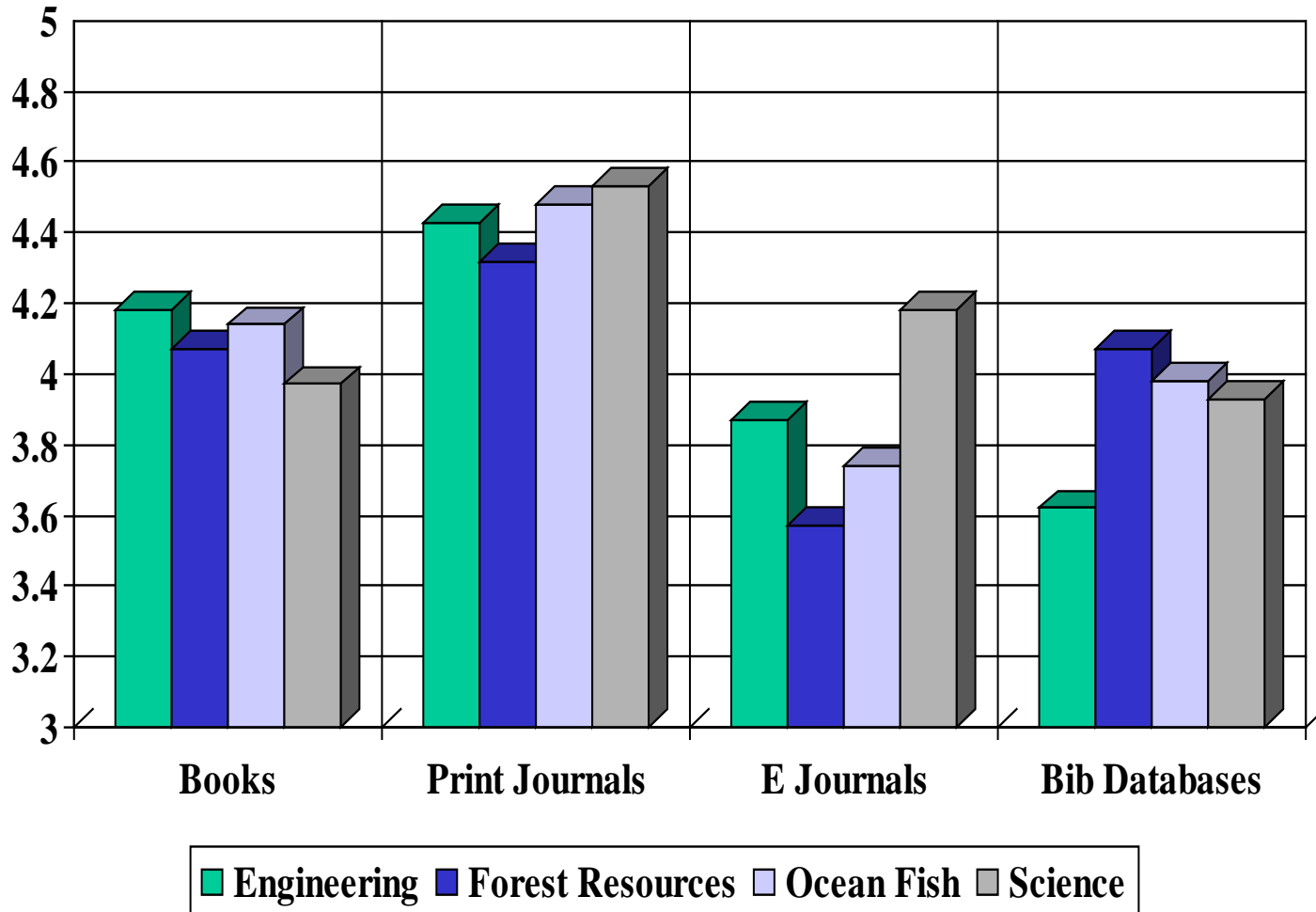


Triennial Survey: Resource Type Importance 1998 and 2001 for Science Faculty and Grad Students

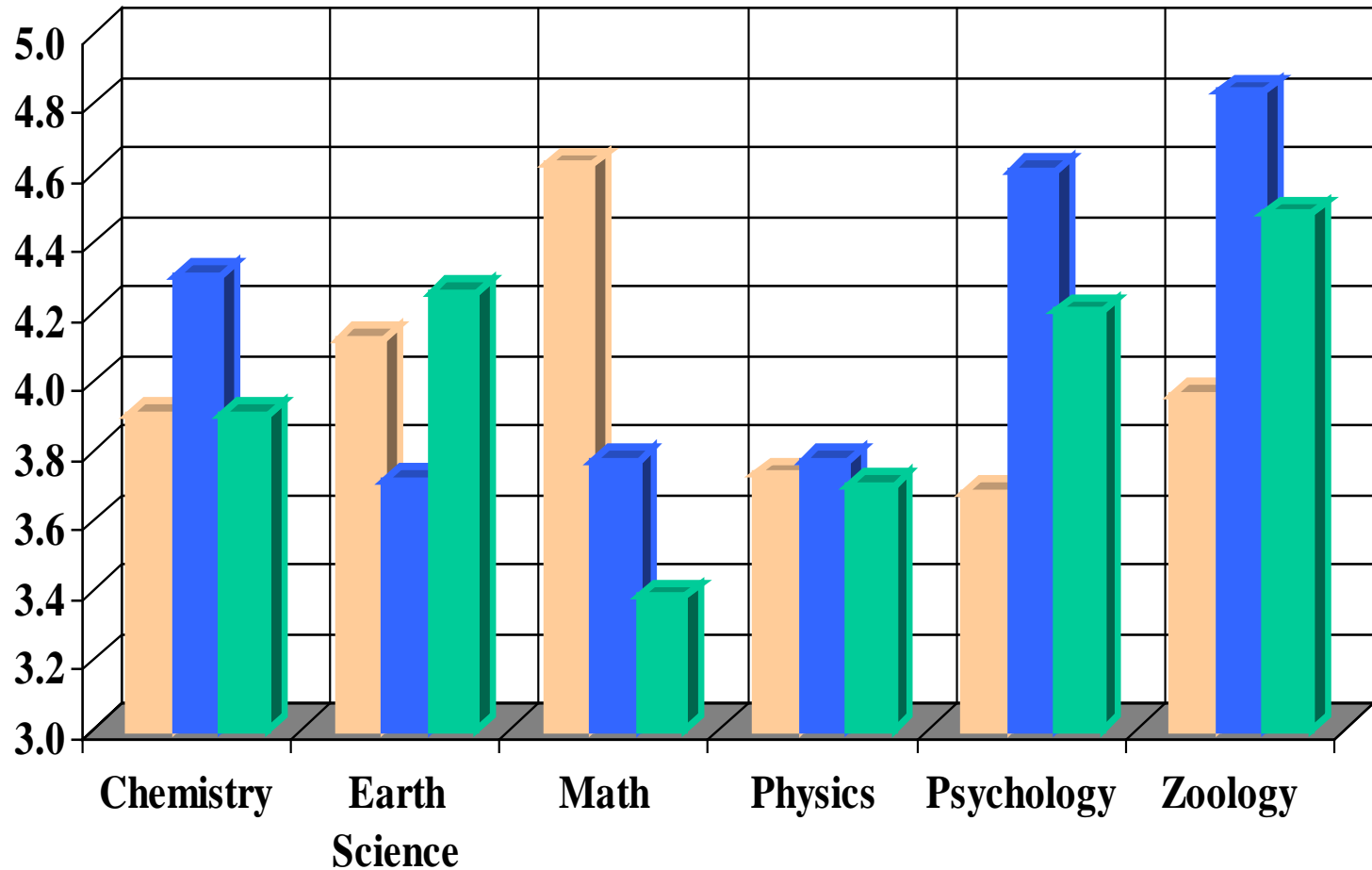


Triennial Survey:

Faculty Resource Type Importance by College

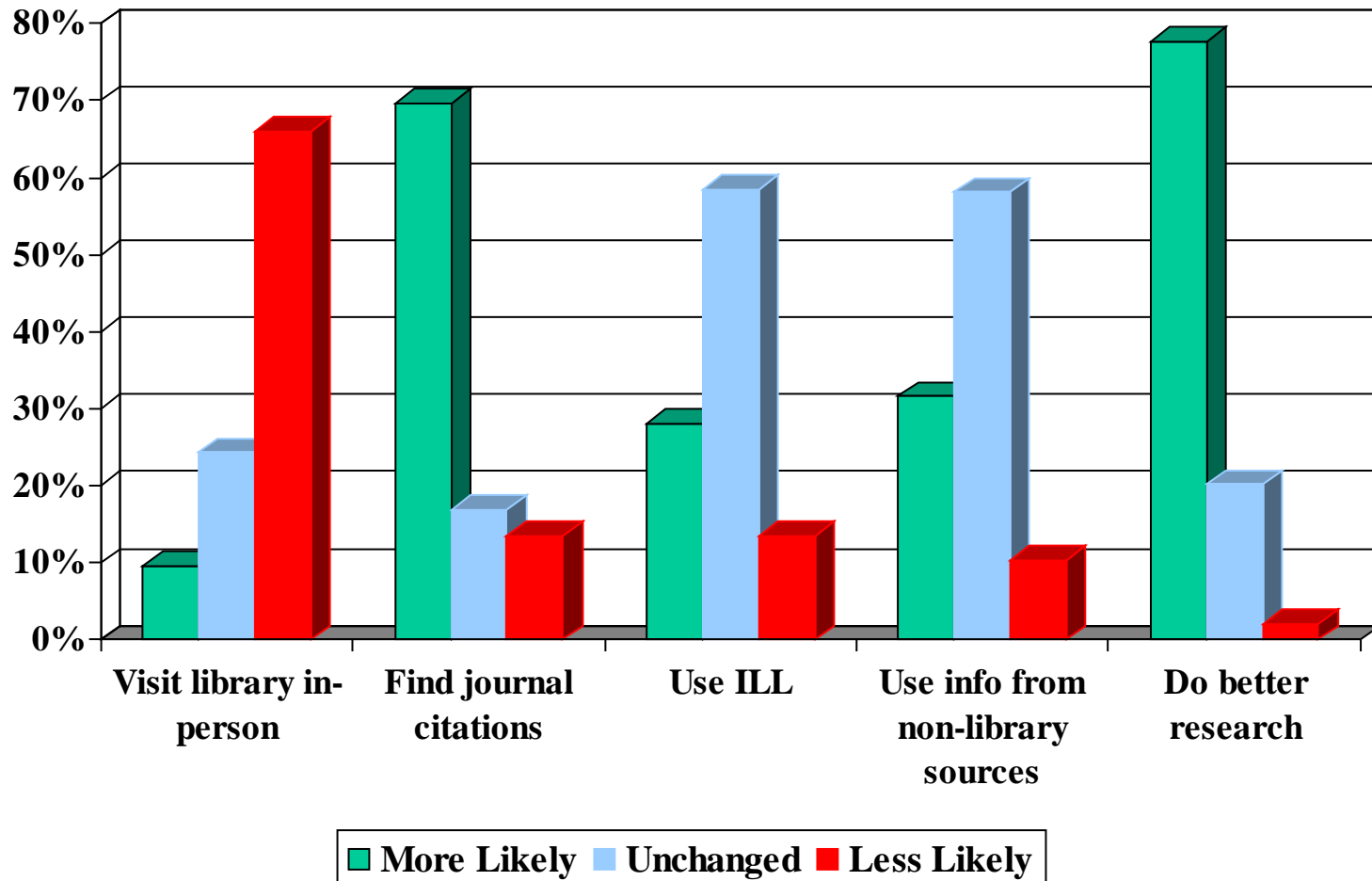


Triennial Survey: Faculty Resource Type Importance by Science Department

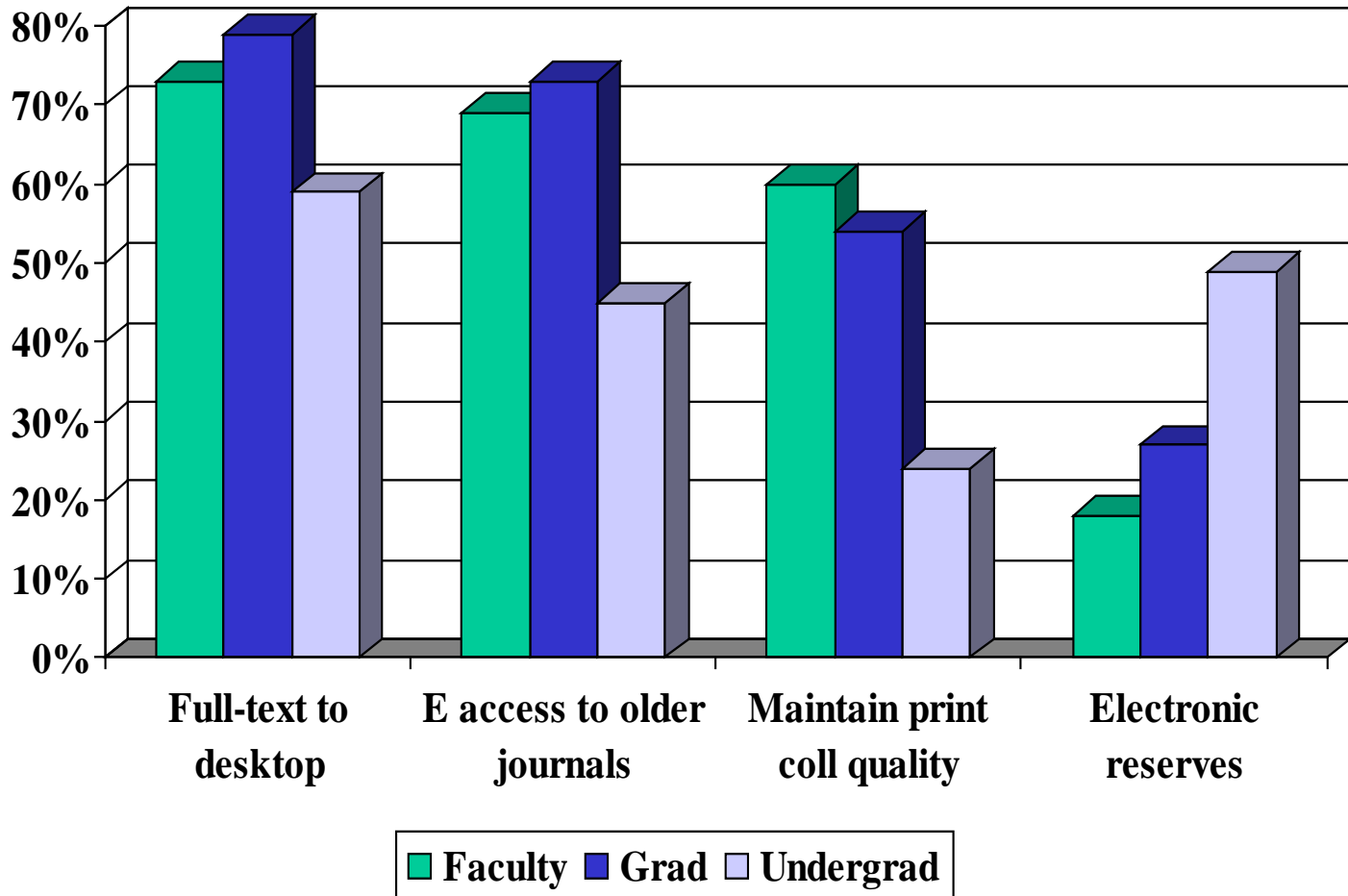


Books E Journals Bib Databases

Triennial Survey: Impact of Online Resources on Science Faculty Work



Triennial Survey: Library Priorities for Science Faculty and Students



Other Assessment Techniques Used at the University of Washington

- Focus Groups Annually Since 1998
 - 1998, 2000, 2002 concerned with information seeking and using behavior
- Directed Observation and Usability Since 1998
 - Web Gateway Usability (ongoing)
 - Finding electronic journals (1998)
 - Searching bibliographic databases (2003)

Guided Observation

Bibliographic Database Searching March 2003

- Faculty and graduate students search very differently than we think they should
- Common observations included:
 - Prefer to use single keyword search box
 - Little use of Boolean commands
 - Limits or format changes rarely employed
 - Commands need to be on first page or lost
 - Visible links to full-text critical
- **Important features for librarians are not necessarily important to faculty and students**

2002 Focus Groups on Libraries Impact on Research: Observations

(Science/Health Sciences faculty and grad students)

- The information environment is too complex
- General search engines (e.g. Google) are preferred over library licensed/provided interfaces
- Ubiquity of library research – any place, any time has changed research patterns
- Availability online is more efficient way to research
- **The personal connection with a librarian remains important**

Online Access and the Research Process

Science/Health Sciences Focus Groups Spring 2002

- I find that it has changed the way I do library research. It used to be a stage process:
 - Initial trip
 - Follow-up trip
 - Fine tuning trip

Now it's a continuous interactive thing:

- I can follow-up anything at any time
- While I'm writing I can keep going back and looking up items or verifying information
- If one person finds a really interesting paper we all have it within 15 minutes. And it moves like wildfire through the lab. Because the PDF file is sent all around by email and we all print and we are all reading it. It's great.

Information Environment is Complex

Spring 2002 Faculty Focus Group

I'd like to use Inspec more. I avoid it because I have problems with the search interface. And I know there are articles there that should be coming up, but I'm not finding them. And I'm finding hundreds of garbage items. The librarian keeps saying "Well, sit down with me and I'll show you how to do it." **But I can't remember how to do complicated things from one day to the next.** (Faculty)

Personal Connection is Important

- So I need someone to tell me those things and to give me quick info. **That's why Terry is so blessedly useful.** She'll give me that information very quickly. Just getting those tidbits at the right time can make a very, very large difference in how quickly we can access useful information. That's one thing to chorus loud and clear on the tape, **"Thank God for librarians."** There's no better place for human intervention in information science. (hear, hear from group) (Faculty)
- I am hoping that the **reference librarians I know by name** never disappear from the face of the earth. Nothing can quite replace the human contact when you get stuck (um hmm from group). (Graduate)

Challenge for the Future: How Do We Sustain the Personal Connection?

- Fewer faculty and graduate students coming to “our” physical space
- Information sources extend beyond the physical and virtual library
- Diverse user communities with different needs
- What value added services can we provide?
- How can we simplify complexity of library and information environment

Simpsons: After Robots Run Amok at Itchy and Scratchy Land

Professor Frink: Man, if this is happening here, I'd hate to think of what's happening in Euro Itchy and Scratchy Land.



[shot of empty parking lot in said park]

Booth man: [*French accent*] Hello? Itchy and Scratchy Land open for business. Who are you to resist it, huh?

Come on. My last paycheck bounced. My children need wine.