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Seduction by the Internet: a study of undergraduate use of Web resources

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Key Words: Bibliographical citations, Citation analysis, Web site links, Internet addresses, Use studies/Internet

Abstract

The purpose of this study was to examine upper class undergraduate student citation strategies that were used in completing their research assignments. We analyzed a total of 826 citations from seventy- five (75) political science undergraduate research papers in order to determine the types of scholarly resources that were utilized by these students. Additionally we attempted to determine the extent of student use of online sources and the persistence of these online sources over time. Findings are highlighted with suggestions for future research.

Seduction by the Internet: A study of undergraduate use Of Web resources

1.0. Background

Since the mid-1990s studies have shown a dramatic shift in undergraduate student use of research resources, from those that are traditional print based to those found on the Internet. What makes research using the Internet so seductive is the way that the medium serves as a vast storehouse of knowledge that is conveniently accessible via a simple keyboard at all hours and in all places where there is an Internet connection. In doing their research undergraduates, like other scholars, are attracted by the abundance of resources. The consequence has been an enormous increase in the scope and breadth of academic work.

Three issues converge, however, when it comes to undergraduate student use of online resources. The first is common to faculty and undergraduate students alike across all academic disciplines. It is the fragile nature of digital information and the instability of the Internet as a publishing medium. Web pages lapse on the Internet, a phenomenon known as “linkrot” or “link decay.” For example, a study of leading Communication studies journals found that, on average, 30% of the Web links that were cited disappeared after three years (Dimitrova and Bugeja, 2006). A Cornell study of undergraduate student term paper citations revealed that only 18% of the URLs (i.e., resource links) cited in 1996, when checked in 2000, led to a correct site (Davis & Cohen, 2001). These dead links have become a real issue, as Grafton observed, for students are now less able to negotiate a book landscape while at the same time having become more adept at negotiating the Web (Carlson, 2005). Maintaining accessibility to digital information over a long period is thus critical for students and senior scholars alike. This is a problem, however, for which, to date, there are neither technical nor economical answers. The second issue is the limited ability of undergraduate students

to evaluate critically the authenticity, currency, objectivity and validity (among other criteria) of Web resources. One early study of term papers in one undergraduate course found that nearly half of the online citations used by students were from other student papers that were available online (Grimes & Boening, 2001). However, a 2003 Cornell longitudinal study of undergraduate student term papers found that with proper intervention and guidance by faculty members the quality of student online citations was much improved (Davis, 2003). Despite this, the most recent ETS research reveals that, in general, college students are tech savvy when it comes to entertainment but do not have the critical thinking skills that are necessary to perform the kinds of information management and research tasks necessary for academic work. This study particularly points to the poor showing of students when evaluating a set of Web sites (Katz, 2006). The third issue pertinent to undergraduate use of Web resources is alleged plagiarism. In addition to their limited ability to evaluate Web resources critically, students also lack training in the proper documentation of sources in footnotes. Some misguided students even consider that simply “copying and pasting” Web resources into their term papers, without attribution, is a new way of doing research when using the Internet.

These three factors, the instability of Internet resources, poor evaluation skills, and faulty attribution severely impact the nature of student research and the quality of the work that is produced. The purpose of this study is to explore the depth and breadth of this problem by analyzing the bibliographic citations that were used by undergraduate students in preparing their research papers.

1.1 Goals of the study.

Specifically, we attempt to achieve the following objectives:

1. To ascertain the types of scholarly resource materials that undergraduate students use for their research projects.
2. To ascertain what percentage of student references include online citations?

- a. Of those online citations, what are the distribution patterns of domain names (i.e., .com, .org, .gov, etc)?
- b. Of those online citations, how many links still work?
- c. Of the online citations that do not work, why?
- d. Of the online citations that do work, does the content match the original source?
- e. Of the online citations that do work, at what point in the webpage does the link take the user to a homepage, 2nd level, etc.?

2.0. Literature Review

One of the most widely cited studies in this research area is the piece written by Davis. This seminal study was done using the term papers of Cornell undergraduate students who were enrolled in Econ 103 in 1999-2001 (Davis, 2003). While studies of undergraduate student citation behavior have been conducted from as early as 1990 (Magrill & St. Claire, 1990), the growth of Internet content in recent years has prompted many academic librarians to investigate their own students' citation behavior in an effort to discern any emerging patterns and trends.

While numerous studies have investigated the use of Web citations and their accessibility over time to different levels of user groups and demographic populations (Thomas, 2004)), there are two useful recent studies that are particularly relevant to the investigation reported in this study. Hovde's study of freshman English composition papers at Northern Illinois University in 1999 and 2004 found decreasing accessibility to Web citations over time (i.e., linkrot) while the freshman use of Web citations steadily increased (Hovde,2007). Carlson' study, conducted in the fall semester of 2002 at Bucknell with research papers submitted in multiple disciplines from students in different class years (i.e. freshmen, sophomores, juniors and seniors), found a statistically significant difference among grade levels in the frequency of citation of different research

materials, with first year students citing more websites, fewer books and fewer journal articles (Carlson, 2006).

3.0. Course Context

For this study there were seventy-five (75) research papers written by Rutgers political science majors that were available for the purpose of citation analysis. The papers (50 from spring semester, 2001 and 25 from spring semester, 2006) were the primary requirement in a mandatory undergraduate seminar, one of several offered yearly. The spring, 2001 seminar had two sections of the same seminar, thus doubling the number of papers for analysis. Although students were instructed to collect their papers after the grading was completed; few students did this due to the immediate onset of the summer break. As a consequence, these papers, which would normally have been discarded after a period of time, were available for analysis.

At Rutgers a political science seminar is required for all political science majors in their junior year (with some seniors, who missed a seminar in their junior year, also attending). Specifically, students who were enrolled in the Political Science seminar, "Cultural Change and Commonplace Evil" were required to submit in print format an original research paper on a topic of their choice that dealt with a public policy issue that contrasted differing ethical viewpoints. Such topics included, *inter alia*, abortion, gun control, interrogation techniques, ethnic cleansing, etc. With help from the instructor, students were required to develop their own resource base utilizing both print and Web sources and to prepare a cogent and logical presentation of the issues. The overall purpose of the seminar was to develop writing and research skills. Students in this course did not receive any formalized library instruction. However, they were required to keep detailed research notes, outlines, and drafts of papers, all of which had to be reviewed by the instructor prior to final submission. This was partly to inculcate proper

research and writing habits and partly to prevent students from being tempted to copy and paste from Internet sources (i.e., plagiarism).

4.0. Methodology

Content analysis was employed to analyze the citation strategies that undergraduate students utilized in preparing research papers for a required seminar for political science majors that was offered in 2001 and 2006. All personal information attached to the papers was eliminated in order to protect the privacy of individual students. Only the pages that contained the grade and bibliographies at the end of each paper were examined. Altogether 826 citations were analyzed from seventy-five (75) research papers. There were 50 papers from the 2001 seminar and 25 from 2006.

In order to develop an appropriate coding scheme and methodology we carefully reviewed earlier studies, such as a similar one by Davis (2003). Once a coding scheme was finalized two coders completed the first set with an inter-coder reliability score of 99%.

Finally, the citations were coded utilizing eleven variables: publication year, publication type (print, online sources); web address given (yes, no); DNS (Domain Name Systems) (.org, .gov, .edu, etc.); retrieval dates; publication dates; decay rate; citation failure reasoning (page not found, unauthorized access, typo, etc.); citation content match; and URL level of citation (homepage, 2nd level, etc). For publication type we chose seven distinct categories: (1) journal, defined as a peer-reviewed academic periodical title –this category included journal articles retrieved online via EBSCO etc; (2) magazine, defined as general interest periodical title; (3) book, defined as a print monograph, (4) newspaper; (5) Web, includes citations that contain a URL; (6):other, defined as court cases, presentations, etc.; and (7).unidentifiable, or incomplete. Post inter-coder reliability was 98%.

Upon completion of coding we ran descriptive statistics via SPSS to test patterns and trends identified in previous research.

5.0. Findings

Our preliminary findings confirm the general trends and patterns identified in earlier studies conducted by Davis (2003), Hovde (2007) and Carlson (2006). Rutgers political science majors cited eleven sources on average to complete their research assignments. Our study, however, indicates that although student use of books has not declined dramatically from 2001 to 2006 (a 6% decline over this five year period), the use of Web sources over the same period did increase by about 10.5%. For political science majors the data suggests that while book use is declining, they are still the most highly cited research source material (47.4%, n=226 in 2001 and 41.8%, n=146, in 2006). The data also show a low use of journal articles that in 2001 comprised only 12% (n=59) of all types of materials cited in these papers decreasing to 10% (n=35) in 2006. Although earlier studies indicate that journal articles are generally cited more frequently in the social science disciplines than in the humanities (Carlson, 2006), one explanation from this data is the character of the course and the cross disciplinary nature of the research projects. While the course was clearly embedded in a social science discipline (public policy), there was also a heavy element of humanities readings (ethics). We surmise that journal use might have been higher had there been systematic instruction in the use of the library's databases. Figure 1 details the type of publications cited in the research papers while Figure 2 details the types of Web sites that students used as information sources for writing their research papers. Figure 1 shows that student use of Web sources increased from 19.9% (n=95) in 2001 to 31.5% (n=110) in 2006.

Figure 1

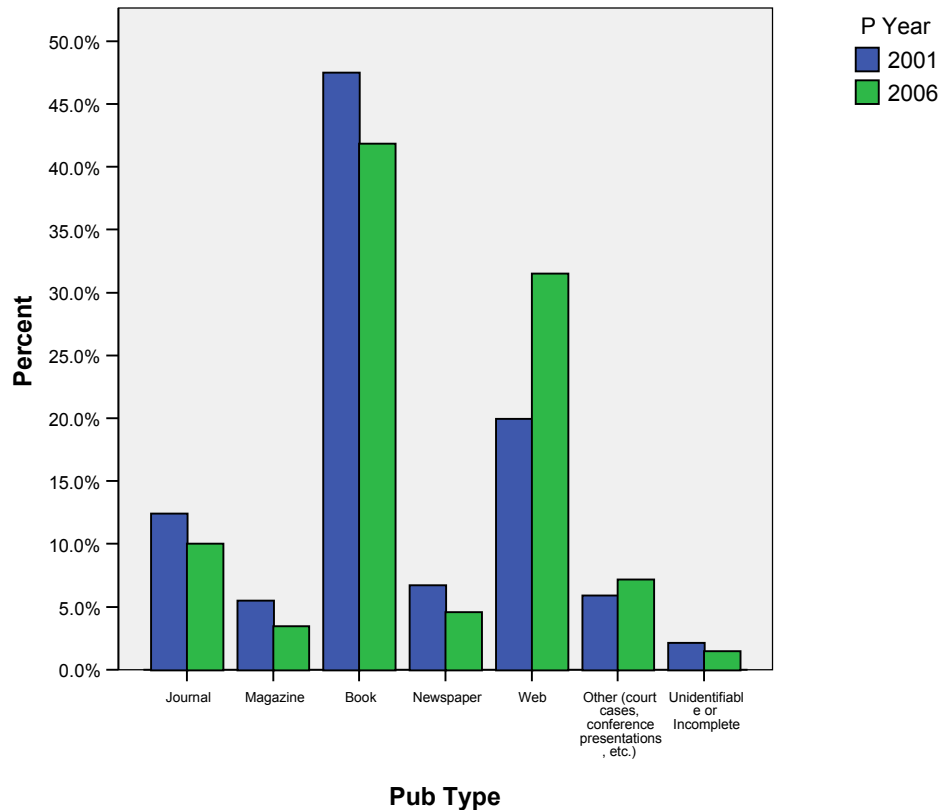


Figure 1. Percent change in publication type by student paper year. Note that Web site citations increased by 10.5% from 2001 to 2006.

Figure 2 details the types of Web sources (DNS) that student cited in their papers. The data in Figure 2 show that there is a decrease in Dot-coms use from 44.2% (n=42) in 2001 to 39.1% (n=43) in 2006 and an increase in Dot-orgs use from 34.7% (n=33) in 2001 to 40% (n=44) in 2006.

This finding is a surprising contrast from earlier studies such as Hoved's that reported that "Dot-coms are the overwhelming choice, over half, in both years" (Hovde, 2007, p. 318). Similar findings (i.e. Dot-coms as "the mostly heavily cited category") by Davis were also reported in the Cornell study (Davis, 2003, p. 47). One possible

explanation for Rutgers political science majors' increased use of Dot-org sources is that these were upper class students. Although the seminar instructor did not provide specific library research training, Rutgers libraries in general offer very active instructional programs in lower class courses. There is a high chance that many students enrolled in the junior seminar attended one or more library instruction sessions where they were taught to evaluate the sources of Web sites.

Figure 2

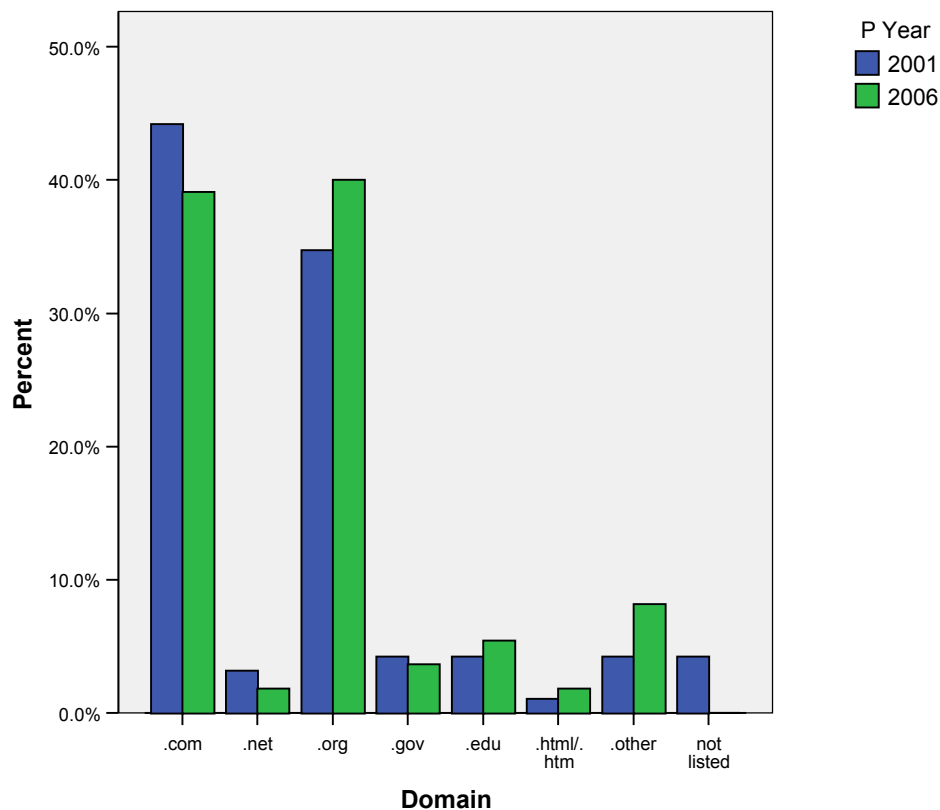


Figure 2. Percent change in Web sources (DNS) by student paper year. Note that .com citations decreased while .org citations increased from 2001 to 2006.

The analysis of Web site persistence over time (i.e., link decay) showed that there was an increase from 2001 to 2006 in the number of links that still worked. Overall

64.2% (n=61) of Web site links cited in 2001 were still working when checked in 2007 while 72% (n=80) of the links that students cited in 2006 were still working when checked in 2007. This latter percentage may decrease should more time elapse. The most frequent reason for citation failure appears to be the common error code 404 where, among other things, the cited Web sites were either moved (without redirections), renamed or completely removed (See Figure 3).

Figure 3

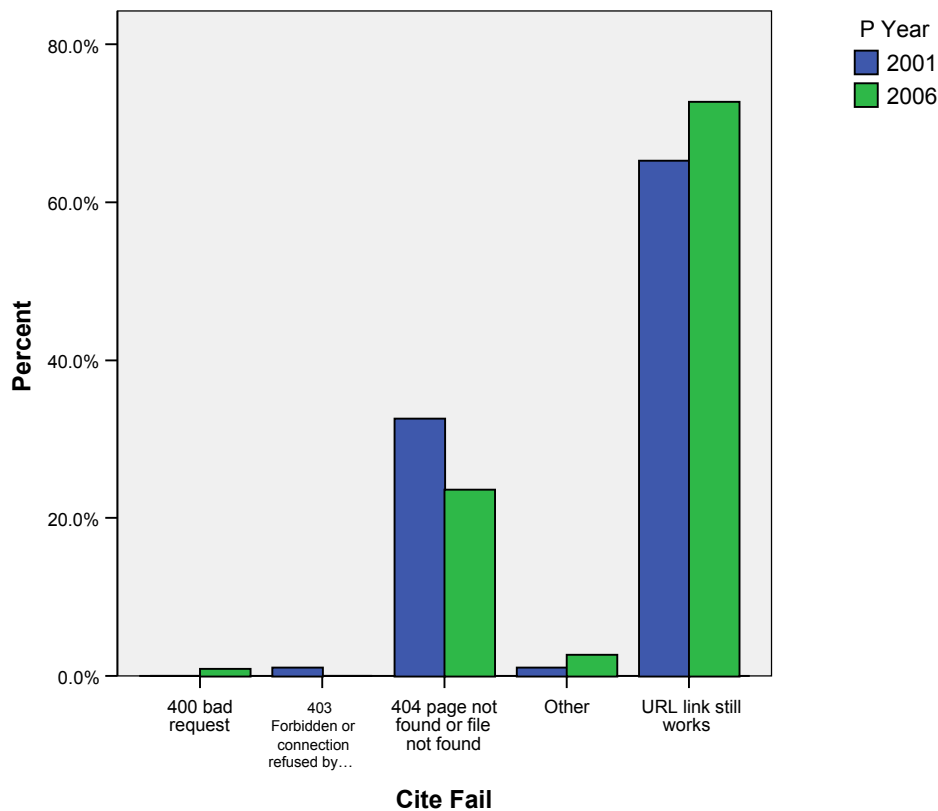


Figure 3. Percent change in Web site persistence over time by student paper year. Note that “404 page/file not found” is the most common reasons for link failure.

6.0. Conclusion

Our study confirms the general trends that have been asserted in earlier undergraduate citation studies of student research. Clearly there has been a steady rise in the use of Web sources. However, our findings also suggest that upper class undergraduate use of research resources is varied (books still being the most frequently consulted source) and the type of Web sites that students use has begun to shift from Dot-coms to Dot.org sources, at least for political science majors.

The significance of this study is two fold—first, it provides a unique window onto student citation habits at the upper class level in a social science discipline, thus providing future researchers with an additional demographic profile. Second, this study also adds value to undergraduate student citation studies by creating a snapshot of bibliographic citation patterns that occurred over a five year period (2001 and 2006). One interesting area that future studies can address is to establish whether there is any correlation between the use of online citations and student grades or whether there is general research effectiveness. Continuing dialogues between teaching faculty and academic librarians will be essential to monitor students' research activities so that students are guided through the modern research landscape without barriers.

References

- Carlson, J. (2006). An examination of undergraduate student citation behavior. *Journal of Academic Librarianship*, 32(1), 14-22.
- Carlson, S. (2005, March 18). Scholars note 'Decay' of citations to online references. [Electronic version]. *The Chronicle*. Retrieved February 15, 2007 from <http://chronicle.com/weekly/v51/i28/28a03002.htm>
- Davis, P. M. (2003). Effect of the web on undergraduate citation behavior: Guiding student scholarship in a networked age. *Portal: Libraries and the Academy*, 3(1). 41-51, 2003. Retrieved February 9, 2007, from Project Muse database.
- Davis, P. M., & Cohen, S. (2001). Effect of the Web on undergraduate citation behavior 1996-1999. *Journal of the American Society for Information Science and Technology*. 52(4), 309–314.
- Dimitrova, D., & Bugeja, M. (2006). Consider the source: Predictors of online citation permanence in Communication journals. *Portal: Libraries and the Academy*, 6(3) 269–283. Retrieved April 15, 2008, from Project Muse database.
- Grimes, D. J., & Boening, C. H. (2001). Worries with the Web: A look at student use of Web resources. *College and Research Libraries*, 62(1), 11-22.
- Hovde, K. (2007). You can't get there from here: Student citations in an ephemeral electronic environment. *College and Research Libraries*, 68(4), 312-321.
- Katz, I. B. (2006). ETS research finds college students fall short in demonstrating ICT literacy. *College & Research Libraries News*. 68(1), 35-37.

Magrill, R.M, & St. Claire, G (1990). Undergraduate term paper citation patterns by disciplines and level of course, *Collection Management*, 12, 22-55.

Thomas, J. (2004). Web site demise and graduate research: Persistence of Web pages cited in Social Work theses," *Behavioral and Social Sciences Librarian*, 22(2), 67-77.