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Course instructor perceptions of computer-generated bibliographic citations

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Abstract

Purpose – The purpose of this paper is to investigate course instructor perceptions into personal and classroom use of computer-generated bibliographic citations. The paper aims to provide guidance as librarians promote and teach automated citation services to the academic communities.

Design/methodology/approach – Course instructors at one university completed a quantitative survey about computer-generated bibliographic citations. Questions focused on instructor use of automated citation services, if they generally reduce grades for bibliographic errors, if they would reduce grades for specific computer-generated citation (CGC) errors, and would they advise students to use automated citation services at various course levels.

Findings – The results show a majority of course instructors do not use CGCs for their own research or promote the citation services in the classroom. A majority of respondents generally reduce student grades for bibliographic errors and would continue to do so for CGC errors. The data show specific types of automatically generated citation errors are more detrimental to student grades than others. Furthermore, results indicate course level impacts instructor promotion of CGCs.

Practical implications – The results provide librarians with helpful data, from the course instructor perspective, as they promote and teach computer-generated bibliographic citations.

Originality/value – Literature on computer-generated bibliographic citations tends to focus on technical and comparative aspects of citation services, or users' product opinions. This paper explores course instructor use, course promotion, and bibliographic grading of automatically generated citations to enhance advocacy and instruction of these services.

Keywords Bibliographies, Bibliographic systems, Information media

Paper type Research paper

Introduction

Students have greater access to services that automatically create bibliographic citations in writing styles such as American Psychological Association (APA) and Modern Language Association (MLA). These services range from software programs like Endnote to web sites such as RefWorks and Son of Citation Machine. While these services may save students, time and frustration associated with manually creating bibliographic citations, these automated services often generate inaccuracies within entries. Librarians often face the dilemma of teaching and promoting citing tools that assist students with their bibliographic writing, but may be detrimental to citation accuracy. As a result, uncertainty about informing students of computer-generated citation (CGC) services often arises at the reference desk and in library instruction sessions.

Understanding course instructor perceptions into the classroom use of automatic citation services may alleviate the uncertainty towards promoting and teaching CGC services. Since students create bibliographic citations for class assignments, course instructor feedback would provide constructive insights for librarians. For instance, do



course instructors know about and use CGCs? Would course instructors advise students to use these services at different course levels? There are also questions about the impact of CGCs on bibliographic assignments. Since course instructors ultimately assess the quality of student bibliographies, do instructors reduce grades for citation errors? More specifically, would instructors reduce grades if specific CGC errors were present in student bibliographies? Unfortunately, little research is available investigating course instructor perceptions toward CGC promotion to students and grading CGC inaccuracies within student bibliographies.

The author designed and implemented a survey to explore unanswered questions related to course instructor use, promotion, and grading of CGCs. This research offers librarians data to support and enhance the promotion and teaching of automated citation services to their academic communities. The responses gathered from teaching faculty at one university provide information on and insight into, instructor use of CGCs, their current CGC promotion to students, the likelihood of promoting CGCs at various course levels, and the potential grading implications for student bibliographies with CGC errors.

Dilemmas associated with CGCs are connected to the dramatic increase in the availability and variety of CGC services in the past two decades. Once limited to bibliographic management software such as Endnote and ProCite, citations can now be produced via the internet, or within database interfaces and word processing programs. Owing to the variety of ways to automatically generate bibliographic citations, the phrase CGCs is here used as an umbrella term encompassing software, online services, internet plug-ins, or embedded programs that dynamically generate bibliographic citations. CGCs include bibliographic citation managers that import, store, organize, and generate citations. These managers include software packages such as EndNote, subscription web sites like RefWorks and NoodleBib, and internet browser plug-ins like Zotero. Another type of CGC involves database or wiki features that dynamically create citations for individual records or entries, but do not organize or store citations for later use. For example, library database interfaces such as EBSCOHost, ProQuest, and CSA generate citations for records, while wikis such as Wikipedia have page-citing features to automatically generate citations in specific styles. All the CGC services above allow users to dynamically generate citations from a database record or webpage information, thus, reducing the need to manually enter required citation elements (e.g. author, title, and date). On the other hand, the final type of CGC requires users to manually add author, title, date, and other components into fields to generate citations. This type of CGC, where users enter information into specific fields, can be found in word-processing programs like Microsoft Word 2007, and web sites like Son of Citation Machine or KnightCite.

The variety of CGC services provides students with greater access to automatically generate citations, yet at the same time, requires librarians and teaching faculty to evaluate the appropriateness of promoting these services to students. Reviewing the available literature is a starting point to understand librarian, student, and faculty perspectives on CGC use as well as the classroom impact of these automated citing services.

Literature review

As information began to appear on bibliographic citation managers in the late 1980s, the literature focused on evaluation and selection of software programs. Since

bibliographic citation managers were new to many universities, authors provided criteria for choosing services based on product ranking and user needs (Stigleman, 1988, 1992, 1993; Cibbarelli, 1995; Hanson, 1995; Shapland, 2000; Simboli and Zhang, 2002). Authors compared technical requirements and software features by assessing the ease of implementation, special features, and integration with word processing programs. The information specifically focused on the details of purchasing, implementing, and using the citation services. This literature did not address pedagogical issues of educating students to use the various CGC products, or how the services may affect course assignments.

Looking beyond technical features of CGC products, authors assessed the accuracy of citations generated by different services. In their comparative study of EndNote and Reference Manager, Brahmi and Gall (2006) investigated inaccurate bibliographic citations produced by the two software programs. They discovered the greatest number of errors occurred in the author, article title, and journal title sections of a citation. Evaluation of CGC accuracy continued with the advent of web-based services. For instance, Kessler and van Ullen (2005) found citations generated by the online service NoodleBib had overall fewer errors than those produced by EndNote, a software program, or EasyBib, an online service.

CGC-related literature also examined user perceptions of citation tools. Comments provided by users of online and software-based bibliographic citation managers highlighted their preferences and frustrations with the services. Pamela Cibbarelli's (1995) survey of librarians, researchers, and teaching faculty found users positively ranked the capabilities of bibliographic management software, while giving lower rankings to the reliability of these programs. In a small pilot study, McGrath (2006) found students liked RefWorks for the ease of use and time saving features. About 68 percent would recommend the web-based service to others. Both studies focused on individuals' perceptions and experiences for their own research. The information did not include comments on promoting CGCs or insights into how CGCs may impact student assignments.

While previous research did not explicitly investigate CGC promotion and subsequent consequences on class assignments, authors alluded to the potential impact of CGC errors by providing pedagogical recommendations. These authors emphasized the need for instructors, especially librarians, to inform users to edit CGCs (Brahmi and Gall, 2006; Kessler and van Ullen, 2005). As Kessler and van Ullen (2005) stated, "instruction on citation generators by librarians should include a sense of the limitations of these programs as well as the fact that the ultimate responsibility for accurate citations rests with the user." Gathering instructor feedback would provide helpful background information as librarians provide CGC education to courses and individuals. Unfortunately, the available literature does not provide course instructor perspectives into their personal and classroom use of CGCs.

Methodology

A survey instrument was created to gather CGC responses from course instructors at Minnesota State University, Mankato. Minnesota State Mankato is a mid-size university with more than 14,500 students. The university offers associate, bachelor's, master's, specialist, and applied doctorate degrees. The survey sample attempted to reach a diverse pool of course instructors who teach at all levels of this university.

The sample population consisted of full time, fixed term, and adjunct instructors. Graduate assistants, also known as teaching assistants, were not included in the sample since some of these assistants do not hold teaching positions and could skew the survey results. Furthermore, librarians at Minnesota State Mankato were not included in the sample since they generally do not teach credit courses. In the end, the sample consisted of a non-randomized pool of 793 instructors from the six academic colleges at the university.

An online survey, using the subscription web site Zoomerang, was distributed to instructors via e-mail in April 2008. The survey consisted of background questions such as the instructor's college, faculty ranking, if they used CGCs for their own research, if they required assignments with bibliographies, and what instruction they provided to their students about creating bibliographic citations. All responses were anonymous. The survey also included a yes/no question asking respondents if they generally reduced grades for errors in student bibliographies. This question was crucial for later comparative analysis of general grading philosophies and CGC errors.

The remaining questions specifically focused on grading CGC errors and promoting CGC services. The instrument included Likert scale questions asking course instructors to rate the probability of grade reduction if various CGC errors were present in student bibliographies. In order to rate the CGC examples, instructors were asked what citation style was most familiar to them. Based on this selection, the Zoomerang survey branched to examples in the specific citation style. Instructors could choose from the following styles: APA, American Sociological Association, American Chemical Society, Counsel of Science Editors/Council of Biology Editors citation-sequence style, Chicago Manual of Style bibliography system, MLA, or Turabian. After the participants selected a writing style, they reviewed citation examples with common CGC inaccuracies such as author errors, missing journal titles, placement or formatting errors, and missing page numbers. The erroneous CGC article examples were copied from RefWorks after citation information was imported from EBSCOHost's Academic Search Premier, or Library and Information Science Abstracts via the CSA interface. Course instructors rated the probability of reducing a grade if specific CGC errors were found in student bibliographies. The survey then asked if course instructors would promote the CGC services to their students at various course levels. The participants provided responses to the likelihood of advising students to use CGC services at the 100/200, 300/400, and graduate course levels. The survey concluded with a comments box for additional instructor feedback.

Results

The survey participants represented a diverse pool of course instructors at Minnesota State Mankato. A total of 76 instructors completed the online survey, a 9.6 percent response rate. The majority of participants were from the College of Arts and Humanities, while the fewest responses were received from the College of Business (Table I). The survey participants included a relatively equal mix of teaching faculty ranging from adjunct to full professor (Table II).

The survey results provided information about course instructor use of CGC services. The majority of participants did not use CGCs. Of respondents, 75 percent ($n = 56$) created their citations manually. At the same time, the data reflect the variety of CGC services used by the remaining respondents for their own research.

Allowing for multiple selections, 9 percent ($n = 7$) used software products like EndNote, and 7 percent ($n = 5$) of respondents used RefWorks or citation creation features in library databases. Approximately 11 percent ($n = 8$) of instructors utilized other products and services such as NoodleTools, Bibtex, Son of Citation Machine, APA template, CiteSeer, Microsoft Word 2007, StyleEase, or Zotero.

To provide context for subsequent CGC-related questions, survey participants responded to pedagogical questions about bibliographic assignments. Course instructors were asked if they required assignments with cited sources. About 24 percent ($n = 18$) responded yes and allowed students to cite sources in a style of their own choosing. About 68 percent ($n = 52$) selected yes, but required students to cite in a specific style. The remaining 8 percent ($n = 6$) did not require students to cite sources for assignments, or responded with not applicable. Instructors also provided responses to what kinds of instructional support they gave students about documenting sources. Allowing for multiple selections, 74 percent ($n = 56$) of course instructors referred students to style manuals, 62 percent ($n = 47$) gave lectures or handouts, 58 percent ($n = 44$) referred students to web sites like OWL: Purdue University's Online Writing Lab, and 18 percent ($n = 14$) promoted CGC services to their students.

The next question investigated course instructor philosophies toward grading student bibliographies. The responses to this question provided crucial data to later analyze CGC-related questions. The yes/no question asked course instructors whether they would reduce a grade if citation errors were found in a student's bibliography. While 75 percent ($n = 57$) of participants responded that they would reduce a student's grade, there were also 39 open-ended responses to this question. The comments highlighted that this question could not be answered with a simple yes or no. Many instructors who wrote comments had an "it depends" philosophy. For instance, one instructor stated:

It would depend on the severity of the error. Generally, I would just correct the error for their future reference. If the citation is completely missing elements of the citation, though, or if it's difficult to understand what type of source they consulted due to poor style, and if more than one error [is] found I might lower their grade.

Table I.
Academic College of
instructor

Academic College	<i>N</i>	%
Allied Health and Nursing	15	20
Arts and Humanities	22	29
Business	2	3
Education	10	13
Science, Engineering, and Technology	9	12
Social and Behavioral Sciences	18	24

Table II.
Faculty rank

Rank	<i>N</i>	%
Professor	22	29
Assistant professor	17	23
Associate professor	17	23
Adjunct/fixed term instructor	17	23
Other	2	3

This comment emphasizes the combination of two contextual grading paradigms highlighted by other instructors. Some instructors graded on the overall consistency of citations within a bibliography, while others graded citations on the presence of essential locating information and not mechanical or formatting errors.

After selecting a familiar writing style, course instructors reviewed erroneous CGC examples and ranked the probability of reducing a student's grade due to those errors. Results showed course instructors found some CGC inaccuracies were more likely to lead to grade reduction. In general, CGCs with author errors or missing journal titles were more detrimental to a grade than formatting/placement or missing page number errors (Table III). For instance, 84.2 percent ($n = 64$) of course instructors "will reduce" or "probably will reduce" a student's grade if CGCs are missing journal titles. 77.6 percent ($n = 59$) of course instructors will or probably will reduce a student's grade if their bibliography contained CGC author errors. Furthermore, fewer instructors 56.6 percent ($n = 43$) will or probably will reduce a grade if page numbers are missing, while (44.7 percent, $n = 34$) will or probably will reduce a grade due to formatting or placement errors.

The probability of reducing a grade due to CGC errors is enhanced when taking into account course instructors' general grading philosophies toward bibliographies. Instructors who generally reduced a grade if a bibliography has errors (75 percent, $n = 57$) were also likely to reduce the grade due to CGC errors (Table IV). More specifically, 94.7 percent ($n = 54$) will or will probably reduce a grade for CGCs with missing journal titles, while 91.2 percent ($n = 52$) of these course instructors will or probably will reduce a grade if a bibliography contains CGC author errors. Course instructors who generally reduce grades for bibliographic errors also were likely to reduce the grade for CGC formatting/placement errors and CGC missing page numbers. On the other hand, instructors who generally would not reduce a student's grade because of citation errors (25 percent, $n = 19$) were consistently less likely to reduce a grade for bibliographies with CGC errors (Table V).

Finally, survey results supported the assertion that CGC promotion varies at different course levels. The survey asked instructors how likely they were to advise students to use CGCs in lower undergraduate, upper undergraduate, and graduate level courses. Respondents were less likely to advise students to use these citation services in 100/200 level courses than at the 300/400 or graduate levels. 31.6 percent ($n = 24$) of

	Author errors	Missing journal title	Formatting or placement errors	Missing page numbers
Percent	76.6	84.2	44.7	56.6
N	59	64	34	43

Table III.
Instructors who will or probably will reduce grades for specific CGC errors

	Author errors	Missing journal title	Formatting or placement errors	Missing page numbers
Percent who will or probably will reduce grade	91.2	94.7	56.1	68.4
N	52	54	32	39

Table IV.
Course instructors who generally reduce grades for bibliographic errors and probability of reducing grades for CGC errors

total survey respondents were highly likely or likely to advise the use of CGCs in 100/200 level courses, while 39.5 percent ($n = 30$) were highly likely or likely to advise students to use CGCs at the 300/400 level and 43.4 percent ($n = 33$) at the graduate level.

Discussion

Course instructor responses from the survey offer valuable insights for librarians who teach and promote CGC services. For instance, the majority of responding instructors at Minnesota State Mankato do not use CGCs. While the literature provides positive examples of faculty and student use of CGC products (Cibbarelli, 1995; McGrath, 2006), 75 percent of the instructors in this study do not use, or do not know about, CGCs. The open-ended responses in the survey suggest instructors are unfamiliar with these services or do not have time to learn about them. For instance one instructor stated, “Frankly, I need to know much more about the CGC services,” while another stated they would look into the services for their students in the following academic year. Furthermore, only 18 percent of respondents include CGC services in their course instruction on documenting sources. These comments and data suggest there are still workshop and library liaison opportunities for, and interest in, faculty education on CGC services.

When promoting CGC services, the survey results indicate benefits of understanding how individual instructors assess student bibliographies. The survey data show course instructors’ grading philosophies parallel their tolerance for CGC errors in student bibliographies. Course instructors who generally reduce a student’s grade for bibliographic errors would also reduce student grades if CGC errors are present in a bibliography. Librarians should keep in mind that course instructors in the survey emphasize grade reduction is contextual and based on multiple factors. Comments suggest instructors look for citation accuracy in the bibliography as a whole, and/or the inclusion of essential locating information. As a result, a few random or minor formatting errors may be tolerated, but systematic CGC errors throughout a bibliography, or the absence of information needed to locate sources, increases the likelihood of grade reduction.

Survey responses highlight possibilities for librarians and course instructors to educate students to identify and edit specific types of CGC errors. Since specific kinds of CGC errors have a greater impact on grade reduction, students can learn to identify inaccuracies in various sections of a citation. For instance, CGC instruction can focus on correcting missing journal titles since that inaccuracy led to the highest percent of course instructors who would reduce a student’s grade. CGC author name errors are another prevalent inaccuracy that should be addressed to reduce the likelihood of grade reduction. While missing page numbers and formatting/placement errors are less likely to lead to grade reduction, these errors can still lead to lower grading. As a result, students can be instructed to look for these types of errors as well.

Table V.
Course instructors who generally do not reduce grades for bibliographic errors and probability of reducing grades for CGC errors

	Author errors	Missing journal title	Formatting or placement errors	Missing page numbers
Percent who will or probably will reduce grade	36.8	52.6	10.5	21.2
<i>N</i>	7	10	2	4

The survey results support the preposition that CGC promotion is linked to course level. Course instructors are less likely to advise students to use CGCs in lower level 100/200 courses than 300/400 and graduate courses. With this information, librarians can investigate the level of courses taught by the instructor and customize their CGC promotion efforts. In conversations with course instructors, librarians can gather feedback about the appropriateness of promoting and teaching CGCs to undergraduate and graduate courses. Furthermore, discussions can lead to greater knowledge of course instructor concerns and preferences about CGC services offered by libraries and promoted to our students.

Finally, the survey responses provide librarians with data to advocate product improvements to vendors. Results indicate course instructors consider author and journal title errors to be more egregious than placement/formatting and page number inaccuracies. Librarians can call on vendors to improve their products to reduce these errors. In doing so, librarians need to work with both CGC and library database vendors. Since many CGC errors stem from database indexing rather than from the citation products, alleviating inaccurate information in database record fields would improve reliability (Simboli and Zhang, 2002). As one course instructor responded in the survey, "Computer generated citations are simply an application of another computer text and data field processing software. Very little software is customized sufficiently to function without errors." Therefore, librarians should continually collaborate with CGC vendors to improve computer programming that generates the citations, while simultaneously work with library database vendors to improve indexing within specific data fields.

Conclusion

Course instructors, like librarians, face the dilemma of teaching and promoting CGC services in the classroom. The findings from this study provide several avenues for librarians to work with course instructors to alleviate concerns related to these automated citation products. For instance, the results suggest many course instructors do not use, or are unfamiliar with CGCs. Librarians can investigate why their instructors do not use CGCs, while simultaneously connecting unfamiliar instructors with CGC services available at their university. The survey also reveals instructor grading philosophies play a role in their tolerance for CGC errors. The findings indicate specific types of CGC errors in student bibliographies are more likely to lead to grade reduction. Librarians and course instructors can address these errors by teaching students to identify and edit CGC inaccuracies. Finally, librarians should consider course level of students as they promote CGC services to both course instructors and students.

Further research into other CGC-related issues is needed. While this survey addresses overall course instructor perceptions of CGCs, micro-level research would be helpful to explore individual course instructor perceptions when grading student bibliographies containing CGCs. This detailed, qualitative information would provide data to discover the difficulties and advantages course instructors uncover as they grade CGC entries. Qualitative research with course instructors may also lead to information about why instructors do or do not advise students to use CGCs, especially at various course levels.

How students use CGC services is another research area that needs investigation. Understanding student use of these products and services will improve librarians' promotion of CGC services and enhance discussions with course instructors. Questions remain about students' effective editing of these less-than-accurate citations. For instance, do students edit CGCs? Do they recognize errors in their CGC-produced bibliographies? Studies analyzing CGC-produced student bibliographies compared to manually created bibliographies would be beneficial.

The debate over student use of computer-generated bibliographic citations will continue into the foreseeable future. It is a debate, however, librarians do not have to face alone. This study reveals course instructors have similar issues concerning CGC products and services. Librarians and course instructors have an opportunity to address these common concerns by participating in an active dialog to effectively teach and promote CGCs to our students.

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