A Microscope or a Mirror?: A Question of Study Validity Regarding the Use of Dissertation Citation Analysis for Evaluating Research Collections

by Penny M. Beile, David N. Boote, and Elizabeth K. Killingsworth

Available online 8 August 2004

Use of dissertation citation analysis for collection evaluation was investigated. Analysis of 1842 education dissertation citations from three institutions suggests the assumption of doctoral student expertise in their use of the scholarly literature may be overstated. For purposes of developing research collections, dependence on dissertation citation analyses should proceed cautiously.

Penny M. Beile is Associate Librarian, University of Central Florida, Orlando, FL 32816, United States <pbeile@mail.ucf.edu>; David N. Boote is Assistant Professor, University of Central Florida, Orlando, FL 32816, United States <dboote@mail.ucf.edu>; Elizabeth K. Killingsworth is Associate Librarian, University of Central Florida, Orlando, FL 32816, United States <ekilling@mail.ucf.edu>.

Dissertation citation analysis is an in-house means heavily relied upon to identify journals most important for the research collection.[1] Investigators have suggested that the doctoral dissertation provides evidence of the author's ability to engage in an extensive scholarly endeavor,[2] and that successful doctoral students should be "comprehensive and up to date in reviewing the literature."[3] Accordingly, as doctoral dissertations offer an abundance of significant bibliographic information, analysis of bibliographies serves as an expedient approach to effective collection development.[4] This argument articulates a fundamental assumption that as the doctoral dissertation is the capstone to the formal academic training process, associated bibliographies are high quality, comprehensive in scope, and reflect emerging research areas.

Likewise commenting upon citations as sources for analysis, other researchers have presented rather exacting conditions for their use.[5] According to Wallace and Van Fleet,[6] choosing appropriate sources is an important criterion to ensure study validity. More specifically, citation studies presume the citation of an information source is an indicator of its quality, that the citing author has provided references to the best possible works, and that all citations are of equal value.[7] However, this assumption has never been systematically examined within the context of analyzing dissertation citations to inform collection decisions. Few studies have been conducted exploring the quality of references, and none of these studies were undertaken in the field of education. Researchers who have investigated the quality of citations generally report on such topics as completeness of cited references[8] or the increasing use of electronic resources;[9] no information was uncovered that examined the appropriateness or quality of dissertation references for citation analysis.

Further, the majority of studies that used citation analysis to evaluate collections only considered dissertations awarded by a single institution, with subsequent comparison of the derived journal title list to institutional holdings often leading researchers to deem their collections of adequate research caliber.[10] However, the failure to verify the quality of doctoral student citations constitutes a methodological violation and raises concerns regarding the validity of dissertation citation analysis studies for some collection evaluation purposes.

Literature Review

Defined as a wide-ranging area of bibliometrics, citation analysis considers the citations to and from documents[11] and is one method often used to generate core lists of journals deemed critical to the research needs of an institution.[12] Citation analysis is a procedure of tabulating, counting, and ranking the number of times sources are cited in a document.[13] The relative importance of an item is determined by the number of times it is cited.

Research studies employing citation analysis methodology are often conducted by evaluating a sample of citations from student dissertations to develop a core list of journals and

Table 1
Dissertation Characteristics, by Institution

Institution	Average number of total citations	Average number of citations coded	Average number of pages
1	83.60 (SD = 31.40)	42.90 (SD = 16.55)	199.40 (SD = 74.32)
2	90.40 (SD = 30.63)	71.80 (SD = 34.89)	119.60 (SD = 24.38)
3	89.10 (SD = 38.21)	69.50 (SD = 35.25)	119.30 (SD = 44.30)
Total	87.70 (SD = 32.54)	61.40 (SD = 32.01)	146.10 (SD = 63.06)

subsequently to determine the proportion locally held and the estimated strength of the collection.[14] In most of the reported studies, references of dissertations awarded from a single institution have been analyzed to determine a list of core journals specific to that institution. Recently, a number of studies have suggested citation analysis not only as a means for eliminating low-use journals but also for purchasing needed ones.[15]

Using data from single institution dissertation citation analysis to identify low use or core journals specific to the institution constitutes a completely different application as compared to building collections and procuring needed journals. While it is logical to conclude that once the condition of appropriateness of sources is satisfied, dissertation citation analysis studies can be used to provide local use data, applying citation analysis to identify needed sources constitutes a leap of faith. Paisley cautions that bibliometric methods may be misapplied when measurement limitations are ignored.[16] Without confirmation of doctoral candidate's expertise, is it reasonable to conclude, as other researchers have, that research collections that contain the majority of cited items are sufficient for doctoral level research? Or is it equally plausible to consider that doctoral candidates may lack the skills necessary to perform an exhaustive review of the literature and procure information available external to the institution?

Further investigation by Kuyper-Rushing,[17] who examined dissertation citations across institutions, has proven enlightening. Kuyper-Rushing developed a core journal title list gleaned from music dissertation bibliographies from across the United States and compared the composite list to a single institution's list. From that, she concluded that analysis of a single institution could result in a skewed list of journals and suggested a broader institutional base to arrive at a more objective list of core journals.[18] Kuyper-Rushing's results indicate that analyses that only consider dissertations awarded by a single institution may be inadequate for building collections, and leads to the question of whether such reliance on analysis of doctoral dissertation citations as a basis for collection decisions is justified.

Similar to earlier research, this study presumes dissertation citations are indicative of doctoral students' demonstrated ability to locate and evaluate scholarly information. However, the earlier assumptions of the high *quality* of doctoral student review of the literature performance are examined

"...the earlier assumptions of the high quality of doctoral student review of the literature performance are examined..."

by assessing various characteristics of dissertation citations across three institutions. Specifically, this study is guided by the following questions:

1) What are the characteristics of citations in recently awarded doctoral dissertations in the field of education?
2) How does a core journal list from a single institution compare to a list resulting from analysis of multiple institutions?
3) What is the relative quality of doctoral dissertation citations as determined by their scholarliness, currency, and appropriateness of fit to the development of the topic?

Method and Data Sources

Thirty education dissertations awarded in the year 2000 from three institutions in the United States were examined. Each of the institutions offered doctoral degrees in education, possessed similar acceptance rates to the graduate education program, and reported a comparable number of education faculty. Two institutions were purposely chosen for their similarities in total enrollment (43,000 students in 2000), date of institutional establishment (mid-1850s), and presence among the top ranked schools of education.[19] The third institution was selected for purposes of contrast as it was not included in the list of top ranked schools, and enrollment (31,500 in

Table 2
Material Type, by Institution

Institution		Journal articles	Monographs	"Other"	Magazines	Web sites	Total
1	Count	188	188	44	8	1	429
	Percentage within institution	43.8	43.8	10.3	1.9	0.2	100.0
2	Count	284	187	225	14	8	718
	Percentage within institution	39.6	26.0	31.3	1.9	1.1	100.0
3	Count	357	248	68	7	15	695
	Percentage within institution	51.4	35.8	9.8	0.9	2.2	100.0
Total	Count	829	623	337	29	24	1842
	Percentage of total	45.0	33.9	18.3	1.5	1.3	100.0

2000) and date of establishment (mid-1960s) differed.

Dissertation Abstracts database and institutional library catalogs were searched to identify all education dissertations awarded by these institutions in 2000. Results were grouped into the general topic areas of educational leadership, educational psychology, instructional or learning theory, and teacher education. A stratified sample of ten dissertations from each of the three schools was selected, and each of the groups of ten included representatives from each of the four topic areas. Full text of the thirty dissertations selected for the study was then obtained.

Information extracted from each dissertation included the name of the granting institution, the total number of citations in the bibliography, the number of citations coded, and the number of pages of the dissertation. Citations were coded by date of publication, type of material cited, journal or magazine title (if relevant), and material format (print or electronic). Types of material consisted of journal, magazine, Web site/not electronic journal, monograph, or "other." Examples of items included in the category of "other" were ERIC documents, dissertations and theses, conference proceedings and presentations, and personal communications.

To address the question of doctoral students' assumed ability to thoroughly mine the scholarly information, citations were evaluated on the criteria of scholarliness, currency, and appropriateness of the source to the subject being developed, and then averaged to arrive at an overall quality score. Based on earlier work by Kohl and Wilson,[20] these criteria were defined as follows:

- Scholarliness: How good was the fit of the source for the topic? (Did the student use empirical, peer-reviewed journal articles rather than accounts in general magazines? Or did the student use sources from scholarly presses rather than popular publishers?)
- Currency: Was an appropriate decision made regarding retrospective versus contemporary sources for the topic? (If the student required recent research on a particular topic were journal articles rather than books consulted?)

Table 3
Core Journal Title List with Citation Count

Core journal titles	Citation count
Journal of Learning Disabilities	36
Exceptional Children	32
Journal of Educational Psychology	25
Phi Delta Kappan	20
Remedial and Special Education	20
Psychology in the Schools	19
American Educational Research Journal	17
Child Development	13
Learning Disabilities Research and Practice	13
Learning Disability Quarterly	13
Review of Educational Research	13
Evaluation and Program Planning	12
Journal of Special Education	12
Reading Research Quarterly	12
Educational Leadership	11
Journal of Educational Research	11
Teaching Exceptional Children	11

Table 4
Journal Title List with Five or More Citations, Institution 1

Journal titles	Citation count
Journal of Learning Disabilities	13
Exceptional Children	8
Psychology in the Schools	7
School Counselor	7
School Psychology Review	7
NASSP Bulletin	6
Phi Delta Kappan	6
Journal of Moral Education	5

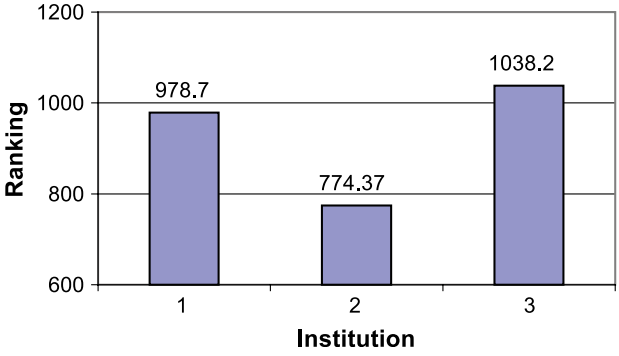
Table 5
Journal Title List with Five or More Citations, Institution 2

Journal titles	Citation count
Exceptional Children	19
Evaluation and Program Planning	12
Journal of Educational Psychology	12
Remedial and Special Education	11
Journal of Learning Disabilities	10
Chronicle of Higher Education	7
Journal of Research on Computing in Education	7
Journal of Special Education	7
Phi Delta Kappan	7
Journal for Research in Mathematics Education	6
Journal of Educational Research	6
Review of Educational Research	6
Teaching Exceptional Children	6
Educational Technology	5
Journal of Counseling Psychology	5
Journal of Reading	5
Learning Disability Quarterly	5

Table 6
Journal Title List with Five or More Citations, Institution 3

Journal titles	Citation count
American Educational Research Journal	14
Journal of Learning Disabilities	13
Child Development	12
Journal of Educational Psychology	12
Learning Disabilities Research and Practice	11
Early Childhood Research Quarterly	10
Psychology in the Schools	10
Reading Research Quarterly	10
Phi Delta Kappan	7
Topics in Early Childhood Special Education	7
Childhood Education	6
Journal of Early Intervention	6
Learning Disability Quarterly	6
Psychological Bulletin	6
Remedial and Special Education	6
Review of Educational Research	6
Young Children	6
Educational Leadership	5
Elementary School Journal	5
Exceptional Children	5
Journal of Educational Research	5
Journal of Teacher Education	5

Figure 1
Scholarliness Rankings, by Institution



- Appropriateness: Was the material type appropriate for treatment of the topic? (If the student needed to develop their rationale for use of a learning theory, was a book more appropriate than an encyclopedic entry?)

Dissertations were distributed among three evaluators (one education and two library faculty), with each evaluator assigned three dissertations from each institution, plus one additional. As multiple evaluators were scoring citations independently, it was necessary to determine how consistent evaluators were in their scoring. References from one dissertation were independently rated and then examined using a two-way mixed effects model of the intraclass correlation coefficient in SPSS version 10.0. The test revealed the average scores of the three evaluators to be sufficiently reliable (interval of 0.6766–0.9345 with 95 percent confidence), suggesting that the evaluators were able to successfully and consistently differentiate among different levels of performance.

Although Kohl and Wilson[21] scored each of the criteria in their model on a four-point scale, evaluators in the current study slightly modified their method by using a four-point scale for scholarliness and a three-point scale for currency and appropriateness. The same criteria were applied to both print and electronic formats. Data were analyzed at the institutional level and overall, and descriptive statistics were generated for dissertation and citation characteristics. Core lists of journals from each institution were evaluated for duplicate and unique titles and then compared to institutional holdings to determine the percentage of items locally available. A Kruskal–Wallis test was conducted to examine citation differences among institutions.

Results and Conclusions

Overall, the number of citations coded for this study was 1842. The total number of citations per dissertation ranged from a low of 25 to a high of 159 (M = 87.70, SD = 32.54). As the study was limited to analysis of the review of literature, only references from this chapter were coded. The number of citations coded ranged from 18 to 137 (M = 61.40, SD = 32.01). The length of dissertations, without appendices, ranged from 76 pages to 329 pages, with an average of 146 pages. For purposes of reporting, institutions are referred to as 1, 2, and 3, with 2 being the institution of contrast as noted in the previous section. See Table 1 for dissertation characteristics by institution.

Analysis of all thirty dissertations revealed journal articles were cited most frequently, accounting for 45 percent or 858 of the 1842 citations coded. Journal articles were followed by monographs (33.9 percent) and "other" (18.3 percent), with magazines and Web sites totaling less than 2 percent each of the total material types cited. Disciplines vary in their modes of scholarly communication, and these results suggest that while professional journals remain the predominant medium for disseminating scholarly information in the field books and book chapters continue in their importance.

"...journal articles were cited most frequently, accounting for 45%...of the...citations..."

The "other" material type category contained 337 items, or 18.3 percent of coded citations. ERIC documents accounted for 35.6 percent of these materials, followed by abstracts of dissertations (15.1 percent), conference papers and presentations (14 percent), doctoral dissertations (9.5 percent), research reports (9 percent), and law and legislation (6.5 percent). The remaining 10.3 percent were comprised mainly of company reports, e-mail correspondence, unpublished or submitted manuscripts, policy papers, and master's theses. More than one in ten of all coded citations were

Figure 2
Currency Rankings, by Institution

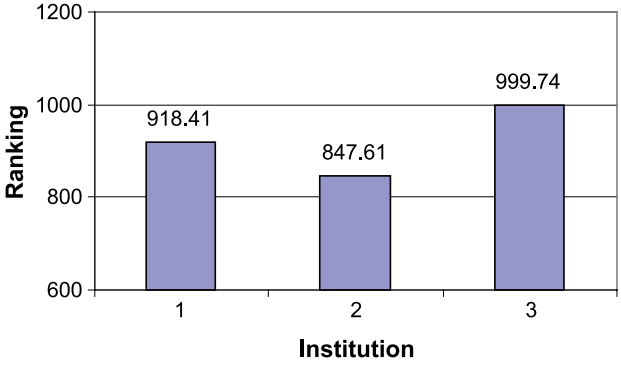
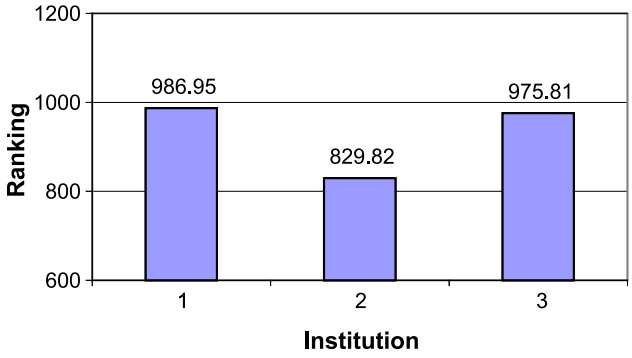


Figure 3
Appropriateness Rankings, by Institution



ERIC documents, doctoral dissertations, or abstracts of dissertations. Items such as these vary immensely in quality, and the authors found the heavy student reliance on and faculty acceptance of them quite surprising.

Considerable variation of material type cited was found among institutions. Notably, dissertations from Institution 1 cited an equal number of journal articles and monographs (both 43.8 percent), while the remaining institutions relied more heavily on journal articles. Also, Institution 2 cited "other" materials much more frequently, at 31.3 percent, than the other institutions, which were around 10 percent. See Table 2 for material type by institution.

Of the 1842 references analyzed, 858 (46.5 percent) were journal and magazine citations, which were found in 293 unique titles. Of these, 111 journal citations and twenty-eight magazine citations (139 total, or 16.2 percent) were not peer reviewed. The average date of publication for coded journal and magazine citations was 1990 (SD = 7.79). The top seventeen journals accounted for 290, or 33.8 percent, of the citations coded. The midtier, which contained sixty-five journal titles, returned 309, or 36 percent of the citations. The remaining 259 citations (30.2 percent) were retrieved from 211 titles.

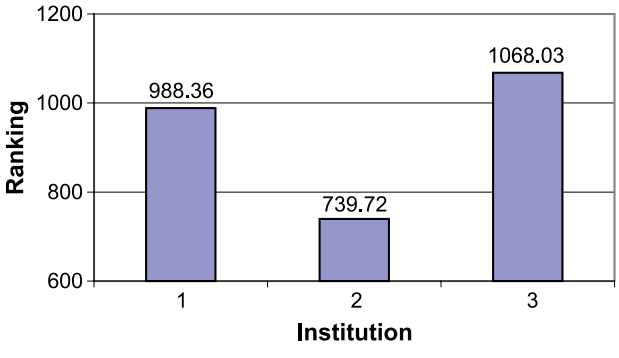
This pattern is consistent with Bradford's Law, which suggests that the published journal research in a field falls into three zones, each of which includes an approximately equal number of articles, while the number of journals required to produce those articles increases substantially from one zone to the next.[22] Essentially, Bradford and a number of researchers since have concluded that a core number of journals publish an inordinate amount of cited articles.[23] Table 3 lists the top seventeen journals that comprise the core journal title list.

Lists distinct to each institution were also derived. Significant overlap of titles was found among institutions, but a surprising number of titles unique to individual institutions were also discovered. Of the ninety-five journal and magazine titles cited in Institution 1 dissertations, fifty-six or 58.9 percent were unique to the institution. Similarly, of the 137 titles cited in Institution 2 dissertations, ninety-two or 67.2 percent were cited only by candidates from that institution. Finally, of the 142 titles cited in Institution 3 dissertations, ninety-two or 64.8 percent were unique. Similar to Kuyper-Rushing's findings, these results also found a multi-institutional core list very distinct from lists compiled from individual institutions. Tables 4–6 list the most frequently cited journal titles by each institution.

Similar to other researchers who have reported that their institution overwhelmingly contained the cited sources, this study also found, across all institutions, that research collections held the majority of sources cited by doctoral students. Journal and magazine titles were checked in the online library catalogs of the institutions. Of the 196 references cited by Institution 1 candidates, 90.7 percent were locally held, nineteen or 9.3 percent were not. Likewise, of the 298 references cited by Institution 2 students, 93 percent were owned by the institution, twenty-one or 7 percent were not. Of the 364 references cited by Institution 3 students, 97 percent were locally owned, only eleven or 3 percent were not.

To arrive at some explanation of student reliance on local collections, dissertation citations were scored for scholarliness, currency, and appropriateness of format. Scores on the three criteria were averaged to arrive at an overall quality rating for the citation. The criterion of scholarliness was scored based on journal prestige within the discipline and the field, presence or absence of peer review, and consideration of empirical, research-based studies rather than program descriptions. Citations were also rated on currency or their timeliness of publication. The date of publication was regarded in context of type of material and usage in the literature review, and the raters recognized when currency was not an issue. Appropriateness, or fit of the material type to the topic being developed, was evaluated in relation to maturity of the field.

Figure 4
Quality Score Rankings, by Institution



As data were not normally distributed, procedures generally used for parametric data could not be employed. Instead, Kruskal–Wallis statistics, which can accommodate nonparametric data, were conducted to compare the scores on coded citations across institutions. A statistically significant result was found for scholarliness [$H(2) = 107.11$, $P < 0.01$], indicating that the institutions differed from each other on the scholarly quality of dissertation citations. For the Kruskal–Wallis test, higher placement scores indicate higher performance on the variable being analyzed. As such, Institution 2 averaged a placement of 774.37, while Institution 1 averaged 978.70 and Institution 3 averaged 1038.20.

Currency also differed significantly [$H(2) = 43.11$, $P < 0.01$] across institutions. Institution 2 averaged a rank of 847.61 while Institution 1 averaged 918.41 and Institution 3 averaged 999.74. A statistically significant result was found for appropriateness scores [$H(2) = 57.70$, $P < 0.01$] when compared across institutions. Institution 2, with an average rank of 829.82, was lower than Institution 1 at 986.95, and Institution 3 at 975.81. Quality scores were also significantly different [$H(2) = 150.32$. $P < 0.01$] among institutions. Institution 2 averaged 739.72 while Institution 1 averaged 988.36 and Institution 3 averaged 1068.03. Figures 1–4 graphically represent rankings.

This study found that all citation quality indicators, including scholarliness, currency, and appropriateness, as well as the overall quality score, varied across institutions. Although the less well-established and nonranked school, Institution 2, systematically received lower scores across all criteria, students across all institutions cited a remarkable number of sources of questionable quality. Further, core journal lists distinct to each institution were significantly different from each other, and each varied dramatically from the overall core journal list. Finally, with a range of 90.7–97 percent of items cited, this study found each institution held a large percentage of journals cited by students.

Importance of the Study

Citation analysis studies are often used as a basis for collection management decisions, but there is an issue of validity as to what questions these studies can answer. One study condition often violated by investigators is the failure to verify appropriateness of the source. A second violation occurs when conclusions that collections are of sufficient scope to sustain doctoral level research are reached on the basis of single institution analysis.

For dissertation citation analysis, source appropriateness hinges on quality. As indicators of quality, references must cite the best possible works and all citations must be of equal value.[24] While several researchers have assumed dissertations are sufficiently "appropriate" to base analyses and subsequent collection decisions upon, the quality of citations, and consequently bibliographies, varied considerably among institutions examined for this study. As evidenced by student reliance on items of questionable value, the presumed quality of dissertation citations was not substantiated by this study.

"...the presumed quality of dissertation citations was not substantiated by this study."

Thus, collection managers would do well to assess the quality of dissertation bibliographies prior to using them as a basis for collection decisions.

Additionally, Paisley states that methodological restrictions exist, and there are limits as to what questions citation analysis can answer.[25] Some investigators have used this in-house method to identify low-use serials for possible subscription cancellation, while others endorse citation analysis as a valid approach for determining needed serials. Many of the studies reported in the literature often make no mention of dissertation citation analysis being used in tandem with other collection assessment methods,[26] thus allowing the reader to surmise dissertation citation analysis alone was sufficient to base collection decisions upon.

This study confirms Kuyper-Rushing's findings that analysis from a single institution can result in a skewed list of core journals.[27] Journal lists derived from analysis of a single institution varied significantly from a list generated through analysis of a larger institutional base. Also, library collections at each of the institutions examined held the vast majority of the materials cited by the doctoral students. Students do not appear to seek sources not locally owned; and so it may be inferred that single institution journal lists can be used to reflect local use and identify journal titles core to a collection but do not necessarily provide information on which journals should be added to the collection. Citation analysis may be valuable for serials cancellation projects, but using single institution analysis to indicate collection adequacy should proceed cautiously.

Ultimately, whether due to graduation or attrition, the doctoral student population is by nature transient, and basing collection decisions on their research interests and information searching prowess should not be the sole means of determining a core journal collection. Only after the quality of dissertation references is established and core lists are created by comparison to external institutions can a journal list be considered as one tool for building the research collection. To arrive at a more robust indication of collection use and needs, citation analysis should be used in conjunction with other methods, such as journal impact ratings, user studies, circulation and interlibrary loan reports, and faculty publication citation analysis.

Notes and References

1. See Lois Buttlar, "Information Sources in Library and Information Science Doctoral Research," *Library & Information Science Research* 21 (1999): 227–245;
Sherri Edwards, "Citation Analysis as a Collection Development Tool: A Bibliometric Study of Polymer Science Theses and Dissertations," *Serials Review* 25 (1999): 11–20;
Angela M. Gooden, "Citation Analysis of Chemistry Doctoral Dissertations: An Ohio State University Case Study," *Issues in Science and Technology Librarianship* (Fall 2001), http://www.library.ucsb.edu/istl/01-fall/refereed.html (accessed March 20, 2003);
Laurel A. Haycock, "Citation Analysis of Education Dissertations for Collection Development," unpublished manuscript, (2003);
Jean-Pierre V. M. Herubel, "Philosophy Dissertation Bibliographies and Citations in Serials Evaluation," *Serials Librarian* 20 (1991): 65–73;
Bluma C. Peritz and D. Sor, "The Use of Libraries by Graduate Students in Psychology as Indicated by Citations," *Collection Management* 12 (1990): 11–23;
Rosalind Walcott, "Local Citation Studies—A Shortcut to Local Knowledge," *Science & Technology Libraries* 14 (1994): 1–14.

2. Buttlar, "Information Sources in Library and Information Science Doctoral Research," 227.
3. Christine Barry, "Information Skills for an Electronic World: Training Doctoral Research Students," *Journal of Information Science* 23 (1997): 229.
4. Herubel, "Philosophy Dissertation Bibliographies and Citations in Serials Evaluation," 66.
5. William Paisley, "The Future of Bibliometrics," in *Scholarly Communication and Bibliometrics*, edited by Christine L. Borgman (Newbury Park, CA: Sage Publications, 1990): 281–299;
   Danny P. Wallace, "Bibliometrics and Citation Analysis," in *Principles and Applications of Information Science for Library Professionals*, edited by John N. Olsgaard (Chicago, IL: ALA Publications, 1989): 10–26;
   Danny P. Wallace and Connie Van Fleet, *Library Evaluation: A Casebook and Can-Do Guide* (Englewood, CO: Libraries Unlimited, 2001): 153–164.
6. Wallace and Van Fleet, *Library Evaluation*, **153.**
7. Wallace, "Bibliometrics and Citation Analysis," 18.
8. Barbara A. Williams, *A Citation Analysis of Three American Nursing Journals* (Kent State University: Master's Research Paper, 1997), ERIC ED413933, p. 27.
9. Philip M. Davis and Suzanne A. Cohen, "The Effect of the Web on Undergraduate Citation Behavior, 1996–1999," *Journal of the American Society for Information Science and Technology* 52 (2001): 312;
   Philip M. Davis, "The Effect of the Web on Undergraduate Citation Behavior: A 2000 Update," *College & Research Libraries* 63 (2002): 57;
   Susan Davis Herring, "Use of Electronic Resources in Scholarly Electronic Journals: A Citation Analysis," *College & Research Libraries* 63 (2002): 339.
10. Gooden, "Citation Analysis of Chemistry Doctoral Dissertations," Introduction;
    Herubel, "Philosophy Dissertation Bibliographies and Citations in Serials Evaluation," 71.
11. Virgil Diodato, *Dictionary of Bibliometrics* (Binghampton, NY: Haworth Press, 1994): 33.
12. Wallace and Van Fleet, *Library Evaluation,* **153.**
13. Edwards, "Citation Analysis as a Collection Development Tool," 11.
14. Bonnie Strohl, *Collection Evaluation Techniques: A Short, Selective, Practical, Current, Annotated Bibliography, 1990–1998* (Chicago: American Library Association, 1999): 28.
15. Robert N. Broadus, "The Applications of Citation Analyses to Library Collection Building," *Advances in Librarianship* 7 (1977): 328;
    Buttlar, "Information Sources in Library and Information Science Doctoral Research," 242;
    Gooden, "Citation Analysis of Chemistry Doctoral Dissertations," Introduction;
    Haycock, "Citation Analysis of Education Dissertations for Collection Development," Introduction.
16. Paisley, "The Future of Bibliometrics," 28.
17. Lois Kuyper-Rushing, *Identifying Uniform Core Journal Titles for Music Libraries: A Dissertation Citation Study*, *College & Research Libraries* 60 (1999): 153–163.
18. Kuyper-Rushing, "Identifying Uniform Core Journal Titles for Music Libraries," 161.
19. "Schools of Education," *U.S. News & World Report* 128 (10 April 2000): 93.
20. David F. Kohl and Lizabeth A. Wilson "Effectiveness of Course-Integrated Bibliographic Instruction in Improving Coursework," *RQ* 26 (Winter 1986): 208–209.
21. Ibid.
22. Diodato, *Dictionary of Bibliometrics*, 24; Wallace, "Bibliometrics and Citation Analysis," 13–14.
23. See Gooden, "Citation Analysis of Chemistry Doctoral Dissertations," Results;
    Kuyper-Rushing, "Identifying Uniform Core Journal Titles for Music Libraries," 162;
    Edward G. Summers and B. R. Clark, "A Citation Analysis of Core Journals on Education of the Hearing Impaired," *A.C.E.H.I. Journal* 12 (1986): 112–113;
    Walcott, "Local Citation Studies," 6.
24. Wallace, "Bibliometrics and Citation Analysis," 18.
25. Paisley, "The Future of Bibliometrics," 287.
26. Gooden, "Citation Analysis of Chemistry Doctoral Dissertations;"
    Herubel, "Philosophy Dissertation Bibliographies and Citations in Serials Evaluation," 65–73;
    Peritz and Sor, "The Use of Libraries by Graduate Students in Psychology as Indicated by Citations," 11–23.
27. Kuyper-Rushing, "Identifying Uniform Core Journal Titles for Music Libraries," 161.