# THE CORE PERIODICALS IN CAREER AND TECHNICAL EDUCATION

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## ABSTRACT

*When constructing the theoretical or conceptual framework for their research, researchers often rely heavily on a "core" set of periodicals within their discipline for articles relevant to their topic. In this study, an analysis of citations in 265 graduate student research papers, theses, and dissertation was conducted to identify the "core" periodicals in career and technical education research. The findings identified the 50 most frequently cited periodicals by the greatest percentage of students, and these 50 titles were then compared to those periodicals identified previously as the journals that are of greatest interest to career and technical educators. Thirteen of the 67 journals of interest were included in the list of 50 titles. The list of core periodicals produced from this study illustrates the interdisciplinary nature of career and technical education research.*

## INTRODUCTION

Periodicals are essential resources to career and technical education researchers. Scholarly, refereed journals are the primary source for information used by researchers to build the theoretical or conceptual framework for their studies. Non-refereed trade magazines are often useful when researchers need information to establish the need for research and the implications that their findings may have on practitioners (Borg & Gall, 1989).

Given the importance of periodicals when conducting research, considerable effort was expended to identify those "core" periodicals that are believed to be of greatest interest to career and technical educators. In 1995, the Publications Committee of the IOTA Chapter of Omicron Tau Theta (OTT) surveyed a small group of faculty and graduate students in the Division of Vocational and Technical Education at Virginia Tech to identify a list of core periodicals in the discipline (Daughtry & Mimbs, 1995). The survey consisted of a list of titles previously identified as journals of interest to vocational educators. The group was then asked to identify those periodicals that they felt should remain on the list, and to recommend titles that should be added. In all, the titles of 46 refereed and 21 non-

refereed periodicals were included in the final list. These titles were then disseminated to the members of OTT.

By all accounts, the efforts undertaken by the Publications Committee were applauded by those in the career and technical education community. However, while surveying faculty and graduate students to establish serial rankings is considered a valid method to base decisions about which periodicals are core (Lockette, 1989), Thomas (1993), and others (e.g., Broude, 1978) note concerns. First, those surveyed may not be sufficiently motivated to commit the time and thought required to adequately enumerate the periodicals they consider core. Second, those selections that are made are often fraught with personal bias because of individual research interests or professional affiliation with particular periodicals. Therefore, a more empirical and objective method, free from the short-comings inherent in relying on faculty and graduate student feedback, to identify the core journals in a discipline is suggested.

Also a concern is whether the list of periodicals produced in 1995 by the OTT Publications Committee (Daughtry & Mimbs, 1995) remains relevant today. According to Zivney and Reichenstein (1994), the identification of the core periodicals in a discipline is a worthwhile activity. The list of titles produced is valuable to authors searching for journals to publish their research, to graduate students and faculty who are interested in the locations of important literature in the field, and to tenure and promotion committees when weighing the influence of particular journals in the discipline. The activity also benefits academic librarians who need guidance about which core periodical subscriptions in the discipline to acquire and retain. Radhakrishna (1995), citing Narin, Carpenter and Berlt (1972) adds that the activity ". . . characterizes a field of study, defines its boundaries, and explains how a discipline is interrelated with other fields of study" (p. 2). But, the core list of periodicals in a discipline will often change over time, particularly in an evolving discipline. Since 1995 significant changes have taken place in career and technical education. For instance, the American Vocational Association (AVA) changed its name to the Association of Career and Technical Education (ACTE) to more appropriately reflect the evolving field. University departments across the country have instituted name changes as well, broadened their curricula to include emerging distance education and instructional technologies, and strengthened their focus on adult learning and human resource education. In light of these changes, it is plausible that the periodicals of most interest and use to career and technical education researchers have changed as well.

The benefits derived from a core periodical analysis have not gone unnoticed by researchers. Studies have been conducted to identify the core periodicals in a variety of disciplines such as marketing (Goldman, 1979), agriculture (Lawani, 1973), environmental sciences (Subramanyam & O'Pecko, 1979), sociology (Broadus, 1952), finance (Hamelman & Mazze, 1972), psychology (Sylvia & Lesher, 1995), real estate (Redman, Manakyan, & Tanner, 1999), and women's studies (Marinko, 1998) to name a few. However, a comprehensive review of the literature failed to find any empirically-based study producing a list of core periodicals in career and technical education. Nor has any study been conducted to validate the list produced by the OTT Publications Committee (Daughtry & Mimbs, 1995). Therefore, the purpose of the present study is

twofold: First, the study attempts to empirically identify a core list of CTE periodicals. Second, the study attempts to validate the OTT list by examining the extent that the serials identified in 1995 are being utilized by today's career and technical education researchers.

## REVIEW OF THE LITERATURE

Several methods to identify a core list of periodicals in a field were identified in the literature. These methods include studying library circulation and in-house use of journals, surveying library patrons to establish journal usage frequencies and patterns, and analyzing journal interlibrary loan statistics (Lockett, 1989). Sylvia and Lesher (1995, p. 314), however, suggest using citation analysis, saying it is "empirically, one of the best ways to measure past use of an academic library".

Citation analysis is a procedure in which the periodical titles are ranked according to the frequency that they are cited in bibliographies or reference lists. Gross and Gross (1927) are considered the first to use citation analysis as an objective means to determine a journal's value. In this study, the researchers recorded all of the references cited in a single volume of the *Journal of the American Chemical Society*, which led to the identification of a list of core journal titles most likely to be of value to chemical researchers. Since that time, citation analysis has been applied in a multitude of disciplines (e.g., Chambers & Healey, 1973; Hardesty & Oltmanns, 1989; Magrill & St. Clair, 1990; Peritz & Sor, 1990; Radhakrishna, 1995).

Historically, citation analyses have been conducted on specific journals to determine the core periodicals used predominately by faculty researchers when publishing their articles. Edwards (1999, p.11) notes, however, that because "graduate students form a large percentage of the user group of most academic science libraries, utilizing journals and other library resources in support of research for the theses requirement", an analysis of the citations in academic products produced by graduate students is justified.

Indeed, many scholars conducting research to identify a list of core periodicals within an academic discipline have adopted an approach that involves the analysis of citations within the academic products by graduate students. For example, Thomas (1993) analyzed the use of journals cited in psychology theses written by students at California State University at Long Beach. Sylvia and Lesher (1995) analyzed the use of journals cited in theses and dissertations authored by psychology and counseling students at St. Mary's University. Marinko (1998) conducted a citation analysis of dissertations written during 1989 or 1994 to determine the usage of women's studies journals. If a researcher desires to identify the periodicals within a discipline most used in an academic library, then it clearly makes sense to focus the citation analysis on the products of graduate student research.

Kriz (1978) cautions, however, that the periodicals used and cited by students in their academic papers may differ widely from those used by faculty. But, Zipp (1996) and McCain and Bobick (1981) found positive correlations between the journals cited most often by graduate students in their theses and/or dissertations and those titles most

heavily cited in faculty publications. Citing these studies, Edwards (1999) concludes that "While graduate students may be less vocal and less stable than faculty, their research interests often reflect those of their faculty advisors" (p. 12). Zipp (1996) suggests that a citation analysis of student products can be "reliably used as a surrogate for faculty publication citations" (p. 341).

## THEORETICAL FRAMEWORK AND OBJECTIVES

Historically, researchers have found support for the theory that within any academic discipline the majority of citations come from a few core journals (e.g., Bradford, 1934; Broadus, 1952; Davis, 2002; Goldman, 1979; Goldsmith, 1983; Hamelman & Mazze, 1972; Hardesty & Oltmanns, 1989; Lawani, 1973; Subramanyam & O'Pecko, 1979). This pattern, referred to as the 80/20 rule, predicts that 80 percent of citations come from 20 percent of the cited journals (Trueswell, 1969). This 20 percent, then, constitutes the core journals in the field.

But, deviations from this rule are not uncommon. For example, Sylvia and Lesher (1995) found from their analysis of theses that the top 20 percent of journals cited only constituted 62 percent of the total citations. Thomas (1993) found an even greater disparity from the 80/20 rule. In this study of psychology theses, 80.8% of the citations came from 80% of the total journals cited. These studies reflect an apparently growing trend among student researchers to cross discipline boundaries and "borrow" from a greater variety of journals when conducting reviews of literature.

The present study examines the extent that citations found in a population of CTE graduate student academic research papers, theses, and dissertations adhere to the 80/20 rule. The objectives of this study were to:

1. prepare a core list of periodicals in Career and Technical Education; and
2. determine the extent that the core list of periodical titles overlap the list identified by OTT as journals of interest to career and technical educators.

## METHODOLOGY

To develop a data set for this study, a total of 265 graduate student products were selected for citation analysis. The products were delimited to academic research papers ($N$ = 196) written from 2000 to 2002, and theses ($N$=23) and dissertations ($N$=46) written from 1995 to 2002 by graduate students pursuing the Master's of Science in Education (MSEd) or Doctor of Philosophy (PhD) degree in the Department of Workforce Education and Development at Southern Illinois University in Carbondale.

The history and mission of the Department of Workforce Education and Development is deeply rooted in vocational/career and technical education. The department originated in the early 1970s as occupational education. In 1975, the occupational education faculty

joined with faculties in agriculture education, business education, and home economics education to form a new Department of Vocational Education Studies. In 1993, the department changed its name to the Department of Workforce Education and Development to reflect the broad array of curricula specializations that remain available to students today. These specializations are designed to prepare students for careers in career and technical education at the secondary, postsecondary, and higher education levels and in education and training positions in allied health, agriculture, business education, family and consumer science, industrial technology, apparel design and retailing, and human resources.

As a capstone requirement for the MSEd. Degree in Workforce Education and Development, graduate students must complete either a thesis or academic research paper to the satisfaction of a faculty committee. The thesis typically includes the specification of research questions and/or hypotheses, a review of the literature, data collection, quantitative and/or qualitative analysis, a description of the results, conclusions based on the findings, and suggestions for further research. Graduate students choosing to complete an academic research paper must identify one or more research questions relating to a current and important issue in career and technical education, write a comprehensive review and synthesis of the literature relevant to the issue, formulate concluding answers to the research questions, and make recommendations for further research.

The citation analysis involved an examination of the reference list included within each dissertation, thesis, and research paper. A data base was created which included the title of each periodical cited and the number of articles cited from that periodical. In other words, if a student's reference list included a citation of four articles from the same periodical, then that periodical was credited with four citations. The data base allowed the ability to sort periodicals based on the frequency with which they were cited for the purpose of determining those periodicals cited most to least often.

## RESULTS

Among the dissertations, theses and academic research papers included in the citation analysis, a total of 4580 citations to 1584 periodicals were found. Twenty-five periodicals (1.58 %) were cited 20 or more times. Seventy-eight periodicals, or almost five percent, were cited 10 or more times, while the majority, 913 periodicals (57.64 %), were cited only once.

The simplest method to present the results of the citation analysis would be to list the periodical titles in rank order from the most to the least cited. However, after a close inspection of the frequency in which journals were cited by individual students, it was concluded that such a presentation would be misleading. For instance, the *Journal of Industrial Technology* was cited 39 times, making it the eighth most cited journal. But, all 39 of those citations came from a single dissertation. Therefore, far too much weight would be given to one student product.

In an effort to present the citation analysis results in a manner that more accurately reflects those periodicals most cited by the greatest percentage of students, the weighting formula, *weight = (t / 265) x c*, was applied to each periodical title. As the formula shows, the number of students citing each periodical (*t*) was divided by 265, the total number of student products. These percentages were then multiplied by the number of times the respective periodical was cited (*c*). The resulting weighted indices served as the basis to rank order the periodicals.

An initial examination finds that the results of the citation analysis deviate from the 80/20 rule. Specifically, 317 titles (the top 20% of the highest ranking titles out of 1,584 total titles cited in student products) accounted for only 2820 (62%) of the total 4580 citations. Six hundred and seventy-one titles constitute 80 percent of the citations.

Because of the limited space available for this article, listing all 317 titles is impractical. Therefore, Table 1 shows the titles of only the top 50 periodicals cited in student products and the rank of each periodical based on the weighted indices. These 50 periodicals account for 1214 (26.5%) of the total citations.

Table 1

*Top Fifty Periodicals Cited in WED Student Products*

| Rank | Periodical | No. of Students | Times Cited | Weight Index |
|---|---|---|---|---|
| 1 | *T & D* | 46 | 80 | 13.887 |
| 2 | *Techniques* | 38 | 59 | 8.46 |
| 3 | *Training* | 33 | 55 | 6.849 |
| 4 | *Educational Leadership* | 31 | 55 | 6.434 |
| 5 | *Business Education Forum* | 11 | 79 | 3.279 |
| 6 | *Phi Delta Kappan* | 21 | 37 | 2.932 |
| 7 | *The Chronicle of Higher Education* | 16 | 41 | 2.475 |
| 8 | *Journal of Educational Psychology** | 15 | 33 | 1.868 |
| 9 | *T.H.E. Journal* | 14 | 31 | 1.638 |
| 10 | *Journal of Applied Psychology** | 16 | 27 | 1.630 |
| 11 | *Harvard Business Review** | 16 | 25 | 1.509 |
| 12 | *Educational Technology* | 14 | 28 | 1.479 |
| 13 | *Workforce* | 14 | 27 | 1.426 |
| 14 | *HR Magazine* | 15 | 25 | 1.415 |
| 15 | *Journal of Education for Business** | 14 | 22 | 1.162 |
| 16 | *Journal of Educational Research** | 15 | 20 | 1.132 |
| 17 | *HR Focus* | 13 | 22 | 1.079 |
| 18 | *Journal of Nursing Education** | 7 | 37 | .977 |
| 19 | *Communication Education** | 14 | 18 | .951 |
| 20 | *Journal of Research on Technology Education** | 10 | 25 | .943 |
| 21 | *Sex Roles** | 10 | 22 | .830 |
| 22 | *Review of Educational Research** | 12 | 18 | .815 |

| Rank | Periodical | No. of Students | Times Cited | Weight Index |
|---|---|---|---|---|
| 23 | *Journal of Vocational Education Research** | 10 | 21 | .792 |
| 24 | *Change** | 12 | 16 | .724 |
| 25 | *Journal of Industrial Teacher Education** | 13 | 14 | .687 |
| 26 | *Journal of Personality and Social Psychology** | 8 | 21 | .634 |
| 27 | *Personnel Psychology** | 10 | 16 | .604 |
| 28 | *Community College Journal* | 12 | 13 | .589 |
| 29 | *Community College Review** | 7 | 22 | .581 |
| 30 | *Education** | 10 | 15 | .566 |
| 31 | *Performance Improvement Quarterly** | 8 | 18 | .543 |
| 32 | *The Director* | 8 | 18 | .543 |
| 33 | *Community College Journal of Research and Practice** | 9 | 15 | .509 |
| 34 | *HRD Quarterly** | 11 | 12 | .498 |
| 35 | *Journal of Correctional Education** | 3 | 44 | .498 |
| 36 | *Monthly Labor Review** | 11 | 12 | .498 |
| 37 | *Fortune* | 11 | 11 | .457 |
| 38 | *Journal of Vocational Behavior** | 8 | 15 | .453 |
| 39 | *Corrections Today* | 6 | 19 | .430 |
| 40 | *Educational and Psychological Measurement** | 10 | 11 | .415 |
| 41 | *Public Personnel Management** | 10 | 11 | .415 |
| 42 | *Computerworld* | 9 | 12 | .407 |
| 43 | *Journal of Counseling and Development** | 9 | 12 | .407 |
| 44 | *Adult Learning* | 7 | 15 | .396 |
| 45 | *Supervision* | 8 | 13 | .392 |
| 46 | *Urban Education** | 10 | 10 | .377 |
| 47 | *International Journal of Instructional Media** | 9 | 11 | .374 |
| 48 | *American Secondary Education** | 9 | 9 | .306 |
| 49 | *Business Communication Quarterly** | 6 | 13 | .294 |
| 50 | *Academy of Management Journal** | 8 | 9 | .272 |

*Note*: "*" indicates periodical is a refereed, scholarly journal as identified by *Ulrich's Periodical Directory*. Those periodicals with equal weight indices are ranked in alphabetical order.

As shown in Table 1, of the 50 periodicals titles listed, 31 (62%) are identified by *Ulrich's Periodical Directory* (Bowker, 2003) as refereed, scholarly journals. The remaining 19 (38%) periodicals are non-refereed and/or trade publications. The most frequently cited periodical by the greatest percentage of students is *T & D*. This periodical was cited a total of 80 times by 46 students, accounting for 1.7% of the total number of citations. Rounding out the top 50 is the *Academy of Management Journal*, which was cited a total of 9 times by 8 students.

Among the 46 refereed periodicals identified by the Publications Committee of OTT as journals of interest to career and technical educators (Daughtry & Mimbs, 1995), 30 were cited at least once. And, among the 21 non-refereed periodicals identified by the Publications Committee, 17 were cited at least once. Table 2 lists the 30 refereed titles

and Table 3 the 17 non-refereed titles. In both tables, the rank of each title based on weighted indices are provided, with the lower rank values reflecting those cited most often by the greatest percentage of student products.

Table 2

*Refereed Journals of Interest to Career and Technical Educators*

| Rank | Journal | No. of Students | Times Cited | Weight Index |
|---|---|---|---|---|
| 15 | *Journal of Education for Business* | 14 | 22 | 1.162 |
| 23 | *Journal of Vocational Education Research* | 10 | 21 | .792 |
| 25 | *Journal of Industrial Teacher Education* | 13 | 14 | .687 |
| 28 | *Community College Journal* | 12 | 13 | .589 |
| 38 | *Journal of Vocational Behavior* | 8 | 15 | .453 |
| 57 | *Journal of Family and Consumer Sciences* | 8 | 9 | .272 |
| 70 | *Exceptional Children* | 6 | 10 | .226 |
| 76 | *American Educational Research Journal* | 7 | 7 | .185 |
| 78 | *Perceptual and Motor Skills* | 7 | 7 | .185 |
| 81 | *Journal of Educational Research* | 6 | 8 | .181 |
| 87 | *The Technology Teacher: A Journal of the American Industrial Arts Association* | 6 | 8 | .181 |
| 101 | *Delta Phi Epsilon Journal* | 4 | 10 | .151 |
| 104 | *The American Journal of Distance Learning* | 4 | 10 | .151 |
| 115 | *Journal of Education Technology Systems* | 5 | 7 | .132 |
| 126 | *Educational Researcher* | 5 | 6 | .113 |
| 166 | *Journal of Cooperative Education* | 2 | 9 | .068 |
| 202 | *Journal of Allied Health* | 3 | 5 | .057 |
| 268 | *Journal of Career Development* | 3 | 3 | .034 |
| 448 | *Journal of Marketing Research* | 2 | 2 | .015 |
| 486 | *Rural Special Education Quarterly* | 2 | 2 | .015 |
| 455 | *The Journal of Vocational Special Needs Education* | 2 | 2 | .015 |
| 801 | *Career Development for Exceptional Individuals* | 1 | 1 | .004 |
| 1007 | *Hospital and Health Services Administration* | 1 | 1 | .004 |
| 1058 | *International Journal of Vocational Education and Training* | 1 | 1 | .004 |
| 1085 | *Journal of Agricultural Education* | 1 | 1 | .004 |
| 1110 | *Journal of Computer-Based Instruction* | 1 | 1 | .004 |
| 1127 | *Journal of Education for Teaching: International Research and Pedagogy* | 1 | 1 | .004 |
| 1189 | *Journal of Studies in Technical Careers* | 1 | 1 | .004 |
| 1198 | *Journal of Vocational and Technical Education (now: Journal of Career and Technical Education)* | 1 | 1 | .004 |
| 1444 | *Studies in Educational Evaluation* | 1 | 1 | .004 |

*Note*: Those periodicals with equal weight indices are ranked in alphabetical order.

Table 3

*Non-Refereed Journals of Interest to Career and Technical Educators*

| Rank | Journal | No. of Students | Times Cited | Weight Index |
|---|---|---|---|---|
| 1 | *Training & Development* | 46 | 80 | 14.26 |
| 2 | *Vocational Education Journal (now: Techniques)* | 38 | 59 | 8.69 |
| 3 | *Training* | 33 | 55 | 7.03 |
| 4 | *Educational Leadership* | 31 | 55 | 6.434 |
| 5 | *Business Education Forum* | 11 | 79 | 3.279 |
| 6 | *Phi Delta Kappan* | 21 | 37 | 2.932 |
| 7 | *The Chronicle of Higher Education* | 16 | 41 | 2.475 |
| 13 | *Workforce* | 14 | 27 | 1.426 |
| 54 | *National Forum: The Phi Kappa Phi Journal* | 2 | 37 | .279 |
| 59 | *NASSP Bulletin* | 7 | 10 | .264 |
| 60 | *Performance and Instruction* | 5 | 14 | .264 |
| 500 | *Agricultural Education Magazine* | 1 | 4 | .015 |
| 896 | *Database* | 1 | 1 | .004 |
| 1239 | *Marketing News* | 1 | 1 | .004 |
| 1277 | *NEA Today* | 1 | 1 | .004 |
| 1328 | *PC Week* | 1 | 1 | .004 |
| 1453 | *Tech Directions* | 1 | 1 | .004 |

*Note*: Those periodicals with equal weight indices are ranked in alphabetical order.

As presented in Table 2, 5 of the 46 (10.87 %) refereed journals of interest to career and technical educators made the top 50 list. Thirty of the 46 (65.22 %) refereed journals were cited at least one time. Among these periodicals, *The Journal of Education for Business* received the most citations by the greatest percentage of students. Table 3 shows the rank order of the 17 non-refereed journals of interest out of the total of 21 periodicals (80.95 %) that were cited at least one time. Almost half (47.06 %) of the 17 non-refereed journals made the top 50 list.

## CONCLUSION AND RECOMMENDATIONS

This study sought to identify the "core" periodicals in career and technical education. However, support for the 80/20 rule used in previous studies to define a core list in other disciplines was not found in this study. Which titles, then, constitute the "core" serials in career and technical education?

The answer depends on how the "core" is defined. While this study successfully identified those serials cited most to least often, the fact that the 80/20 rule was not evident in the results makes it more difficult to define the titles that could reasonably be

considered the core. The literature is not particularly helpful here either, as the standard used to define a core list in the absence of the 80/20 ratio appears somewhat arbitrary. For example, Radhakrishna (1995) opted to define the core journals used by agricultural and extension educators as those cited a total of at least 5 times over a period of 10 years. Sylvia and Lesher (1995) delineate the core as those titles cited 10 or more times. Thomas (1993) lists the top 20 journals cited most frequently.

In this study, the "core" is defined as the 50 serials cited most often by the greatest percentage of student researchers. Admittedly, however, the decision to present the top 50 serial titles was also arbitrary. The top sixty serial titles could have just as easily been presented.

From the perspective of the academic librarian, this empirically-based ranking of 50 core periodicals could reasonably serve as the basis to make decisions regarding which periodical subscriptions to maintain. From the perspective of the CTE researcher, however, one could argue that, in addition to the 50 periodicals listed in Table 1, the "core" should also include those 34 refereed and non-refereed periodicals that were, first, previously identified as "of interest" to career and technical educators and, second, cited at least once by WED student researchers. I support this notion and recommend that CTE researchers not neglect these informative and useful periodicals.

In his article discussing the formulation and evaluation of theoretical frameworks in career and technical education research, Camp (2001) writes, ". . . the ultimate goal of researchers in career and technical education should be to relate our work to the larger research and theoretical community" (p. 23). Achievement of this goal requires that researchers extend beyond the confines of research published in their own discipline to cite sources from other disciplines. Clearly evident in the findings from this study is that student career and technical education researchers do extend beyond their own discipline. For example, of the 4580 citations, 1420 citations (31%) came from psychology periodicals, 1008 citations (22%) came from management periodicals, and 504 citations (11%) came from other various periodicals outside education. Thus, student CTE researchers appear to read widely across a variety of disciplines beyond education, frequently citing articles published in psychology and management periodicals.

Citing Brandon, Calhoun and Finch (1982) note the interdisciplinary nature of research in vocational and technical education. Schmidt (1992), when discussing the future direction of vocational education research, predicted that research would continue to broaden in focus. The findings presented in this study suggest that career and technical education research is, indeed, interdisciplinary. However, the reader is cautioned to remember that the present study was confined to only those student products at a single university. Therefore, these results can not be generalized to student CTE researchers at other universities or CTE researchers in general. A broader replication of this study, analyzing the citations of products produced by student and faculty researchers from other universities, is needed to further refine the "core" list of periodicals and validate the interdisciplinarity of career and technical education research.

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