



Value Added: A Case Study of Research Impact Services

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abstract: What are the ways in which library-provided bibliometric services add value to the research enterprise? Tasked with developing a program to assess and improve research impact services at Indiana University Bloomington, the open scholarship librarian launched a research impact offering in fall 2019, with positive results. Research impact services help faculty see the full significance of their work, equip them with tools to demonstrate and advocate for the value of their scholarship, and often provide unexpected insights. Bibliometric analysis can also benefit library units, particularly in supporting administrative decision-making in interactions with publishers and in seeing publishing trends to make collection management decisions. Service development in this area has the potential to deepen library engagement with the campus community. It might also promote collaboration between librarians in functional roles and those who serve as subject specialists.

Introduction

This article discusses the first year of a research impact services program at Indiana University (IU) Bloomington Libraries as a case study for librarians supporting researchers in the social sciences and humanities. While the literature on research impact services in academic libraries has grown over the past decade, few of the articles are case studies, and most such studies focus on the health sciences. In their 2019 publication, Linlin Zhao and Marina Minns report on identifying appropriate research impact metrics and indicators for creative disciplines.¹ None of the case studies, however, involve social science and humanities researchers. This report details the methodology for producing shareable dashboards to track research output and impact for researchers in those fields. The article discusses the potential of such services to help faculty see the full significance of their work. The findings include the value of internal and external collaboration, the importance of open scholarship, and the hidden insights that bibliometric analysis can reveal.

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These findings demonstrate the added value that librarians may provide to support faculty in meeting promotion and tenure goals, to aid them in future research endeavors, and to assist librarians and library administrators in institutional decision-making. Although the tools used for bibliometric analysis are equally available to faculty, the open scholarship librarian—one of the authors of this article, referred to hereafter as the librarian—used them to show that faculty scholarship made significant and unexpected impacts. The article focuses on a project to analyze the influence of the research of Professor Emerita Lynn M. Jamieson, the other author of this article, in sports management competencies. The article also discusses two similar projects undertaken with area studies librarians spurred by the initial work with Jamieson.

Literature Review

Blaise Cronin and Cassidy Sugimoto describe bibliometrics as the application of mathematical techniques to reduce the subjective notion of scholarly value to quantifiable measures through tracking and analyzing the citation of research output. They note that practitioners now employ usage-based metrics alongside citations.² Research impact includes bibliometrics but is broader in scope. In a 2019 article, Linlin Zhao and Marina Minns explain that measuring research impact involves looking at “impact on

The demand for bibliometric measures of the value of scholarly research has prompted an increase in research impact services in academic libraries.

the economy, society, culture, health, [or] the environment” and seeks to incorporate qualitative evidence of significance, such as social engagement and adoption, direct audience feedback, and influence on policy.³ In 2013, Sheila Corral, Mary Anne Kennan, and Waseem Afzal noted that the demand for bibliometric measures of the value of scholarly research has prompted an increase in research impact services in academic libraries.

Li Si, Yueliang Zeng, Sicheng Guo, and Xiaozhe Zhuang confirmed this observation in a 2019 investigation.⁴ To retain and attract funding, universities seek to demonstrate how their research impacts societal problems.⁵ Within universities, promotion and tenure depend on scholars’ ability to demonstrate the influence and impact of their work.

The literature identifies a “shifting research paradigm” in which digital, networked, data-intensive research dominates, coupled with a rising culture of measurement applied to universities and researchers. This shifting paradigm has pushed libraries to explore approaches to research impact measurement.⁶ Librarians have leveraged their bibliometric skill set, traditionally deployed in collection development, to research support.⁷ In their 2018 survey analysis, Rachel Ann Miles, Stacy Konkiel, and Sarah Sutton found that faculty have concerns about research impact measures being used for funding, promotion, and tenure decisions.⁸ This reflects a previous finding reported by Steven Braun in his 2017 case study covering the development of a library-built faculty research information system.⁹



Research support in libraries has shifted from primarily providing content to a more holistic approach that includes services around content creation.¹⁰ Research impact assessment emerged as a trend at the beginning of the last decade. By 2019, the service was described by A. Tyler Nix and Judith Smith as well-established and by Braun as “a nearly ubiquitous facet of scholarly communication.”¹¹ Case studies indicate a need for research impact services from academic libraries.¹² Implementation of such services can position librarians as the professionals who can provide this support, increase visibility for the library and familiarity with its work across campus, promote a more nuanced awareness of the responsible use of metrics among university administrators, and prove the value of the library in supporting an institution’s mission.¹⁴

Along with this growth in service delivery, however, concerns have emerged. As early as 2013, Corral, Kennan, and Afzal noted competition in providing bibliometric services from specialized units or personnel and from external providers, rather than libraries or librarians.¹⁵ In 2020, Dominic Walker questioned the invisibility of librarians’ work in the Research Excellence Framework, a system for assessing the quality of research in higher education institutions in the United Kingdom.¹⁶ Two studies, the first by Dan DeSanto and Aaron Nichols in 2017 and the other by Marc Vinyard and Jamie Beth Colvin in 2018, found that faculty have concerns about the use of metrics by university administrators and about the library becoming the evaluation arm of administration by providing bibliometric support for organizational decision-making.¹⁷ This suggests that librarians should couple service delivery with education about the responsible use of metrics. Academic libraries and librarians are already responding.¹⁸

Bibliometric services in medical libraries are better developed than in general academic libraries. The National Institutes of Health Library in Bethesda, Maryland, manages a robust Bibliometric Services Program that provides an online self-paced training series and arranges tutorials on request.¹⁹ Librarians at Washington University School of Medicine Becker Medical Library in St. Louis, Missouri, developed and refined the Becker Model of research impact assessment, which provides a well-regarded framework for evaluating research using a wider range of tools than traditional citation analysis.²⁰ Bart Ragon’s 2018 study of 112 medical libraries revealed that 86 percent provide routine research impact services.²¹ Similarly, Alisa Surkis and Stuart Spore note the increased prominence of bibliometrics in medical libraries between 2013 and 2017. They link this trend not only to the rise of interest in metrics generally but also specifically to the long history of medical centers in tracking clinical effectiveness, which expanded to include measures of academic performance.²²

William Mischo and Mary Schlembach provide a detailed case study of an in-house system at the University of Illinois at Urbana-Champaign Library for generating research impact visualizations for research groups within the Carle Illinois College of Medicine.²³ Karen Elizabeth Gutzman and a large group of coauthors provide a survey

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of bibliometric support services at seven biomedical libraries, concluding that increasing demand for these services and a common skill set among librarians tasked with bibliometric analysis deserve further professional development attention.²⁴ Janice Yu Chen Kung and Thane Chambers report on the implementation of fee-based research impact and other services at the University of Alberta's John W. Scott Health Sciences Library in Edmonton for the Faculty of Nursing, at the request of the nursing school. It was an innovative step for the library to charge for its services, though the authors point out historical examples of fee-based services in academic libraries, including in some health sciences libraries.²⁵

This is a small sample of a wide body of literature on bibliometrics in medical and health sciences libraries. The University of Alberta's case study is particularly relevant because it emphasizes the recognition of the value of library-provided bibliometric services, at least in medical libraries. The current case study shows that similar value can be provided by academic libraries in social sciences and humanities disciplines.

Background

How can library-provided bibliometric services add value to the research enterprise? Results from the initial year of offering research impact services by the Indiana University Bloomington Libraries show that such services can contribute to the development of skills through collaboration between librarians and faculty members, reveal hidden aspects of scholarly activity, and show faculty the true reach and potential effect of their work. Faculty members also benefit from visualizing a community of practice, enabling them to interact with other scholars who share their interests. The study shows new ways in which bibliometric analysis can support collection and subscription management within libraries. It also points to the potential for librarians in functional roles to have deeper engagement with subject specialist librarians, faculty, and ultimately the campus academic community.

The starting point for the launch of bibliometric services at Indiana University Bloomington (IU Bloomington) was a seminar to educate faculty on the responsible use of metrics. IU Bloomington has a Carnegie classification of an R1 research institution, one with "very high research activity." It had 2,140 full-time academic faculty in 2019 and 2,100 in 2020.²⁶ When the librarian launched the research impact services offering, there was no dedicated bibliometric librarian at IU Bloomington Libraries. As a result, researchers and subject librarians turned to librarians in the Scholarly Communication Department with bibliometric queries.

In fall 2018, the Scholarly Communication Department recruited a diversity resident librarian to join the department as a visiting assistant open scholarship librarian. This was an entry-level position with a primary focus on developing a program to assess and improve research impact services and affordability of content at Indiana University. The position description emphasized bibliometric assessment, affordable textbooks, open educational resources, qualitative assessments, and altmetrics, a broad group of metrics that attempts to measure the impact of publications by tracking attention, reviews, and conversation in news sources, government documents, and social media.²⁷ When the



librarian joined, the Scholarly Communication Department comprised the department head (who also doubled as the research data management librarian), a scholarly communication librarian, and an open access publishing manager. The scholarly communication librarian provided consultations on dossier preparation and ORCID (open researcher and contributor ID), a system of unique digital codes that identifies authors and researchers.

Preparatory steps for launching research impact services included promoting ORCID adoption via a library research guide, featuring this information at library events, and creating a research impact services page for the department's open scholarship website, which was under development.²⁸ The central marketing tool for the new research and impact services offering was a seminar on "Research Metrics and Altmetrics for Promotion and Tenure" designed by the librarian. The Scholarly Communication Department advertised the seminar as the second installment of a two-part "Boost Your Research Profile" series launched during Open Access Week in October 2019. In the first session, the scholarly communication librarian and the open scholarship librarian focused on open access resources. Replies were required for that first session, allowing the library's administrative staff to compile an e-mail list to advertise the research impact seminar. The Office of the Vice Provost for Diversity and Inclusion also publicized both seminars.

The librarian offered the research impact seminar in-person and simultaneously via Zoom, recording the live session. She prepared a Research Metrics and Altmetrics Workshop LibGuide as an instructional resource for the seminar, providing a helpful reference for both attendees and those who could not participate.²⁹ She also sent invitations to liaison librarians, the campus Institute for Advanced Study, and the School of Education, and liaison librarians shared the invitation with their departments. Attendance at the research impact seminar was triple that of the first seminar, with a significant factor being the option of attending via Zoom. Only one-third of attendees came in person, which was equivalent to the attendance at the initial seminar. The librarian sent a recording of the session to a further 12 faculty members who had requested it, expanding the seminar's reach to a total of 45 persons.

After the seminar, campus partners further promoted the library's research impact services. The vice provost for diversity and inclusion advertised the service at a faculty luncheon, which the librarian attended. The Office of the Vice Provost for Academic Affairs requested that the libraries provide a printed impact half sheet (see Figure 1) for inclusion in materials for the tenure and promotion workshop and for new faculty orientation, and it continues to generate service requests. In the 12 months following the seminar, patrons viewed the Research Metrics and Altmetrics Workshop 412 times on the Springshare LibGuides platform and an additional 67 times (with 15 downloads) on IUScholarWorks, Indiana University's institutional repository.

Prior to the workshop, the Scholarly Communication Department had received only two requests for research impact services over the previous two semesters. The workshop and subsequent outreach efforts led to nine service requests over the next two semesters, spring and summer 2020, including a follow-up seminar for fellows of the Institute for Advanced Study.

Requests generally focused on tracking the impact of prior research for tenure and promotion. Faculty members asked for help managing scholarly profiles, creating



IU Libraries offers impact services to help you document and demonstrate your scholarly contributions

Overview

Institutions and individuals are increasingly interested in understanding and evaluating faculty contribution, productivity, and impact, including for the purposes of academic promotion and tenure. The IU Libraries can assist you with

- Scholarly identity management
 - Creating a unique online ID to differentiate you from other researchers
 - Managing your profile to ensure that your qualifications and scholarly contributions are accurately reflected
- Tracking the impact of your work using online tools
- Creating a narrative around the scholarly contributions that are most valuable to you to make your case for scholarly excellence

Consult with a Librarian

IU Libraries will partner with you to:

- Increase the visibility of your work
- Incorporate practices with your teaching and scholarship to facilitate gathering data on impact
- Understand how metrics and altmetrics are calculated and used, their benefits and limitations, and how to apply them to your work
- Identify and use qualitative indicators of impact
- Recommend other relevant services such as IU Libraries CV Service - openscholarship.indiana.edu/oa-cv-service

Contact:

IU Libraries Scholarly Communication Department
Herman B Wells Library
1320 E. Tenth Street, Bloomington, IN 47405

IUSW@indiana.edu |   @IULibraries
openscholarship.indiana.edu/oa-impact#impact

SCHOLARLY COMMUNICATION
SCHOLARLY IMPACT



LIBRARIES

Figure 1. A description of research impact services offered by Indiana University Bloomington Libraries, included in tenure and promotion workshop materials for tenure-track faculty and in orientation materials for new faculty.



impact reports, producing author and citation visualizations, determining impact factor and other indicators to evaluate publication venues, using alternative metrics, and populating ORCID from external sources. The open scholarship librarian used various licensed and free tools and resources to fulfill these requests, which came from graduate students, librarians, tenured and tenure-track faculty, and one professor emerita, Lynn M. Jamieson, who is one of the authors of this article.

The Jamieson Bibliometric Study

In 2019, the head of the University Archives, which is part of the Indiana University Libraries and curates Jamieson's papers, proposed a bibliometric study of the impact of Jamieson's initial research regarding competencies of recreational sports specialists. The IU Institute for Advanced Study had considered awarding a grant to external researchers to study the importance of Jamieson's seminal work on sports management competencies but suspended its grant program because of the COVID-19 pandemic. The head of the University Archives referred Jamieson to the librarian for help in assessing the impact of Jamieson's Recreational Sports Competency Analysis survey instrument, developed 40 years prior.

Faculty members asked for help managing scholarly profiles, creating impact reports, producing author and citation visualizations, determining impact factor and other indicators to evaluate publication venues, using alternative metrics, and populating ORCID from external sources.

In 1980, Indiana University Bloomington awarded Jamieson a doctoral degree upon the successful defense of her dissertation titled "A Competency Analysis of Recreational Sports Personnel in Selected Institutional Settings."³⁰ The study involved 300 randomly selected subjects from municipal, university, and military recreational sport settings. Jamieson sent the subjects a mail survey instrument titled "Recreational Sports Competency Analysis" (RSCA) and asked about their perceptions of skills needed to perform their duties. Responses yielded 152 usable returns, representing a 50.6 percent response rate. The findings provided an array of competencies that respondents regarded as important for entry, middle, and top management levels. Jamieson determined that these findings could address curriculum development and other facets of understanding the professional qualities needed to manage sport programs. She recommended replicating the study and applying more in-depth statistical analysis as appropriate for intended research designs.

Initially, the study gained attention from the Professional Development Committee of the National Intramural Recreational Sport Association (NIRSA). NIRSA, now known by its abbreviation, is a professional association for those employed in recreational sports at universities. Within a few years, NIRSA used Jamieson's dissertation to develop a standardized test to certify recreational sports specialists. Further, NIRSA created a curriculum guide to assist those who teach courses in sports programming and management.



Jamieson knew about these uses of her study instrument during her tenure at California Polytechnic State University in San Luis Obispo, where she taught from 1980 to 1993. When she was appointed at Indiana University in 1993, she began to advise graduate students interested in competency-based research. As a result, two doctoral students completed their dissertations using an amended survey instrument based on the RSCA titled “Competencies of Sport Managers” (COSM).³¹ Their research explored perceptions from a wider range of populations than the initial survey had reached. Jamieson did a narrative meta-analysis of replications of the original study but did not track other uses.³²

The librarian’s bibliometric analysis yielded data on the widespread use of not only the instrumentation and improvements but also methodological replication and citations referring to the research over the years. Jamieson initially provided a list of seven research studies that used or cited the RSCA. Through bibliographic research, the librarian developed a data set showing use of the instrument by others from 1980 to 2020, consulting scholarly and industry publications. The analysis found 50 instances by 70 unique authors (see the Appendix). The papers covered sports management in 14 countries, plus multinational and cross-border studies.³³ Research replications and citations occurred in 16 countries.

Major uses for Jamieson’s original research included development of the COSM (an instrument based on the RSCA), other instruments based on one or both surveys, or new instruments; creating standards for professional certification; and establishing the validity and reliability of assessments. The librarian created a freely accessible dashboard that Jamieson could easily share with the repository grant researchers using a Web link.³⁴ The data set includes all the articles reviewed, broken down by author and other subcategories. The impact measured by this method was surprisingly large, and this database proved beneficial in several ways:

1. The results allow researchers to easily access a broad body of knowledge pertaining to the competencies of sports specialists, saving them time on conducting a literature review.
2. The database makes visible the community of researchers with similar interests to foster collaborative endeavors.
3. The report demonstrates that Jamieson’s work reaches the broader field of health and wellness design, with community sports as a foundation for the international study of sport personnel and the impacts of their discipline on overall health.
4. The database allows for engagement in global discourse about the role of qualified sport personnel and application in specific national and international contexts.
5. The applicability of research methods and instrumentation lends itself to further meta-analysis and establishment of quality standards for personnel.

The process may be useful for researchers to systematically track the impact of their research contributions to the scientific community at large. It also assists those applying for tenure or promotion to build a case for how their work has impacted their field or other fields. Although Jamieson is a professor emerita with a long track record, similar results are feasible for researchers seeking promotion or tenure whose time frame would be shorter, typically six years. These researchers can follow several publications, unlike the Lynn Jamieson impact report, which only tracks a single publication. One faculty



member using the library's research impact services for her tenure case expressed surprise at the geographic and disciplinary reach of her work on autism in education. She may study whether her work is useful in the developing world as a potential future research project.

An impact report helps scholars identify those with whom they may collaborate, sharing common research accomplishments and building the body of knowledge in that area of study. Further, it is helpful for graduate students to track their research efforts beginning with their initial studies.

Methods

In addition to the Jamieson RSCA bibliometric analysis, the librarian completed two similar research impact dashboards with input from area studies librarians. These projects demonstrate how librarians can apply specialized expertise to support faculty research not well represented in traditional bibliometric databases, such as studies by social sciences and humanities scholars.

Working with the seven replications provided by Jamieson, the bibliometric research eventually identified 52 publications that cited her original survey. Initially, the librarian searched Web of Science and Scopus, the traditional bibliometric databases to which the library holds subscriptions. A 2018 study of seven biomedical libraries by Karen Elizabeth Gutzman and her team specifically identifies these two databases as the common tools used by librarians providing research impact services.³⁵ Initial searches in Web of Science and Scopus proved unhelpful as neither database indexed the 1980 dissertation. An initial search on Google Scholar returned 51 results, however. Though some were duplicates or errors, this result indicated that the RSCA had much wider reach than Jamieson knew.

The librarian recommended that Jamieson create a Google Scholar profile and set citation alerts for references to her original study. She also arranged for an initial consultation, with the goal of understanding the direction and ultimate purpose of Jamieson's search.

The Initial Consultation

In this consultation, the librarian shared the initial results with Jamieson, and Jamieson provided an overview of her work in sports management competency education and professional development. The librarian demonstrated how to use the bibliometric databases Web of Science and Scopus and described their strengths and weaknesses, and she demonstrated the benefits and limitations of Google Scholar searches and metrics.

Jamieson was most interested in getting an array of charts like those produced by Scopus and Web of Science, but using the results from Google Scholar searches. The number of results far exceeded her expectations. She wanted to find out how other authors had utilized the competency analysis in their research. Jamieson also knew that NIRSA had

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used the RSCA in its seminal certification program and was interested in documenting this. Finally, she wanted to easily share the results of the project with a researcher who was slated to visit the IU Bloomington Archives to explore the history and use of the RSCA. Shortly after the initial consultation, however, the researcher's visit was canceled because of the campus shutdown after the outbreak of COVID-19 in the United States.

The librarian investigated methods of generating the charts needed and ways to share them, despite the campus shutdown. Web of Science and Scopus allow users to analyze citation results generating visualizations of the citing documents by year, author, country/territory, subject area, and type. She looked at the possibilities for creating similar visualizations. Google Data Studio offers a visually appealing and flexible visualization platform, ease of sharing, and graphical user interface for building a shareable dash-

Google Data Studio offers a visually appealing and flexible visualization platform, ease of sharing, and graphical user interface for building a shareable dashboard.

board. There is a minimal learning curve, and the data for the project already resided in Google Sheets and Google Docs because Google Suite (now Google Workspace) was the Scholarly Communication Department's core application for day-to-day working documents. Concerns were that Google Data Studio is not open source, and because it is a commercial product, Google might discontinue it at any time. Despite these

concerns, the features that made Google Data Studio easy to read and to share led to its selection. That Google Data Studio is currently freely available was also a point in favor of ease of replicability by other librarians within and beyond Indiana University. The dashboard created in Google Data Studio displays introductory text, an interactive time series citation graph, and charts and tables showing authorship, use, subject area, and geographic distribution.³⁶

Data Gathering

The primary bibliometric source for the project was Google Scholar. Additional results were identified by searches in the ProQuest Dissertations and Theses database.

The first step was to pull the Google Scholar search results into a Zotero library using the Zotero browser extension, then export the library as a CSV (comma separated values) file, which allows data to be entered into a table-structured format. The table was saved as a Google Sheets spreadsheet. The librarian added the dissertations and theses to the spreadsheet, then created additional worksheets within the spreadsheet for hyperlinks and coding, coauthors, and unique authors. The original worksheet was renamed "Jamieson."

The hyperlinks and coding worksheet has nine columns, a sequential numbering of the results and eight other columns labeled "Title," "Author," "Year," "Publisher," "URL," "Use of RSCA," "Subject," and "Country." The URL must be recorded as a separate string to produce a calculated field in the Google Data Studio interface to enable hyperlinking of each title in the dashboard. The coauthors worksheet split the author information into separate columns for each author of a citing study. This information provided the building blocks for the unique authors worksheet, which removes duplicate listings to

identify individual authors, as well as the number of times each author's name appears in the "Author" column.

Analyzing Use of the RSCA

The librarian used manual analysis to complete the "Use of RSCA," "Subject," and "Country" columns in the hyperlinks and coding sheet. The unit of analysis was an information object citing the RSCA. The information object was usually a published article, but replications also included a book, several dissertations, and a report by NIRSA referencing the 1980 dissertation as the source for developing its original professional certification. The librarian created a coding scheme after reviewing the titles and, if necessary, the content to identify significant concepts. Replications were eventually coded by type of use (such as developing a new instrument or testing validity) and by subject area. The subject areas identified were professional certification, professional competencies, curriculum perspectives, competency-based education, and human resource management. Replications not in English or lacking an English abstract were not coded.

Creating the Dashboard

A Google account is needed to access Google Data Studio (<https://datastudio.google.com>). From the landing page, a user selects a blank report to start a project. The blank report automatically prompts the user to add a data source and displays a list of connectors. For this project, the "Lynn Jamieson Impact Report," the librarian selected the Google Sheets connector. Each worksheet in the Google Sheets spreadsheet was added as a separate data source. In Google Data Studio, charts are created using the "Add a Chart" menu function, which displays a panel that allows the user to choose the chart type, data source, dimensions, and metrics. Each chart has a dimension (from categories of information contained in the data source) and a metric. A separate date range dimension is also available, and the platform generates a record count field as an available dimension. Dimensions and metrics are referred to as "fields." To give a different name to a field, the "Add a field" function is used to enter a new name and select an available field as the formula underlying the newly created field. The librarian created a "Citations by year" field using this method, based on the automatically generated record count field from the Jamieson worksheet.

The Lynn Jamieson Impact Report originally comprised four pages. The first page provides a summary of the RSCA and a time series chart showing citations between 1980 and 2020. The data source for this page was the Jamieson worksheet. The next page showcased the use of the RSCA with doughnut charts for "Studies by subject area" and "Use of RSCA" and a tree map representing "Studies by country" as rectangles, the areas of which corresponded to their numerical value. The data source for all three charts was the hyperlinks and coding worksheet. The next page shows citing articles and authors and two tables. The first table shows "Title," "Year," and "Publisher of citing studies," using the hyperlinks and coding worksheet as the data source. The second table lists "Unique authors" and "Number of documents" by each author, using the unique authors worksheet as the data source.

The final page of the report displays three data tables, all using the hyperlinks and coding worksheet as the data source. The first table shows use of the RSCA by each title. The librarian created a calculated field named "Title" which applies the URL field to the "Title" field, so that each title listed in the table is a clickable link that takes readers to the article. The second table shows the number of titles for each type of use, and the third table shows the number of titles for each subject area.

Jamieson identified three other articles to be included in the Lynn Jamieson impact report. Although these did not cite the RSCA, they focused on later work by Jamieson and other researchers that directly built on the survey instrument. They could not be counted as citations but were important because they showed the breadth of contribution of her research, its importance to the field of sport management, and its continuing relevance. The librarian therefore added a new page focusing on the impact of those articles and providing a short summary and citation graph for each. Therefore, at the time of writing, the Lynn Jamieson Impact Report comprises five pages: (1) introduction; (2) impact; (3) use; (4) citing articles and authors; and (5) data tables. See Figure 2.

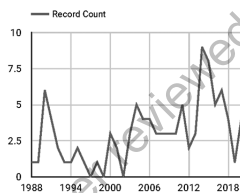
Institutional Use Cases for Bibliometrics

Area Studies Research Output Dashboards

After the project with Jamieson, the librarian launched a similar project with the input of area studies librarians to prepare publication output dashboards. The subject specialists

Jamieson, L. M. (1987). *Competency-Based Approaches to Sport Management*. *Journal of Sport Management*, 1(1), 48-56. <https://doi.org/10.1123/jsm.1.1.48>

101
citations



Citing article highlight
Gutović, T., Relja, R., & Popović, T. (2020). The constitution of profession in a sociological sense: An example of sports management. *Economics and Sociology*, 13(4), 139-153. [doi:10.14254/2071-789X.2020/13-4/9](https://doi.org/10.14254/2071-789X.2020/13-4/9)

This article, which examines the sociological context for the professionalization of sports management cites Jamieson (1987) to make the points that a competency based formal education model has come to be recognized as an important prerequisite for a wider presence of highly competent sports managers "with such 'curricula ... focused on keeping pace with social development and changes in sport, thus providing future managers with a necessary professional basis of knowledge, skills and competencies, industry-focused specialisation and practical experience'".

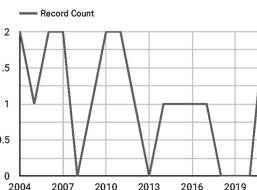
IMPACT OF RSCA

The RSCA has been central to the development of other areas of research including:

- the professionalization of sports management (Jamieson, L. M. (1987). *Competency-Based Approaches to Sport Management*. *Journal of Sport Management*, 1(1), 48-56. <https://doi.org/10.1123/jsm.1.1.48>);
- the development of models for sports management competency (Toh KL, Jamieson LM. *Constructing and Validating Competencies of Sport Managers (COSM) Instrument: A Model Development*. *Recreational Sports Journal*. 2000;24(2):38-55. [doi:10.1123/nirsa.24.2.38](https://doi.org/10.1123/nirsa.24.2.38)); and
- the importance of competencies in sports management (Barcelona RJ. *An analysis of the perceived competencies of recreational sport managers: Toward a competency-based model for academic and professional development*. Indiana University; 2001.).

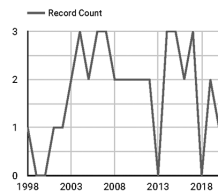
Barcelona RJ. *An analysis of the perceived competencies of recreational sport managers: Toward a competency-based model for academic and professional development*. [Order No. 3024235]. Indiana University; 2001.

19
citations



Toh KL, Jamieson LM. *Constructing and Validating Competencies of Sport Managers (COSM) Instrument: A Model Development*. *Recreational Sports Journal*. 2000;24(2):38-55. [doi:10.1123/nirsa.24.2.38](https://doi.org/10.1123/nirsa.24.2.38)

39
citations



Citing article highlight
Chia - Chen Yu. *Important Computer Competencies for Sport Management Professionals*. *International Journal of Applied Sports Sciences*. 2007;19(1):66-85.

This article, which sought to investigate computer competencies for sports management professionals, points out that Toh and other researchers lay the foundation for identifying computer skills as a key competency for sports management. Yu's research found that "(1) word processing for managing text, (2) spreadsheets for managing numbers and (3) communication via the Internet, all ... are critical computer competencies that students need to possess before graduation." This reinforces the curriculum development research area spurred by the RSCA. Yu also theorized that multimedia, web design and graphics would become important competencies in the field.

Figure 2. A page from the Lynn Jamieson Impact Report produced by Indiana University Bloomington Libraries.



for Slavic and East European Studies and for East Asian Languages and Cultures both provided the librarian with a list of publishing venues for researchers in those departments. The librarian, with significant help from graduate students, applied a methodology like that used to develop the Lynn Jamieson Impact Report. The first dashboard created was for Slavic and East European Studies. The Scopus database was the starting point, as it allows users to search for a researcher using the scholar's unique Scopus ID. Web of Science only permits searches by subject area, therefore results would not necessarily be limited to the current members of the department.

The librarian determined that 21 of the 28 faculty members had Scopus IDs and recorded them in a Google spreadsheet. The librarian and graduate student used the IDs to search the Scopus database for publications by those faculty members. The search yielded 129 results dating from 1976 to 2020, 71 of which were published between 2010 and 2020. The graduate student then searched Google Scholar and reviewed faculty web pages and curricula vitae, yielding 134 additional results.

A high degree of manual input was involved in data gathering, necessitating assistance from a graduate student or other helper, because the traditional bibliometric databases did not completely cover the work of these researchers. The librarian and graduate student worked together to determine the most appropriate visualizations for the information. As these were for internal use, the visualizations were created within the Google spreadsheet itself on a separate worksheet, while the worksheets containing the information were locked to prevent changes to the processed data. The librarian also researched the open access policies of the list of journals provided by the subject specialist, which was presented as a central data table within the dashboard. In addition to that table, the dashboard displays a bar chart for publications by year, a time series chart for citations by year, a pie chart for publication type, and both a horizontal bar chart and pie chart for publication venues. The horizontal bar chart represents actual numbers of publications, and the pie chart shows percentages.

The dashboard was well received by the Area Studies Department and the Slavic and East European Studies subject specialist, and the latter requested further bibliometric analysis of the publication output of graduate students within that department. Notably, the bibliometric research to prepare the Slavic and East European Studies dashboard pointed to three venues where faculty had published that were not identified by the subject specialist, who now plans to add these to the library's collections. This is another example of insight revealed by bibliometric analysis. Librarians and publishing staff at other universities also expressed interest after presentations at the 2021 Big Ten Academic Alliance Liaison Institute and the Society for Scholarly Publishing 43rd Annual Meeting.³⁷ The librarian arranged follow-up meetings with interested persons and shared the process documentation for the dashboard.

The librarian created a second dashboard for East Asian Languages and Cultures with assistance from another graduate student.

In the early stages of bibliometric data gathering, they noted a gender differential in online scholarly visibility. Many female faculty members lacked a Scopus ID, a Google Scholar profile, or a full curriculum vitae on their faculty web page. These digital "footprints" create visibility for a

Many female faculty members lacked a Scopus ID, a Google Scholar profile, or a full curriculum vitae on their faculty web page.

scholar's work. In an almost evenly balanced department with 21 men and 19 women, 30 percent of women faculty members had zero online visibility (that is, no Scopus ID, Google Scholar profile, or online curriculum vitae), compared to 5 percent of the men. Conversely, only 5 percent of the women had full online visibility (that is, all three digital scholarly footprints), compared to 21 percent of the men. Seventy-four percent of the men had at least one scholarly footprint, compared to 65 percent of the women (see Figure 3). Much of the difference in visibility may result from women holding 75 percent of the department's instructional positions, where research is not required.

The publication output dashboards serve as a prototype for other librarians who may be interested in the service or in undertaking similar projects themselves. Two other subject specialists have since expressed interest.

Analyzing Publisher Offers

Within the libraries, the librarian has also provided bibliometric services to support administrative decision-making. The Collaborative Archive and Data Research Environment (CADRE), a science gateway to standardized text-mining and data-mining services for large data sets, has proved a valuable resource for extracting and analyzing institutional publishing data.³⁸ The libraries have used insights provided by the librarian into the venues and level of publishing by IU Bloomington researchers to inform decision-making on transformative agreements in subscription negotiations—that is, contracts that gradually shift from a traditional subscription-based model to open access publishing—and on offers for open access publishing discounts with several publishers.

During contract talks with a publisher, the IU Bloomington negotiating team raised the possibility of a transformative agreement. The team asked the publisher to provide

Visibility of East Asian Languages & Culture faculty by Gender

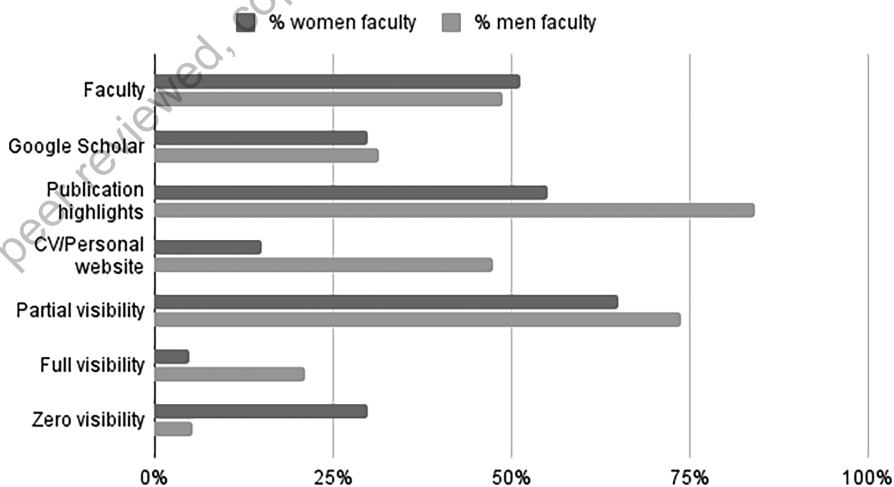


Figure 3. A chart comparing the scholarly visibility, by gender, of faculty members in the Department of East Asian Languages and Cultures at Indiana University Bloomington.



read and publish (gold open access) and increased article sharing (green open access) options, and gave the publisher various priorities, including a range of overall cost savings desired. The publisher had not provided these options. Using data pulled from CADRE about research output with the publisher, the librarian projected costs in the range of \$1,000,000 for a read and publish agreement publication by applying modeling methods developed by the California Digital Library, which has digitized and made accessible the University of California's collections.³⁹ Given the publisher's lack of response, the projected costs, and the relative uncertainty of a post-pandemic budget, the team elected not to pursue such an agreement.

The libraries also declined a flat-fee read and publish offer after soliciting input from the librarian. The librarian provided an analysis comparing research output published with that publisher, the publisher's article processing charge (APC), and the proposed fee. The fee exceeded what individual APCs would cost at current or projected levels over the period covered by the proposal. Two open access publishing discount offers were accepted, however, based on savings projected by the librarian, who looked at the pricing, contract terms, and levels of publishing output with those publishers.

Findings

The launch of research impact services at Indiana University Bloomington revealed three key ways in which these services add value to the research enterprise:

1. Collaboration among librarians, and among librarians, faculty, and the campus community, develops skills and services and deepens engagement among the groups.
2. Visualizing a community of practice equips researchers to identify potential collaborators and build scholarly networks.
3. Bibliometric analysis yields insights that support faculty in promotion and tenure, aid librarians in selection and collection management, and help libraries in administrative decision-making for collections, subscriptions, and publisher offers.

The Value of Collaboration

Internal and external collaboration was critical to the successful launch of research impact services. A supportive network of librarians, library administration, and campus partners, including the Office of the Vice Provost for Academic Affairs, the Office of the Vice Provost for Diversity and Inclusion, and the Institute for Advanced Study, has been key to promoting research impact services. Input from subject specialist librarians was crucial to the area studies dashboards project. Similarly, collaboration with Jamieson was an important part of preparing the Lynn Jamieson Impact Report.

Bibliometric analysis yields insights that support faculty in promotion and tenure, aid librarians in selection and collection management, and help libraries in administrative decision-making for collections, subscriptions, and publisher offers.



Jamieson's strong background in social science research was integral. She clearly articulated the desired outcomes, which were to determine other researchers' conclusions on the validity and reliability of the RSCA, its utility in developing new instruments, and its use in professional certification. These goals provided the initial coding categories for use of the RSCA. The librarian completed the first iteration of the dashboard in August 2020. Using citation alerts for the RSCA as well as for Jamieson's other articles, which added to the initial findings, Jamieson identified new citing studies and forwarded these to the librarian. Where these could not be directly incorporated into the data, Jamieson and the librarian discussed the rationale for inclusion. The librarian proposed solutions, and Jamieson ultimately selected three specific articles for inclusion on the impact page of the dashboard, as described earlier.

The collaboration between the librarian and Jamieson demonstrates the value of incorporating the subjects of library services in the design and delivery of service outcomes. This has benefited both the librarian and Jamieson. While Jamieson built on her proficiency in citation management tools and scholarly profiles, the librarian applied preexisting skills in a new way and developed an additional method of service delivery, which she then replicated for subject specialists in the Area Studies Department.

Jamieson and the librarian continued to collaborate—this article is one example. In addition, they both worked with the campus education librarian and a professor in math education to deliver a seminar to masters and doctoral students in the School of Education on visibility for emerging scholars. They also intend to organize a webinar on sport management competencies and professional development.

Visualizing a Community of Practice

The librarian's bibliometric analysis of Jamieson's original research has allowed Jamieson to represent the value of 40 years of scholarship. Jamieson plans to leverage this information to bring together a community of practice. She has begun to contact individuals involved in the study of competencies to share findings and insights that may prove valuable to future research efforts. This bibliometric analysis also provides Jamieson, a professor emerita, a sense of satisfaction about how her research impacted the world.

Insights from Bibliometric Analysis

With bibliometric analysis, faculty can see the reach, impact, and currency of their research and identify a community of practice for potential future collaboration and scholarly

With bibliometric analysis, faculty can see the reach, impact, and currency of their research and identify a community of practice for potential future collaboration and scholarly networking.

networking. These bibliometric insights can be used for promotion and tenure and to generate new research directions. Bibliographic analysis at the institutional and department level can show trends in publishing and output over time. These insights can be used for selection, collection management, and administrative decision-making.



The Value of Institutional Repositories and Self-Archiving

Academic institutional repositories were invaluable in preparing the Lynn Jamieson Impact Report, providing a significant source of full-text articles citing the RSCA. Of the 52 replications, 17 were available through institutional repositories. Of the remaining 35, 16 were obtained through interlibrary loan and 12 were available through library databases. Four publications were open access publications, two were available through academic social networks, and extracts from the single remaining object were accessible through Google Books. The large number of articles available through repositories indicates the importance of self-archiving and institutional repositories to the scholarly communication landscape.

Conclusion

Research impact services is a developing area at IU Bloomington Libraries, and so a fixed workflow or service roster has not been established. In July 2021, the libraries created a permanent role for the librarian as the research impact and open scholarship librarian. This formal designation led to opportunities to work with subject specialists who receive research impact queries.

The resources used for research impact services are also available to faculty members, librarians, and library administrators. Having a dedicated librarian for research impact adds value, however, because faculty and other librarians often lack the time or experience for holistic thinking and planning around research impact, or collecting and analyzing bibliometric data. Research impact consultations can result in faculty and librarians developing new skills at the post-publication phase of the research life cycle.

Future priorities are ensuring sustainable service delivery, encouraging reproducibility by maintaining robust documentation, and keeping pace with new tools and methods as they develop. The librarian is currently working with the Library Technologies department to identify or build systems that can automate or partially automate this work.

The first year of research impact services at IU Bloomington Libraries was a success. Faculty value research impact support from the libraries, and the libraries can use bibliometric services to support internal decision-making. Ongoing service requests, some from large academic departments, indicate that research impact services meet a growing need and provide an opportunity for libraries to deepen engagement with the academic community.

The librarian has continued to support faculty across campus with research impact services and has targeted outreach to those in the social sciences and the humanities. The authors hope that sharing our experiences and methods will contribute to developing a better understanding of the needs and priorities of these researchers, and possibly the creation of improved tools and services to support them.

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Lynn M. Jamieson is a professor emerita in the Department of Health and Wellness Design (previously the Department of Recreation, Park, and Tourism Studies) in the School of Public Health at Indiana University Bloomington.



Appendix

Citations of the Recreational Sports Competency Analysis

Year	Title	Author or authors	Publication title
2019	"A Competency Analysis of Waterpark Aquatic Professionals"	Christopher A. Crume and William D Ramos	<i>International Journal of Aquatic Research and Education</i>
2018	"Learning by Doing: Sport Management Internship Education in Norwegian Professional Football Clubs"	Dilara Valiyeva	[master's thesis]
2018	"A Phenomenological Analysis on Evaluation of Sports Management Department Curriculum by Sports Sciences Faculty Members"	Ebru Araç Ilgar and Bekir Baris Cihan	<i>Journal of Curriculum and Teaching</i>
2017	"Leadership Competencies: Qualitative Insight into Non-Profit Sport Organisations"	Majd Megheirkouni	<i>International Journal of Public Leadership</i>
2017	"An Exploration of the Golf Management Competencies Model"	Hong Suk Choi	<i>International Journal of Human Movement Science</i>
2017	"Determine and Validate the Needs of Competencies for Sport Managers in Sport Centres in Isfahan City, Iran"	Akram Soltani, Jamalsafri Saibon, Ahmad Tajuddin Othman, and Iman Nazerian	<i>Journal of Advanced Management Science</i>
2016	"Impact of Demographic Factors on Management Competencies of the Municipal Sport Organizations" ^a	Alexandra Tripolitsioti	<i>Choregi</i>
2015	"Competências de liderança dos Presidentes das Federações Olímpicas Brasileiras [Leadership competencies of the presidents of the Brazilian Olympic Federations]"	Daiane Miranda de Freitas	[master's thesis]
2015	"Analysis of Perceived Competencies of Sport Managers in Guatemala under a Federated Sport Perspective"	Isaí Cruz Pérez	[master's thesis]
2015	"Perceptions of Importance and Performance for NIRSA Core Competencies in Collegiate Recreation"	Jill Sturts	[doctoral dissertation]
2014	"Developing a Sports Club Management Competency Model for Albania: A Delphi Study"	Valbona Gjolligaj	[doctoral dissertation]

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Year	Title	Author or authors	Publication title
2014	"Legal Competencies Essential for Golf Directors"	Hong Suk Choi	<i>Journal of Physical Education and Sports Management</i>
2014	"Identifying Competencies of Boxing Coaches"	Ioannis Tasiopoulos, Alexandra Tripolitsioti, and Apostolos Stergioulas	<i>Choregia</i>
2012	"Determining the Competencies of Sport Event's Managers"	Salman Farzalipour, Velittin Balci, Behrouz Ghorbanzadeh, Mehrdad Moharamzadeh, Mir Hassan Seyyed Ameri, and Mir Majid Kashef	<i>Archives of Applied Science Research</i>
2011	"The Perceived Importance of Sport Management Competencies by Academics and Practitioners in the Cultural/Industrial Context of Taiwan"	Ling-Mei Ko, Ian Henry, and Joe Chin-Hsung Kao	<i>Managing Leisure</i>
2011	"Comparison Study: Generational Perceptions of Competencies of Parks and Recreation Professionals"	Timothy Peitzmeier	[master's thesis]
2010	"A Study to Examine the Nature and Scope of School Athletic Administrator Positions in the State of Virginia"	Robert Case	<i>VAHPERD (Virginia Association for Health, Physical Education and Dance) Journal</i>
2009	"Sport Science as a Determinative Factor in Management of Indoor Facilities in Municipal Sport Organizations"	Alexandra Tripolitsioti, Costas Mountakis, and Ethan Strigas	<i>Journal of Applied Sciences</i>
2009	"Perceptions of Industry Practitioners toward an Academic Degree Program in Public Assembly Facility Management"	James J. Riordan	[doctoral dissertation]
2009	"Analysis of the Perceived Competencies of Administrators in Sport and Fitness Clubs and Indoor Sport Facilities of Municipalities Sport Organizations"	Αλεξάνδρα Τριπολιτσιώτη (Alexandra Tripolitsioti)	[doctoral dissertation]
2008	"Kompetencije sportskih menadžera [Competencies of sports managers]"	Nebojša Maksimović	<i>Aktuelno u praksi (Current practice)</i>
2007	"The Management Competencies of the Directors of Youth Centres and Indoor Facilities in the Municipalities"	Alexandra Tripolitsioti, Konstantinos Moudakis, Pantelis Konstantinakis, and Panagiotis Theodorikakos	<i>Biology of Exercise</i>
2006	"Identification des besoins de perfectionnement des travailleurs en loisir du Nouveau-Brunswick [Identification of the development needs of New Brunswick recreation workers]"	Hubert Roussel	[doctoral dissertation]



Appendix 1., cont.

Year	Title	Author or authors	Publication title
2005	"Management in kommerziellen Sportstudios: eine Berufsfeldanalyse [Management in commercial sports studios: A professional field analysis]"	Sebastian Kaiser	[doctoral dissertation]
2005	"Management Competencies of Golf Course Directors"	Hong Suk Paul Choi	[doctoral dissertation]
2004	"Examining the Importance of Recreational Sport Management Competencies Based on Management Level, Agency Type, and Organizational Size"	Bob Barcelona	<i>Recreational Sports Journal</i>
2004	"An Examination of the Competencies Needed by Sport Managers in Taiwan"	Chih-Yi Chen	[doctoral dissertation]
2004	"An Analysis of the Perceived Competencies of Recreational Sport Administrators"	Bob Barcelona and Craig M. Ross	<i>Journal of Park and Recreation Administration</i>
2003	"A Study to Examine the Job Competencies of Sport Facility Managers"	Robert Case and J. David Branch	<i>International Sports Journal</i>
2001	"Ικανότητες που απαιτούνται για τη διοίκηση αθλητικών συλλόγων [Skills required for the management of sports clubs]"	Χρυσή Γιοβάνη	[bachelor's thesis]
2001	"Toward a Conceptual Framework for Sport Management Curriculum: An Exploratory Study"	Lynn M. Jamieson and Kian Lam Toh	<i>Recreational Sports Journal</i>
2000	"Professional Preparation in Sport Management: A Narrative Meta-Analysis"	Lynn M. Jamieson and Kian Lam Toh	<i>Recreational Sports Journal</i>
2000	"Constructing and Validating Competencies of Sport Managers (COSM) Instrument: A Model Development"	Kian Lam Toh and Lynn M. Jamieson	<i>Recreational Sports Journal</i>
1998	"Job Competency Analyses of Entry-Level Resort and Commercial Recreation Professionals"	Charles H. Hammersley and Joanne F. Tynon	<i>Journal of Applied Recreation Research</i>
1998	"Hiring the Right Person: Using the Assessment Center as an Alternative to the Traditional Interview Process"	Craig M. Ross and Stephen A. Wolter	<i>Recreational Sports Journal</i>
1996	"A Study on Research Trends and Academic Challenges in Sports Management"	Joon Suhk Oh and Yong Sik Lee	<i>Journal of Sport and Leisure Studies</i>

Year	Title	Author or authors	Publication title
1993	"An Analysis of Perceived Competencies of 'Sports for All' Manager in Greece"	Ioannis D. Afthinos	[doctoral dissertation]
1991	"Human Resource Management in Recreational Sports"	Gene G. Lamke	<i>Recreational Sports Journal</i>
1990	"Recreational Sports Curriculum: A Perspective"	Lynn M. Jamieson	<i>Recreational Sports Journal</i>
1990	"Professional Preparation Competencies of Recreational Sport Administrators"	Karen A. Regier and Robert L. Boucher	<i>Recreational Sports Journal</i>
1990	"Sport Management Curricular Evaluation and Needs Assessment: A Multifaceted Approach"	Joy T. DeSensi, Dennie R. Kelley, Mary Dale Blanton, and Patricia A. Beitel	<i>Journal of Sport Management</i>
1990	"Competencies for Collegiate Sports Facility Managers: Implications for a Facility Management Curricular Model"	Walter Thomas Skipper	[doctoral dissertation]
1988	"Perceived Importance and Performance of Competencies of Recreational Sport Administrators in Canadian Colleges and Universities"	Karen Ann Regier	[master's thesis]
1987	"Competency-Based Approaches to Sport Management"	Lynn M. Jamieson	<i>Journal of Sport Management</i>
1987	"The NIRSA Certification Exam: Our 'Rite of Passage'"	Susan C. Brown	<i>Recreational Sports Journal</i>
1987	"Graduate Curriculums in Sport Management: The Need for a Business Orientation"	Stephen Hardy	<i>Quest</i>
1986	"Curriculum Perspectives"	Janet B. Parks and Richard J. Quain	<i>Journal of Physical Education, Recreation & Dance</i>
1986	"An Analysis of the Competencies of Athletic Club Managers"	Keith W. Lambrecht	[doctoral dissertation]
1984	"Intramural-Recreational Programs: Selecting Qualified Coordinators"	Robert W. McLellan and James R. Pope Jr.	<i>Journal of Physical Education, Recreation & Dance</i>
1993	"Competency Assessment in Sport Management for the Republic of China"	Chih-fu Cheng	[doctoral dissertation]



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