

Identifying institutional trends in collaborative and interdisciplinary research using bibliometrics

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Research output, in the form of peer-reviewed journal articles, is analyzed to assess the collaborative and interdisciplinary nature of work performed at Indiana State University. Using Thompson-Reuters *Web of Knowledge*, articles authored by ISU faculty over the past 13 years (2000-2012) were analyzed to identify co-authorships, inter-institutional affiliations and cross-disciplinary collaborations. The resulting data can be used to identify trends in publication, research, and funding. The data may also be used to identify potential areas of research for future endeavors. The methodology employed in this study can be easily applied to other institutions.

Methodology: *Web of Knowledge* (WoK) is an interdisciplinary database of peer-reviewed journal literature that includes enhanced, detailed indexing of articles published in the major journals of most academic disciplines. A search strategy is formulated to identify all the authors from a given institution. For ISU, it was a simple zip code search in the author address field. The search results are downloaded, then imported into an Excel spreadsheet. Each article record includes subject heading, source title, institutional affiliation of the authors, country, and other citation information. The records are then compiled and standardized for uniformity in Excel. Textual analysis tools and visualization tools--including word clouds, maps, and bubble charts-- are employed to clarify the data through illustration.

- Tools: ISI Web of Knowledge / Microsoft Excel / Data visualization software
- Process: Download and compile an institution's combined peer-reviewed journal article output for a period of time
- Analyze: Co-author data for internal and external collaborations
- Identify: Areas of strength as indicated by total publication records
- Identify: Subject areas of interdisciplinary research based on author home departments

Results: Data analysis identifies trends and varying degrees of interdisciplinary work across most schools and departments at the University. Visualizations are used to compare the disciplines and identify trends over time. The publishing output highlights the differing degrees of collaboration within the disciplines, identifies institutional partnerships, and the subject areas of research output.

Conclusions: WoK identifies three broad areas of research: 1) Science/Technology/Medicine (STM); 2) the Social Sciences; and 3) the Arts/Humanities. As might be expected, most inter-institutional and inter-disciplinary collaboration occurs within STM. This is no exception at ISU. Likewise, the Social Sciences mostly collaborate among their related disciplines. The Arts and Humanities have the least amount of interdisciplinary collaboration and co-authorship, but that's

not to say it doesn't exist. This study found a significant number of papers that were cross identified in at least two broad areas, and a few papers were included in all three.