Beyond Bibliometrics: Understanding Library Services in Multidisciplinary Research

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Abstract

With a strategic initiative from George Mason University (GMU) to become excellent in multidisciplinary research, Mason Libraries fully supports multidisciplinary research activities. Bibliometrics are used across academic libraries to measure research impact. These measures and resulting visualizations can be used to indicate trends and multidisciplinary connections across university departments and campuses.

Mason Libraries began this project in 2017 as an analysis of bibliometrics and funding across the Science and Technology (SciTech) at George Mason University. The results of this analysis demonstrated understanding of research activities and interactions across the five centers at the SciTech Campus. A sixth center, the Virginia Serious Games Institute (VSGI), also resides on the SciTech Campus, but research products from VSGI cannot be visualized by bibliometrics. This project became a survey of the use of analysis and visualizations, beyond bibliometrics, for library services and academics.

Keywords: research analysis, visualizations, beyond bibliometrics, library services, multidisciplinary research.

Research Questions

1. Bibliometric Analysis

The co-occurrence and co-authorship network graphs (above) generated using VOSviewer indicate that researchers from Center for Applied Proteomics and Molecular Medicine (CAPMM) and Center for the Study of Chronic Metabolic and Rare Diseases (CSCMRD) have collaborated in various research projects prior to 2010. The collaboration between the two institutes expanded to National Center for Biodefense and Infectious Diseases (NCBID). Researchers from Microbiome Analysis Center (Mbac) and Sports Medicine Assessment Research and Testing (SMART lab) have instead expanded their networks with researchers from different institutions since 2010.

2. Funding Analysis

According to the funding analysis, the number of funded research projects associated with the SciTech Campus Centers have been increasing over the years since 2006. Between 2008 and 2017, 2013 is the year with the highest number of funded projects. The top three funding agencies are the National Institutes of Health (NIH), the National Science Foundation (NSF), and the Congressionally Directed Medical Research Programs (CDMRP) respectively. Research activities on the SciTech Campus have grown from biomedicine to applied health over the years.

3. Experience Mapping

Research and the products of research are changing and are more nuanced. The Virginia Serious Games Institute (VSGI) was established on the SciTech Campus in 2014. Currently, it works on three fronts: 1) as an entrepreneurial incubator for start-up companies; 2) as a part of the Computer Game Design program; and 3) as an educational outreach machine which includes the K-12 component the Mason Game and Technology Academy (MSTA). VSGI was the first multidisciplinary entity studied for this project. Consultation data were collected via a Qualtrics survey. This work can provide a roadmap for subsequent multidisciplinary institutes that have been formed at GMU for how libraries can visualize entrepreneurship, events, and research connections to build library services and research connections.

Methodology

Visualizations were created in VOSviewer based on citations using data from the five research centers mined from Web of Science (WoS). The publications citations files were created by indexing GMU publications into two timespans: before 1997 and after 1997 (1997 being the founding date of the SciTech Campus). The search results were filtered from 1997 dataset in WoS to researchers who are associated with the SciTech campus. Citations from the Federal RePORTER and the Web of Science tools were used to generate various visualizations on funding both based on researchers who are associated with centers at the SciTech campus. Tableau was used to visualize funding sources that propel research on the SciTech campus. Experience Mapping visualizations were created in Tableau from library consultation data collected in a pilot project. All data is archived in the Open Science Framework (OSF).

Discussion

Academic libraries are complex organizations, with many touchpoints (interactions at specific times and contexts to meet user needs) and channels of interaction that define the library experience. Research activity outcomes have expanded beyond traditional products captured by citations. Outcomes may include guidelines, apps, performances, games, health enhancing devices, and more. Knowing the research environment and communicating with the researcher includes new customer service emphasis. Mason Libraries is practicing LEAN Customer methods, as well as, utilizing tools to analyze and communicate the research environment. New tools for visualizing research and customer relationships should be researched and developed to highlight libraries unique position in understanding research trends. This work can provide a roadmap for subsequent multidisciplinary institutes that have been formed at GMU.

References


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