

A radical change in LIS doctoral research: a bibliometric mapping from 1960-2013

Introduction

Since the 1960s, Library and Information Science (LIS) has been undergoing an identity crisis that questions the relationship between library and information science (Dillon, 2007). It is argued that library science and information science are two different fields that have strong interdisciplinary relations (Holmes, 2002; Saracevic, 1999) rather than being defined as part of the interdisciplinary field of LIS (Tang, 2004).

As an original contribution to the advancement of knowledge (Johnson, 2009; D. O'Connor & Park, 2001), the LIS doctoral dissertation has been used to investigate disciplinary identity (Sugimoto, Li, Russell, Finlay, & Ding, 2011). Previous studies report the change in LIS by demonstrating the decreasing usage of the word “library” in LIS doctoral dissertations (Finlay, Sugimoto, Li, & Russell, 2012; Sugimoto et al., 2011), but no study yet investigated the evolution of interdisciplinary relations in LIS doctoral dissertations topics. The purpose of this study is to establish the prevalence of LIS PhD topics as well as how they have evolved since the 1960s’, and demonstrate the relationship between these topics using a co-word map.

Literature Review

Scholars began to investigate LIS doctoral dissertations at the end of 1970s (Anselmo, 1982; Lane, 1975; M. O'Connor, 1978). Houser (1982) defines the discipline of LIS by analyzing the research interests of all LIS doctoral dissertations, which is also used in the current research. After examining the title and abstract of LIS doctoral dissertations between 1930 and 2009, Sugimoto et al. (2011) report that the main topics in LIS doctoral dissertations have changed substantially during the past 80 years. Library science is no longer the major research focus in this field: the usage of the term “library science” and library-related words such as cataloging, reference, and collection are diminishing in LIS doctoral dissertations (Finlay et al., 2012; Larivière, Sugimoto, & Cronin, 2012; Sugimoto et al., 2011).

Tang (2004) demonstrates the interdisciplinary characteristic of LIS through citation analysis, and reveals that LIS is a highly interdisciplinary field. Chang and Huang (2012) indicate that the degree of LIS interdisciplinary has increased since the 1970s by investigating the citation, bibliographic coupling, and co-authorship of LIS doctoral dissertations from 1978 to 2007. Prebor (2007) finds that two thirds of doctoral dissertations tagged under “Library Science” or “Information Science” in the ProQuest Thesis and Dissertation Database are contributed by non-LIS students.

Methodology

A manually validated list of PhDs who graduated between 1960 and 2013 and their advisors was compiled first from the MPACT database (MPACT, 2010), which records all LIS PhDs from 1930 to 2009, and second, LIS PhDs who graduated after 2010 and their advisors were identified and added to the list by searching the ProQuest Thesis and Dissertation Database and corresponding university websites. This process produced a list of 3,450 LIS doctoral dissertations out of 3,561 graduated LIS PhD students (96.9%)

and 833 advisors' doctoral dissertations (89.8% of all advisors). 3,172 doctor-advisor pairs (including co-supervision) were formed.

For each dissertation, controlled topical vocabulary subject terms were retrieved. Dissertations with 2 and more topics were coded as interdisciplinary. Every topic pair assigned to interdisciplinary dissertations were labeled as a co-assigned pair of topics. Each topic co-assignment was imported into the Gephi (2015) graph drawing application in order to generate a visual map of the LIS PhD topics where topics are nodes drawn as colored circles and topic co-occurrences form edges (i.e. lines) between them. The data was analyzed by number of topics, decade, and affiliated university.

Findings

From 1960 to 2013, 3,561 PhDs graduated from 44 LIS programs with the University of Pittsburgh as largest source with 406 PhD graduates. The number of LIS PhDs has increased from 18 in 1960 to 114 in 2013 and reaches its highest number of graduates (116) in 2010. Among the 3,450 LIS doctoral dissertations, 1,797 can be considered as interdisciplinary dissertations, with 2 to 7 topics. The average number of topics per dissertation is 1.902; this number has increased from 1.006 in 1960s to 2.701 in 2010s.

Students of interdisciplinary advisors are more likely to produce an interdisciplinary dissertation. This is illustrated by the fact that 79.0% of PhDs whose advisor conducted an interdisciplinary dissertation also chose interdisciplinary topics for their dissertations; this ratio is 50.6% for PhDs whose advisor conducted a single topic dissertation. PhDs who are supervised by senior advisors (measured by the time gap between the graduation years of advisor and student) are more likely to conduct an interdisciplinary dissertation. The advisors' academic background (doctor degree in LIS or non-LIS) does not have an effect on whether their PhD students conduct an interdisciplinary dissertation or not.

“Library Science” is still the most popular topic appearing in 2,326 dissertations (67.4%), but its preponderance decreases from 96.5% in 1960s to 45.0% in 2010s. “Information Science” appears in 1,541 dissertations (44.6%) and becomes the most popular topic after the 2000s; its ratio increases from 0% in 1960s to 81.1% in 2010s. 562 dissertations (16.3%) contain both “Library Science” and “Information Science” while 46 dissertations (4.2%) have neither.

The visual mapping considered 2,356 co-assignment topic pairs and their 10,182 appearances in 1,797 interdisciplinary dissertations. Using Gephi, the interdisciplinary topic maps for each decade are presented (see attached). From 1960 to 2013, “Library Science” and “Information Science” accounts for 12.5% (1,272/10,182) of assigned topic pairs, followed by “information Science” and “Computer Science” (350), and “Information Science” and “Educational Technology” (200). Beyond the increase in multi-disciplinarity, a radical change has occurred where “Information Science” has replaced “Library Science” as the dominant LIS topic since the 1990s.

Conclusion

Based on the analysis and mapping of the evolution of the interdisciplinary relations found in LIS doctoral dissertations, “Information Science” has surpassed “Library Science” and become the dominant research interest in LIS. Notwithstanding this change, a strong relationship between library science and information science still exists and hints that LIS is still an interdisciplinary field.

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