

ACKNOWLEDGEMENTS IN STEM DISSERTATIONS AT THE UNIVERSITY OF TENNESSEE

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Abstract: The acknowledgement section of the doctoral dissertation is the only portion of the document that is not prescribed in structure and content. It provides lasting insight into the mental and emotional transitory process that is the doctoral degree experience. This project explores the scholarly communication literature in dissertation acknowledgements. Additionally, it examines the methodologies utilized in the project such as content analysis, computer aided research, and data mining. While this is a pilot project for a class, the author expects the results when the project is complete to be in line with the initial findings.

Objective: Despite common recognition of the social nature of doctoral research, there remains little detailed empirical work on the social networks through which doctoral research is accomplished. This paper seeks to address this gap by empirically exploring the types and purposes of social connections that support Ph.D. completion.

Method: Content analysis is a method of analyzing written, verbal or visual communication messages (Neuendorf, 2002).¹ It was first used as a method for analyzing hymns, newspaper and magazine articles, advertisements and political speeches in the 19th century (Harwood & Garry 2003).² Today, content analysis has a long history of use in communication, journalism, sociology, psychology and business, and during the last few decades its use has shown steady growth (Neuendorf, 2002).³

Findings: A subset of STEM dissertations from 2006 to about 2016 in the Aerospace Engineering area were hand-coded as a part of a pilot project. This revealed that Academic Support is the largest area of gratitude with 54% proportion, followed by Moral Support at 23% and Financial Support at 13%. The remaining areas of support are very small; Technical Support is 6%, Access to Data is 2%, Other is 2%, and Clerical Support is at less than 1%. The *n* for the Aerospace Engineering data is 196.

Keywords: Scholarly Communication, Electronic Theses and Dissertations, Content Analysis, Data Mining, Computer Aided Research.

INTRODUCTION

Doctoral research does not occur in social isolation. It is a collaborative endeavor in which a variety of people and institutions, knowingly and unknowingly, contribute to the production of the thesis and the development of the doctoral candidate as a researcher (Turner and McAlpine, 2011;⁴ Baker and Lattuca, 2010;⁵ McAlpine et al., 2009;⁶ Darwin and Palmer, 2009).⁷ Social relations and networks are known to aid doctoral progress and improve the Ph.D. experience (Jairam and Kahl, 2012;⁸ Lahenius and Martinsuo, 2011;⁹ Sweitzer, 2009;¹⁰ Lovitts, 2001).¹¹ Peers (such as postdoctoral researchers or fellow candidates), for example, are a source of emotional, social and intellectual support, and can replace or complement supervisory guidance (Kemp et al., 2013).¹² Family, friends and other institutions, groups or places likewise support the Ph.D. candidate through providing meals, shelter, distraction and encouragement.

WORKING HYPOSTHESIS

Over time, library and librarians have had a lessening role in mediating research, particularly in the STEM disciplines due to the proliferation of electronic journals. A Ph.D. student no longer needs to visit library in order to complete a dissertation, but is provided access to resources via internet. The author believes that this transition is documented in dissertation acknowledgments. The two hypotheses presented below do not apply to this pilot study at this time, the first will when the project is expanded to include all of the dissertations in the timeframe. The second will apply should the project be expanded further to include dissertations prior to 2006. These hypotheses are greatly informed by Laurie Scrivener's (2009)¹³ study, Figure 4 on page 245. The hypotheses are below:

H1. Gratitude is expressed to a library or librarian in $\leq 25\%$ of STEM dissertations completed at the University of Tennessee from 2006-2016.

H2. Gratitude is expressed to a library or librarian in $\geq 26\%$, but $\leq 50\%$ of STEM dissertations completed at the University of Tennessee from 1947-2005.

METHODOLOGY

The University of Tennessee University Libraries' Institutional Repository is known as Trace (Tennessee Research and Creative Exchange). All dissertations produced by Ph.D. students are required to be placed in Trace from 2006 going forward. There are some older dissertations in Trace that have been published in the repository at the request of the graduate. These dissertations do not reside on a server in Knoxville, but in Berkeley, California. This is the home of Bepress/Digital Commons, an institutional repository software company. It is commonly used by many university libraries. Unfortunately, getting groups of pdfs out of the Bepress/Digital Commons platform is not an easy undertaking. I was provided an Excel spreadsheet with the metadata of the dissertations that I needed to obtain for my project. This was discouraging. Downloading the dissertations one by one from the repository would take an enormous amount of time. I had been expecting to be able to automate the process.

I posted to a few library listservs asking if anyone using the Bepress/Digital Commons platform had undertaken a similar project and how were they able to automate getting groups of pdfs out of the repository. My initial responses were not hopeful. A few later responses were more informed. However, by then my husband, Scott Bertin, had taken the Excel spreadsheet from me and had written a script to extract the dissertations.

Scott wrote a script in the AWK programming language to extract the dissertations in about four hours. AWK runs on Unix based operating systems and is an efficient language, using a terse vocabulary. It is an excellent filter and report writer.

The first pass of the AWK script produced 2,739 dissertations and took about four hours. However, this first pass was all of the dissertations, not only just STEM. The script needed to be tweaked for just the STEM dissertations and also for time frame. Recent dissertations had embargos on them.

Getting thirty-five groups of dissertations totaling 1,772 into QDA Miner took a bit of time. Also, initially there were a few problems with dissertations that the script was returning that QDA Miner would not accept. Some of the dissertations had odd dots inserted into the titles. When the script was corrected for this, the dissertations went into QDA Miner without difficulty. Some of the pdfs were just a bit corrupted and QDA Miner would not accept them. In those cases, I would save the pdfs as archivable pdfs in Adobe Acrobat and the file would be repaired. Also, saving to another file format would as well, such as Microsoft Word. In the loading process, QDA Miner converts documents into Rich Text Format (RTF) and compresses them.

Loading documents into QDA Miner requires some computing power. The dissertations were loaded using my Dell XPS 13 (9350) with 16 GBs of RAM. My old computer is a Dell Vostro (3555) with 4 GBs of RAM; it tried, but sputtered while loading documents into QDA Miner. It took about a month to load 1,772 cases into QDA Miner. However, this was only loading the cases on a part time basis during the evenings when my computer was not needed for homework or other projects that were due during the course of the term.

The coding for the STEM dissertations project is derived from the work that Dr. Ken Hyland has done with acknowledgments in dissertations (2003).¹⁴ He covers the type of support manifest in dissertation acknowledgments thoroughly in six categories: Academic Support, Access to Data, Moral Support, Clerical Support, Financial Support, and Other.

For the purposes of this pilot project the first group of the thirty-five groups, Aerospace Engineering was used for hand coding for preliminary data gathering. Aerospace Engineering has been the test file throughout the course of the project. It is the first on the list and has a small, but manageable number of dissertations, just sixteen. Coding these dissertations took and putting the codes into an Excel spreadsheet for counting and manipulation, took about three hours. It was a highly revealing and educational process working directly with the data and raised questions about whether or not QDA Miner could be adequately coded to account for quirks in the data.

PRELIMINARY ANALYSIS AND FINDINGS

The pilot data for the Aerospace Engineering is in Figure 1 below.

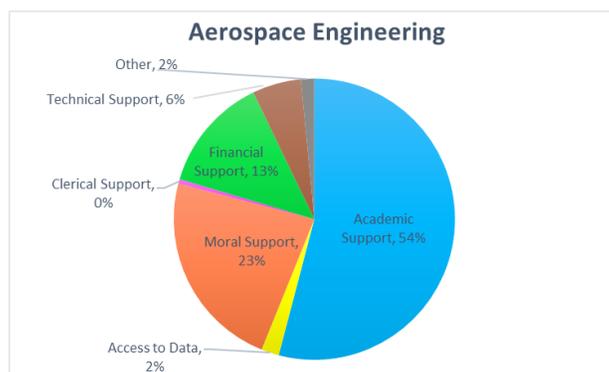


Figure 1. Pie chart for Aerospace Engineering Pilot Data

It is expected that the other thirty-four groups of dissertation acknowledgment data will have profiles that are similar to Aerospace Engineering. Academic Support is the largest area of gratitude with 54% proportion, followed by Moral Support at 23% and Financial Support at 13%. The remaining areas of support are very small; Technical Support is 6%, Access to Data is 2%, Other is 2%, and Clerical Support is at less than 1%. The *n* for the Aerospace Engineering data is 196.

CONCLUSION

There is a strong focus in the acknowledgment literature on persons as information and support resources, regardless of whether these persons were known prior to the writing process or encountered during this process. Various individuals, communities, and supporters provide information, and this information differs, along with its context. Librarians are rarely mentioned in STEM dissertations, but much more so in the Humanities area. Gratitude towards those who provide moral and emotional support throughout the writing process becomes intertwined with thanks given for help in information-seeking.

NOTES

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²Harwood T.G. & Garry T. (2003). An overview of content analysis. *The Marketing Review*, 3, 479–498.

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⁹Lahenius, K. & Martinsuo, M. (2011). Different types of doctoral study processes. *Scandinavian Journal of Educational Research*, 55, 609-623. <http://dx.doi.org/10.1080/00313831.2011.555924>

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¹¹Lovitts, B.E. (2001). *Leaving the Ivory Tower: The Causes and Consequences of Departure from Doctoral Study*. Washington, DC: Rowman & Littlefield.

¹²Kemp, M.W., Molloy, T.J., Pajic, M. & Chapman, E. (2013). Peer relationships and the biomedical doctorate: a key component of the contemporary learning environment. *Journal of Higher Education Policy and Management*, 35, 370-385.
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¹⁴Hyland, K. (2003). Dissertation acknowledgements the anatomy of a Cinderella genre. *Written Communication*, 20, 242-268. <https://doi.org/10.1177%2F0741088303257276>

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