Initial Study of Information Literacy Content in Engineering and Technology Job Postings

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Initial Study of Information Literacy Content in Engineering and Technology Job Postings

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Abstract—The goal of this research category work-in-progress study is to investigate the information literacy needs and expectations of employers who hire new engineering and technology graduates, through content analysis of job postings. It seeks to answer two questions: (1) Which information sources do employers expect engineering and technology graduates to know and use on the job and (2) in what ways are new engineering and technology hires expected to interact with information?

A collection of 1502 entry-level job postings aimed at undergraduate engineering and engineering technology students was gathered from a university career center database for the time period May 2017 to May 2018. Three researchers coded a sample of the job postings to calibrate and to develop a code book consisting of the types of information mentioned (journal articles, laws and regulations, technical requirements and specifications, product literature, technical reports, patents, and technical standards and codes) and specific ways of interacting with information (gathering, learning, evaluating, using, managing, creating, and communicating). Next, each researcher utilized NVivo to analyze a subset of the postings using the code book. The researchers will conduct additional analysis in order to make sure the data is reliably coded, but some trends are already obvious.

Preliminary results suggest that employers often place their emphasis on different sources of information than those traditionally emphasized in academic settings. Job postings that deal with information sources list experience with standards and codes, both in general and citing specific organizations or documents, as the most common information source requirement. In contrast, journal articles and conference proceedings, often the focus of IL instruction, are barely mentioned in this data set. These findings indicate the need for a new approach to information literacy by engineering educators and librarians to better align with workplace information use.

Index Terms—Workplace Information Literacy, Undergraduates, Information Skills, Engineering Technology, Engineering

I. INTRODUCTION

Information literacy (IL) is a set of interrelated and interdependent skills, abilities, and practices for gathering, using, managing, and communicating information. The Accreditation Board for Engineering and Technology (ABET) emphasizes these skills in Criterion 3 of their accreditation standards for Engineering [1] and Engineering Technology [2], and specialist librarians often collaborate with engineering and technology faculty to incorporate this vital IL content into their courses. In order to better make the case for information literacy instruction in engineering and technology courses, librarians have worked to make the case that IL content aligns with ABET requirements. Riley et al. [3] mapped the ACRL/ASEE/STS information literacy standards for science, technology, and engineering to Criterion 3, highlighting the high degree of correlation. Sapp Nelson & Fosmire [4] used the same approach to highlight the connection between information literacy and lifelong learning.

Work has also been done to determine industry expectations facing graduating students as they enter the workforce. Lloyd [5] looked at how information literacy is conceptualized outside of academia, specifically in the workplace, highlighting the gap between the text-based, theory-driven approach to information literacy students get in educational settings with the much broader and more practical information practice they may encounter in the workplace. Jeffryes & Lafferty [6] examined the information needs of engineering students in a co-op workplace setting, showing a mismatch between the information skills the students were learning in school and the information skills they were expected to use as co-op students. As an example, students were comfortable with books and journal articles as a source of information, but not with the industry standards that were heavily used in their co-op workplaces. Phillips et al. [7] compared the information needs and habits of engineering undergraduates and practicing engineers at a major company, identifying similar gaps. The students, while highly confident in their own abilities, were less adept at staying current with new information in their field than the engineers, relying on social media tools to gather information versus the engineers’ heavy use of knowledge management systems.

Graduating students often search through job postings to find potential employment. Employers calibrate their postings to filter for the specific skills and experiences they would like to see in new employees, and often these skills and experiences relate to information. An employer, for example, might specify that candidates should be able to use a certain knowledge management tool or have facility with information products like standards, patents, or legal documents.

This is the first study examining information literacy through the lens of engineering and engineering technology job postings. These job postings, in aggregate, can give us critical insight into what IL proficiencies would be most
The figures and methods sections are not complete or clear in this document. It appears there may be issues with the transmission or presentation of the text. The content seems to be discussing information source types and methods for collecting and analyzing job posting data to understand employer expectations for entry-level engineering and technology graduates. The research focuses on identifying the types of information sources employers expect graduates to know and use, as well as the ways they interact with information. The data analysis includes deductive and inductive content analysis to understand the information needs of employers. The authors propose recalibrating information literacy instruction to better align with employer expectations.
better prepare students for the information challenges they may face in the workplace. Journal articles, often the default information source discussed in the college classroom, were referenced in the job postings, but at the same relatively low level as technical reports, patents, and product literature. All of these information sources, though, were referenced at a much lower level than technical standards and legal and regulatory information. While more work needs to be done in order to clarify the exact parameters of the demand, the obvious takeaway from this preliminary data is that a focus on journal articles at the expense of other information sources is not meeting the needs of engineering and technology students or their employers. Therefore, this can make the case for breadth in the information sources discussed in information literacy instruction in engineering and technology classrooms, with a particular emphasis on technical standards, laws, and regulations.

A. Next Steps

The next steps for this project will involve further calibration between the investigators in order to better capture accurate data, with a goal of a Fleiss’ kappa inter-rater reliability rating of 0.75 or above. The investigators will also assess the data set for specific information literacy skills (locating information, presenting information, etc.), potentially highlighting additional areas of workplace information literacy expectations for libraries and librarians to incorporate into their curricula.

REFERENCES


