Survey of Library Services at Engineering News Record Top 500 Design Firms: What has changed since 2004?

Abstract

In October 2002 a survey was mailed to *Engineering News Record's* Top 500 Design Firms. The survey was in two parts. One part was to be completed by a principal in the firm. The second part was to be completed by the librarian if the firm employed one. Goals of the survey were to gather information about how engineers in design firms obtain needed information without a librarian, if engineers could find information without assistance, and what types of information were typically sought.

Librarians were asked if they have a master's degree in library science and whether it was a requirement for their job, what databases they use and the types of information they are asked to find, and if they serve more than one office and if these offices were within one state, multi-state, or multinational.

In October 2014 a similar survey was sent to *Engineering News Record's* Top 500 Design Firms. The purpose of both surveys was to assess the prevalence of degreed librarians and the types of resources available in engineering design firms. In the decade since 2004, when the article describing the survey results was published[1], the U.S. experienced an economic crisis. With this in mind, the author of the original survey wanted to repeat the study to learn what, if anything had changed at the engineering firms in the preceding decade. In October 2014 a survey was mailed to 500 engineering design firms using the most recent version of the Engineering News Record's Top 500 Design Firm list.

Background

As in 2004, there is still no other detailed study of librarians in consulting engineering firms. There is, however considerable literature on engineering libraries and librarianship in the academic setting. Much is also written about the information-seeking behavior of engineering students and faculty. The following are three recent examples.

Waters, Kasuto and McNaughton, two academic engineering librarians and a librarian at an engineering firm, collaborated on a study of the information needs of working engineers. It was hoped that this collaboration would help the academic librarians better prepare their students for life after graduation when information resources, including librarians would likely be less than was available at their university. The authors found that "…to best use the limited time available for instruction we will concentrate less on tools, such as specific databases, and more on transferable skills."[2] A skill such as the evaluation of information found without the use of specialized databases was determined to be particularly useful for students transitioning to the workplace.

Jeffryes and Lafferty explored the workplace readiness of engineering co-op students at the University of Minnesota. Thirty-six co-op students completed an online survey dealing with

information seeking while on the job. Every student reported needing to locate at least one type of information. Standards were deemed most difficult to find by the respondents. The authors suggest that more assignments requiring the use of information sources in the engineering curriculum would be helpful.[3]

Wertz, Purzer, Fosmire and Cardella conducted a content analysis of memos written by teams of engineering students. The purpose of their study was to assess the information literacy skills of the students. The authors found that the student teams relied most often on Web resources and that their documentation skills were weak.[4]

In October 2014, with the tenth anniversary of the original survey and the 2007 economic crisis having passed, the decision was made to mail another survey to the *Engineering News Record* Top 500 Design Firms. The economic crisis was assumed to have had a negative effect on the number of firms who would report employing a degreed librarian.

Methodology

The survey was in two parts (see Appendix). One part was to be completed by a principal of the firm. The other part was to be completed by the degreed librarian, if the firm had such a position. For the purposes of this study, the term "degreed librarian" refers to a person with a Masters in Library Science (MLS) or its equivalent.

 A "principal" is often an owner of the firm. Always they are in senior management positions and are in charge of projects. Since a principal would likely have more knowledge of the firm as a whole than a junior engineer, it was decided that a principal should complete a survey. The minimum qualification for librarians in the United States is the MLS, although some librarians have an additional Masters degree in a subject area. Most often librarians with dual Masters degrees are employed in academic libraries. Busy engineering executives might be disinclined to complete a lengthy survey about library services therefore it was felt that keeping the survey short, while providing less detail, would result in a higher return rate. Principals were asked eleven questions and librarians were asked seven. Both the principal and librarian survey instruments were limited to the front and back of one sheet. This was the same design used in the 2004 survey.

The mailing list was purchased from *Engineering News Record*. This mailing list was chosen because it was composed of the most profitable engineering design firms in the United States. The most profitable firms would be most likely to have a full complement of services such as a library staffed by a Master's degreed librarian. An online survey was considered but rejected due to the difficulty in obtaining email addresses for employees of private companies.

The return rate was 16.4%, or 82 responses. The 2004 survey had a return rate of 21.8%. Since both surveys were anonymous it is impossible to know with certainty the reasons for non-returns. Some firms have a policy of not responding to surveys that do not relate directly to engineering. The response rate for principals was calculated based on the 82 responses received, with 2

surveys being returned as "undeliverable as addressed." The response rate for librarians was calculated based on the 20 responses received.

Survey Results

The firms ranged in size from 130-12,400 employees, including all employees at all office locations. The average size of the firms was 476 employees. The survey instrument asked principals if their firm had a library. Principals were free to define "library" for themselves. Responses indicated that some "libraries" consisted mainly of supplier catalogs or regulations related the firm's work. Of the principals responding, 69.5% indicated that they had a library.

Of all the respondents, 13.4% have a librarian. One firm reported that their librarian had an orientation program for newly hired engineers. In 91.3% of firms without a degreed librarian engineers obtain information on their own. In 37.6% of firms without a degreed librarian a secretary or other employee has the library as part of their duties. Local libraries are used by engineers in 21.7% of firms without a degreed librarian. The reasons most often given for not having a librarian were "financial" in 44.2% of firms and "no need" in 40% of firms

Figure 1. Information types needed at firms without a degreed librarian
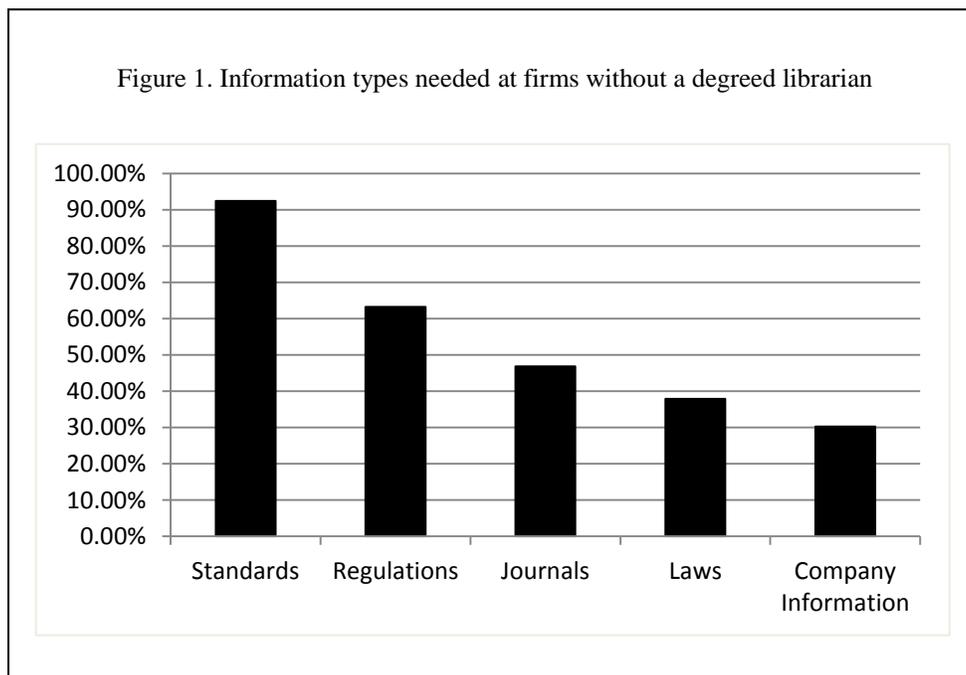
Of principals responding, 25.6% indicated that they felt newly hired engineers were able to locate information on their own. When asked how engineers obtain information in firms without a librarian principals who said they did not employ a librarian because they didn't need one were compared with those who said newly hired engineers are not able to find needed information on their own. There was an overlap of 45.7% between the two groups.

Of the principals responding, the types of information most often needed by their engineers was standards 92.4% of firms, regulations 63.2% of firms, journals 46.8% of firms, laws 37.9% of firms, company information 30.3% of firms (see Figure 1). At 83.5% of firms responding there

are no databases available. Nine firms subscribe to LexisNexis, two subscribe to Compendex and two subscribe to Dialog (see Figure 2). The largest firm responding subscribed to 12 databases including LexisNexis, Knovel, Compendex, Science Direct, Business Source EBSCO, IEEE Xplore, SNL, Bloomberg environmental reporter, IHS Plus, Northern Light, Capital IQ, Energy Central. The list of databases was the same whether provided by the librarian or a principal.

Figure 2. Databases available
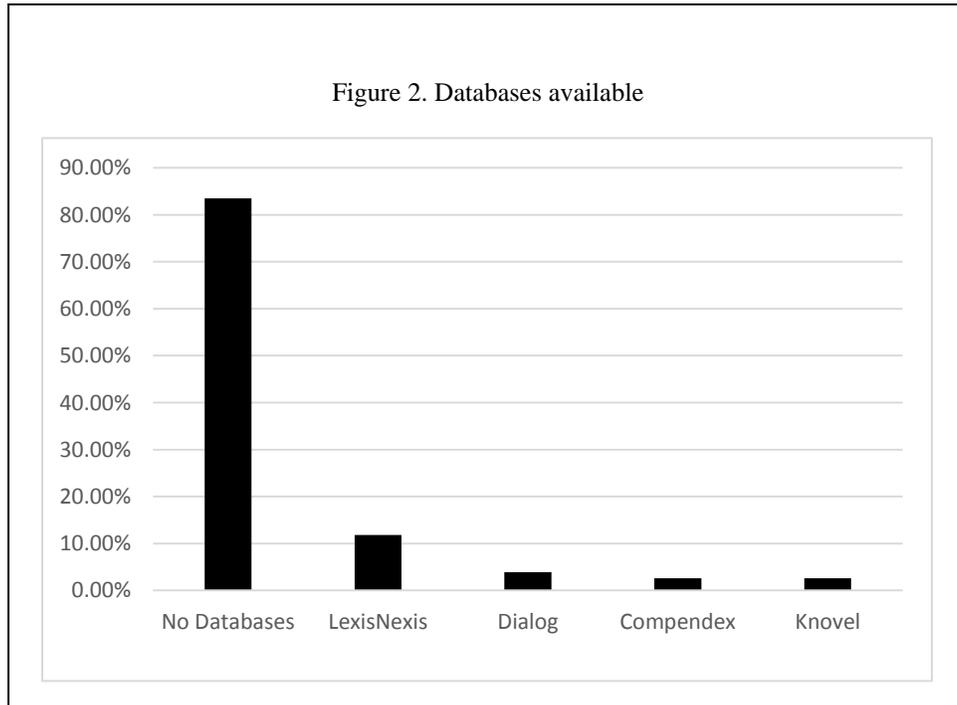
Twenty-five percent of the librarians responding reported that an MLS was required for their position. When asked if most research materials available to engineers was in print, electronic or both formats, 65% responded that most materials were in both formats, 20% indicated that most materials were in electronic format. Only one librarian indicated that mainly print materials were available. The size of the firms having librarians ranged from 250 to 12,400 employees.

Discussion and Conclusions

The Association of College and Research Libraries defines information literacy as: "…a set of abilities requiring individuals to recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information."[5]

Once students graduate and begin careers as engineers they should be information literate. This study shows that most engineers in design firms have limited access to information resources so teaching effective use of search engines like Google and how to know when assistance from a local library might be appropriate could be essential parts of the engineering curriculum.

Since 2004 there has been a small increase in database access. The current study found 83.5% having no access and in 2004 it was 86.2%. The most popular database in the 2004 study was

Dialog with 7.3% of firms having access. In the current study LexisNexis was the most popular with 11.3% of firms responding reported having a subscription.

The percentage of firms in 2004 having a library was 81.6. In the current study that percentage dropped to 69.5. In this study only 13.4% of the firms had a degreed librarian. In the 2004 study 25.6% of the firms had a degreed librarian. Also in this study 44.2% of the principals at firms without a librarian reported there was no need and 25.3% of principals who feel newly hired engineers are able to obtain information without assistance of a librarian. More firms have database access now but engineers are left on their own to use them.

The size of the firm did not directly correlate to the likelihood of having a librarian. A firm with 3,500 employees did not have a librarian, while a firm with 260 employee did have a librarian. However, the median size of a firm with a librarian was 411 employees and the median size of all the firms was 173. The largest firm in the current study reported having both a librarian and subscriptions to the largest number of databases of all the firms.

Some principals reported that senior engineers helped junior engineers locate information. Since senior engineers are managing projects and personnel it seems likely that they would have limited time to provide assistance with database or Internet searching. At over a third of firms without a degreed librarian a secretary or other employee had running the library as part of their duties. It is possible for someone to be skilled at locating information without an MLS degree. However, when this is only part of your duties such an employee may not be able to devote sufficient time to searches.

With the majority of the design firms in the study having no database access, no library or librarian engineers are assumed to be able to locate information through search engines such as Google. While databases such as Compendex, SciFinder Scholar or Inspec are widely available through university libraries, those same resources are often not available at engineering firms. A suggestion supported by the work of Waters, Kasuto and McNaughton[6] is to help students to learn how to be skilled Google searchers and to know when to seek out a librarian at a local library while also exposing them to the subscription resources available at a university library.

References

[1]Napp, John B. "Survey of library services at Engineering News Record's top 500 design firms: Implications for engineering education." *Journal of Engineering Education* 93, no. 3 (2004): 247-252.

[2] Waters, Natalie, Emily Kasuto, and Fiona McNaughton. "Partnership between Engineering Libraries: Identifying Information Literacy Skills for a Successful Transition from Student to Professional." *Science & Technology Libraries* 31, no. 1 (2012): 124-132.

[3] Jeffryes, Jon, and Meghan Lafferty. "Gauging workplace readiness: Assessing the information needs of engineering co-op students." *Issues in Science and Technology Librarianship* 69 (2012).

[4] Wertz, Ruth EH, Şenay Purzer, Michael J. Fosmire, and Monica E. Cardella. "Assessing information literacy skills demonstrated in an engineering design task." *Journal of Engineering Education* 102, no. 4 (2013): 577-602.

[5] "Information Literacy Competency Standards for Higher Education", American Library Association, September 1, 2006. http://www.ala.org/acrl/standards/informationliteracycompetency (Accessed February 2, 2015) Document ID: efeb57df-7090-e1d4-558f-d59c7537f9c7

[6] Waters, Kasuto and McNaughton. "Partnership between Engineering Libraries."

<u>Appendix</u>

<div align="center">
To be completed

by a principal in the firm.
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1. Does your firm have a library?

    ___Yes   ___No

2. Does your firm have a degreed (Masters of Library Science or equivalent) librarian on-site (someone for whom this is their primary job)?

    ___Yes (If yes, proceed to question 7)   ___No

3. Is the reason you do not have a librarian on-site…

    ___Financial   ___ Because our firm does not need one

    ___Other _____

4. If you do not have a librarian on-site, do you outsource library-type research?

    ___Yes   ___No

5. If you do not have a librarian on-site and are not outsourcing those function, how is needed information obtained?

    ___Engineers get what they need on their own

    ___A secretary of other non-engineer has research as part of their work assignment

    ___Local college, university, or public libraries are utilized

6.   If you do not have a librarian on-site, is there a catalog or database of research material owned by the firm to assist in locating the materials?

___Yes   ___No

7.   What type of information is most often needed in your firm? (Check all that apply)

___Regulations (OSHA, EPA, or state rules)   ___ Standards   ___Laws

___Patents or other technical data   ___Journal articles   ___Company information

Other _____

8.   What database(s) does your firm subscribe to? (Circle all that apply)

Dialog   LexisNexis   STN   Knovel   Engineering Village/Compendex

Other_____

9.   Do you believe newly hired engineers are able to find needed information without assistance?

___Yes   ___No

10.   How many employees are at your location (including principals)?

_____

11.   How many employees are in your firm at all locations total (including principals)?

_____

To be completed by the librarian.

1.   Do you have an MLS (Master in Library Science) degree or its equivalent?

___Yes   ___No

2.   Was an MLS required for your current position?

___Yes   ___No

3.   What database(s) does your firm subscribe to? (Check all that apply)

___Dialog   ___LexisNexis   ___STN

 ___Knovel   ___Engineering Village/Compendex

___Other_____

4.   What type of information are you asked to find most often?

___Regulations (EPA or state rules)   ___Standards

___Laws/Building Codes   ___Patents or other technical data

___Journal articles   ___Company information

___Other_____

5.   Is most of the research material available to engineers at your firm in electronic or print format?

___Electronic   ___Print   ___Both

6.   Do you provide services to more than one office? (Check all that apply)

       ___No   ___Yes, to offices in this state

       ___Yes, to offices in multiple states

       ___Yes, to offices in other countries

7. In your position as librarian, indicate the percentage of a typical week devoted to each category: (must add up to 100%)

Cataloging

Reference

Web searching

Database searching

Administrative responsibilities

Shelving, filing loose-leaf materials

Document delivery

Non-library duties

Other