

Librarians help high school students improve research skills

Yamila M. El-Khayat, MA

See end of article for author's affiliation.

DOI: <http://dx.doi.org/10.3163/1536-5050.104.3.009>

Millennials, the generation born from the early 1980s to early 2000s, and anyone born after them are often assumed to be effective information technology users who, because of their experience growing up with technology, are fully prepared to enter today's technology-rich workplaces after completing their education. Yet it is becoming increasingly clear that tech savviness by itself does not guarantee having the essential skills that many employers are looking for—skills that can vary all the way from working with spreadsheets to higher-level problem solving to the ability to perform high-quality research. Goodman found that “Millennials may be on track to be our most educated generation ever, but they consistently score below many of their international peers in literacy, numeracy and problem solving in technology-rich environments” [1].

Since at least 1966, the National Library of Medicine (NLM) has had discussions about reaching out to students in kindergarten through twelfth grade (K–12). In 2006, NLM's 10-year long-range plan recognized the need “for a greatly expanded and more diverse workforce of clinicians, informaticians and librarians” [2]. It recommended that NLM help to meet this need by continuing to adapt its existing educational programs and by “increasing its focus on K–12 education.” Today, NLM's Division of Specialized Information Services provides a robust offering of K–12 science and health education resources to help teachers introduce, reinforce, and supplement education programs [3].

Librarians, working in collaboration with teachers, are in a position to help prepare today's K–12 students to become the health professionals of tomorrow. As a health sciences outreach services librarian who has worked with K–12 students and teachers, I have learned that teachers can greatly benefit from and deeply appreciate having health information professionals work with them in the classroom. One teacher I have been working with for a couple of years mentioned to me that materials such as curricula are very useful yet not sufficient: Often more complex questions arise, and having a health information professional present in the classroom at certain key points in the curriculum to

answer intricate questions and to work with the students through parts of the research process is extremely helpful.

As the outreach services librarian at the University of Arizona Health Sciences Library, I have been partnering with high school science teachers for five years. I work mainly with juniors and seniors (eleventh and twelfth grades) from about thirteen high schools each year. Included in the students' experience—usually toward the beginning of the school year—is a visit to the university campus and the health sciences library. For many students, visiting a university campus is a new experience. In the library classroom, the students, who have been assigned a research project beforehand, are taught the fundamentals of database searching and are assisted in locating literature relevant to their project. This model teaches students research skills that they can apply to both current and future classroom assignments, while at the same time exposing them to the university environment, demystifying it, and, for many, helping them begin to realize that higher education can be an attainable goal.

Recently, I have had conversations with several elementary school teachers and librarians to explore the possibility of working with students and teachers at earlier grade levels. One idea includes working with students in connection with school gardens and seed libraries; helping them learn about food, diet, and nutrition; and maybe learning about some basic research concepts in the process and to do so in such a way that students can take some of these concepts back home with them. Based on this preliminary brainstorming, I think there is potential for health sciences librarians to make meaningful impacts even at the earliest grade levels.

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AUTHOR'S AFFILIATION

Yamila M. El-Khayat, MA, yme@ahsl.arizona.edu, Outreach Services Librarian, Arizona Health Sciences Library, University of Arizona, Tucson, AZ

Received July 2015; accepted February 2016

Virtual embedded librarianship program: a personal view*

Trey Lemley, MLIS, JD, AHIP

See end of article for author's affiliation.

DOI: <http://dx.doi.org/10.3163/1536-5050.104.3.010>

This commentary provides an overview of the author's experience as a virtual embedded librarian with the University of South Alabama College of Nursing. My involvement has increased every semester, and most recently, I have been assigned as the solo librarian to classes with 300–500 students. As a virtual embedded librarian, I have never interacted with an enrolled master of science in nursing (MSN)/doctor of nursing practice (DNP) student face to face; however, I have spoken live via telephone with students throughout the United States and abroad, including from Canada, Germany, and Japan. Herein, I present a brief overview of the embedded concept. In addition to summarizing my responsibilities, I discuss the challenges that I have faced and best practices for developing an embedded librarianship program.

A NEW MODEL OF LIBRARIANSHIP

Technology has changed the way people use information, and as a consequence, traditional models of reference are not always the most effective means of providing service to library users. In an effort to increase responsiveness and relevance, the embedded librarian model has developed as a new paradigm of librarianship to take “library services and resources to the user, regardless of the user's

locale, through various effective routes that will meet the needs of the users” [1]. In contrast to the traditional model of reference in which the librarian serves one library user at a time, the embedded librarian becomes a team member by providing personalized services through integration, collaboration, and establishment of a strong working relationship with an entire community of information users [2].

Another distinguishing characteristic of the embedded model is its proactive focus: instead of simply responding, the embedded librarian anticipates information needs and provides customized “bespoke” service to the user group.

A NEW MODEL OF EDUCATION

The MSN and DNP programs of the University of South Alabama College of Nursing are offered exclusively in an online and asynchronous format; therefore, students do not come to the physical campus to attend classes. Because students (and some faculty) are located throughout the United States and in foreign countries, it would be impossible for a librarian to provide traditional “in-person” reference service. Therefore, nursing faculty and librarians decided to “embed” librarians of the University of South Alabama Biomedical Library in online nursing courses. In 2012, I became a virtual embedded librarian in graduate nursing courses, after a long period of scholarly collaboration with University of South Alabama nursing faculty, which

* Based on a poster presentation at MLA '15, the 115 Annual Meeting of the Medical Library Association; Austin, TX; May 17, 2015.



Supplemental Figure 1 and Figure 2 are available with the online version of this journal.