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Research Article

Use, Perceptions, and Awareness of LibGuides among Undergraduate and Graduate Health Professions Students

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Abstract

Objective – This study investigated usage, perceptions, and awareness of library research guides created using Springshare's LibGuides among undergraduate and graduate health professions students.

Methods – The researchers recruited 100 health professions students in April 2017 from Hunter College, a senior college within the City University of New York system. Participants were asked to complete a paper survey to ascertain their use, perceptions, and awareness of Springhare's LibGuides.

Results – Nearly two-thirds of study participants were not aware of library-created LibGuides and 68% had never used this tool. Compared to undergraduates, graduate students were more likely to be aware of LibGuides. The use of LibGuides was higher among graduate respondents (43%) than their undergraduate counterparts (30%). The study found low awareness and use of LibGuides among health professions students overall, regardless of age, gender, academic level, and health sciences concentration. Physical therapy students were more likely to use and be familiar with LibGuides than nursing, medical laboratory sciences, and speech-language pathology and audiology students. Participants reported using general subject guides more than course-specific guides, and the most commonly used page was the Databases guide. Of those participants who had used LibGuides, the vast majority (97%) said they found them useful in their studies.

Conclusion – This study demonstrates low usage and awareness of LibGuides among health professions students at a large urban public college. Findings suggest a need for academic libraries serving such students to develop and implement strategies to promote awareness and increase usage of online research guides. The researchers recommend instructing with LibGuides during information literacy sessions and demonstrating their usefulness during reference consultations. Additional strategies include linking LibGuides to course sites through learning management systems such as Blackboard and collaborating with faculty members to better inform students about the guides.

Introduction

LibGuides is a cloud-based tool offered by the internet software company Springshare that enables users to create and easily edit web pages of useful resources in a subject area or for a specific course. LibGuides often provide links to books from the library's catalogue, instructions for searching databases, and lists of relevant journals or recommended resources. With this tool librarians can "synthesize vast amounts of information about databases, websites, journals, and other sources, and list only the most relevant sources for a particular subject" (Ouellette, 2011, pp. 436-437). Today, many academic libraries offer access to LibGuides or other online research guides from the home pages of their websites.

At Hunter College's Health Professions Library (HPL), librarians utilize research guides to teach bibliographic instruction classes, conduct research consultations, and answer queries at the reference desk. Students can access the guides by first clicking on an icon labeled "Research Guides" on the home page of the library's website, then choosing from an alphabetical list of subjects. When viewing this list or an individual guide, the guides are identified under the heading "LibGuides."

The authors designed this study to gain insight into the use and awareness of LibGuides among undergraduate and graduate health professions students at Hunter College. These students differ from other populations studied as health professions students not only follow different

curricula but also work in clinical and hospital settings where they face time constraints and rely on evidence based information to make point-of-care decisions. Previous researchers have noted that "[h]ealth care professionals are faced with a need to acquire and apply information in an immediate sense (e.g., students may be asked to evaluate a case study of a patient exhibiting particular symptoms, and must be able to easily locate a valid resource for examining this patient and correctly diagnosing him). Nursing students exemplify this demand" (Barnett-Ellis & Restauri, 2007, p. 121). Given these needs it is likely that, for example, nursing students who are preparing for careers in medical centers will have different information-seeking practices—including subject guide usage—than humanities or social sciences students who aspire to teach and conduct research in academic settings.

Some studies have identified differences in the types of information favored by health sciences students compared with others. In a study of the research habits of doctoral students in the United Kingdom, Carpenter (2012) found that "Google or Google Scholar . . . were strongly favoured above other sources by arts and humanities, social science and engineering and computing science students; while citation databases or ejournal search interfaces were equally as popular as Google among biological and biomedical sciences students" (Carpenter, 2012, p. 6). Similarly, in a citation analysis of doctoral theses defended at Vilnius University in Lithuania, Grigas et al. (2017) found that "in biomedical sciences the most popular type of information was peer-reviewed papers. . . . The social sciences and the humanities manifest an analogous situation with printed books" (p. 14). The researchers hope that the findings of this study are valuable to academic reference and instruction librarians and will add to existing library and information science (LIS) literature on research guide usage, awareness, and perception among health sciences students.

Literature Review

For decades, librarians have used subject guides to introduce patrons to topics and support the use of library resources. Whether known as "research guides, pathfinders, electronic library guides, [or] webliographies," in academic libraries these tools have traditionally aimed to "assist students with their research needs" (Staley, 2007, p. 119). The Web-based Springshare product LibGuides evolved in recent years from academic subject guides and similar tools developed by librarians or offered by vendors. First launched in 2007, LibGuides differed from many previous "static forms" of subject guides in that the LibGuides platform "allows content to be dynamically pulled in from other sources, shared across multiple guides, and . . . is also based around the concept of reuse and sharing, not just of in-house material, but also guides created by other institutions, supporting a culture of best practice and minimising duplicated effort" (Dalton & Pan, 2014, p. 516). The ease with which even basic users can edit and update LibGuides led to a remarkable expansion in their use; writing from a North American perspective, Almeida and Tidal (2017) found that LibGuides "have become ubiquitous in academic library environments" (p. 63). A study conducted from 2011 through 2013 examining subject guides on the websites of U.S. academic libraries belonging to the Association of Research Libraries found that 71% of libraries surveyed used the LibGuides platform (Jackson & Stacy-Bates, 2016, p. 222). As Giullian and Zitser noted in 2015, LibGuides have proliferated internationally as well, based on global statistics tracked on the LibGuides Community site (p. 173). This growth has since continued, reaching 731,795 total guides created at 5,460 institutions in 95 countries by March 2020 (Springshare, 2020).

Given the prevalence of LibGuides, it is vital for librarians to understand their impact and

effectiveness for patrons. A corresponding body of LIS literature has emerged, focused on a few primary themes, including "guide content and arrangement, the use of guides, and promotion of their use" (Jackson & Stacy-Bates, 2016, p. 220). A smaller number of studies have focused on specific aspects of guide usage or types of users. One study conducted at San José State University examined the use of LibGuides among more than 1,000 undergraduate nursing, journalism, mass communications, and organization and management students (Staley, 2007). Findings indicated high usage of the "online databases" research guide, particularly among nursing students (p. 125). Ouellette (2011) reviewed the use of LibGuides at Concordia University College of Alberta by conducting in-depth interviews with 11 students from diverse academic backgrounds, identifying lack of awareness about LibGuides as one reason respondents did not use them. By contrast, Staley (2007) discovered participants who attended information literacy sessions at the San José State University library were more likely to utilize subject guides. This indicates the value of raising awareness of LibGuides at library workshops or instruction sessions.

Studies have shown that library users hold a wide range of views toward the usefulness of LibGuides. This ambivalence is not specific to the LibGuides brand; as Dalton and Pan (2014) note, "to date subject guides have received a mixed response in terms of both usage levels and user feedback" (p. 516). In an early study focusing on user perceptions, researchers at George Washington University surveyed 210 students about the usefulness of LibGuides (Courtois, Higgins, & Kapur, 2005). Results indicated nearly one third of respondents did not find research guides "helpful," while slightly more, 35%, described them as "[v]ery helpful" (Courtois, Higgins, & Kapur, 2005, p. 192).

Some researchers have focused on usability testing, exploring how issues of guide structure,

layout, and navigation affect user experience and educational value. In one usability test conducted at Metropolitan State University in Minnesota, investigators observed "a great deal of frustration and confusion on the part of the participants" when asked to perform tasks using the library's LibGuides (Sonsteby & DeJonghe, 2013, p. 86). That study identified "six major design issues" with LibGuides, involving confusion about the placement or purpose of search boxes, ambiguity or inconsistency with language or labels used within or across guides, excessive tabs or clutter, and confusing contact information for assistance (Sonsteby & DeJonghe, 2013, p. 86). These findings correspond to several "common usability impediments" that Thorngate and Hoden (2017) identify in their review of the literature on LibGuides usability and design (p. 845). These obstacles include "inconsistent design" from page to page or from guide to guide, "confusing terminology/reliance on library jargon," cluttered pages that lack a "focal point," and "too much content, not appropriately scoped to the task at hand" (p. 846). Such impediments risk making LibGuides harder to use and less pedagogically effective for students.

Librarians can address such issues with targeted preparation when creating subject guides. As Almeida and Tidal (2017) point out, "just because librarians have subject expertise and knowledge of specialized research practices does not necessarily mean they can create digital resources that will be easy for students to use or that will address the information needs students have in different contexts" (p. 63). When crafting research guides, librarians must consider factors such as the selection of high-quality resources, arrangement of those resources, annotations that properly describe guide content, and the accuracy and currency of links (Jackson & Stacy-Bates, 2016, p. 220). Librarians in this role should receive sufficient training and maintain awareness of best practices to ensure the guides they promote are as useful and relevant as possible.

Some studies have looked at the roles LibGuides can play in health sciences libraries. Britton and Li (2019) identified "numerous positive results" the University of South Alabama's Biomedical Library derived from its implementation of LibGuides, including consolidating access to e-books that would otherwise be siloed by platform or vendor (p. 36). In a survey of nursing LibGuides at 50 institutions across the U.S., Stankus and Parker (2012) identified a "common core" of recommended resources, consisting of "CINAHL, some version of PubMed or MEDLINE, perhaps one or two point-of-care information services, a relative handful of classic reference sources, a few widely recognized journals, and websites, with an overall emphasis on any resources that deal with evidence-based practice" (p. 254). However, to the best of the authors' knowledge, previous studies have not explored the use of LibGuides among physical therapy, medical laboratory sciences, or speech-language pathology and audiology students. In addition, previous studies have not collected data about students' academic level, undergraduate class level, or demographic factors. This paper attempts to fill these gaps in the LIS literature.

Aims

The goal of this exploratory study was to examine usage, perceptions, and awareness of LibGuides among undergraduate and graduate health professions students. Drawing from a limited, non-random sample, the investigators sought to collect baseline data regarding four research questions:

- RQ 1. How do the use and awareness of LibGuides compare among health professions students of different academic levels (undergraduate or graduate) and undergraduate class levels—freshman (first year), sophomore (second year), junior (third year), or senior (fourth year)?
- RQ 2. How do the use and awareness of LibGuides compare among nursing,

physical therapy, medical laboratory sciences, and speech-language pathology/audiology students?
- RQ 3. Which type of LibGuides (course specific or general subject guides) and guide pages (e.g., finding books, finding articles, citation styles) do health professions students utilize?
- RQ 4. Do health professions students find LibGuides useful in their studies?

This study was conducted at Hunter College's Brookdale Campus in New York City. Hunter College is a senior college within the City University of New York system. It offers undergraduate and graduate degrees in a wide variety of academic disciplines through its six schools (Hunter College, 2019a). Approximately 17,000 undergraduate and 6,000 graduate students currently attend Hunter (Hunter College, 2019b).

The Brookdale Campus is one of Hunter's three campuses in Manhattan. It houses the School of Health Professions and the Hunter-Bellevue School of Nursing. The School of Health Professions offers graduate degrees in speech-language pathology and audiology, as well as physical therapy. The School of Nursing offers degrees at the baccalaureate, master's, and doctoral levels. The Brookdale Campus also houses the Medical Laboratory Sciences department (part of the School of Arts and Sciences), which offers undergraduate and master's degrees. The Health Professions Library supports all of these programs.

The School of Health Professions and School of Nursing at Hunter together hold a total enrollment of 1,355 students. The Speech-Language Pathology and Audiology program enrolls 47 students, while Physical Therapy enrolls 96. The School of Nursing serves a much larger body of 431 undergraduate and 629 graduate students. Medical Laboratory Sciences has 110 undergraduate and 42 graduate students.

Methods

Research Methodology, Survey Instrument, and Pilot Study

The investigators designed a 16-item paper survey instrument based on the study's research questions. It consisted of fifteen multiple-choice questions and one open response question. The survey addressed students' use, awareness, and opinions of LibGuides; gathered demographic information about the participants; and sought to assess participants' use of the Hunter College Libraries website and attendance at library instruction sessions.

To identify gaps in existing research for the questions on the instrument to address, the authors searched databases covering library and information science as well as social sciences. The investigators conducted Boolean searches in Library and Information Science Source, Library and Information Science and Technology Abstracts, and Academic Search Complete using the following keywords: (subject guides OR subject guide, LibGuides OR Libguide, research guides OR research guide); (use OR usage); (awareness); (undergraduate students OR college students OR university students); (health science students OR health sciences students); (physical therapy students OR nursing students OR medical laboratory science students); and (speech-language pathology and audiology students). The authors ran a search in EBSCO All Databases using SU (health sciences or health sciences programs or health science programs) AND ("research guides" or "subject guides" or Libguides or libguides). In Web of Science, the authors searched for the Topic: ("subject guide") refined by the categories (INFORMATION SCIENCE LIBRARY SCIENCE OR AREA STUDIES OR NURSING) AND Topic: (health).

The authors conducted a pilot study with five health sciences students (four undergraduate and one graduate) to test the survey instrument. This enabled investigators to identify ambiguous questions and revise them for clarity. Investigators also incorporated feedback from a Hunter College librarian not involved in the study to further refine the instrument. See the Appendix for the text of the final survey instrument.

Data Collection and Analysis

In April 2017, following approval from the institutional review board, the investigators administered the survey to health professions students at the College. The researchers chose April to avoid scheduling conflicts with upcoming final examinations. The researchers recruited participants for the study during one day from 9 A.M. to 7 P.M., choosing a day of the week that is usually busy for patron traffic. Conducting the survey from morning through evening allowed recruitment of students enrolled in morning, afternoon, or evening classes at the campus.

Researchers approached potential participants in college hallways, in front of classrooms, both outside and inside the HPL, outside the School of Health Professions building, and inside the campus cafeteria. The researchers set a goal of recruiting 100 participants for this study in order to collect baseline data with a view toward conducting a larger quantitative or qualitative study in the future. They approached 103 potential participants, 100 of whom agreed to take the survey (three declined to participate due to lack of time). All students approached were health sciences majors and thus eligible to participate in the study, not surprising given that this campus houses only health professions programs. The investigators explained the study's purpose, informed potential subjects that their participation was voluntary and responses would remain anonymous, and provided copies of the informed consent script. Afterwards they administered paper questionnaires to participants, none of whom received monetary compensation or other incentives. Most participants took three to five minutes to complete the questionnaire, although

some requested additional time (up to five to ten minutes) due to language difficulty.

Survey Population and Demographics

All survey respondents were health sciences students. One hundred students completed the survey in full, demonstrating a 97% response rate and a 100% completion rate. Among those surveyed, 78% (n = 78) were undergraduates, 21% (n = 21) graduates, and 1% (n = 1) identified as "other" (continuing education). Among the 78 undergraduates, 31% (n = 24) were sophomores (second year), 42% (n = 33) were juniors (third year), and 27% (n = 21) seniors (fourth year). Respondents included no freshmen as students enter the Hunter College undergraduate health sciences programs only in their second year or later. However, the researchers included the freshman demographic in the survey instrument because students from other City University of New York colleges can access the HPL, and some of those institutions admit first-year students into their health sciences programs. Therefore, the investigators wanted to give the opportunity to all eligible patrons of the library to participate in the study.

Of those surveyed, 22 were male and 78 female. Sixty participants were under 25 years of age, 30 between 25 and 34 years of age, five between 35 and 44, four between 45 and 54, and one was 55 or older. Study participants also represented a wide range of racial and ethnic groups. Forty-six respondents identified as Asian, 28 as white, 12 as being from other racial and ethnic groups, seven as Black, and seven as Hispanic.

In terms of majors, 65 students were pursuing degrees in nursing, seven in physical therapy, 24 in medical laboratory sciences, and three in speech-language pathology and audiology. One participant chose not to answer this question.

Results

Only a minority of participants (n = 35) reported being aware of LibGuides, and even fewer (n = 32) reported using them. Sixty-eight respondents said they had never used LibGuides, 65 of whom were unaware of the guides. In addition to the following text summaries that describe the results according to students' academic level and field of study, Table 1 provides a complete record of participant responses regarding use and awareness.

Use and Awareness of LibGuides by Academic Level and Class Level

Both awareness and use of LibGuides were higher among graduate than undergraduate respondents. Approximately 57% (n = 12) of graduate respondents indicated awareness of LibGuides, while only 30% (n = 23) of undergraduates did so. However, all undergraduates who were aware of LibGuides also reported using them (n = 23, 30%). Among graduate students, use was slightly lower than awareness (n = 9, 43%).

The researchers disaggregated LibGuide use and awareness data by undergraduate class level. Close to 21% (n = 5) of sophomores (second year), 30% (n = 10) of juniors (third year), and 38% (n = 8) of seniors (fourth year) reported awareness of LibGuides. Usage similarly increased with academic level: approximately 21% (n = 5) of sophomores and 27% (n = 9) of juniors reported having used LibGuides whereas 43% (n = 9) of seniors had done so.

Use and Awareness of LibGuides by Health Sciences Concentration

This study also collected data on LibGuides use and awareness according to concentrations within the health professions. Results show most students within each discipline were not using LibGuides. Among the 65 nursing students—the study's largest cohort—only 19 were aware of LibGuides and 46 had not used them. Five out of the seven physical therapy

Table 1

Awareness and Use of LibGuides, by Number of Respondents and Percentage ($n = 100$)

	Awareness		Use	
	Yes, n (%)	No, n (%)	Yes, n (%)	No, n (%)
All Participants	35 (35)	65 (65)	32 (32)	68 (68)
By Academic Level				
● Undergraduate Students	23 (30)	55 (70)	23 (30)	55 (70)
● Graduate Students	12 (57)	9 (43)	9 (43)	12 (57)
● Other	0	1 (100)	0	1 (100)
By Undergraduate Class Level				
● Sophomore	5 (21)	19 (79)	5 (21)	19 (79)
● Junior	10 (30)	23 (70)	9 (27)	24 (73)
● Senior	8 (38)	13 (62)	9 (43)	12 (57)
By Health Sciences Concentration				
● Medical Laboratory Sciences	10 (42)	14 (58)	9 (37)	15 (63)
● Nursing	19 (29)	46 (71)	19 (29)	46 (71)
● Physical Therapy	5 (71)	2 (29)	4 (57)	3 (43)
● Speech-Language Pathology and Audiology	1 (33)	2 (67)	1 (33)	2 (67)
By Age Group				
● Under 25 Years of Age	17 (28)	43 (72)	18 (30)	42 (70)
● 25-34	14 (47)	16 (53)	12 (40)	18 (60)
● 35-44	2 (40)	3 (60)	1 (20)	4 (80)
● 45-54	2 (50)	2 (50)	1 (25)	3 (75)
● 55 and Over	0	1 (100)	0	1 (100)
By Gender				
● Female	28 (36)	50 (64)	28 (36)	50 (64)
● Male	7 (32)	15 (68)	4 (18)	18 (82)

students indicated awareness of LibGuides and 4 had used them. Among medical laboratory science students, 10 indicated awareness of LibGuides yet 15 had never used them. Among speech-language pathology and audiology students, only one respondent was aware of LibGuides and the other two had never used them.

Use of LibGuides by Type and Page

The researchers further disaggregated LibGuides usage data by type of guide: course specific or a general subject area. Of the 32 respondents who had used LibGuides, most (63%, $n = 20$) reported using general subject guides, while 34% ($n = 11$) used course-specific

guides. Only one respondent reported using both types of guides (Figure 1).

Based on observations drawn from several years of experience working with students in the health professions programs, the researchers suspected that students often remember the specific guides and pages within guides that they access. For instance, after library instruction sessions the second author has received questions from students asking whether they could go directly to a LibGuides page such as "Finding Books" rather than navigating from the library's home page. Therefore, the investigators designed one question on the instrument to collect data on participants' utilization of specific pages within LibGuides. Among the 32 respondents who had used LibGuides, 21 navigated to pages helping to locate journal articles, and three used pages assisting with APA style. Just one respondent used pages locating print and e-books while another used a page about citation management

software. Six respondents indicated using more than one type of page within the guides (Figure 2).

Utility of LibGuides

The researchers sought to determine whether students found LibGuides useful in their studies. Of the 32 respondents who reported having used LibGuides, 31 (97%) found them useful and one (3%) said they did not know whether the guides were useful or not.

Use and Awareness of LibGuides and Library Instruction Sessions

Thirty-eight of the health professions students who took part in the study reported attending a library workshop or instruction session, whereas 61 did not attend. One participant did not answer this question.
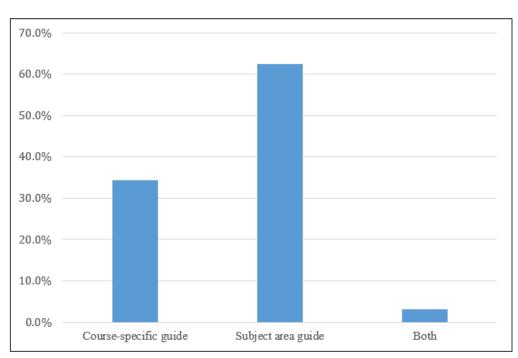

Figure 1
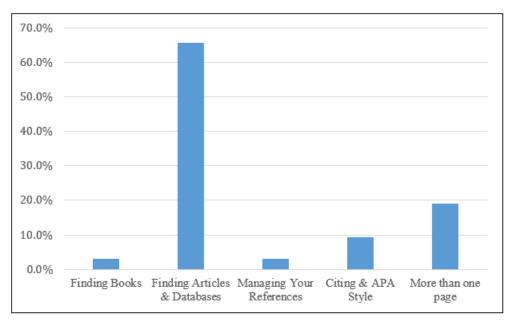Use of LibGuides by type (*n* = 32).

Figure 2
Use of LibGuides by page (*n* = 32).

Of the 38 respondents who had attended a library workshop or information literacy session, 22 (58%) indicated that they were aware of LibGuides and 16 (42%) that they were unaware; 19 (50%) of these respondents said they had used LibGuides and 19 had not. Of the 61 participants who had not attended a library workshop or instruction session, 13 (21%) said they were aware of subject guides and an equal number reported having used them. Forty-eight (79%) of the uninstructed participants said they were not aware of LibGuides and had not used them. So, the survey data appear to suggest a connection between attending a library workshop or instruction session and increased use and awareness of LibGuides.

Open Question Responses

The survey instrument included an open question asking participants whether they had any additional comments or suggestions for the librarians. The vast majority of respondents, 86% (*n* = 86), had no comments. Many of the comments received addressed topics not relevant to this study, such as a desire for more charging stations and extended library hours, or the relative helpfulness of library staff. Of those comments that did refer to LibGuides, one student said that they now "will use LibGuides." Another participant wrote, "We use Google for our research projects. But if instructors inform us about LibGuides, we may look into it more." Another wrote that while they had never heard of LibGuides, "it sounds helpful for research students should be made aware of the service [sic]."

Discussion

The goal of this research project was to ascertain the use, awareness, and perceptions of LibGuides among baccalaureate, master's, and doctoral-level students in health sciences. The most compelling discovery was that the vast majority of respondents (65%) were unaware of the existence of research guides and nearly the same proportion do not utilize them. The results indicating low levels of use and awareness persist across various academic levels and demographics.

This study found higher use and awareness of LibGuides among graduate students than undergraduate students. Moreover, within the undergraduate cohort both use and awareness increased progressively from second-, to third-, to fourth-year students. One possible explanation for these results could be the extensive use of course-specific LibGuides by instruction librarians during information literacy sessions at the HPL. As we have seen, the data collected here suggest a link between attendance at these sessions and increased awareness of LibGuides. Librarians at the HPL teach more one-shot information literacy sessions for graduate and upper-level undergraduate students than for others, which may explain the higher rates of use and awareness found among these groups. Another possible explanation could be the promotion of subject guides by some health sciences faculty to their students. One physical therapy instructor mentioned during a conversation with the second investigator that he encourages his Doctor of Physical Therapy students to utilize relevant subject guides.

Among those respondents who had used LibGuides, two thirds reported having used the "Finding Articles: Databases" page, which helps students navigate databases and locate journal literature. As Jackson and Stacy-Bates (2016) note, several earlier studies also found high usage for guide pages that link to databases. In the current study, usage of this page far eclipsed that of other pages common to all the guides, such as those addressing use of the library's catalogue or citation management software. Moreover, this was probably the only page many users were viewing, since most respondents who used LibGuides did not report consulting more than one page within the guides. The popularity of this page among users could be due to the ease with which LibGuides allow patrons to browse and seamlessly connect to a curated list of databases or other electronic resources, or it could indicate a demand for research support not sufficiently addressed by other means.

These results may also reflect a discipline-specific prevalence of assignments in the health professions that require students to retrieve and cite journal articles rather than, for example, books from the circulating collection. As Nordsteien, Horntvedt, and Syse (2017) note in their study of the effect of faculty-library teaching collaborations on Norwegian nursing students' research skills, "It is not enough to teach how to search for information; skills such as formulating a research question and critically appraising, analysing and synthesising the literature are also required" (p. 24). In their description of an embedded information literacy program for nursing students implemented at the Memorial University of Newfoundland, Farrell, Goosney and Hutchens (2013) detail the research competencies that map to specific stages of the nursing curriculum:

> First year: basic searching of the Cumulative Index of Nursing and Allied Health Literature (CINAHL) database, and evaluating and distinguishing between popular and scholarly literature. Second year: drug information resources, alternative medicine resources, critical evaluation of web-based information, and advanced CINAHL searching techniques (subject headings). Third year: the principles of evidence informed practice, study types, formulating a research question using the PICO (patient, intervention, comparison, outcome) method, searching PubMed using both MeSH and clinical queries, searching CINAHL using clinical queries, and other evidence-based resources. (p. 166)

While the current study cannot identify a cause for the use of individual pages within or across LibGuides, the heavy usage of the "Databases" page suggests that among the population surveyed, a primary function of the library's subject guides is to assist with this type of literature searching and appraisal emphasized in the curriculum.

Finally, the finding that less than one third of participants in this study had used LibGuides may lead some to question whether the creation and maintenance of such guides merits the time and attention involved. However, to recommend abandoning such efforts based on the data collected here would be premature. Even leaving aside the argument that the impact of subject guides goes beyond student use (many librarians and staff also consult them when delivering public services such as reference or instruction), it is nonetheless promising that among those participants who had used LibGuides almost all (97%, *n* = 31) said they found the guides useful. This is not to minimize the challenges librarians face in producing the guides, challenges which go beyond technical mastery of the LibGuides platform. As one respondent wrote in Jackson and Stacy-Bates' (2016) survey of heads of reference, "Librarians spend a lot of time carefully compiling exhaustive amounts of information, but they could use help packaging it for consumption. . . . Librarians need to become more familiar with principles of user-centered design and best practices in writing for the web" (p. 227). Addressing this need may involve additional staff training or the development of departmental guidelines or policies. However, the finding that virtually all participants in this study who had accessed LibGuides perceived some benefit suggests that libraries should explore building on this success before drawing any final conclusions regarding the merits of subject guides.

Limitations and Recommendations for Further Research

This study has three primary limitations. First, only 100 health professions students out of an enrollment of 1,355 participated in this survey. This small sample size makes it problematic to draw conclusions applicable to health professions students in general at Hunter College or similar institutions. The project also relied on self-reported data, which can introduce response bias in the results. Finally, the

investigators administered the questionnaire only on campus, thus capturing no data from students taking only online or hybrid courses.

With regard to the data collection, the researchers verbally explained to participants before distributing the questionnaires that if they had not used LibGuides (that is, answered "no" to item 11), then they should not answer the question regarding whether or not they find LibGuides useful (item 15). However, given the fact that 88 respondents answered question 15 despite the fact that only 32 had used LibGuides, perhaps it would have been more effective to include an instruction about this in the text of the instrument. Moreover, the researchers did not address the possibility that some students who may have used or known of LibGuides nonetheless did not know the name of the specific tool, and therefore might answer "no" when in fact they had used a LibGuide. Both of these circumstances introduce potential ambiguity into the results and constitute additional limitations of this study.

In spite of its limitations, the study provides opportunities for further research on this topic. While LibGuides will naturally vary by institution, further study of their usage at other locales by health sciences students could reveal more about the information needs and behaviors of health sciences students in general. In addition, investigators could design a similar study to explore the use, perceptions, and awareness of research guides by students majoring in other subjects. They could conduct a comparative study to examine responses of students enrolled in online and hybrid courses versus those of traditional students on campus. Finally, a study utilizing focus groups could provide qualitative insights about health sciences and other students' LibGuides usage and information behaviors.

Conclusion

This study examined the use, perceptions, and awareness of subject guides among

undergraduate and graduate health professions students. Results reveal low use and awareness of LibGuides among the majority of study participants. This suggests several courses of action for librarians at Hunter College or similar institutions. To begin with, librarians should ensure that the LibGuides they design are as useful and appealing to students as possible by familiarizing themselves with commonly noted usability impediments and best practices. During this process, health sciences librarians must remain mindful of the competencies health professions students need to master and the types of assignments and coursework that these students undertake, so that they can highlight the most relevant resources (such as point-of-care information services or evidence based practice resources) and support development of the most relevant skills (such as advanced searching of journal literature or formulation of research questions).

Once librarians have created suitable LibGuides, they can employ numerous strategies to maximize use and awareness. First, libraries should prominently display links to the guides on the library web page to enhance discoverability, and the catalogue itself should link directly to the guides. Instructional librarians should use subject guides as instruction tools to raise awareness among students attending information literacy sessions and highlight them as a key resource during reference interactions. As a form of outreach to teaching faculty, librarians can demonstrate the value of subject guides by mapping guide content to the health professions curriculum and can encourage faculty to showcase LibGuides on course syllabi or link to them through course management sites. Finally, new student and faculty orientations offer opportunities to raise awareness of subject guides. The researchers hope other academic health professions libraries benefit from the results of this project and

encourage fellow librarians in other disciplines to undertake further research on this topic.

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Appendix
Questionnaire: Use and Awareness of LibGuides

1. Which institution do you attend? Please select ONE of the following;
   a. Hunter College
   b. Other CUNY college (please specify)
   c. Other college or institution (please specify)
   d. I do not attend a college or institution
2. What is your academic level? Please select ONE of the following:
   a. Undergraduate student
   b. Graduate/Professional student
   c. Continuing Education student
   d. Other (please specify)
3. If you are an undergraduate student, please select ONE of the following. Otherwise skip this question.
   a. Freshman
   b. Sophomore
   c. Junior
   d. Senior
4. What is your gender? Please select ONE.
   a. Male
   b. Female
   c. Transgender
5. Approximately what is your age? Please select ONE.
   a. Under 25
   b. 25-34 years
   c. 35-44 years
   d. 45-54 years
   e. 55 and over
6. How do you identify yourself? Please select ONE.
   a. White
   b. Black
   c. Hispanic
   d. American Indian or Alaska Native
   e. Asian
   f. Arab/Middle Eastern
   g. Native Hawaiian or other Pacific Islander
   h. Multiracial
   i. Other (please specify)
7. What is your major OR intended major OR in what subject area do you have or hope to obtain a degree? Please select ONE.
   a. Nursing
   b. Physical Therapy
   c. Medical Laboratory Sciences
   d. Speech-Language Pathology and Audiology
   e. Other (please specify)

8. How often do you visit your college library's website?
    a. At least once per week
    b. At least once per month
    c. At least once per semester
    d. I never visit the library's website
9. Have you ever attended a library workshop or instruction session?
    a. Yes
    b. No
10. **LibGuides (Research Guides)** are collections of web pages that gather together useful resources related to a subject area or to a specific course. LibGuides often provide links to books from the library's catalogue, instructions for searching databases, and lists of relevant journals or other recommended resources. Hunter's LibGuides can be accessed from the library's home page. **Are you aware of LibGuides related to your courses or major?**
    a. Yes
    b. No
11. Have you used LibGuides?
    a. Yes
    b. No
12. Which type of LibGuides do you use most often?
    a. Course-specific guides (e.g., Nursing 700, Nursing 380)
    b. General subject area guides
13. Which pages of LibGuides do you use most often?
    a. Finding Books
    b. Finding Articles: Databases
    c. Managing Your References
    d. Citing: APA Style
    e. Other (please specify)
14. How often do you visit or check LibGuides?
    a. At least once per week
    b. At least once per month
    c. At least once per semester
    d. I never visit or check LibGuides
15. Do you find LibGuides useful for your academic purposes (such as research papers or other assignments)?
    a. Yes
    b. No
    c. Do not know
16. Any other comments or suggestions: