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Library Instruction for Graduate Nursing Students: A Scoping Review

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Résumé de l'article

Objective – The number of graduate nursing programs in the U.S. has increased significantly in recent years. This scoping review seeks to examine the range of literature discussing librarian instruction for graduate nursing students to identity the types of studies being published, the characteristics of instructional sessions, knowledge gaps which may exist, and the evidence available for a subsequent systematic review evaluating instructional effectiveness.

Methods – Guidelines established by the PRISMA statement for scoping reviews (PRISMA-Scr) were used to conduct this review. Concepts for library instruction and graduate nursing students were searched in six databases as well as Google Scholar. The two authors used titles/abstracts and when necessary, full-text to independently screen identified studies. Conflicting screening decisions were resolved by discussion.

Results – Data was extracted from 20 sources. Thirteen of the sources were descriptions of classes or programs, one was a program evaluation, two were mixed methods studies that looked at library use and program support respectively but did not assess instruction, two were surveys of students' feelings and attitudes about instruction, and two were quasi-experimental studies which included pre-post instruction quizzes. The most popular format for library instruction was online (synchronous or asynchronous) instruction. Most sources did not include information about the timing or duration of instruction. In addition, most sources did not reference instructional theory although a few mentioned aspects of instructional theory such as active learning. Only one source mentioned using a specific model to develop instructional content. While several sources mentioned assessment of student learning, only four studies included the results of assessment.

Conclusions – Sources reporting on instruction for graduate nursing students consisted primarily of descriptions of programs or instructional sessions. Many of the descriptive studies lacked essential information such as specifics of format, timing, and duration which would aid replication at other institutions. Only four sources were research studies that evaluated instructional effectiveness.

Evidence Based Library and Information Practice

Review Article

Library Instruction for Graduate Nursing Students: A Scoping Review

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Abstract

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Conclusions – Sources reporting on instruction for graduate nursing students consisted primarily of descriptions of programs or instructional sessions. Many of the descriptive studies lacked essential information such as specifics of format, timing, and duration which would aid replication at other institutions. Only four sources were research studies that evaluated instructional effectiveness.

Introduction

The number of graduate nursing programs in the U.S. as well as enrollment in those programs has been increasing steadily (Jonas Philanthropies, 2015). Although librarians and nursing faculty might imagine that students enter graduate school with information literacy (IL) skills already fully developed, researchers have found that many students, including those in graduate nursing programs, struggle with finding, evaluating, and using information effectively (Robertson & Felicilda-Reynaldo, 2015). Therefore, graduate nursing students may benefit from librarian-led instruction intended to improve information literacy skills.

While librarians might consider using the same information and instructional techniques employed in undergraduate nursing classes, graduate students tend to differ from undergraduates in meaningful ways. Graduate nursing students are likely to be older, may have been out of school for many years, and may have additional family or work responsibilities (Salani et al., 2016). In addition, graduate nursing students are expected to develop more advanced information literacy skills than undergraduates to facilitate translating evidence into practice, identifying gaps in practice, and disseminating their scholarship (American Association of Colleges of Nursing [AACN], 2021). Finally, as adult learners, graduate nursing students may have a greater need for library instruction that allows them to be self-directed, to have their prior experience taken into account, and to understand why they are learning and how the new knowledge will be helpful in real-world situations (Knowles et al., 1998; Ross-Gordon et al., 2017).

Aims

This scoping review seeks to identity and summarize the published literature related to library instruction provided to graduate nursing students. The following research questions guided the study:

- What types of studies are being published?
- What characteristics of instructional sessions are included in published literature?

Methods

Guidelines established by the PRISMA statement for scoping reviews (PRISMA-Scr) were used to conduct this review (Tricco et al., 2018). No protocol was prepared for the review. One author (AG), a health sciences librarian with prior experience creating searches for systematic and scoping reviews, developed and executed all searches. Six databases were searched on July 30, 2019 with concepts for library instruction and graduate nursing students along with related synonyms and subject headings (see Appendix A for complete searches). CINAHL; Medline; ERIC; Library Literature & Information Science Index (H.W. Wilson); and Library, Information Science & Technology Abstracts were searched concurrently though the EBSCO interface while Library & Information Science Abstracts (LISA) was searched through the ProQuest interface. The searches were rerun on December 7, 2021 to update content before publication submission. Hand searching consisted of examining the reference lists of reviews included in the search results and screening the first 100 results of a search run in Google Scholar. All results were exported to an EndNote library (Version X9). After deduping, sources were exported to Excel spreadsheets for screening.

Inclusion/Exclusion Criteria

Types of Participants

The population of interest was graduate nursing students. Studies that included only undergraduate students or professional nurses were excluded; however, studies that involved more than one level of student (e.g., undergraduates and graduate students) or more than one type of student (e.g., nursing and pharmacy students) were included as long as specific information about graduate nursing students could be extracted.

Concept

Sources had to include some type of librarian-led instruction. That instruction could be provided wholly by the librarian(s) or in partnership with other institutional faculty or staff. There were no restrictions on format of instruction; sessions could be provided in-person or virtually, and either synchronously or asynchronously.

Context

Due to the change from print-focused to electronic resources beginning in the late 1990s and subsequent changes to library instruction, sources had to have been published in or after 1994.

Types of sources of evidence

No restrictions were placed on type of source. Book reviews, article reviews, editorials, and evidence syntheses were excluded. All other source types including articles, book chapters, dissertations, and theses were included. Due to language restrictions of the reviewers and lack of funding for translation services, all sources had to be written in English.

Screening

The number of sources screened at each stage is shown in Figure 1. Numbers in parentheses are the total of the initial search and the bridge search. Separate figures for each search are provided in square brackets. At each level (title/abstract and full-text) the two authors independently screened sources, then met to compare decisions. Conflicting screening decisions were resolved by discussion. After the full-text screening, 20 sources were retained for synthesis.

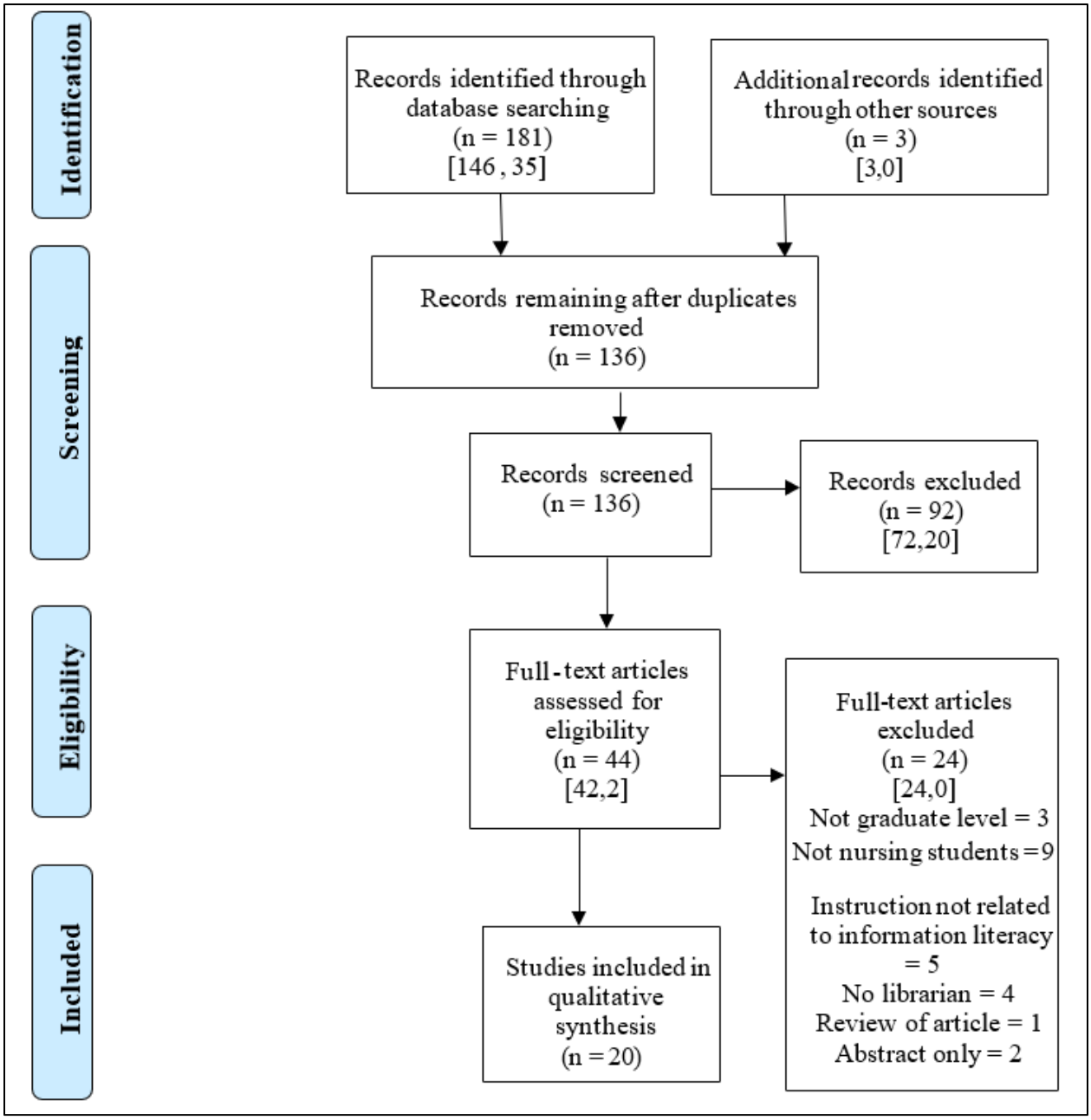
Data Extraction

A data extraction form was created using Excel. Variables on the form included population; location; extent of instruction (class or program); standards/guidelines/theories used to develop instruction; format, timing, and duration of instruction; content taught; additional support offered; methodology; assessment; and additional notes (see Appendix B). One author (AG) extracted data from each source and the second author (KS) checked the extracted data for accuracy and completeness.

Results

Overview of Sources

The 20 sources included in this review were primarily journal articles (n=19; Bernstein et al., 2020; Dorner et al., 2001; Francis & Fisher, 1995; Guillot & Stahr, 2004; Guillot et al., 2010; Hinegardner & Lansing, 1994; Hodson-Carlton & Dorner, 1999; Honey et al., 2006; Layton & Hahn, 1995; Leasure et al., 2009; Lemley, 2016; Milstead & Nelson, 1998; Schilperoort, 2020; Thompson, 2009; Welch et al., 2016; Whitehair, 2010; Whiting & Orr, 2013; Wills et al., 2001; Wimmer et al., 2014). The one exception was a book chapter (Deberg, 2014). Publication dates ranged from 1994 to 2020 with zero to two publications each year. Most instruction took place in the United States (n=18; Bernstein et al., 2020; Deberg, 2014; Dorner et al., 2001; Francis & Fisher, 1995; Guillot & Stahr, 2004; Guillot et al., 2010; Hinegardner & Lansing, 1994; Hodson-Carlton & Dorner, 1999; Layton & Hahn, 1995; Leasure et al., 2009; Lemley, 2016; Milstead & Nelson, 1998; Schilperoort, 2020; Welch et al., 2016; Whitehair, 2010; Whiting & Orr, 2013; Wills et al., 2001; Wimmer et al., 2014), although there was one source from Canada (Thompson, 2009) and one from New Zealand (Honey et al., 2006).



From: Moher D., Liberati A., Tetzlaff J., Altman D. G., The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Metanalyses: The PRISMA Statement. *PLoS Med 6*(7): e1000097. doi:10.1371/journal.pmed1000097. **For more information, visit www.prisma-statement.org.**

Figure 1
PRISMA flow diagram.

Four sources included instruction for more than one level of student. One of the four included Master's, DNP, and PhD students (Whitehair, 2010), two included Master's and PhD students (Francis & Fisher, 1995; Layton & Hahn), and one included Master's and DNP students (Lemley, 2016). The remaining sources included only one level of students. Master's was the most common (n=9; Dorner et al., 2001; Guillot & Stahr, 2004; Guillot et al., 2010; Hinegardner & Lansing, 1994; Hodson-Carlton & Dorner, 1999; Honey et al., 2006; Schilperoort, 2020; Thompson, 2009; Wills et al., 2001) followed by PhD (n=3; Milstead & Nelson, 1998; Welch et al., 2016; Wimmer et al., 2014) and DNP (n=3; Bernstein et al., 2020; Deberg, 2014; Whiting & Orr, 2013). The remaining source referred only to graduate nursing students without indicating what level(s) were included (Leasure et al., 2009).

Characteristics of Sources (see Appendix B)

Format of Instruction

The 20 identified sources included descriptions of format for 21 classes and programs. The most popular format for library instruction was virtual (n=7); however, only one source used online synchronous instruction (Wimmer et al., 2014). Other virtual options included interactive tutorials (n=4; Dorner et al., 2001; Hodson-Carlton & Dorner, 1999; Schilperoort, 2020; Welch et al., 2016), videos (n=1; Deberg, 2014), and a static webpage (n=1; Milstead & Nelson, 1998). Five additional sources used hybrid methods with both virtual and face-to-face (F2F) components. Two of the five used F2F followed by online tutorials (Honey et al., 2006; Leasure et al., 2009), one used F2F followed by a recording (Deberg, 2014), one used F2F followed by optional individual virtual sessions (Guillot & Stahr, 2004), and one used both F2F and synchronous instruction followed by optional individual sessions (Whitehair, 2010). Four sources included only F2F instruction; however, it is important to note that three of those four were from 1994 and 1995, the earliest years included in this review (Francis & Fisher, 1995; Hinegardner & Lansing, 1994; Layton & Hahn, 1995). The fourth F2F source occurred later but involved instruction on SPSS using library computers (Thompson, 2009). Three of the remaining five sources reported on librarians who were embedded in a course or courses throughout the semester (Guillot et al., 2010; Lemley, 2016; Wills et al., 2001). The final two did not indicate the format of instruction (Bernstein et al., 2020; Whiting & Orr, 2013).

Timing of Instruction

Three sources involved embedded librarians (Guillot et al., 2010; Lemley, 2016; Wills et al., 2001) and one a static webpage (Milstead & Nelson, 1998) so instruction could be considered to be available throughout the class. There were 17 classes described in the remaining 16 studies. There was no indication of when instruction took place during the semester for eight of those classes (Deberg, 2014; Francis & Fisher, 1995; Guillot & Stahr, 2004; Hinegardner & Lansing, 1994; Layton & Hahn, 1995; Leasure et al., 2009; Thompson, 2009; Whiting & Orr, 2013). The remaining nine reported instruction which took place early in the semester, i.e., before class started or within the first month (Bernstein et al., 2020; Deberg, 2014; Dorner et al., 2001; Hodson-Carlton & Dorner, 1999; Honey et al., 2006; Schilperoort, 2020; Welch et al., 2016; Whitehair, 2010; Wimmer et al., 2014). In addition, some authors reported that instruction was tied to course assignments or course content (Bernstein et al., 2020; Deberg, 2014; Dorner et al., 2001; Guillot & Stahr, 2004; Hinegardner & Lansing, 1994; Hodson-Carlton & Dorner, 1999; Thompson, 2009), that library assignments were required/graded (Francis & Fisher, 1995; Schilperoort, 2020), and that assistance (Guillot et al., 2010) or tutorials (Dorner et al., 2001) were provided at point of need. Finally, seven authors reported inclusion in the course learning management system which provided access to syllabi, assignments, discussion boards, and class email lists (Dorner et al., 2001; Guillot et al., 2010; Lemley, 2016; Whitehair, 2010; Whiting & Orr, 2013; Wills et al., 2001; Wimmer et al., 2014).

Duration of Instruction

Very few sources reported how long instruction lasted. Most that did mention duration were discussing either F2F sessions or the F2F session of hybrid instruction. Durations reported included two mentions each of one-hour sessions (Guillot & Stahr, 2004; Whitehair, 2010), two-hour sessions (Francis & Fisher, 1995; Layton & Hahn, 1995), and three-hour sessions (Hinegardner & Lansing, 1994; Thompson, 2009). Only Schilperoort (2020) mentioned the length of instructional tutorials, reporting an average time of 15 to 30 minutes to complete the self-paced tutorial.

Content of Instruction

Fourteen of the 20 sources included introducing students to databases, in many cases mentioning specific health science databases such as CINAHL and Medline (Bernstein et al., 2020; Deberg, 2014; Dorner et al., 2001; Francis & Fisher, 1995; Guillot & Stahr, 2004; Hinegardner & Lansing, 1994; Honey et al., 2006; Layton & Hahn, 1995; Leasure et al., 2009; Lemley, 2016; Schilperoort, 2020; Welch et al., 2016; Whitehair, 2010; Wills et al., 2001). Nine of those 14 sources also included specific instructional content related to searching skills such as choosing keywords, finding subject headings, and using Boolean operators or filters (Bernstein et al., 2020; Dorner et al., 2001; Francis & Fisher, 1995; Hinegardner & Lansing, 1994; Layton & Hahn, 1995; Leasure et al., 2009; Lemley, 2016; Schilperoort, 2020; Whitehair, 2010). Although all instruction might be assumed to discuss library services, 11 sources explicitly mention introducing library services in general or specific services such as how to access full-text, use interlibrary loan or contact a librarian for help (Guillot & Stahr, 2004; Guillot et al., 2010; Honey et al., 2006; Layton & Hahn, 1995; Leasure et al., 2009; Lemley, 2016; Milstead & Nelson, 1998; Thompson, 2009; Whitehair, 2010; Whiting & Orr, 2013; Wimmer et al., 2014). Five instructors included content about citing sources (Dorner et al., 2001; Guillot et al., 2010; Lemley, 2016; Welch et al., 2016; Whiting & Orr, 2013), and four included instruction on evaluating research sources (Bernstein et al., 2020; Dorner et al., 2001; Hodson-Carlton & Dorner, 1999; Leasure et al., 2009).

Additional content mentioned more than once included: bibliographic management software (n=3; Hinegardner & Lansing, 1994; Leasure et al., 2009; Welch et al., 2016), developing research questions (n=3; Deberg, 2014; Guillot et al., 2010; Welch et al., 2016), evaluating evidence/levels of evidence (n=3; Deberg, 2014; Lemley, 2016; Schilperoort, 2020), and resources to find research instruments (n=2; Dorner et al., 2001; Francis & Fisher, 1995). Finally, there was content mentioned by only one author including current awareness services (Whitehair, 2010), data concepts and using SPSS (Thompson, 2009), off-campus access (Francis & Fisher, 1995), and in a pre-2000 source, how to use email and the Internet (Layton & Hahn, 1995).

Additional Support

In many cases students were offered additional support beyond the actual instructional session(s). The most common type of support offered was online discussion boards/rooms within learning management systems (n=5; Dorner et al., 2001; Hodson-Carlton & Dorner, 1999; Lemley, 2016; Whiting & Orr, 2013; Wills et al., 2001). Other support included encouraging students to contact a librarian or a library help desk with questions (n=3; Lemley, 2016; Thompson, 2009; Whitehair, 2010), offering individual sessions (n=3; Bernstein et al., 2020; Deberg, 2014; Wills et al., 2001), holding chat sessions for group help (n=2; Dorner et al., 2001; Hodson-Carlton & Dorner, 1999), sending follow-up emails (n=2; Guillot & Stahr, 2004; Guillot et al., 2010), providing information about additional training opportunities (n=2; Honey et

al., 2006; Leasure et al., 2009), offering a research guide (n=1; Wimmer et al., 2014), and providing a brochure (n=1; Honey et al., 2006).

Assessment of Instruction

Most of the sources (n=16) did not assess the effectiveness of library instruction. Instead, authors provided descriptions of how instruction was implemented in a specific class or classes (n=6; Deberg, 2014; Guillot & Stahr, 2004; Guillot et al., 2010; Hinegardner & Lansing, 1994; Wills et al., 2001; Wimmer et al., 2014), how instruction was implemented in a new program of study (n=3; Francis & Fisher, 1995; Honey et al., 2006; Lemley, 2016), or how instruction was implemented in both a program and one or more specific classes (n=7; Dorner et al., 2001; Layton & Hahn, 1995; Leasure et al., 2009; Milstead & Nelson, 1998; Welch et al., 2016; Whitehair, 2010; Whiting & Orr, 2013). Three of those 16 sources were research studies, but the research was intended to assess library use (Honey et al., 2006), students' satisfaction with library services and resources (Whiting & Orr, 2013), or the practicalities of providing instruction (Guillot & Stahr, 2004) rather than instructional effectiveness.

Several authors did mention assessing the effectiveness of instruction with varied means including pre/posttests and evaluations; however, no results of assessment were provided (Deberg, 2014; Dorner et al., 2001; Francis & Fisher, 1995; Layton & Hahn, 1995; Welch et al., 2016). Four authors provided anecdotal evidence of instructional success derived from informal feedback from faculty or students (Deberg, 2014; Dorner et al., 2001), course evaluations (Guillot et al., 2010), or colleagues at the reference desk (Francis & Fisher, 1995).

Only four sources were research studies assessing the effectiveness of library instruction. Two were quasi-experimental studies utilizing pre and posttests of knowledge with additional open-ended questions about student confidence (Hodson-Carlton & Dorner, 1999; Schilperoort, 2020). The other two studies surveyed students about their feelings and attitudes concerning instruction (Bernstein et al., 2020; Thompson, 2009). Results of the research studies assessing instructional effectiveness are shown in Table 1. There were mixed results from surveys of student confidence, with three studies reporting increased confidence (Bernstein et al., 2020; Hodson-Carlton & Dorner, 1999; Schilperoort, 2020) and one study reporting students almost equally divided among more confident and less confident (Thompson, 2009). Both studies with pre and postquizzes reported that the percentage of correct answers increased on the postquiz (Hodson-Carlton & Dorner, 1999; Schilperoort, 2020).

Learning Theories/Standards/Guidelines

Fourteen of the 20 sources did not mention using any standards, guidelines, or theories to inform development of instructional content (Dorner et al., 2001; Francis & Fisher, 1995; Guillot & Stahr, 2004; Hinegardner & Lansing, 1994; Hodson-Carlton & Dorner, 1999; Layton & Hahn, 1995; Leasure et al., 2009; Lemley, 2016; Milstead & Nelson, 1998; Thompson, 2009; Welch et al., 2016; Whiting & Orr, 2013; Wills et al., 2001; Wimmer et al., 2014). In the remaining six sources, two authors mentioned library standards with Honey et al. (2006) referencing the *Australian and New Zealand Information Literacy Framework* (Bundy, 2004) and Guillot et al. (2010) referencing both the Association of Colleges and Research Libraries (ACRL, 2000) *Information Literacy Competency Standards for Higher Education* and the ACRL (2008) *Standards for Distance Learning Library Services*. Three authors referenced nursing standards with Bernstein et al. (2020) and Deberg (2014) citing the *Essentials of Doctoral Education for Advanced Nursing Practice* (American Association of Colleges of Nursing, 2006) and Whitehair (2010) citing the *Practice Doctorate Nurse Practitioner Entry-Level Competencies* (National Panel for NP Practice Doctorate Competencies, 2006).

Only two authors mentioned using a specific learning model or theory to develop instructional content. Whitehair (2010) used both the student-centered model of Kraft and Androwich and Kuhlthau's *Model of the Information Search Process*. Schilperoort (2020) mentioned using both constructivist learning theory and andragogy (adult learning theory) to develop an interactive tutorial. Six additional authors (Dorner et al., 2001; Francis & Fisher, 1995; Hinegardner & Lansing, 1994; Hodson-Carlton & Dorner, 1999; Layton & Hahn, 1995; Leasure et al., 2009; Welch et al., 2016) did mention elements such as active learning, hands-on learning, point-of-need instruction, or accommodating different skill levels which would be consistent with adult learning theory or constructivist approaches (Knowles et al., 1998; Ross-Gordon et al., 2017).

Table 1
Results of Research Studies Assessing Instructional Effectiveness

Author(s), Date, Population, Location	Methodology	Specifics	Results of Assessment
Surveys			
Bernstein et al., 2020, DNP Students, United States	Survey of student feelings and attitudes	No indication of how many students completed the survey. Results were given as broad statements rather than as numbers or percentages.	Most students felt they understood the components of nursing literature. Most students felt confident in using databases to find relevant literature. Students valued the integration of the library and the writing center into the class and felt both should be included in future classes.
Thompson, 2009, Master's students, Canada	Survey of students' feelings and attitudes	No indication of how many students completed the survey. Results were given as broad statements rather than as numbers or percentages	Most students agreed content was relevant. Students were divided about whether the class increased their comfort with undertaking future quantitative projects. Students were divided about whether they felt more comfortable reading and interpreting quantitative research. Most students felt the assignment was too difficult.
Quasi-Experimental Studies			
Hodson-Carlton & Dorner, 1999, Master's students, Indiana	Quasi-experimental (pre & postquiz plus open-ended questions)	30 students took the prequiz and 24 took the postquiz. (6 students did not complete the course so did not take the post-quiz).	88% (21/24) answered the 6 post-module questions correctly compared to 63% (19/30) pre-module. Post-module 79% agreed or strongly agreed they were able to assess the quality of Web healthcare information from an advanced nursing conceptual approach.

Schilperoort, 2020, Master's students, California	Quasi-experimental (pre-post quiz plus survey of confidence with some open-ended questions)	59 students completed the pre and postquiz. 57 were required to do so as part of a class, the other 2 chose to complete the module voluntarily. 13 students provided additional comments.	The percentage of correct answers increased on the post-test for each of 5 questions. The biggest change (+46%) occurred in a question asking students to rank by level of evidence. All students felt much more (49%) or somewhat more (51%) confident in their ability to identify high-level research. All students felt much more (59%) or somewhat more (41%) confident in their ability to use library resources to find various types of evidence. Additional comments were positive.

Challenges and Benefits

Some challenges seemed to be almost universal while others were related to specific types of instruction. The need for collaboration between nursing faculty and librarians was mentioned by almost all authors (Bernstein et al., 2020; Deberg, 2014; Dorner et al., 2001; Francis & Fisher, 1995; Guillot & Stahr, 2004; Guillot et al., 2010; Hodson-Carlton & Dorner, 1999; Honey et al., 2006; Layton & Hahn, 1995; Leasure et al., 2009; Lemley, 2016; Schilperoort, 2020; Welch et al., 2016; Whitehair, 2010; Wimmer et al., 2014). In contrast, the time-consuming aspects of instruction were mentioned primarily when discussing embedded librarianship (Guillot et al., 2010; Lemley, 2016) or when offering individual consultations (Bernstein et al., 2020; Deberg, 2014; Guillot & Stahr, 2004). Dorner et al. (2001) also mentioned time as a challenge when discussing the need to update videos frequently because of database interface changes, a problem echoed in Schilperoort's (2020) recommendation to review and update tutorials at the beginning of each semester or use. One benefit mentioned for tutorials is that even when created for a specific class, they can also be offered as standalone sources of instruction (Hodson-Carlton & Dorner, 1999; Schilperoort, 2020). Other challenges reported for embedded librarianship include unrealistic expectations of students (Guillot et al., 2010) and role confusion, i.e., students asking questions of the librarian which should be directed to nursing faculty (Guillot et al., 2010; Lemley, 2016). Benefits of embedded librarianship included extended rapport with students (Guillot et al., 2010), the ability to be proactive (Lemley, 2016), and the ability to broadcast messages to an entire class (Guillot et al., 2010; Lemley, 2016).

Other instructional challenges mentioned include difficulties in providing equal access to off-campus students (Dorner et al., 2001; Francis & Fisher, 1995; Milstead & Nelson, 1998), technological costs associated with virtual instruction (Guillot & Stahr, 2004), and nursing faculty turnover (Dorner et al., 2001; Lemley, 2016).

Discussion

This scoping review sought to identify and summarize literature on librarian-led instruction for graduate nursing students. Like previous research (Salani et al., 2016), many of the reviewed sources suggest that the needs of graduate nursing students differ from those of undergraduates in multiple ways. Graduate nursing students tend to be older (Guillot & Stahr, 2004; Honey et al., 2006; Whiting & Orr, 2013) and to be working while attending school (Dorner et al., 2001; Francis & Fisher, 1995; Guillot & Stahr, 2004; Honey et al., 2006; Thompson, 2009; Whitehair, 2010; Whiting & Orr, 2013). In addition, many graduate

students have been out of school for several years (Guillot & Stahr, 2004; Guillot et al., 2010; Lemley, 2016; Whitehair, 2010; Whiting & Orr, 2013) and may have increased family responsibilities (Guillot & Stahr, 2004; Whitehair, 2010).

Sources reporting on library instruction for graduate nursing students consisted primarily of case reports, i.e., descriptions of instructional sessions, tutorials, or programs rather than research studies evaluating instructional effectiveness. Descriptions, particularly of new programs or classes, can be helpful for librarians looking for different ways to approach instruction, however, these descriptions often lacked details which would aid in replicating library sessions or tutorials at other institutions. Although all sources provided some information about instructional content and most sources indicated the format of instruction, in many cases, other information such as timing and duration which would assist in replicating the session was missing.

Although several authors mentioned assessing instructional effectiveness, few reported assessment results which could also aid in replication decisions. In addition, the studies that did assess results varied in significant ways. Two looked only at student's feelings and attitudes (Berstein et al., 2020; Thompson, 2009) which provides an incomplete measure of effectiveness. The remaining two studies assessed both changes in knowledge and attitude (Hodson-Carlton & Dorner, 1999; Schilperoort, 2020) which offers a more complete assessment of learning. Although published 21 years apart, both of the studies reported on the creation of a Web-based, point-of-need tutorial. The older tutorial was intended to teach students to evaluate the quality of websites, while the newer taught students to find evidence based information and evaluate levels of evidence. Both studies reported an increase in student knowledge after instruction.

Finally, although authors may have developed instruction and assessment based on learning theories, standards, or guidelines, with a few exceptions, there was little indication of which standards and/or theories were used and how those standards/theories influenced instructional development.

Implications

Findings illustrate the need for librarians to provide more detail in published class descriptions so that sessions can be replicated by others. Also helpful would be more explicit information about instructional theories, standards, or guidelines used to develop class content. More importantly, librarians should consider adopting or creating assessment strategies to determine the effectiveness of instruction for graduate nursing students, and then publish the results of those assessments for the benefit of others. Only a robust assortment of published assessment studies will enable a clearer understanding of the effectiveness of library instruction for graduate nursing students.

Limitations

Searching always involves compromise between comprehensiveness (finding all relevant sources) and precision (finding a minimum of irrelevant sources). This study sought to err on the side of comprehensiveness in two ways: (a) by searching both subject headings and keywords in the title, abstract, and subject heading fields and (b) by using compound searching (X AND Y) rather than quoted phrase searching ("X Y"). However, there are still limitations to the search. For example, there may be other words or phrases used in the literature to refer to graduate nursing students or library instruction that were not included in this search strategy. In addition, search results were limited to results in English, which would have limited the inclusion of studies completed outside the United States.

Conclusion

This scoping review examining published literature of librarian-led instruction for graduate nursing students found that most of the sources were descriptions of classes or programs which did not report any results from measures of instructional effectiveness. An additional three sources evaluated programs or library use but did not assess instruction. All sources reported some characteristics of instructional sessions, but few provided enough information to allow others to accurately replicate instruction at other institutions. Only four sources provided measures of instructional effectiveness. Two included surveys of students' feelings and attitudes about instruction, and two were quasi-experimental studies which included pre-post knowledge quizzes. The lack of evidence related to the effectiveness of librarian-led instruction for the population of graduate nursing students reveals a gap in library research and suggests there is insufficient evidence to warrant a systematic review evaluating this topic.

Author Contributions

Adelia Grabowsky: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Writing – original draft, Writing – review & editing **Katherine Spybey:** Conceptualization, Data curation, Formal analysis, Investigation, Writing – review & editing

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Appendix A
Search Strategies

Initial searches were completed on July 30, 2019. Bridge searches were run on December 7, 2021.

CINAHL; Medline; ERIC; Library Literature & Information Science Index (H.W. Wilson); and Library, Information Science & Technology Abstracts

(Graduate nursing students OR students, nursing, graduate OR students, nursing doctoral OR students, nursing, Masters OR education, nursing, graduate OR MSN OR DNP OR ((masters OR PhD OR doctoral OR graduate student*) AND nurs*)) AND (Library orientation OR library user education OR library instruction OR ((Librar* OR information literacy) AND (instruction OR workshop OR orientation OR session OR class)))

Search notes:

Subject headings and keywords associated with the two concepts of graduate nursing students and library instruction were included in the search (see Table A1 for list of included subject headings). Medline, CINAHL, ERIC, and PsycINFO were searched concurrently through the EBSCO Interface. While it is possible to use field codes to restrict search terms to specific fields, a more comprehensive search is possible with the "Select a Field" option. When using "Select a Field" all search terms are searched in the author, subject, keyword, title, and abstract fields which reduces the chance of missing relevant results. More information about using the "Select a Field" option can be found here: https://help.ebsco.com/interfaces/EBSCO_Guides/General_Product_FAQs/fields_searched_using_Select_a_Field_drop_down_list).

All searches were limited to English. The initial search was limited to 1994 through July 2019. The bridge search was limited to July 2019 through December 2021.

Table A1
Subject Headings for Each Database

	Concept – Graduate nursing students	Concept – Library instruction
Database	Subject headings	Subject headings
CINAHL	Students, nursing, graduate Students, nursing, masters Students, nursing, doctoral	Library user education
Medline	Education, nursing, graduate	Libraries
ERIC	Graduate students Nursing students Doctoral students	Library instruction
Library Literature & Information Science Index	Students	Library orientation
Library, Information Science, & Technology Abstracts	Students	Library orientation

Library & Information Science Abstracts (LISA) (searched through ProQuest interface):

(Graduate nursing students OR students, nursing, graduate OR students, nursing doctoral OR students, nursing, Masters OR education, nursing, graduate OR MSN OR DNP OR ((masters OR PhD OR doctoral OR graduate student*) AND nurs*)) AND (Library orientation OR library user education OR library instruction OR ((Librar* OR information literacy) AND (instruction OR workshop OR orientation OR session OR class)))

Search notes:

All searches were limited to English. The initial search was limited to 1994 through July 2019. The bridge search was limited to July 2019 through December 2021.

Google Scholar (first 100 results examined)
(Graduate nursing students | MSN | DNP | ((masters | PhD | doctoral | graduate student) AND nurse))
((Library OR information literacy) AND (instruction | workshop | orientation | session| class))

Search notes:

The initial search was limited to 1994 through 2019. The bridge search was limited to 2019 through 2021.

Appendix B
Sources Included in Scoping Review

Table B1
Characteristics of Sources
**S/G/T are Standards, Guidelines, or Theories used to develop instruction.*

Author(s), Date, Population, Location	Class OR Program S/G/T*	Format (F2F = face-to-face)	Timing, Duration	Content taught	Additional support	Methodology, Assessment, Other notes
Bernstein et al., 2020, DNP Students, United States	Class - DNP Intro Level Class Essentials of Doctoral Education for Advanced Practice Nursing	No indication of format.	First week of class. No indication of class duration.	Reading and evaluating nursing research; database searching focused on advanced features such as filters.	Follow-up research appointments with librarian.	Survey. Survey of feelings and attitudes. Instruction tied to course assignments.
Deberg, 2014, DNP Students, Iowa	Two classes - 1. Primary Care and Older Adult II 2. Finding Evidence for Practice. Essentials of Doctoral Education for Advanced Practice Nurses.	1. Hybrid - F2F lecture, recorded for distance students. 2. Virtual-Online videos of database demos and lectures.	1. & 2. No mention of timing or duration.	Class 1 -structuring clinical questions, evaluating evidence strength, utilizing clinical and literature databases. Class 2 - Databases demoed, no specifics.	1. & 2. Individual meetings via phone, email, or Web.	Case report. 1. & 2. Assessment mentioned but no results provided. 1. Anecdotal evidence of success from nursing faculty and conversations with students. Not clear if F2F lecture in class 1 was delivered by librarian or nursing faculty. Instruction was tied to course assignments.

Dorner et al., 2001, Master's students, Indiana	Both - Program was tiered approach in BSN and MSN. Specific MSN class – NURS 605. No S/G/T mentioned.	Virtual – online tutorials, each with a pre and postquiz, developed for specific courses and inserted at point of need.	Module for NURS 605 was assigned during first two weeks of semester and contained multiple tutorials. No mention of duration or number of tutorials.	NURS 605 - citations, Boolean, keyword, and subject searching, evaluation of sources, Web searching, CINAHL, APA. Additional content included in other classes - Medline, PsycLit, Index Medicus, Science Citation Index, Dissertation Abstracts, Mental Measurements Yearbook, Tests in Print.	Online discussion boards, online chat sessions for small groups.	Case report. Each tutorial of the module had a pre and postquiz, however no results were provided. Informal feedback solicited from students was consistently positive. Instruction was tied to course assignments. Librarians given 'instructor' access to Course Blackboard site.
Francis & Fisher, 1995, Master's and PhD students, Florida	Program No S/G/T mentioned.	F2F	No indication of timing. Two sessions, each two hours long.	CINAHL/Medline (search strategies including limits, controlled vocab), catalogue, Science Citation Index, Index Medicus, Dissertation Abstracts, Hospital Literature Index, Mental Measurements Yearbook, Tests in Print, Test Critiques.	Additional content for off-campus users: Using databases from off-campus.	Case report. Mentions assessment but no results provided. Anecdotal evidence - librarians reported that nursing students asked fewer basic questions. Instruction was tied to course work. Students were required to participate, assignments were graded, or credit was received for participation.

Guillot & Stahr, 2004, Master's students, Louisiana	Class - NURS 600 Theoretical Foundations of Advanced Nursing No S/G/T mentioned.	Hybrid - Traditional bibliographic instruction followed by optional individual virtual sessions.	No indication of timing. Session was 1 hour with 20 minutes spent scheduling individual sessions. Duration of individual sessions varied.	Health science databases, library services, virtual reference. Individual virtual sessions were tailored to each student with students expected to have chosen relevant search terms before the meeting.	Follow-up email with a transcript of the virtual session.	Program evaluation. Focus was assessment of practicalities of providing the program, no assessment of instructional effectiveness mentioned. Instruction tied to assignment.
Guillot et al., 2010, Master's students, Louisiana	Class - NURS 500/600 Theoretical Foundations of Advanced Nursing Information Literacy Competency Standards for Higher Education; Standards for Distance Learning Library Services.	Embedded	Available throughout semester. Assistance provided at point of need.	Content driven by student questions on discussion board. Questions for the specific semester included assessing library resources remotely, using interlibrary loan, APA, and help with research questions.	Broadcast email about how to access assigned articles.	Case report. Anecdotal evidence that students were enthusiastic about the service (derived from course evaluations). Librarian embedded into course management system.
Hinegardner & Lansing, 1994, Master's Students, Maryland	Class - Computer Applications in Nursing and Health Care No S/G/T mentioned.	F2F	No indication of timing. 3-hour session.	Computerized literature searching, databases, search strategy development, file management software.	None mentioned.	Case report. No assessment mentioned. Focus of article is development of Nursing Informatics program. Instruction tied to class assignment.

Hodson-Carlton & Dorner, 1999 Master's students, Indiana	Class - NUR 605 No S/G/T mentioned.	Virtual - Interactive Web instructional module.	Module took place in the 3rd or 4th week of the semester. No indication of duration of module.	Evaluation of Web resources using seven evaluation criteria (scope, audience, authority, currency, accuracy, purpose, and organization).	One synchronous chat session; asynchronous online bulletin board which included both a nursing faculty member and a librarian.	Quasi-experimental. Pre-post quiz with six true/false questions about Web information. Open-ended questions about perceptions also included in postquiz. Instruction tied to class assignments.
Honey et al., 2006, Master's students, New Zealand	Program Australian & New Zealand Information Literacy Framework	Hybrid - F2F plus online tutorials and Web-based resource pages.	F2F orientation beginning of semester. No indication of duration. Course related sessions provided within classes.	F2F orientation - nursing specific resources, library tutorials, workshops, librarian contact info. Voluntary F2F sessions - catalogue, nursing-specific databases including CINAHL, e-journals.	Informational brochure about library resources for nursing students. Small F2F voluntary sessions.	Mixed methods (student surveys plus library staff interviews). Assessment of library use but no mention of assessment of instructional effectiveness. Focus of the study is a survey of use of technology by nursing students and changes made as a result.

Layton & Hahn, 1995, Master's and PhD students, Maryland	Both - Program and two classes; MSN class - Computer Technologies in Nursing. PhD class - Technology Applications in Nursing Research. No S/G/T mentioned.	Both classes F2F	MSN Class 2) two-hour sessions. No indication of timing. PhD class two sessions. No indication of timing or duration.	MSN Class - Internet, email, databases, search strategies, controlled vocab, Medline, CINAHL, PsycINFO, library services. PhD class - Internet, email, electronic mailing lists, databases, search strategies, controlled vocab, Medline, CINAHL, PsycINFO, library services.	None mentioned.	Case report. Assessment mentioned but no results provided. All instructional sessions include lecture, demo, and hands-on training with students performing exercises on the computer.
Leasure et al., 2009, Graduate students (level not specified), Oklahoma	Both - Program and two graduate nursing classes. No S/G/T mentioned.	Hybrid - Both F2F and online tutorials.	Early Graduate Nursing Class No indication of timing or duration of F2F instruction. Graduate Research Course No indication of timing or duration.	Early Course - databases, searching (keywords, controlled vocab, limits, Boolean operators), website evaluation. Online tutorial – webpage evaluation. Research Course – Advanced and command line searching, full-text, bibliographic management.	Additional free training sessions were available to individuals wishing to improve their skills.	Case report. No assessment mentioned. Instructional sessions consisted of lecture plus live demo searches followed by discussion among students, librarian, and nursing faculty member.

Lemley, 2016, Master's and DNP Students, Alabama	Program No S/G/T mentioned (did reference best practices for embedded librarians).	Embedded	Available throughout semester. Assistance provided at point of need.	Driven by questions. Individual questions answered include APA, definitions of research types, where to search, CINAHL.	Encouraged to contact the librarian by phone, email, or discussion board. Online videos and tutorials for specific databases and ILL.	Case report. No assessment mentioned. Librarian listed as instructor in course management system.
Milstead & Nelson, 1998, PhD students, Pennsylvania	Both - Program and Nursing PhD course -Politics and Health Policy Development. No S/G/T mentioned.	Virtual (webpage)	Webpage available throughout the course.	Frequently used library functions/resources.	Vendor rep provided instruction for class on Westlaw database.	Case report. Mentioned assessment of library use and access, but no results provided. No assessment of instructional effectiveness mentioned. Primary focus is development of program, limited discussion of library involvement, no librarian author on article.
Schilperoort, 2020, Master's students, California	Two clinical classes (no specifics on class name). Andragogy, Constructivist learning theory	Virtual asynchronous interactive video tutorial.	Embedded in LMS. Self-paced, estimated 15 to 30 minutes to complete tutorial.	Identifying level of evidence and locating library resources to find evidence.	None mentioned.	Quasi-experimental. Pre-post tests, Survey of confidence with some open-ended questions. Unique focus on clinical courses. Tutorial was required; assignment was graded credit or no-credit.

Thompson, 2009, Master's students, Canada	Class – Research Methods Course No S/G/T mentioned.	F2F	No indication of timing of class. Compared two iterations with differing durations. First iteration was 1) 3-hour class, second iteration was 3) 3-hour classes.	1st iteration (3 hr. class) – lecture on basic concepts of data & quantitative research, demo of basic analysis in SPSS, hands-on practice with provided dataset. 2nd iteration (3 – 3 hr. classes) – 1st 3-hour class- lecture on data concepts, 2nd 3-hour class, hands-on practice with SPSS, 3rd 3-hour class, answering questions and one-on-one assistance.	Assistance at the academic data center on a walk-in basis.	Survey (students' feelings/ attitudes). 1st iteration – anecdotal evidence (Instructor reported high grades on assignment). 2nd iteration – student survey. Instruction tied to class assignment.
Welch et al., 2016, PhD students, Georgia	Program - Orientation No S/G/T mentioned.	Virtual (online interactive modules).	Access before classes began, but not clear if modules had to be completed before classes began. No indication of duration of modules.	4 modules - topics included scholarly writing, APA, library databases, lit reviews, research questions/ hypotheses, popular vs. scholarly, theoretical frameworks, Endnote, planning a research study, research ethics.	None mentioned	Case report. Reports meeting as a group to discuss orientation assessments and evaluations but no results provided. Describes shift to online modules for student support.

Whitehair, 2010, Master's, DNP, and PhD students, Kansas	Both - Program and two classes - DNP capstone course PhD on-site sessions. Practice Doctorate Nurse Practitioner Entry-Level Competencies; Kuhlthau's Model of the Information Search Process; Kraft and Androwich's student-centered model.	Hybrid - F2F, synchronous online instruction, videos.	Orientation preclass. DNP course - beginning of semester, recorded; No indication of duration. Q&A session several weeks later. PhD students – 1st & 3rd week included 1-hr library sessions; 2nd week individual meetings.	Orientations - critical resources, off-site access. DNP Capstone Course - lit searching, video tutorials, resources. PhD sessions -1. library services, website, databases, 2. - voluntary meetings. 3. complex searching, refining searches, current awareness services.	One-on-one interaction with library liaisons was encouraged and available in person, via phone, online conferencing, and instant messaging.	Case report. No assessment mentioned. SON faculty encouraged to add library contact info to the syllabus and to set up "Ask a Librarian" discussion boards in all courses.
Whiting & Orr, 2013, DNP students, Indiana	Both - Program, Orientation No S/G/T mentioned.	No indication of format of orientation.	No indication of timing or duration of orientation.	Content that changed as a result of the research – improved explanation of ILL and document delivery, more time spent on citing and citation resources, greater emphasis on nine nursing journals added to the collection in support of the new DNP program.	Librarians maintained a "library support" section within the general Blackboard site.	Mixed methods. Analysis of research paper reference lists and survey of library resources/services satisfaction but no assessment of instructional effectiveness mentioned. Focus is support of DNP program over three years rather than instruction.

Wills et al., 2001, Master's students, Michigan	Class - Nursing 811 Concepts of Research and Evaluation for Advanced Practice Nurses No S/G/T mentioned.	Embedded	Available throughout semester.	CINAHL, Medline, ProQuest Direct, and other health-science databases.	Individual consultations via email or F2F. Discussion room in WebTalk for questions and where the librarian posted content.	Case report. There was an end-of-class evaluation, but no assessment of library support was reported. Focus is the development of an online nursing class in the Master's program, including info about library support.
Wimmer et al., 2014, PhD students, Utah	Class - Research with Diverse Populations No S/G/T mentioned.	Virtual - synchronous	Second week of class was an orientation to library resources with question-and-answer session. No indication of duration.	No information beyond that it was an orientation to library resources. Librarian assisted with full-text, remote access, and ILL.	Research guide for Evidence-Based Nursing shared via course management system.	Case report. No assessment mentioned. Focus is describing librarians' involvement in the creation of an e-textbook by students in the class.