A Qualitative Study of the Process Undergraduate Health Professions Students Utilize while Conducting a Scoping Review

Dawn De Vries
Grand Valley State University, devridaw@gvsu.edu

Betsy Williams
Grand Valley State University, williab2@gvsu.edu

Recommended Citation

A Qualitative Study of the Process Undergraduate Health Professions Students Utilize while Conducting a Scoping Review

Abstract

Purpose: The purpose of this research study was to inform pedagogy on the effectiveness of journaling as a tool to gauge synthesis and application of course content to a scoping review. The research question asked is "Is reflective journaling effective in helping undergraduate health profession students understand and apply course research concepts and ideas directly to an academic project?" The researchers used a reflective journaling activity to enhance student learning and to explore student application of course lectures to a scoping literature review. Method: Students were required to complete the journaling activities as a class assignment. Four journal entries were aimed at understanding student application of steps of scoping review and how students applied course content to a specific project; a final journal entry was reflective on lessons learned through the process. Results: Student journal entries provided detail on synthesis and application of course lectures to a student specific scoping literature review. Students identified challenges experienced such as trouble in finding literature; selecting and using the most appropriate keywords; lack of evidence-based, discipline specific research; finding recent research (i.e., within the last 10 years); and narrowing the topic to a manageable size. Successes include demonstrating student understanding of areas such as writing the research question and collaboration. As the project progressed, concerns shifted to writing barriers, team issues, the "choppiness" of writing with multiple authors, and organizing the flow of the paper. In the final journal entry, students reported that the project helped them learn how to apply research to practice, increased their skill and comfort in presenting research and education to others, and improved their skills in doing more effective literature searches and using keywords. Course lectures were adapted based on student journal entries to increase student comprehension and application, which were effective in improving student work as the project progressed. Conclusions: The student journal entries were effective in demonstrating their learning and application of course content to a specific project. Students benefitted from the opportunity to reflect on their process, problems, and strategies. For the instructor, journal entries provided an opportunity to see where students were at in the process, identified barriers, and allowed adaptations to instruction to provide feedback or further guidance. Other findings from this study reinforced previous studies on journaling outside of health professions, such as the value of having direct access to the librarian for guidance, the opportunity journaling provides for in-the-moment lessons and learning from students' reflections, and that journaling activities provide for accountability with timely completion of assignments.

Author Bio(s)

Dawn DeVries, DHA, MPA, CTRS, is the Program Director and an Associate Professor of Recreational Therapy in the College of Health Professions at Grand Valley State University in Grand Rapids, MI.

Betsy Williams, MSLIS, is the Health Professions Librarian in the Grand Valley State University Libraries, Grand Rapids, MI.

A Qualitative Study of the Process Undergraduate Health Professions Students Utilize while Conducting a Scoping Review

Dawn De Vries
Betsy Williams

Grand Valley State University

United States

ABSTRACT

Purpose: The purpose of this research study was to inform pedagogy on the effectiveness of journaling as a tool to gauge synthesis and application of course content to a scoping review. The research question asked is "Is reflective journaling effective in helping undergraduate health profession students understand and apply course research concepts and ideas directly to an academic project?" The researchers used a reflective journaling activity to enhance student learning and to explore student application of course lectures to a scoping literature review. **Method**: Students were required to complete the journaling activities as a class assignment. Four journal entries were aimed at understanding student application of steps of scoping review and how students applied course content to a specific project; a final journal entry was reflective on lessons learned through the process. **Results**: Student journal entries provided detail on synthesis and application of course lectures to a student specific scoping literature review. Students identified challenges experienced such as trouble in finding literature; selecting and using the most appropriate keywords; lack of evidence-based, discipline specific research; finding recent research (i.e., within the last 10 years); and narrowing the topic to a manageable size. Successes include demonstrating student understanding of areas such as writing the research question and collaboration. As the project progressed, concerns shifted to writing barriers, team issues, the "choppiness" of writing with multiple authors, and organizing the flow of the paper. In the final journal entry, students reported that the project helped them learn how to apply research to practice, increased their skill and comfort in presenting research and education to others, and improved their skills in doing more effective literature searches and using keywords. Course lectures were adapted based on student journal entries to increase student comprehension and application, which were effective in improving student work as the project progressed. **Conclusions**: The student journal entries were effective in demonstrating their learning and application of course content to a specific project. Students benefitted from the opportunity to reflect on their process, problems, and strategies. For the instructor, journal entries provided an opportunity to see where students were at in the process, identified barriers, and allowed adaptations to instruction to provide feedback or further guidance. Other findings from this study reinforced previous studies on journaling outside of health professions, such as the value of having direct access to the librarian for guidance, the opportunity journaling provides for in-the-moment lessons and learning from students' reflections, and that journaling activities provide for accountability with timely completion of assignments.

Keywords: recreational therapy, journaling, research process, health professions, scoping review

INTRODUCTION

In their review of evidence-based practice education in the health professions, Thomas, Saroyan, and Dauphinee found "that in order to apply research findings in clinical decision making, clinicians must be able to pose a good clinical question, and have a skill set that facilitates searching and appraisal of the literature."[1] However, teaching research skills in undergraduate health professions education can be challenging as many undergraduates do not believe they will need or utilize these skills as professionals. Research has shown that students lack enthusiasm for research and have difficulty applying what they learn directly to practice.[2] Furthermore, students believe that research is irrelevant or struggle with anxiety in what is perceived as a difficult topic.[2]

Despite these challenges, participating in undergraduate research experiences has been shown to enhance educational outcomes, facilitate professional development, increase the ability to talk with others about research, assist students in connecting research to practice better, and motivate students to engage in future research.[2,3] In order to help students have positive undergraduate experiences with learning research skills, educators need to understand how students engage in the process. One tool to understand students' research experience is that of journaling. Journaling is a reflective activity that "offers the possibility for theory to be linked with practice so that meaning and knowledge can be constructed."[4] Journaling can be used for both summative and formative evaluation, allowing faculty to assess student work for accuracy, identify where students are in their projects, understand student problems and/or frustrations, and see what students believe they have learned.[5]

A variety of studies support using journaling as a teaching and learning tool, but we found none specific to using journaling in evidence-based practice education in the health professions. Searches in the CINAHL Complete and PubMed databases did not yield any results for articles related to journaling, allied health professions (including recreational therapy, physical therapy, occupational therapy, and speech language pathology), and evidence-based practice; therefore, we relied on studies from other disciplines.

King and LaRocco explored the use of e-journals with students in two graduate-level education classes.[6] In 2018, Young used reflection interventions with students in a 300-level undergraduate marketing course.[7] Both studies found that journaling helped students "make connections between theory and practice" and fostered deep learning.[6,7]

Mimbs implemented a journaling intervention with a small sample of undergraduate mathematics students as a formative and summative assessment tool.[5] Journal writing fostered communication between the students and the instructor/research mentor and among the students working in groups. Students working on group research projects where journaling was required turned assignments in on time and received higher grades compared to group research projects completed without journals.

Further support for using journaling as a teaching tool was found in the library science literature. These studies focused on how journaling can be used to learn where students are struggling in the research process and identify where information literacy training can be optimally placed within the curriculum.[8–10] Information literacy training helps students learn to find and evaluate research; as such, it is a critical component of evidence-based practice.

The research question guiding this study was, "Is reflective journaling effective in helping undergraduate health profession students understand and apply course research concepts and ideas directly to an academic project?" While this research would also enable the researchers to follow the process that students use to complete a scoping review, it would provide insight into student synthesis and application of course content directly to a scoping literature review. By understanding how students synthesize course materials and apply them to a project, educators will have a better understanding of the effectiveness of journaling to teach and train students on research methods. The ultimate goal for this project was to inform pedagogy on journaling that increases student confidence and comfort in utilizing existing research with hopes they will continue to use these skills as clinicians.

METHODS

After reviewing Bauer's ethnographic study on undergraduate business students, the researchers adapted the study for undergraduate students in health professions.[9] Bauer's study utilized journaling centered around specific questions to understand how business students seek research information. Journaling was done twice during the semester, plus a final summative reflection on personal growth in research. The upper division undergraduate course was face-to-face and hybrid, and journaling was not required. To analyze data, Bauer utilized thematic qualitative analysis, generating codes and then identifying and naming themes or patterns.[9] In the present study, modifications included journaling five times during the semester, and journaling was required for all students in this upper level course.

This study utilized an ethnographic method, in the form of reflective journaling, to assist in understanding how students learn and apply research skills to an evidence-based project. The project focused on students working in small groups to complete a scoping literature review. In order to complete the project, students must employ the initial steps involved in evidence-based practice: "posing a clinical question, searching the literature, [and] appraising the literature."[1] For the purposes of this study, a series of reflective questions was provided to students on the university's learning platform related to the students' research experience and methodologies. Students gave short answers to the prompts at four different times during the course, plus one summative journal entry at the end. The researchers used the journal entries to assess student learning and application of the skills being taught.

Course

Senior level undergraduate students enrolled in a capstone undergraduate research class entitled "Research and Evaluation in Recreational Therapy" participated in this study to explore the effectiveness of journaling in helping students reflect on their learning and application of content. The students, in their final semester, participate in class lectures on research and put lessons into practice by reviewing existing research to create a scoping literature review. Class lectures include topics such as evidence-based research, developing a research question, conducting literature searches, writing elements of a scoping review, understanding types of research and research hierarchy, research methods (quantitative and qualitative), responsible conduct of research and research ethics, and how to give professional presentations. While learning these, students work in teams of two to five to apply the topics by conducting a scoping literature review on a diagnosis and intervention utilized by recreational therapists. The students develop a research question to guide their search, then review existing literature on their topic before summarizing the research on the use, benefits and/or application of an intervention to a specific diagnosis (e.g., what aquatic techniques are beneficial to maintain endurance and range of motion for individuals who have Multiple Sclerosis?). After completing the scoping review, student teams write a manuscript, submitting drafts during the semester, and give a 20-minute oral presentation as part of the university-wide undergraduate scholarship day. Students turn in drafts of each chapter of their paper for feedback. Faculty can evaluate student application of course content, progress on their project, and offer editorial and process feedback.

Process

After IRB approval as an exempt study, students were given the option of having their journal entries included in the study; however, regardless of student participation, students were required to complete the journaling activities as a class assignment. Students were awarded 10 points for completion of each reflective journal entry. At different points of the scoping review process, students completed journal entries via the electronic learning management system. Journaling was identified as a tool to help students reflect on their learning and then write about their application of course content to their project. Journals one through four used identical prompts and were completed after key times in the review process (see Appendix A for prompts). Journal one occurred after completion of the PICO (patient/population/problem, intervention, comparison or intervention, and outcome being measured) process and writing of the research question; journal two was done after instruction on conducting literature reviews and writing of a methods section; journal three was written after writing the literature review; and journal four was written after lectures on the abstract and dissemination of research. The final journal was written after all components of the process (i.e., paper and presentation) were completed. In total, 330 journal entries were completed, with 274 entries for journals one to four (149 from year 1 and 125 in year 2) and 56 entries for journal five (31 in year 1, 25 for year 2).

Subjects

In the two years of this study, 77 students agreed to allow the use of their journal entries in the research. The journal entries were exported from the learning platform and pasted into a word document by journal number and question number (i.e., journal one, question one; journal one, question two). No personal identifying information was included in the export. The students were all recreational therapy majors who had completed coursework in anatomy and physiology, psychopathology, lifespan development, kinesiology, and introduction to applied statistics, as well as specific recreational therapy coursework such as comprehensive program planning, interventions in recreational therapy, and professional trends and issues. The majority of students are traditional students having completed college directly after high school; however, at least three of the students in the study were non-traditional students having worked in different roles prior to returning to college. Student ages ranged from 21 to 40. The majority of students were female, which is consistent with health care professions (76% female) and recreational therapy professions (88% female).[11,12]

Analyzing Data

To identify themes and analyze reflection about learning and application, the two researchers separately reviewed the first year's journal entries, using open coding, to identify themes and patterns by journal number and journal question. Opening coding allowed researchers to organize similar reflective responses and code them according to question using Excel and/or paper and highlighting rather than software. As an example of coding responses, codes for question three which asked about why specific sources were selected included categories like "reputation," "recommendation by faculty/librarian," and "previous experience." Following separate analyses, the researchers compared and identified codes and patterns. This was followed by informal thematic coding in which the

researchers looked for the most frequent journal comments and responses to identify overall themes. For second year content, one of the researchers repeated the same process of thematic analysis and found similar themes to the first year's data. No additional themes emerged in the second year. Themes with supporting responses were included in a summative document by journal question and are discussed in the Results section of this paper.

RESULTS

Thematic analysis revealed consistency between the two cohorts. This presents opportunities to understand student learning and synthesis of course content, and modify teaching or course content for the future, but first themes needed to be analyzed and explored. Overall identified themes of the students' reflective journals show that they learned effective search strategies, identified methods for working through challenges including communication and teamwork, and developed a variety of skills and applied them through the scoping review.

Effective Search Strategies

In both cohorts studied, there were common trends in how students searched for literature. CINAHL was the most commonly cited source for locating health profession literature (mentioned 62 and 52 times respectively), followed by PubMed (34, 29), PsycInfo (30, 15), and ProQuest (21, 11). Literature searches began using general sources such as Google Scholar and the library's article search function, then shifted to specific databases once students had a better understanding of their topic and more refined search terms. One student wrote,

> "I started with Temple (University's) Wise Owls to make sure we did not miss anything already known by our profession. Then, I looked through CINAHL because it is known to be a good database for therapies and holds a wide range of information" (journal two).

As expected, journal entries showed that the number of databases searched decreased as the project went on with the majority of students in both cohorts indicating that they had found all of their articles by the time of journal four. Figure 1 shows the shift from general databases to health science specific databases as the project progressed. One interesting search shared by a student was the use of TED Talks and podcasts; the student explained,

> "I am beginning my research by listening to TED Talks and podcasts to find concepts and ideas as a starting point and then searching the library databases for interesting ideas that came up" (journal one).
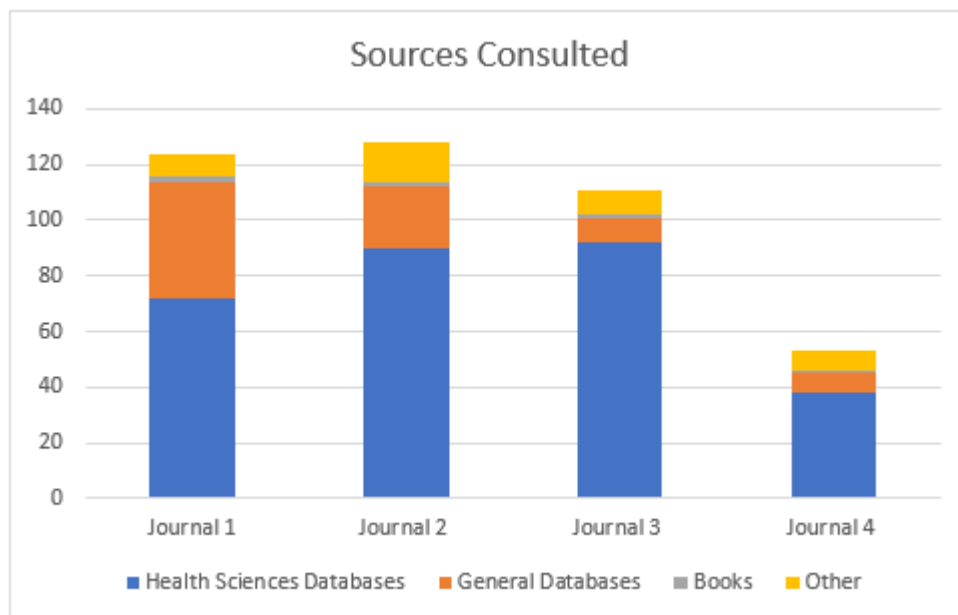

Figure 1. Sources consulted by students

The most common strategy identified by students was to "divide and conquer". Both cohorts shared that research team members each identified a database to search using the key words identified during the PICO process or through meetings with the librarian

or instructor. Two student groups in cohort two identified using a systematic literature review or reviewing references from a strong research article to locate other relevant literature. One student mentioned their strategy of reviewing textbooks to better understand definitions and key terms before moving on to database searching.

When asked why databases were selected, the most common response was the perception of relevance – that the database provided literature most connected and related to the topic. Other reasons cited were credibility/reliability, peer reviewed sources, ease of use, evidence-based information, recommendation by librarian or instructor, and familiarity with or prior use of the database. One student commented that they selected their databases because

> "These sources are easy to use and seem to be effective in finding information" (journal two). An additional related comment was, "We chose these places because it is easy to narrow down to the information we want with the filters given on the page" (journal 3).

An interesting observation was that ease of use appeared as a comment in the first three journal entries but not the fourth; this may be due to increased comfort with utilizing new sources for information or having exhausted familiar databases and needing to explore others.

Working Through Challenges
The most commonly identified challenge in finding literature was selecting and using the most appropriate keywords to find research. Students also mentioned challenges with finding articles on a topic due to a lack of evidence-based, discipline specific research; having difficulty finding recent research (i.e., within the last 10 years); and difficulty narrowing the topic to a manageable size. It appears that these issues persisted throughout the search process for both cohorts. One comment from journal 4 said, "Our biggest struggle was finding literature that was published within the last 10 years while also focusing on our topic." Figure 2 illustrates the problems students encountered.
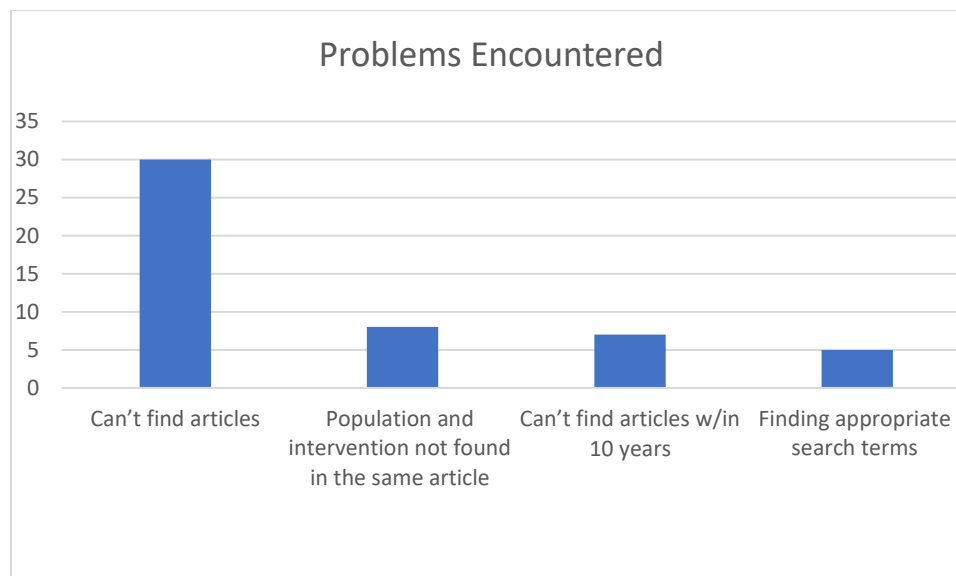

Figure 2. Most frequently reported problems encountered

Students were asked to identify how they worked through these challenges. The most frequently cited solution was to consult with the librarian or instructor, followed by modifying the search terms. Figure 3 displays the results as students identified their strategies. Having the librarian available through the project was beneficial to both cohorts as indicated by student comments. Additionally, the librarian and instructor observed that the librarian's physical presence in the classroom was more effective and engaging than virtual meetings.
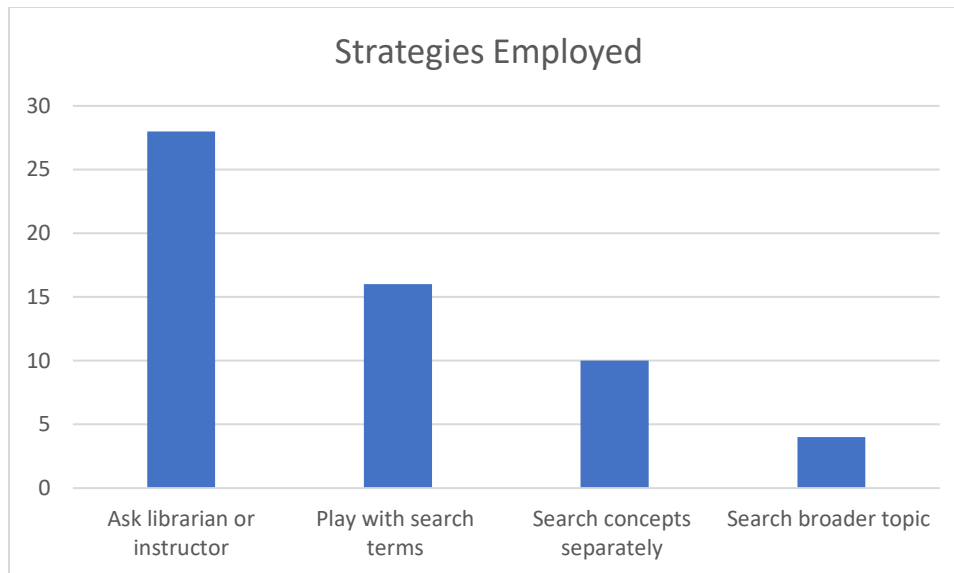
Figure 3. Most frequently reported strategies employed by students to overcome problems encountered

As the project progressed, students encountered fewer problems or frustrations with the search process. Concerns shifted by journal three to writing barriers, team issues, the "choppiness" of writing with multiple authors, and organizing the flow of the paper. This quote demonstrates the challenges students encountered as their project progressed,

> "It has been a little challenging integrating all of the research we found into one paper, but our group has been communicating with one another to organize the paper in the best way possible" (journal 4).

Skills Acquired
In journal five, students were asked to reflect on their research experience, including what they would do differently and what skills they acquired. The most mentioned responses to what would they do differently were related to time management, in particular starting sooner on the project (responses: 12, 8). Another common project related suggestion was organizing and tracking the literature. Students expressed feeling that the article information was not well organized, that they had difficulty understanding articles obtained by team members (because they had not read them), and that they did not have an effective process for connecting all of the articles to one another. This was evidenced by comments such as

> "I think keeping more of a detailed record with the literature findings is incredibly helpful but continuing to do that throughout looking through all the data and recording quotes or important information that could be useful through developing the paper" (journal five).

A different student wrote about how their group dealt with organizing their content

> "Our group was very organized and created entire folders for different parts of the research" (journal five).

Issues also mentioned related to personal and team traits, such as improving team communication, ensuring accountability, being assertive and working with a smaller number of people.

An example related to teamwork is one student's comment,

> "Something I would do differently next time is I would make sure that the pieces were split between group members more clearly and make sure that things are finished by the deadline we say" (journal five).

Another student commented on their personal challenges and a solution for it:

"I think next time I will set aside time to come up with options and planning. I will also take more time looking up articles and diving deeper into them" (journal five). Another student commented that "I think next time I will dedicate about one hour per day to research and working on the project" (journal five).

Finally, students find submitting drafts of their paper helpful as one indicated,

"The project being broken into pieces has made it a lot less daunting and I personally feel good about where we are currently, as well as feel confident in the information we have found even though we really had to shift/fine tune our searches" (journal five).

From student journal entries, it is clear that the research project and process achieved the purpose of educating students on the importance of evidence-based practice and how to apply research to practice. This was mentioned 20 times between the two cohorts. Another purpose of the assignment was to help students learn communication skills related to the practice of healthcare. Students expressed that they increased their skill and comfort in presenting research and education to others (mentioned seven times). Several students connected communication skills and teamwork to their takeaways. One student wrote,

"I would also be able to use the communication skills this class taught me in my research studies because teamwork can make the world of difference and this class showed me it is a great thing to have other people's input and ideas and mash them all together to come up with even more intricate and creative ideas."

Another student wrote,

"I will make sure to utilize scholarly articles and journals when evaluating evidence-based research" (journal five).

Related to research skills, students indicated that they have learned how to do more effective literature searches and use keywords (mentioned 54 times). One student said,

"I have learned a lot through this evidence-based project including how to best find research, create a literature review, and interpret our findings and results within our research" (journal five).

One of the prompts in journal five asked students to reflect on their strengths and weaknesses throughout the process. Figure 4 illustrates that while some students reported strong skills in searching the literature and writing, others reported these as weak skills. Time management, however, was consistently reported as a weakness.
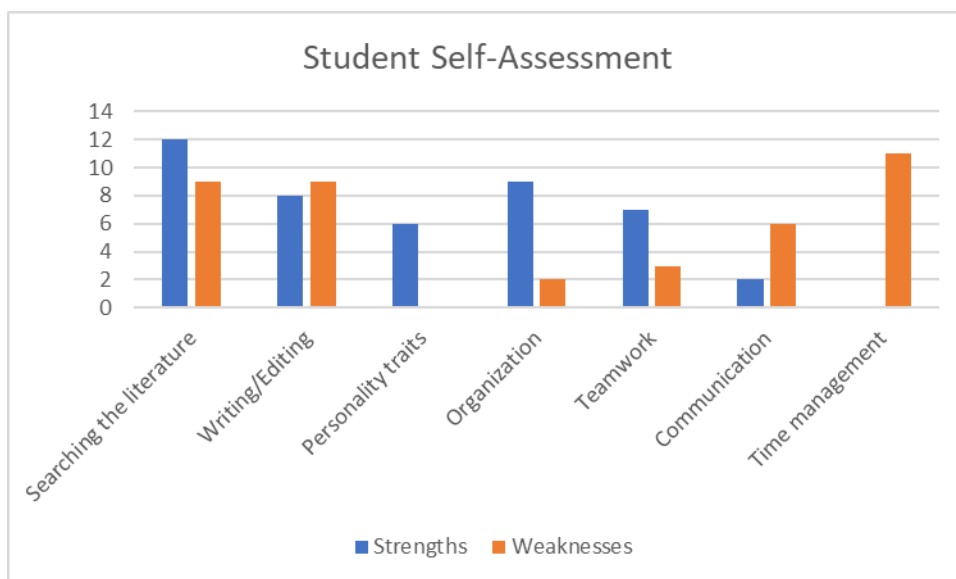

Figure 4. Student reports of their strengths and weaknesses throughout the project

DISCUSSION

This study affirmed that journaling is an effective teaching and learning tool. Similar to the participants in Mimbs' study, journaling provided accountability to students in this study, as they turned assignments in on time more often than in previous semesters when journaling was not used.[5] As seen in King and LaRocco and Young, journaling helped students connect theory to practice, an important skill in evidence-based practice.[6,7] Students in this study reported the skills they learned and would use in the future, as shown in Figure 5.

Figure 5. Most frequently reported skills students will use in professional practice

Journal entries helped the faculty member and librarian in understanding student synthesis of course materials and application to an evidence-based project. Students knew <u>where</u> to search for information on their topics, and often began their search in Google for background and scope. However, most students struggled with <u>how</u> to search, especially in identifying appropriate search terms. These findings are echoed in Bauer's study on undergraduate business students and Medaille's study on how honors students conducted research for their final thesis.[9,10]

Having the librarian available during class times was beneficial. Face to face meetings between the students and librarian were advantageous for offering guidance and mentoring. In this study, students often sought help from the librarian when they experienced issues in finding appropriate research studies to include in their scoping reviews. This is contrary to other studies that found students most often ask instructors, friends, relatives, or classmates for help instead of librarians.[8,13]

Findings from other studies have also shown the benefits of a collaborative approach to research in health professions. In Phillips and Bonsteel, nurse educators and librarians worked together to help students develop skills for professional practice. Students' journal entries provided positive feedback on the role of the librarian throughout the process in the Phillips and Bonsteel study, and this partnership demonstrated "how information literacy and evidence-based practice can be modeled in practice".[14] Boruff and Thomas also found that collaboration between a faculty member and librarian played an important role in integrating information literacy concepts and evidence-based practice skills in a course for undergraduate physical and occupational therapy students.[15]

Instructor and Librarian Takeaways

The scoping literature review paired with journaling proved to be an effective pedagogical tool. In the present study, students gained experience in evidence-based practice creating research questions, searching, and critically appraising literature. They also benefitted from the opportunity to reflect on their process, problems, and strategies. For the instructor, journal entries provided an opportunity to monitor students' progress, identify barriers, and allow adaptations to instruction to provide feedback or guidance. Reviewing the themes also provided takeaways and ideas for adapting the research course. Takeaways include:

- Breaking the scoping review project into pieces is beneficial. With deadlines, drafts and journaling, students stayed on schedule with the project. Journal entries provided a source of accountability and problem solving.
- If working in research teams, students should be encouraged to have a shared documents file. Organization will vary by group but having all of the resources and manuscript in one place enables collaboration and group accountability.

- The team approach is helpful on a scoping review for undergraduate students examining evidence-based practice. This allows the group to maximize strengths and minimize weaknesses; however, groups should be limited to a maximum of four students. It also allows for students to divide and conquer such as each searching a different library database.
- Introducing the students to the concept of pre-research would help them avoid picking topics that are too new, too broad, or too narrow to find appropriate research.
- Providing online learning objects that address choosing search terms, databases, and searching works cited would help students improve their strategies when they cannot find relevant articles.
- Students frequently search for and select articles based on the title and abstract. Faculty and librarians should be mindful of this and encourage students to explore articles in different ways rather than just relying exclusively on this limited information.
- When it comes to writing up the final paper, providing students with previous exemplary papers would be beneficial. At times, students struggled with identifying what the paper should look like and where specific content should be included.

Limitations and Delimitations

The greatest limitation impacting this study was COVID-19. In the first year that journal entries were collected (2020), students were face-to-face in class for nine weeks of the fifteen-week semester; after week nine, students shifted to fully virtual classes as the COVID-19 pandemic began. For the second year (2021), students attended class in a staggered hybrid format in which one day half of the students (20) were face-to-face while the other half (20) were engaging in virtual lectures, and then the second day of class, the students flipped formats. This is a limitation as it is known that the stress and anxiety around the COVID-19 pandemic impacted student learning. Additionally, Pellegrino, who used journaling activities to understand student research, found that help seeking behaviors of online students related to research sought input from more "informal" sources (i.e., family members, friends) rather than formal sources (i.e., librarian, instructor) which can affect the quantity and quality of the research found.8 Other limitations of this study include size of the sample (n= 77 students; 330 journal entries); focus on one mid-sized university (25,000 students); and reliance on self-report through reflective journaling on open-ended questions.

Delimitations were intentional to establish appropriate parameters for the study. The main delimitation was the inclusion of undergraduate senior level recreational therapy majors, rather than the inclusion of other disciplines. For convenience purposes, students in the recreational therapy research class at one university were recruited to participate in the study.

CONCLUSION

This research study contributes to the existing literature on information-seeking behavior of students during a research course, the use of journaling as self-reflection on student learning, and understanding the process undergraduate students' use to review and summarize research. As the literature showed and this study confirms, participating in undergraduate research facilitates the development of research skills, contributes to students understanding the relevance and importance of research, and allows students to consider ways to improve skills for future use. Furthermore, as Kulthau found, students' confidence in understanding and applying research improves over the course of a project.[16]

In the current study, Bauer's study was used as a guide for the research study design to explore the process that undergraduate students use to apply research in a scoping review.[9] This study confirms findings on journaling as a self-reflective activity for students participating in research. Journaling helped students reflect on their learning and encouraged problem solving and critical thinking. Other findings from this study reinforced previous studies on journaling such as:

- The value of having direct access to the librarian for guidance[14,15];
- The opportunity journaling provides for in-the-moment lessons and learning from students' reflections[6]; and
- That journaling activities provide for accountability with timely completion of assignments.[5]

As a teaching method, journaling helped the instructor and librarian understand the students' process in seeking and reviewing published research. Additional lessons learned can be incorporated to modify the research project and curriculum to enhance student learning about research and translating research into evidence-based practices as professionals. While this study confirmed previous studies in non-health disciplines, this study also led to a greater understanding of how undergraduate students in health professions engage in utilizing research to write a scoping review and the lessons learned will help shape future courses. Future studies could build on this for health professions, as well as identifying specific criteria students use to determine relevance and inclusion in their research papers.

REFERENCES

1. Thomas A, Saroyan A, Dauphinee WD. Evidence-based practice: a review of theoretical assumptions and effectiveness of teaching and assessment interventions in health professions. *Adv Health Sci Educ*. 2011;16(2):253-276. doi:10.1007/s10459-010-9251-6

2. Bridge P, Carmichael MA, Callender J, et al. Internationalising Research Methods Teaching of Undergraduate Health Professionals. *J Med Imaging Radiat Sci*. 2018;49(1):97-105. doi:10.1016/j.jmir.2017.11.003

3. Meeker MA, Jones JM, Flanagan NA. Teaching Undergraduate Nursing Research from an Evidence-Based Practice Perspective. *J Nurs Educ*. 47(8):376-379. doi:10.3928/01484834-20080801-06

4. van der Meulen D. Teaching undergraduates research skills by doing and reflecting. *CeROArt Conserv Expo Restaur D'Objets D'Art*. 2017;(HS). doi:10.4000/ceroart.5055

5. Mimbs D. Assessing Aspects of Undergraduate Research Through Journaling. *PRIMUS*. 2017;27(4-5):537-547. doi:10.1080/10511970.2016.1225875

6. King FB, LaRocco DJ. E-Journaling: A Strategy to Support Student Reflection and Understanding. *Curr Issues Educ*. 2006;9(4):16.

7. Young MR. Reflection Fosters Deep Learning: The "Reflection Page & Relevant to You" Intervention. *J Instr Pedagog*. 2018;20:17.

8. Pellegrino C. A Preliminary Methodology, and a Cautionary Tale, for Determining How Students Seek Research Help Online. *Portal Libr Acad*. 2014;14(2):187-196. doi:10.1353/pla.2014.0000

9. Bauer M. Ethnographic study of business students' information-seeking behavior: Implications for improved library practices. *J Bus Finance Librariansh*. 2018;23(1):1-10. doi:10.1080/08963568.2018.1449557

10. Medaille A, Beisler M, Tokarz RE, Bucy R. Honors Students and Thesis Research: A Study of Information Literacy Practices and Self-Efficacy at the End of Students' Undergraduate Careers. *Coll Res Libr*. 2021;82(1):92-112. doi:10.5860/crl.82.1.92

11. Cheeseman Day J, Christnacht C. Your Health Care Is In Women's Hands. Census.gov. Published August 14, 2019. Accessed December 10, 2021. https://www.census.gov/library/stories/2019/08/your-health-care-in-womens-hands.html

12. 2019 CTRS Professional Profile. Published online 2021. Accessed December 10, 2021. https://www.nctrc.org/publications-forms/

13. Head AJ. Project Information Literacy: What Can Be Learned about the Information-Seeking Behavior of Today's College Students? In: *Association of College and Research Libraries (ACRL) Proceedings*. ; 2013.

14. Phillips RM, Bonsteel SH. The faculty and information specialist partnership: Stimulating student interest and experiential learning. *Nurse Educ*. 2010;35(3):136-138.

15. Boruff JT, Thomas A. Integrating evidence-based practice and information literacy skills in teaching physical and occupational therapy students. *Health Inf Libr J*. 2011;28(4):264-272. doi:10.1111/j.1471-1842.2011.00953.x

16. Kuhlthau, C. C. Perceptions of the information search process in libraries: a study of changes from high school through college. *Inf Process Manag*. 1988;24(4):419-427. doi:10.1016/0306-4573(88)90045-3

APPENDIX A

Journal Prompts

Journals 1 – 4
1. Where are you at in the research process at this time?
2. Where are you finding information for this phase?
3. Why did you choose to use these sources?
4. Are you encountering any problems locating information for this project? If so, what you have done instead?

Journal 5
1. What do you think you might do differently the next time you have a research project?
2. After you graduate, what skills will you use for finding and applying evidence-based research in professional practice?
3. Finally, write a short assessment of your research process for the course. How did you do overall?
4. What were your strengths and weaknesses?