

**Title:** Using Focus Groups to Assess the Information Literacy Skills of First Year Pharmacy Students

**Authors:** Jennifer R. Martin<sup>1</sup>, & Marion K. Slack<sup>2</sup>

**Institution:** <sup>1</sup>Information Services, Arizona Health Sciences Library & <sup>2</sup>Department of Pharmacy Practice & Science, College of Pharmacy, The University of Arizona, Tucson, AZ

### **Abstract**

Specific Aims: The objective of this study was to assess the information literacy skills of entering first year professional pharmacy students and to understand their knowledge of library services and resources. It was observed that incoming students were unfamiliar with applying basic library research skills necessary to answer questions in their case studies course. According to the Accreditation Council for Pharmacy Education, Standard Number 12, “graduates must be able to retrieve, analyze and interpret the lay, and scientific literature to provide drug information and counseling to patients.” Conducting this study would allow both the librarian and professor to address those areas of deficiencies. By use of focus groups, assessment was done to determine the information literacy skills of all entering students. The collaborated effort by the embedded librarian and the professor to conduct this study helped reveal gaps and address the needs of the students.

Methods: The data was collected using focus group sessions. Two sessions were held with fourteen first year professional pharmacy student volunteers. These sessions were held during their second semester and were approximately fifty-five minutes in length. A series of nine open-ended questions were given with follow-up probing questions to instigate discussion. Both sessions were audio recorded and transcribed for analysis.

Results: Results revealed students’ skill levels ranged from low to high. Some students were very skilled and knowledgeable about locating relevant literature for their case studies. While other students had difficulties locating basic information. The study revealed that the typical search strategy was first using Wikipedia, then PubMed, and then MD Consult. It was also revealed that students did not use physical resources such as textbooks located in the library. They relied mostly on electronic formats of

materials and if an article was not available in an electronic format, they would not retrieve it. Students also had difficulties distinguishing between different types of databases and the information included in those databases. Many would not know how to search these specialized databases and would often rely on Google.

Conclusions: Results revealed searching habits of students along with their general knowledge of using library resources prior to entering pharmacy school and behaviors during their first year experience. It allowed both the librarian and professor to address these deficiencies through instruction. It also allowed the librarian to create a tool to measure information literacy skills for future incoming students and to address areas of weakness through instruction to benefit their competency skills throughout their didactic coursework, as they enter rotations, and in professional practice.

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## **Introduction & Purpose**

Information literacy skills are a critical component of pharmacy education. They are a set of skills and abilities that require students to “recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information.”<sup>1</sup> In the Accreditation Council for Pharmacy Education (ACPE) Standards and Guidelines, Standard Number Twelve indicates “graduates must possess the basic knowledge, skills, attitudes and values to practice pharmacy independently at the time of graduation.”<sup>2</sup> Specifically, pharmacy graduates must be able to “retrieve, analyze and interpret the professional, lay, and scientific literature to provide drug information and counseling to patients, their families or care givers, and other involved health care providers.”<sup>2</sup> To reinforce the ACPE Standard Twelve, the goal is to enhance the information seeking skills of students throughout their curriculum in ways that will benefit them in their professional practice.

The University of Arizona College of Pharmacy is one of four colleges on the health sciences campus. Established in 1947, the College has approximately 400 professional pharmacy students in the PharmD program and 80 graduate students in MS and PhD programs.<sup>3</sup> As part of the embedded librarian initiative, the Arizona Health

Sciences Library hired a pharmacy librarian in 2007 whose primary responsibility is to provide information services support for the College of Pharmacy.<sup>4,5</sup> The pharmacy librarian has dedicated space in the Department of Pharmacy Practice and Science among the faculty within the College. During those first few years of embedded instruction, it was apparent that many incoming new professional pharmacy students lacked the basic information literacy skills applicable to their first year courses, in particular their case studies course. This course, which requires students to answer questions based on real cases, also required students to cite their information sources. Despite the fact that the librarian provided a lecture introducing students to key health references, many students were having problems distinguishing the types of resources, and were having difficulties using them to locate basic information on diseases, such as incidence rates. To help alleviate these deficiencies, a study was developed to more clearly identify areas of weakness.

The overall goal of the project was to formally assess the information literacy skills of incoming first year professional pharmacy students and to determine the impact of the embedded librarian in increasing these skills over the span of their didactic coursework. In order to better understand the information seeking behaviors of incoming pharmacy students, and to focus on establishing a foundational basic understanding on locating and using quality information, phase one of this project used focus groups. Phase two consisted of a survey tool to provide evidence of student competency skills, reveal areas of deficiency, and provide a benchmark measure of these skills. Results from the focus group informed the development of the survey tool in phase two. As students progress through their coursework, the librarian continuously interacts with them and incorporates feedback from both students and faculty. This article describes the results of phase one of this project.

## **Methods**

Design: For this study, focus groups were used to obtain data about the information seeking skills, behavior, use of resources, and research experience of first year pharmacy students. This study was reviewed and approved by the University of Arizona Human Subject Protection Program and the Institutional Review Board.

Subjects: First year professional pharmacy students were recruited through email and also in person at the beginning of a class.

Data Collection: Interested participants were provided with preliminary questions to answer prior to attending the focus groups. These preliminary questions elicited information about students' educational background prior to coming to pharmacy school. (Table 1) These questions were used to obtain information about the type of degrees earned by the students, when those degrees were earned, and the students' major areas of study. Preliminary questions also revealed if the students had completed four years in an undergraduate institution or completed the two-year pre-pharmacy preparatory requirements for pharmacy school.

**Table 1: Preliminary Questions**

1. Where are you from?
2. Did you attend a university or 2 year college?
3. Have you earned your bachelors, masters, or PhD prior to coming to pharmacy school? If so, which one?
4. What year did you earn your degree?
5. What was your major?

Two focus groups were held over lunch in the spring semester of the first year. Lunch was provided for all participants and gift cards to Target were also given to students who completed the study. Nine open-ended questions were asked during the course of 55 minutes. (Table 2) Probing questions were also included to generate additional discussion related to the main question. They were also asked specific questions about how they located information prior to coming to pharmacy school. The types of questions probed students for their behaviors in searching for information. In particular, they were asked to describe how they located information for a specific case study in their course. Students were also asked if the library lecture was helpful and if there was any particular resource that stood out as being the most useful. Additional questions were designed to elicit the types of resources they used when seeking information. Finally, students were given an opportunity to share any concerns they had

about locating information for their course. Both sessions were recorded using a tape-recorder and a digital recorder as a backup.

**Table 2: Focus Group Questions**

1. What kind of experience did you have locating information and conducting research before you came to pharmacy school?
2. Describe your experience with locating resources for your case studies course?
3. What stood out as the most valuable/useful in the library lecture to you?
4. If you could go back in time to the beginning of your first semester, what do you wish you knew about finding information for your courses?
5. If you were asked to conduct a literature review on a topic, how would you begin your search and where?
6. Did you ask for help finding information?
7. What are the top three resources, in order of preference that you turn to most often?
8. What resources outside of e-resources do you use?
9. Is there anything else you would like to add about finding information in the library?

Data Analysis: Both sessions were transcribed and analyzed for results for common themes. The findings are summarized in Table 5.

### **Results**

The Class of 2014 has 98 students and approximately 60% are women. Approximately half of the class has obtained a bachelor’s degree. The average age is 23, which suggests that most students have had a minimum of three years of college. (Table 3)

**Table 3: Class of 2014 Demographics**

Class Total	98
Men	37

Women	61
Average Age	23
Bachelor's Degree	44
From a Community College	17
Underrepresented Ethnicity	44

A total of fourteen first year students participated in the study. A majority of them were women and most had received a bachelor's degree. Only one student had an associate's degree and three did not receive any degree. (Table 4)

**Table 4: Preliminary Data of Participants**

Total Participants	14
Men	6
Women	8
Bachelor's Degree	10
Associate's Degree	1
No Degree	3
Range of Date Degrees Earned	2004-2010

Table 5 summarizes some of the major findings from the focus group. These are organized by common themes: experience, process, and resources. Experience includes any of the student's previous experience with using resources and locating information. In particular, it was found that students were experienced with using library resources such as books and journals, but were unfamiliar with using library databases. Most had encountered assignments requiring them to use library resources during their undergraduate experience.

The students' process for locating resources revealed that most were unfamiliar with key health sciences databases such as PubMed. Most were comfortable with starting their research using Google and Wikipedia and locating specific electronic resources. Students also noted that the step-by-step process shown to them during the library lecture was also helpful and useful throughout the first semester.

The resources which students used most often were Wikipedia, PubMed and MD Consult during that first semester. Other resources they relied on were their peers, textbooks, and professors. Most students also revealed that they didn't know the librarian was there to help them locate resources for their case studies.

**Table 5: Findings from the Focus Group**

<b>Experience</b>
<ul style="list-style-type: none"> <li>▪ Many students were experienced users of library resources</li> </ul>
<ul style="list-style-type: none"> <li>▪ Few had previous undergraduate coursework that required them to locate a specific resource in the library</li> </ul>
<ul style="list-style-type: none"> <li>▪ Few were familiar and comfortable with using PubMed</li> </ul>
<ul style="list-style-type: none"> <li>▪ Prior to pharmacy school, many had little experience using library databases</li> </ul>
<ul style="list-style-type: none"> <li>▪ Few knew the difference between types of databases in locating different information</li> </ul>
<b>Process</b>
<ul style="list-style-type: none"> <li>▪ Many were unfamiliar with the process of using PubMed, MeSH, and MD Consult prior to the library lecture</li> </ul>
<ul style="list-style-type: none"> <li>▪ Found step-by-step instruction helpful and useful throughout their first semester of their case studies course</li> </ul>
<ul style="list-style-type: none"> <li>▪ A frequent starting point for any search was Wikipedia or Google</li> </ul>
<ul style="list-style-type: none"> <li>▪ Students were comfortable with using familiar databases such as PubMed and MD Consult after the library lecture</li> </ul>
<ul style="list-style-type: none"> <li>▪ Ease of access to electronic full-text was important. If the resource was not online, students would not bother to locate a print copy</li> </ul>
<ul style="list-style-type: none"> <li>▪ Some students knew to utilize the reference section of review articles to locate other relevant articles</li> </ul>
<b>Resources</b>
<ul style="list-style-type: none"> <li>▪ Top databases utilized: 1) Wikipedia 2) PubMed 3) MD Consult</li> </ul>
<ul style="list-style-type: none"> <li>▪ Top non-electronic resources utilized: 1) Peers 2) Textbooks 3) Professors</li> </ul>
<ul style="list-style-type: none"> <li>▪ Many were familiar and comfortable with using PubMed and MD Consult</li> </ul>
<ul style="list-style-type: none"> <li>▪ Students regularly relied on peers during their case studies course</li> </ul>
<ul style="list-style-type: none"> <li>▪ Students were unfamiliar with the services of the embedded librarian</li> </ul>
<ul style="list-style-type: none"> <li>▪ Students found the lecture from the librarian helpful and relied on resources that</li> </ul>

were covered in the lecture for their course

## **Discussion**

The most important findings from this focus group of first year pharmacy students were related to experiences before pharmacy school. Students were most comfortable using Google and Wikipedia and rarely used printed resources. Students were unfamiliar with many health sciences resources, in particular PubMed, and as a result some struggled with locating relevant information. By spring semester they were comfortable using both PubMed and MD Consult. However, if they needed additional assistance, they consulted their peers first, then they referred to textbooks, and as a last resort, consulted faculty.

Students clearly benefited from a presentation on PubMed and searching strategies provided at the beginning of their fall semester case studies course. In that same semester, the students were also exposed to a second lecture in another course that focused on more advanced resources. Many found this repetition helpful and welcomed another refresher lecture in their second semester case studies course. Previous experiences also varied and many students were not familiar with searching databases such as PubMed.

Some students knew the difference between primary, secondary and tertiary resources and would utilize these resources appropriately for their assignments. However, some were unfamiliar with library resources and using specific databases to locate information for a particular case.

Searching strategies were similar in these groups. Many, if not all, started their searches in Wikipedia and Google. From there many would use PubMed to locate full-text articles. Some relied on Google Scholar to locate articles. Depending on the topic, many students would know to search the most appropriate resource. For example, to locate general information about a drug or disease, students would frequently use MD Consult to obtain a summary or overview. However, some students had difficulties locating specific data, such as incidence and prevalence of a disease and were unfamiliar with the resources in Stat!Ref, which includes textbooks of epidemiology overviews. One key resource that students frequently relied on was peers. It was clear



in both focus groups that ease of access and familiarity with the cases, students found their peers to be helpful in locating relevant information.

Ease of access was important to students. They wanted to be able to obtain the information quickly and easily obtain the full-text of articles. If they were not able to obtain the full-text article, many times it was abandoned and they searched for another article. In many cases, time was a critical factor and students did not use inter-library loan because it could not meet their needs quickly enough. Students would rather look for another article that they could access even though it may not be right on their topic. Time and ease of use are also reasons students do not utilize any of the print textbooks located in the library. Many were unfamiliar with the textbooks located in the library and would not make the effort to use them.

Services provided by the librarian were also widely unknown. Students knew there was a librarian in their school to provide help with locating information. Many, however, did not know how to approach the librarian or felt that their topic was not important enough to seek a librarian's help. Some did not utilize the librarian because access to the second floor was too much of a challenge, despite the fact that the librarian is physically located in the Department of Pharmacy Practice and Science among the faculty.

Feedback from students about improving librarian services and providing instruction included the following:

- During orientation, reassure students that a more focused library lecture will be provided during the case studies course
- Provide more information on other databases earlier in the semester
- Step-by-step searching instruction was helpful during the lecture, and helped students retain information
- Repetition is not bad and students suggested another refresher course during their second semester
- Create online tutorials allowing students to practice searching in databases
- Provide lunch hour tutorials and workshops on other resources

## **Future Direction**

Results were used to develop an assessment tool to measure information literacy for incoming first year pharmacy students. During phase two, the tool was given to students prior to taking any coursework during the first week of orientation. During their first semester of courses, a follow-up focus group was held with students to help obtain more information that was not gathered in the tool. The tool developed was also used as a post-test at the end of the year to measure any changes in their knowledge.

## **Limitations**

The library liaison and another librarian conducted the focus group sessions, which may have affected the feedback from the students on some questions. Additionally, the students participating in the focus groups were volunteers and may not be representative of the entire class. Also, the focus groups were conducted at only one college of pharmacy. Most students obtained their pre-pharmacy course work at the same university or other regional colleges so the findings may not be representative of students in other colleges.

## **Conclusion**

Through the focus groups, information was obtained on information seeking behavior and resource utilization of entering first year pharmacy students. Not only did it reveal their searching habits, but also provided the librarian and the instructor with insight into the resources which they utilized for their case studies course. It was found that students were unfamiliar with many health sciences resources, in particular PubMed, before they came to pharmacy school and as a result, some struggled with locating relevant information. The library lecture that the librarian provided at the beginning of the semester did have an impact in how they located resources later in the year. Students were able to retain key points from the lecture such as how to use PubMed and how to locate basic information in Stat!Ref.

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