

Drug Information (Literacy) at Purdue: One Librarian's Serendipitous Path to Integrating Information Literacy Throughout the Pharmacy School Curriculum

By Vicki J. Killion

Twenty-five years ago, the phrase "information literacy" was relatively unknown; now it is the major component in many academic librarian position descriptions. Coincidentally, or perhaps serendipitously, while ACRL was preparing their position on information literacy, another group of educators was incorporating the same concepts into their professional practice competencies. At the annual meeting of the American Association of Colleges of Pharmacy (AACP) in July 1986, the report of the Task Force for Development of Competency Statements for Pharmacy Practice was first presented to the membership for discussion and was subsequently accepted at the section meeting later that year during the American Society of Hospital Pharmacists (ASHP) midyear clinical meeting. The competencies were developed for the entry level degree in pharmacy – at that time, either a baccalaureate or Doctor of Pharmacy (PharmD) degree. The competencies were divided into four sections: general management and administration of pharmacy; activities related to processing the prescription; patient care functions; and, education of healthcare professionals. The responsibilities listed in the final section described how the pharmacist was responsible for organizing, maintaining, and providing drug information to other healthcare professionals with the final responsibility specifying the selection, evaluation and assessment of drug information resources for application to practice. (Pancorbo, Campagna, Devenport, Garnett & Littlefield, 1987)

In 1987, the American Libraries Association (ALA) Presidential Committee on Information Literacy was appointed with three expressed purposes: define information literacy and its importance to student performance, lifelong learning and active citizenship; design models for information literacy development; and, determine implications for education and development of teachers. The final report, issued in 1989, defined four components of

information literacy: the ability to recognize when information is needed and to locate, evaluate and use effectively the needed information. (American Library Association, 1989)

As Wood, et al. indicated in their article on drug information skills for pharmacy students, teaching library and literature research skills in pharmacy school curricula had been described in the literature for years prior to the AACP and ALA reports. (Wood, Morrison & Oppenheimer, 1990) It was in 1980 that Sewell et al. first described the integration of library skills into various pharmacy school classes rather than in independent or stand-alone library courses. (Sewell, Speedie, Knapp and Cunningham, 1980) These two reports would eventually form the basis of a partnership between this librarian and the Purdue pharmacy faculty that began in 1991 and continues to date.

Purdue University School of Pharmacy and Pharmacal Sciences, as it was titled in 1991, had always had a library physically located within its building. The first pharmacy librarian, Miss E. Dunton, started in 1930 and retired in 1956. Little is known about her, but one can speculate that the majority of her responsibilities were in providing expertise in collection development and reference assistance. Theodora Andrews began her tenure as the pharmacy librarian in 1956. She was an outstanding collection development librarian, specializing in writing annotated bibliographies of the pharmacy and related literature. Bibliographic instruction (i.e., using the card catalog or searching *Index Medicus*, *Excerpta Medica* or *Chemical Abstracts*) was reserved mostly for graduate students. Students in the professional program (BS in Pharmacy) were introduced to the basic drug information resources in their coursework, usually by the faculty teaching the class or lab. The clinical pharmacy program in which

students earned a Doctor of Pharmacy degree (PharmD) had a required two-credit drug information course, but this was taught by a faculty member with a PharmD degree who had completed a drug information specialist residency. This continued until 1991 when Mrs. Andrews retired and the author became only the third pharmacy librarian at Purdue Libraries.

At that time, the professional program consisted of approximately 190 students enrolled in the BS program and less than twenty-five students in the PharmD program. The pharmacy profession was beginning to undergo some fundamental changes, emphasizing what was being called "pharmaceutical care" in practice, which subsequently required significant changes in the curriculum. Increased knowledge of disease state management meant additional coursework and experience in therapeutics. Plans to change the entry level degree to that of the six-year PharmD were being developed by AACP and the American Council on Pharmaceutical Education (ACPE) – now titled the Accreditation Council on Pharmaceutical Education.

During the first year of her tenure at Purdue, the author's expertise as an intermediary in searching the biomedical literature was the entrée into the drug information course that PharmD students took in their second professional year. When the pharmacy faculty member teaching drug information resigned two weeks before the start of the fall semester, the author took advantage of the opportunity and volunteered to teach the first eight weeks of the course. This covered the drug information resources, database searching and systematic search skills – identify, retrieve, evaluate and apply. The second eight weeks included statistics and research study analysis of the primary literature. Frequently using a journal club format, the second eight week classes were taught by clinical faculty with various disease state expertise. The author continued to teach this course for the next four years.

By the mid-1990s, the PharmD as the entry level degree was the only option if the school/college was to retain or obtain accreditation. Programs had to be converted by the year 2000.

In addition to expanded coverage of medicinal chemistry, pharmacology and therapeutics, the new concept of active

learning laboratories was introduced into the Purdue curriculum. Students would be required to take "Integrated Laboratories", a one-credit, three-hour lab in each semester of the first three professional years (PY) of the program. Each lab would reinforce a particular lecture(s) given in a semester course.

An introduction to drug information was considered essential early in the first semester of the program as students would be required to locate relevant information to support their work in the other labs. Over the years the emphasis of the introductory drug information has not changed significantly in content. Students were oriented to the Purdue Libraries' online catalog and other available electronic resources – initially bibliographic databases such as *MEDLINE* and *International Pharmaceutical Abstracts*. At first the major drug information resources were print-based and after a brief introduction on the unique features, assignments in locating relevant drug information for specific questions were given using multiple print copies of the various resources. A modified version of the VAK (visual, auditory, kinesthetic) learning model, or simply "see, hear, do," was utilized. Most teaching in college courses tends to use auditory (lecture) and visual (text and images) and the kinesthetic learning occurs in the lab setting. Since this lab is approximately three hours long and takes place in a computer lab operated by the university's information technology division, immediate feedback for the practice exercises was possible. The author also collaborated with pharmacy practice faculty to integrate drug information literacy into the subsequent labs on pharmaceutical counseling, compounding and prescription fulfillment.

Labs on evaluating healthcare websites, preparing answers to patient-specific drug information requests and locating primary literature followed in the Integrated Laboratories II (Spring PY1) and III (Fall PY2). All content and lab activities directly related to a lecture, lab or course assignment in the curriculum and were of increasing complexity with each passing professional year. The faculty member who now taught the required two-credit drug information course was concurrently a drug information specialist at Methodist Hospital in Indianapolis (now part of IU Health). She worked with other clinical pharmacy faculty to incorporate drug information into additional courses, especially the three-semester sequence of therapeutics. The Integrated Laboratories (IV,

V and VI) became recitation sessions during which students participated in journal club assignments or case-base problem solving exercises.

Information literacy skills are regularly assessed as part of the drug information competency in the ACPE standards and Center for the Advancement of Pharmaceutical Education (CAPE) educational outcomes. These educational objectives are used to integrate general abilities (e.g., thinking, communication, ethics, social and contextual awareness, social responsibility, professionalism, life-long learning) into professional contexts. For example, the performance competency of "collect, summarize, analyze and apply information from the biomedical literature to patient-specific or population-based health needs" maps to *2004 CAPE Outcome 1-a-iii* and *2007 Pharmacy Practice Supplemental Outcome 1-D*: Retrieve, analyze, and interpret the professional, lay, and scientific literature to make informed, rational, and evidence-based decisions. (American Association of Colleges of Pharmacy, 2004)

The ACPE is the accrediting organization for schools/colleges of pharmacy. During the lengthy self-study prior to the official site visit every six years, the librarian prepares *Standard 29, Library and Educational Resources*. (Accreditation Council for Pharmacy Education, 2006) The first accreditation the author participated in was in 1999 when the standard was still very much a "numbers game" – how many books, how many journal subscriptions, how many seats, how much money, etc. A listing of the specific courses that included drug information was also required.

In 2004, the standard changed to one of access to drug information resources and the continuing integration of drug information into the curriculum. Remote access to these resources when students were on their PY4 rotations was of particular concern. The Purdue Libraries' proxy server was more than adequate, but many students experienced problems because of the firewalls established by the healthcare institutions where they were completing their clinical rotations.

The most recent accreditation (2011) finds the standard once again using numbers to assess the library. Lists of journals, databases, drug information systems and other resources that are available electronically are requested. An analysis of the books

included on the "Basic Resources for Pharmacy Education," a collection development tool created by the librarians who are members of the Libraries/Educational Resources section of AACP, is expected, although the intent was never meant to be a prescriptive list of materials for a library supporting a professional pharmacy program. (American Association of Colleges of Pharmacy, 2011) Speculation as to why this is once again important to ACPE can possibly be attributed to the extraordinary number of new pharmacy schools that have been established in the past twenty years. In 1991 when the author first arrived at Purdue, there were 89 schools/colleges. As of 2011, there are 119 schools with five in pre-accreditation status – including a third school of pharmacy in Indiana, Manchester College, which will enroll its first students in fall 2012. (American Association of Colleges of Pharmacy, 2011)

Although the fall of 2012 also brings new changes to Purdue's curriculum, especially in ensuring early experiential opportunities, drug information continues to be a cornerstone of the program. Students will still require an orientation to the resources available to them; they will still need to learn how to retrieve information needed effectively and efficiently; they will still need to evaluate the information needed, successfully one hopes, and apply that knowledge to improve a patient's healthcare outcome. The author is still considered an integral faculty member providing drug information literacy in what will now be called the "professional practice lab." She will continue to collaborate with the faculty in developing specific information literacy activities and providing support for drug information-related assignments.

Pharmacy is, as are all healthcare disciplines, information-dependent and the ability to critically evaluate the every-growing drug information literature is recognized as a required element of the education process – although most students actively dislike the process of learning the various resources. So, with almost twenty years of experience integrating drug information literacy into the curriculum, what has changed or remained the same? Unfortunately a number of observations are still the same:

- Regardless of citation format, a surprising number of students do not know how to interpret the citations they find online or in print. A librarian interviewed in a recent article in the *The*

Chronicle of Higher Education echoed this: "...Or they don't know which is the title of the article as opposed to the title of the journal. Or they can't decipher all the numbers that define the volume, issue, and date." (Saller, 2011)

- Students don't know how to focus and search on the main concepts of a problem.
- Students tend to use one drug information resource almost exclusively in their assignments because it provides brief answers quickly.
- Students don't want to read the entire article; they want to find the answer in the abstract and they don't want to read more than one article, if possible.
- And applying knowledge one hopes they learned in the drug information literacy classes to patient-specific cases students encounter on their 4th year clinical rotations is still problematic.

Has it been "easier" teaching information literacy in a professional program that is centered on information? The effort to maintain a viable and hopefully successful program remains the same regardless of the subject area. However, as superficial as they seem to be in their information-seeking behavior, the students do take their academic careers seriously. Those who are planning to be clinical pharmacists within healthcare organizations recognize that the ability to critically evaluate the primary literature is a required component of their professional development. Those who will be retail pharmacists recognize the need to remain informed, but their expectation seems to be one of reliance upon the future employer's pharmacy information system.

And the serendipity in the title of this article? Reports from two different professions emphasizing similar learning outcomes for students published around the same time; creating a position for oneself in the college curriculum by first offering to "fill-in" when a faculty member resigned; being included automatically in the development and delivery of drug information modules in the active learning labs of the curriculum – all of these are viewed by the author as "the accidental discovery of something pleasant, valuable, or useful." (Microsoft Corporation, 2009)

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