Merging Information Literacy and Evidence-Based Practice in an Undergraduate Health Sciences Curriculum Map

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Abstract

The ACRL's *Framework for Information Literacy for Higher Education* offers the opportunity to rethink information literacy teaching and curriculum. However, the ACRL's rescinded *Information Literacy Competency Standards for Higher Education* correlate with the preferred research and decision-making model of the health sciences: evidence-based practice. Through a partnership, librarians and faculty can use all three to develop a curriculum map composed of a series of research assignments and library instruction delivered over the course of a two-year undergraduate allied health program. The presented curriculum map shows that the *Standards* can be retained and utilized as a bridge between the new *Framework* and evidence-based practice to strengthen the impact of information literacy teaching in the health sciences.

Keywords: information literacy, evidence-based practice, academic librarians, health sciences, curriculum map

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Introduction

In early 2016, the Association of College and Research Libraries (ACRL) formally adopted the *Framework for Information Literacy in Higher Education* (*Framework)* as part of the organization's collection of documents on information literacy. In the process, the status of the *Information Literacy Competency Standards for Higher Education* (*Standards*) was called into question as a foundational document of information literacy (IL) since 2000. In June of 2016, the debate intensified as the ACRL Board made the controversial decision to rescind the *Standards.*

In this period of pedagogical transition, instruction librarians are faced with a dilemma–reject the *Standards* in favor of the concept-based *Framework*, continue to use the *Standards* regardless of the actions of the ACRL Board, or advocate the use of each for its strengths. As health science librarians, the authors rely on the *Standards* to serve as a bridge to evidence-based practice (EBP). EBP is a set of competencies for finding, evaluating, and using information to improve patient care through combining the best scientific evidence available with the needs and preferences of patients (Straus, Glasziou, Richardson, & Haynes, 2011).

Although the *Framework* offers librarians the opportunity to reexamine their teaching to find ways to encourage more conceptual understanding of information, it is problematic for health sciences librarians to disregard the *Standards* when their structure (Determine, Access, Evaluate, Apply, and Ethics) is comparable to the steps of EBP (Ask, Acquire, Appraise, Apply, and Assess). Ergo, while partnering with health sciences faculty to create a curriculum map, the authors connected the steps of EBP and the *Standards* while intertwining the more abstract frames of the *Framework*. The curriculum map presented herein is a series of research assignments paired with library instruction delivered semester-by-semester over the course of either a two-year occupational therapist assistant or physical therapist assistant program. By integrating the *Standards* and the *Framework* with EBP, health sciences faculty and librarians can work together to develop information-responsive professionals who effectively put evidence into practice.

Literature Review

Evidence-Based Practice & ACRL Standards

The recognition of flaws in everyday clinical practices and their impact on patient care provided the impetus for David Sackett and others to teach critical appraisal of medical literature in the 1990s. Sackett, Rosenberg, Gray, Haynes, and Richardson (1996) seminally define evidence-based practice as "the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research" (p. 71). EBP aims to improve clinical decision-making through the integration of relevant professional research, patient values, and the decision-maker's expert experience.

Table 1: The Steps of Evidence-Based Practice

Step	EBP	Description
1.	Assess the Patient	Based on information need, formulate a well-built question
2.	Acquire the Evidence	Find evidence to answer the question
3.	Appraise the Evidence	Critically appraise the evidence for its validity, impact, and applicability
4.	Apply to Practice	Implement a decision based on critical appraisal, patient values and clinical expertise
5.	Evaluate Effectiveness	Evaluate for effectiveness and efficiency

(Straus et al., 2011).

The five steps of EBP provide a model for healthcare providers to improve their clinical performance through the development of a set of research-based skills. EBP offers context and strategies for decision-making while emphasizing lifelong, self-directed learning and research throughout clinical careers. EBP is accepted by many as a standard in medical and allied health fields. Still, many students and clinicians struggle to access and evaluate research in clinical settings (da Silva, Costa, Garcia, & Costa, 2015; Pravikoff, Tanner, & Pierce, 2005; Straub-Morarend et al., 2016). Many librarians have collaborated with health sciences faculty to integrate both EBP and the *Standards* into their teaching and course content, as both are sets of competencies for finding, evaluating, and using information (Boruff & Thomas, 2011; Hoberecht, Randall, & Schweikhard, 2015). Kaplan and Whelan (2002) sketch out correlations between the *Standards*, the steps of EBP, and pharmacy competencies. Adams (2014) exposes components of EBP not found or often overlooked in

IL pedagogy. While EBP and the *Standards* can lay the foundation, the *Framework* adds conceptual elements to information literacy education.

ACRL Standards & ACRL Framework

The ACRL *Framework* is made up of six frames. Each frame consists of a threshold concept, knowledge practices, and dispositions. Meyer, Land, and Baillie (2010) describe threshold concepts as conceptual gateways that are transformative, integrative, irreversible, and troublesome for learners. In the literature, the implications of the *Framework*'s threshold concepts for health science librarians teaching EBP have not yet been fully explored. Knapp and Brower (2014) began the process by suggesting that the threshold concepts provide students with a more comprehensive understanding of information, and the librarian with a more adaptable pedagogy for instruction in the health sciences. Wilkinson (2014) notes that concepts do not imply abilities. Yet EBP, the skill-based *Standards*, and frames all emphasize self-direction, lifelong learning, and critical thinking, which are vital to health sciences faculty as they mold professionals. Although the authors worked with undergraduate occupational therapist assistant and physical therapist assistant students, the *Framework* can provide new ways of thinking about the integration of information literacy in any discipline utilizing evidence-based practice.

Standards Rescinded in Favor of the Framework

In June 2016, the ACRL Board of Directors rescinded the *Standards,* and, while they remain on the ACRL webpage, they will be removed July 1, 2017. Many librarians, the authors included, are puzzled and unsettled by this decision (Craven, 2016; Hinchcliffe, 2016a). While the argument has been made that the *Standards* and the *Framework* cannot coexist (Swanson, 2015), the authors' experiences as health sciences librarians have shown they can. The correlation between the steps of EBP and the *Standards* is invaluable when discussing IL with faculty and students, and the *Framework* can add theoretical depth to the discussion. In 2013, the ACRL Board of Directors approved *Information Literacy Competency Standards for Nursing,* which are rooted in the *Standards,* specifically because of their similarity to evidence-based practice, as well as the AACN essential skills for baccalaureate, masters, and doctoral programs (Phelps, 2013). For health science professionals, EBP is a preferred model, and revoking the *Standards* for librarians is burning the bridge that can connect EBP and the *Framework* in a health sciences curriculum. As Hinchcliffe (2016b) points out, the *Standards* and *Framework* are part of an information literacy constellation, and along with

EBP and the *IL Standards for Nursing,* these documents, like the Gemini constellation, "hold hands [to] bring [each] other into focus." When paired with the steps of EBP and the *Standards,* the *Framework* can support the intersection of skills and knowledge in health sciences students, who will continue to use evidence to support clinical practice. Using this constellation of information literacy documents, librarians can create curriculum maps to support student learning in college and beyond.

Curriculum Mapping

A curriculum map is an opportunity for librarians to "identify relevant and appropriate placement of information literacy within a course of study or the general education curriculum" (Bullard & Holden, 2006, p. 17). The complexity of creating and executing a curriculum map that integrates IL instruction into an existing subject-based curriculum requires the collaboration of subject faculty and librarians. In fact, Buchanan, Webb, Houk, and Tingelstad (2015) found "interaction and communication with faculty members are essential to ensuring the viability and success of a curriculum mapping program" (p. 107). This was certainly true in the authors' experiences; full embedded librarian–faculty partnerships were necessary to build the curriculum map because of the complexity of incorporating EBP, *Standards*, *Framework*, library instruction and content-based assignments.

The partnership, along with the curriculum map, enables librarians with faculty to encourage "measureable improvement in student performance . . . and . . . [provide] a process for ongoing curriculum and assessment review" (Jacobs, 2004, p. 2). Additionally, aligning information literacy with discipline-specific standards gives librarians and subject faculty a shared language that will "lead to greater communication between faculty and librarians" (Archambault & Masunaga, 2015, p. 513). In fact, many academic librarians who develop IL curriculum maps align to the *Standards* as a result of the similarities to other disciplinary standards, general education goals, and institutional outcomes (Bullard & Holden, 2006; Moser, Heisel, Jacob, & McNeill, 2011). By creating a curriculum map, collaborative efforts became more meaningful, information literacy was integrated throughout the program, and classroom library instruction became necessary for successful completion of research-based discipline-specific assignments.

Background

The curriculum map (Appendix 1) is a compilation of both authors' successful collaborations with health sciences faculty at two different community colleges in central Illinois. The authors worked with physical and/or occupational therapy assistant programs in undergraduate cohorts of under 25 students. One librarian was working with a developing program; the other was working with established programs. Both librarians were approached by faculty during the accreditation process to meet accrediting organization requirements related to library resources. Faculty members were concerned with students' preparedness to use research evidence in clinical situations. The subject faculty came to the partnership with class assignments and predefined course sequences. Through conversations, librarian and faculty recognized the need to pair assignments with library instruction that would teach increasingly more complex skills and concepts throughout each semester of the program. Successful collaboration necessitated an understanding of each other's discipline-specific approach to information and the development of a shared language.

EBP and the *Standards,* along with the assignments, dictated the structure of the curriculum map. In class, the librarian and subject faculty taught evidence-based practice, using the language of the EBP steps. Building the curriculum map, the librarian's discipline-specific *Standards* were added because they reinforce and correlate with the subject faculty's discipline-specific language of EBP. The *Framework* was introduced in the midst of curriculum mapping and did not alter the assignments themselves, the order of the assignments, or how the faculty presented EBP. Indeed, the authors' faculty collaborators revealed mixed feelings about the *Standards* vs. *Framework* ranging from disbelief that an organization would rescind a set of usable standards to dismissal of the more ambiguous *Framework* as less important than teaching the steps of the *Standards* as they correlate with EBP. However, the authors used the *Framework* to inform their library instruction, and it changed the way the authors discussed the assignments with their liaison faculty and students.

In the curriculum map, the intersections of EBP, the *Standards*, and the *Framework* apply to the assignment as well as the IL instruction. While the library instruction may only focus on certain EBP steps, *Standards*, or *Framework* concepts (denoted in bold on the map), the

assignment itself may ask students to grapple with more than was addressed in that semester's instruction by building on previous assignments.

Implementation of a Curriculum Map

Semester 1: EBP Assignment & PICO Evidence Search

The students' first-semester EBP assignment requires them to formulate a research question using the PICO method and find evidence to answer their question. The first step of EBP directs clinicians to create a well-formulated research question based on a patient. Structure for the formulation of this question is provided through PICO, an acronym for patient/population (P), intervention (I), comparison (C), and outcome (O) (Guyatt et al., 2015). The structure of PICO allows clinicians to convert the need for information into an answerable, focused question. For example, is Kinesio tape more effective than non-elastic tape in relieving knee pain in adolescent athletes? This structure helps clinicians to quickly narrow their topic and search for information more effectively by focusing search terminology and scope.

For the assignment, the faculty provides a patient scenario that becomes the basis of students' PICO questions. After creating a focused PICO, students search health sciences databases for articles to answer their question and reflect in writing on their search strategies. Students can use any relevant articles in library databases that contribute to answering their research question regardless of source type. Students need to examine the results of each search, determine which search strategy was most effective, and explain why in their reflections.

During library instruction, the students practice writing a research question based on a sample scenario and use that PICO to select key terms to search library databases. In one-on-one research appointments, the librarian reinforces the information covered in library instruction and reviews the characteristics of health sciences databases. Students then independently work on their PICO questions and search for relevant articles while the librarian is available to assist.

This instruction session addresses the first two steps of EBP and the *Standards* in addition to two frames. First, students must consider the patient scenario in order to ask an answerable question via PICO, demonstrating the frame *Research as Inquiry*, *Standard 1–Determine Information Need*, and the EBP step *Assess the Patient*. Once students begin to understand the

need to form a research question, the librarians can touch on how research is inquiry. *Research as Inquiry* focuses on the formation of a research question and the refinement of search strategies to answer that question (ACRL, 2016). Thus, by structuring their search with a PICO question, students can learn how to formulate a focused research query.

For the second part of the assignment, the students do multiple searches and meet with a librarian. The focus is on using many combinations of search terms or databases to locate evidence to address patient scenarios. In addition, the assignment's reflective component requires students to analyze the effectiveness of their search strategies and refine those strategies based on search results. The students grapple to access information to answer their question and work through the associated EBP step *Acquire the Evidence*, *Standard 2-Access Information* and *Searching as Strategic Exploration.*

Accessing information alone can be problematic for students, as they often do not know how to search databases effectively. Once they begin to understand key search strategies, librarians can introduce the concept of *Searching as Strategic Exploration*. When novices attempt *Searching as Strategic Exploration*, they "tend to use few search strategies, while experts select from various search strategies, depending on the sources, scope, and context of the information need" (ACRL, 2016). By critically searching for literature in the databases to support their PICO question, students develop a foundation to build on throughout the program.

Table 2— Semester 1 EBP & IL Curriculum Map

Assignment	*Instruction*	*Framework*	*EBP*	*Standard*
EBP Assignment	**PICO Evidence Search**	**Research as Inquiry** **Searching as Strategic Exploration**	**Assess the Patient** **Acquire the Evidence**	**Standard 1 – Determine Information Need** **Standard 2 – Access Information**

*EBP steps, *Standards* and frames denoted in bold are addressed during instruction session

Semester 2A: Patient Education Assignment & Website Credibility

As students begin to understand basic searching principles, the next step in EBP and the *Standards* is for students to analyze information. During the librarian's next visit, health sciences students determine the credibility of websites.

Based on patient scenarios developed by the health sciences faculty member and librarian, the assignment requires students to find three credible consumer sites they could share with patients to give them more information on a particular condition or therapy. To prepare students for the assignment, the librarian discusses the importance of evaluating sources for credibility as well as the difference between open Web sources and the hidden Web. At the same time, the subject faculty member discusses the difference between patient education sites and professional ones. Students work in pairs to evaluate a variety of health-related websites. Students are asked to think critically about the veracity of each site and give a rationale for their decisions.

The library instruction and classroom assignment stress to the students the necessity of considering the patient's needs in the EBP scenario. The website credibility exercise is one librarians often use to teach ACRL *Standard 3—Evaluate Information*. However, in this case, students are not merely looking at credibility but also the value of the information, especially to their patients. The focus is on IL frame of *Information Has Value*, which aligns with the *Appraisal* step of EBP and *Standard 3–Evaluate Information*. Students are encouraged to consider that websites contain varying degrees of reliable information, and what requires payment online through vendor sites may be free to students via library databases. Analyzing Internet content asks students to think critically not only about the information found online but also how search engines prioritize sites and the role the government plays in creating sites like MedLine and HealthFinder. Students begin to grapple with some of the issues surrounding information access and usage, *Standard 5—Ethical Use of Information*, and that *Information Has Value*. "The novice learner may struggle to understand the diverse values of information in an environment where "free" information and related services are plentiful …" (ACRL, 2016). Students as novice learners can begin to understand free information online has value beyond actual cost and begin to analyze information based on many factors while also considering the importance of crediting others for their intellectual property (see Table 3).

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Table 3—Semester 2A EBP & IL Curriculum Map: Website Credibility Assignment

Assignment	Instruction	Framework	EBP	Standard
Patient Education Assignment	**Website Credibility**	**Information Has Value** Searching as Strategic Exploration	Assess the Patient Acquire the Evidence **Appraise the Evidence**	Standard 1 - Determine Information Need Standard 2 - Access Information **Standard 3 - Evaluate Information** **Standard 5 - Ethical Use of Information**

*EBP steps, *Standards* and frames denoted in bold are addressed during instruction session

Semester 2B: Research Article Summary/Response & Trade vs Academic Journals

The librarian and the health sciences faculty member continue to build on the first two sessions. Next, students examine the differences between trade and academic journals published by professional organizations. A summary/response assignment requires students to find, summarize, and reflect on an empirical research article. In order to do so, students must recognize the difference between primary and secondary research and between trade and academic writing. During library instruction, students work in pairs to compare a trade and an academic article selected by the librarian, noting differences in format, style, references, appearance, and data. By critically thinking about both articles, students can recognize that trade journals include less formal language, fewer references, a more practical approach, use of color, etc. As a first introduction to empirical research, this exercise asks learners to identify empirical research articles by focusing on the appearance and general format rather than content and data. The faculty member has the opportunity to discuss the importance of academic research with students as well as discuss how trade journal writers may use evidence-based research data in their writing to support or refute practice.

Applying ACRL's *Standard 3—Evaluate Information* along with the *Appraise the Evidence* step of EBP, students are asked to assess and summarize trade and academic articles in their written analysis of a research article. The frame introduced by this assignment is *Information Creation as a Process,* which states that professionals "recognize that information creations are valued differently in different contexts, such as academia or the workplace. Elements that affect or reflect on the creation, such as a pre- or post-publication editing or reviewing process, may be indicators of quality." (ACRL, 2016). Thus, by comparing trade and

academic writing, students begin to realize that even within their profession there are sources that have varying degrees of authority, depending on the context of the information. As professionals, they will be asked to assess the level of credibility as well as the purpose of the final product.

Table 4—Semester 2B EBP & IL Curriculum Map: Summary/Response Assignment

Assignment	Instruction	Framework	EBP	Standard
Research Article Summary/ Response	**Trade vs Academic Journals**	**Information Creation as a Process**	**Appraise the Evidence**	Standard 1 – Determine Information Need Standard 2 – Access Information **Standard 3 – Evaluate Information**

*EBP steps, *Standards* and frames denoted in bold are addressed during instruction session

Semester 3: Annotated Bibliography & Research Article Analysis

To build further on their understanding of EBP, students examine the professional literature in more depth by writing an annotated bibliography and a companion synthesis paper. At their clinical sites, students are observing their clinical instructors and working with clients. The annotated bibliography assignment requires them to compare what they see in clinical with published, scholarly evidence. In other words, students study a practical intervention or method they've observed in the clinic and answer the question of whether or not it is supported by evidence. Students find the evidence by creating a PICO question, searching for information, selecting at least five empirical research articles, and creating an annotated bibliography in which they briefly summarize each article, explain its significance, and describe how it does or does not support the clinical intervention. After completing the annotated bibliography, the students write an analysis in which they synthesize the research and make decisions regarding the level of evidence and support for their intervention.

In preparation for library instruction, students look closely at the structure of an empirical research article, including what they find in each section (abstract, introduction, method, results, and discussion). In class, students work in pairs to analyze the article and then discuss their findings during a class discussion. The librarian and the faculty member ask the students questions about what role each section plays in the overall article. They also discuss methodology vocabulary as well as the best way to read a research article. As a class, students examine the results of one study and determine what this data says about the

validity of their hypothesis. Again, faculty members can stress the importance of reading studies done by researchers in their field to prove or disprove the efficacy of specific treatments or interventions.

The annotated bibliography assignment builds on the PICO evidence search assignment and the first two steps of EBP by asking students to acquire (*Standard 1—Determine Information Need/Acquire the Evidence* EBP Step), and evaluate evidence (*Standard 3—Evaluate Information/Appraise the Evidence* EBP step). Students must analyze research for validity and relevance to their research question and apply this evidence to practice. In practicing these EBP steps and *Standards*, learners also grapple with the frames of *Information Has Value*, *Authority Is Constructed and Contextual* and *Information Creation as a Process*. At this point in their EBP and IL learning, multiple concepts of each have been interwoven through assignments and library instruction, allowing the faculty member and librarian to encourage a deeper understanding of EBP and IL. By studying the literature in greater depth, students "respect the original ideas of others" and "value the skills, time, and effort needed to produce knowledge," as delineated in *Information Has Value* (ACRL, 2016). Additionally, the students recognize the authority of those individuals conducting research and creating evidence to support clinical interventions. Since they're learning *Authority Is Constructed and Contextual*, students "use research tools and indicators of authority to determine the credibility of sources, understanding the elements that might temper this credibility" as well as "develop and maintain an open mind when encountering varied and sometimes conflicting perspectives" when they analyze the research they have found (ACRL, 2016). Lastly, by creating their own response to the literature in the forms of an annotated bibliography and synthesis paper, students experience *Information Creation as a Process* and "develop, in their own creation processes, an understanding that their choices impact the purposes for which the information product will be used and the message it conveys" (ACRL, 2016). What remains is for students to pull together all of the steps of EBP, *Standards*, and frames in one final unique writing project.

Table 5—Semester 3 EBP & IL Curriculum Map

Assignment	Instruction	Framework	EBP	Standard
Annotated Bibliography	**Research Article Analysis**	**Information Has Value** Searching as Strategic Exploration **Authority Is Constructed and Contextual** **Information Creation as a Process**	Assess the Patient **Acquire the Evidence** **Appraise the Evidence** Apply to Practice	Standard 1 – Determine Information Need **Standard 2 – Access Information** **Standard 3 – Evaluate Information** Standard 4 – Use Information

*EBP steps, *Standards* and frames denoted in bold are addressed during instruction session

Semester 4: Case Study & Case Study Analysis

The culmination of the program is a case study assignment that addresses all the steps of EBP, the *Standards*, and the *Framework*. To prepare students for this project, the librarian provides a sample case study article for the students to evaluate. In much the same way as they did for the research article, students examine the structure, content, and style of the case study by studying it closely and responding to prompts. The health sciences faculty member talks to the students about the differences between a case study on a single or small group of subjects and the more thorough research done in an empirical research study. Students analyze the case study in order to produce their own study, paying attention to the information that must be included, the use of research to substantiate claims, etc. This instruction is also supplemented with a required research appointment with a librarian. The appointment meets students where they are in the process so the time can be spent refining their research question, acquiring research, analyzing articles, and discussing the case study format.

In order to begin the process of writing a case study, students begin with the first step of EBP: *Assess the Patient.* The assignment requires students to ask a research question based on a patient they worked with during their clinical experience. In EBP, the process of creating a PICO question focuses the scope of the research task. Students study a practical intervention or method they observed in their clinical and build a PICO question to guide their research. This is also the point at which students determine "the nature and extent of the information needed" both in primary and secondary sources (ACRL, 2000). Understanding the frame of

Research as Inquiry can help students ask the question and narrow the scope of their investigation. While *Research as Inquiry* teaches the importance of limiting the scope of an investigation, the frame does not provide the structure for focusing the research question like EBP's PICO. Students can use practical application to understand a more tenuous concept; however, the frame is the theory behind the practice showing the importance of not just *how* but *why* defining a question is important.

The EBP step *Acquire the Evidence* is the next in the student's process. The assignment requires students to do a review of the literature related to their question. Students study a practical intervention or method they have observed in the clinic and answer the question of whether or not it is supported by evidence. For one of the key components of EBP and *Standard 2—Access Information,* practitioners are asked to search efficiently and effectively. This is where evidence is collected in order to answer a clinical question. The frame that most closely pairs with this step of EBP is *Searching as Strategic Exploration.* Both proponents of EBP and IL describe this step as challenging or complex. Librarian and faculty collaborate to create an assignment that provides the structure for students through the search process. The *Acquire the Evidence* step of EBP and *Standard 1—Access Information* ask students to recognize the difference between primary evidence witnessed in clinical settings and published secondary evidence in online and print journals. Although students may collect primary evidence in clinical every day through patient interventions and charts, they don't typically view these as legitimate sources of information. For the assignment, students are evaluated on their ability to choose the most appropriate databases and apply the steps of a basic literature search as well as use relevant, primary, patient information.

After collecting research, students must *Appraise the Evidence*, the third step in EBP and *Standard 3—Evaluate Information.* Though not explicitly addressed in the case study assignment, students are expected to use the evaluation process they learned in the annotated bibliography assignment to evaluate the articles they gathered. As students work through the later steps of the EBP model, the frames begin to overlap more assertively than in the earlier steps. While students are gathering evidence for their case study, they need to determine what *Information Has Value* to their research question. Students need to understand that information as commodity can impact the way data and conclusions are represented by authors, especially when research is funded by corporations. Thus, students should critically evaluate their sources for bias and authority which leads to the next frame: *Authority Is Constructed and Contextual.* Students must look closely at the author's credentials

and affiliations to recognize that additional research into the author may be needed. EBP asks healthcare professionals to understand *Information Creation as a Process* in order to determine the validity, impact and applicability of a research article. By understanding the research methods used in an article, students can reproduce them.

In the fourth step, *Apply to Practice*, students use a combination of the research, their own clinical work, and patient needs to answer their clinical question. For the case study, students reference standards in the field, compare them with the research conducted by other clinicians, and apply both to their work with a patient in an effort to create a viable academic product. In effect, students apply "new or prior knowledge to the planning and creation of a particular product … ," which is their case studies (ACRL, 2000). Students have come to the most difficult part of EBP: they have to reconcile the research, their knowledge, the clinical setting, and the patient's unique biology and values, and create a product that fits within the unfamiliar structure of a case study. Learners often struggle with the frame *Information Creation as a Process* because of its nonlinear quality as previous steps are intertwined within it. Students are synthesizing their research while creating a product that meets an information need. This iterative, multi-pronged process continually impacts the way students understand the research they conducted both in the clinic and through analyzing academic research. As students struggle to transfer their new knowledge into the structure of a case study, they should also convey their own authority in order to contribute to the scholarly conversation.

The final step of EBP is *Evaluate Effectiveness*, which directs health professionals to evaluate their performance. This EBP step requires health professionals to review the previous four steps of EBP. At this point, EBP deviates from the *Standards*, but students should still ensure they are using "information ethically and legally" (ACRL, 2000) by citing and referencing sources correctly. However, for the purposes of the case study, the two most pertinent frames are *Authority Is Constructed and Contextual* and *Scholarship as Conversation*. Students are asked to create a product in which they analyze the treatment of a patient and support this intervention with published evidence establishing their authority and contributing to scholarly conversation. This culminating project tests students' understanding and internalization of the concepts taught to them throughout their program and allows the health sciences faculty to evaluate the student's effectiveness as a professional within evidence-based practice.

Table 6—Semester 4 EBP & IL Curriculum Map

Assignment	Instruction	Framework	EBP	Standard
Case Study	**Case Study Analysis**	Research as Inquiry	Assess the Patient.	Standard 1 – Determine Information Need
		Searching as Strategic Exploration	Acquire the Evidence.	Standard 2 – Access Information
		Information Has Value	**Appraise the Evidence**	**Standard 3 – Evaluate Information**
		Authority Is Constructed and Contextual	Apply to Practice	Standard 4 – Use Information
		Information Creation as a Process	Evaluate Effectiveness	Standard 5 – Ethical Use of Information
		Scholarship as Conversation		

*EBP steps, *Standards* and frames denoted in bold are addressed during instruction session

Conclusion

The authors do not intend to reject the *Standards* in favor of the *Framework* for the reasons outlined above. By using the *Standards* and the *Framework* together in conjunction with EBP, librarians and their health sciences faculty colleagues are able to tap into a wealth of different ways of thinking of information use. The three can work as a collection of documents with the *Standards* linking EBP to the *Framework*. By introducing a combination of skills and concepts to students throughout their educational program, librarians and faculty offer students flexibility in the ways they interact with information, encouraging students to be more responsive professionals.

This complex, meaningful instruction of information literacy in the health sciences classroom necessitates a strong partnership between librarians and health sciences faculty. Ongoing conversations are necessary to recognize common goals for student information use, discern the commonalities between EBP and information literacy, and assess the impact of the curriculum map.

The collaboration to create the curriculum map described above can achieve the goal of both librarian and faculty: a health sciences professional with an understanding of how, when, and why to seek information. The time, energy, and commitment to create this level of partnership and curriculum planning is ultimately worth the effort, as it is through tiered instruction that students can gain, apply, and retain this knowledge.

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